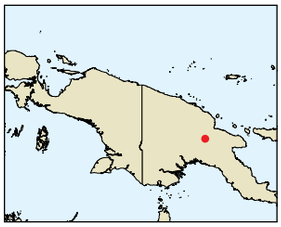
MICROHYLIDAE

CR *Albericus siegfriedi* Menzies, 1999

Critically Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Papua New Guinea
Current Population Trend: Decreasing



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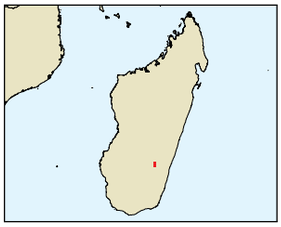
Geographic Range This species is known only from the type locality at Mount Elimbari, Simbu Province, Papua New Guinea, and is thought likely to have a very narrow distribution. It was collected between 2,400 and 2,500m asl.
Population It is quite common at the type locality.
Habitat and Ecology It occurs in montane rainforest. Like other species in the genus, it presumably breeds by direct development.
Major Threats The habitat of this species has become isolated and fragmented due to clearance of the land around the area of the type locality. It is also threatened by bushfires that are increasing due to intensified droughts.
Conservation Measures This species is not known to occur in any protected area, and protection and maintenance of the remaining habitat around the type locality is recommended. Further survey work is needed to determine the biology and population status of the species, and to understand the limits of its range better.
Bibliography: Menzies, J.I. (1999)
Data Providers: David Bickford, Fred Parker, James Menzies

VU *Anodonthyla montana* Angel, 1925

Vulnerable D2
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Stable

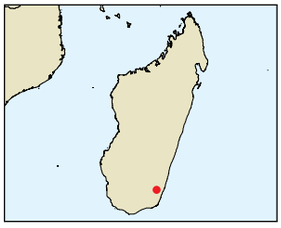


© Frank Glaw and Miguel Vences

Geographic Range This species occurs at 2,000-2,700m asl in south-eastern Madagascar, where it is known with certainty only from Andringitra. Records from Andohahela require confirmation, and the species has not been found there in recent surveys. It might occur more widely, but there is very little high-altitude habitat at other sites in south-eastern Madagascar.
Population It is abundant at several localities within Andringitra.
Habitat and Ecology It lives in rocky areas within heath land and grassland at high elevations above the tree-line. It breeds in small rock pools and has non-feeding tadpoles.
Major Threats Its habitat is largely immune to destruction, and even fires are unlikely to have much effect on this species. It might possibly be susceptible to climatic changes.
Conservation Measures It occurs in Parc National d'Andringitra. There is a need for close monitoring of the population status of this species given that it is known from only a single protected area.
Bibliography: Andreone, F. *et al.* (2005b), Blommers-Schlösser, R.M.A. and Blanc, C.P. (1991), Glaw, F. and Vences, M. (1994), Raxworthy, C.J. and Nussbaum, R.A. (1996a), Raxworthy, C.J. and Nussbaum, R.A. (1996b)
Data Providers: Miguel Vences, Christopher Raxworthy

EN *Anodonthyla rouxae* Guibé, 1974

Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing



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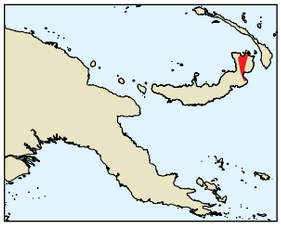
Geographic Range This species has a very small range in south-eastern Madagascar, in the Anosy Mountains, at 1,900m asl. It apparently does not occur at Andohahela.
Population There is no information on the population status of this species.
Habitat and Ecology It is apparently confined to bamboo forests at high elevations, and presumably breeds in water filled cavities in bamboo and has a non-feeding larval form.
Major Threats The main threat is likely to be habitat loss due to subsistence agriculture, timber extraction, charcoal manufacture, spread of invasive eucalyptus, livestock grazing, fires, and expanding human settlements.
Conservation Measures It is not known to occur in any protected areas, and the habitat of the Anosy Mountains is in urgent need of protection.
Bibliography: Blommers-Schlösser, R.M.A. and Blanc, C.P. (1991), Glaw, F. and Vences, M. (1994), Guibé, J. (1974)
Data Providers: Ronald Nussbaum, Christopher Raxworthy

VU *Austrochaperina novaebritanniae* Zweifel, 2000

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Papua New Guinea
Current Population Trend: Decreasing



© Stephen Richards

Geographic Range This species is known only from three localities in north-eastern New Britain, Papua New Guinea. S. Richards (pers. comm.) has recently documented a population of this species to the south-west of the two previously known populations. It has been recorded from 350-1,000m asl.
Population It occurs in high densities in some habitats.
Habitat and Ecology It lives in lowland rainforest, and has also been found in recently cleared rainforest (although the long-term survival of this population has not been documented). It breeds by direct development.
Major Threats It is threatened by the logging of lowland forest in New Britain.
Conservation Measures There are no protected areas within the range of the species. Its distribution, habitat requirements and abundance need to be properly investigated, particularly to determine whether or not it is able to withstand logging pressure.
Bibliography: Zweifel, R.G. (2000)
Data Providers: Stephen Richards, Allen Allison

EN *Balebreviceps hillmani* Largen and Drewes, 1989

Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Ethiopia
Current Population Trend: Decreasing

© M.J. Largen

Geographic Range This species is endemic to the Bale Mountains, east of the Rift Valley, in Ethiopia, where it has been found at 3,200m asl.
Population It seemed to be reasonably numerous in the type locality in 1986; the absence of recent records is due to a lack of survey effort.
Habitat and Ecology It is known only from giant heath (*Erica arborea*) woodland, just below the timberline. All specimens have been collected by day from beneath logs and boulders. Its breeding behaviour is unknown, but females have been found to contain large and unpigmented ova, which is probably indicative of either direct development or at least of a terrestrial nest.
Major Threats Direct damage to the narrow belt of giant heath with which this animal is associated, by either humans or their livestock, does not seem very likely in the near future, but would be disastrous. A more worrying possibility is the indirect harm resulting from logging of contiguous tall forests at a slightly lower elevation.
Conservation Measures The type locality of this amphibian species is situated in the Bale Mountains National Park, although this protected area has not yet been formally gazetted. Conservation of *Erica* woodland and heath throughout the Ethiopian mountains is a high priority. Clearly, there is an urgent need to conduct further survey work to establish whether this species might be more widely distributed.
Bibliography: Largen, M.J. (2001), Largen, M.J. and Drewes, R.C. (1989)
Data Providers: Malcolm Largen, Robert Drewes

VU *Breviceps gibbosus* (Linnaeus, 1758) GIANT RAIN FROG

Vulnerable B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)
Order, Family: Anura, Microhylidae
Country Distribution: South Africa
Current Population Trend: Decreasing

© Atherton de Villiers

Geographic Range This species is endemic to the south-western Western Cape Province of South Africa, where it ranges from the central Cape Peninsula in the south, to west of Citrusdal in the north. There is a distribution gap in the Swartland. It ranges from sea level up to 1,000m asl.
Population It is locally common, but it appears to be declining.
Habitat and Ecology It is a burrowing frog of renosterveld fynbos heathland. It also occurs in disturbed habitats, such as pine plantations and gardens; its occurrence in some of these situations might be due to transportation of topsoil for use in gardens. It breeds by direct development, and is not associated with water.
Major Threats Although it is somewhat adaptable, its habitat is being impacted and fragmented by agricultural expansion and urban development. It is also possibly impacted by the use of pesticides, and herbicides, and this might account for the apparent absence of the species from most renosterveld fragments in the Swartland, north of Cape Town.
Conservation Measures It occurs in several protected areas, including Cape Peninsula National Park, Helderberg Nature Reserve, and Paarl Mountain Nature Reserve.
Notes on taxonomy: This species, originally named *Rana gibbosa*, was the first African frog species to be named by Western science.
Bibliography: Branch, W.R. (1988), Channing, A. (2001), McLachlan, A. (1978), Minter, L.R. *et al.* (2004)
Data Providers: Leslie Minter, Alan Channing, James Harrison

VU *Breviceps macrops* Boulenger, 1907 DESERT RAIN FROG

Vulnerable B2ab(ii,iii,iv,v)
Order, Family: Anura, Microhylidae
Country Distribution: Namibia, South Africa
Current Population Trend: Decreasing

© Atherton de Villiers

Geographic Range This species occurs on the Namaqualand coast of South Africa, north to Lüderitz in coastal south-western Namibia. It ranges from close to the high-water mark to 10km from the coast.
Population It is a locally common species.
Habitat and Ecology It is a fossorial species that lives in sand dunes vegetated with low, succulent shrubs and other xerophytic vegetation in the fog belt. Breeding takes place by direct development, and it is not associated with water.
Major Threats The main threat to the species is loss of its habitat as a result of coastal opencast diamond mining. Development of roads, increasing pressure from human settlement, and changing land-use (e.g. increased grazing) pose additional threats.
Conservation Measures It is not known from any protected areas. There is a need to establish conservation areas within the range of the species.
Bibliography: Branch, W.R. (1988), Channing, A. (2001), Channing, A. and Griffin, M. (1993), Channing, A. and van Wyk, A. (1987), Minter, L.R. *et al.* (2004), Passmore, N.I. and Carruthers, V.C. (1995)
Data Providers: Leslie Minter, Alan Channing, James Harrison

VU *Breviceps sylvestris* FitzSimons, 1930 FOREST RAIN FROG

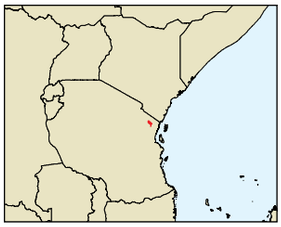
Vulnerable B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)
Order, Family: Anura, Microhylidae
Country Distribution: South Africa
Current Population Trend: Decreasing

© Richard Boycott

Geographic Range This species is endemic to the Limpopo Province of north-eastern South Africa, where it occurs in two separate populations: *Breviceps s. sylvestris* occurs along the eastern escarpment; and *B. s. taeniatus* occurs along the northern escarpment in the Soutpansberg Mountains. The two subspecies are geographically isolated by about 80km of unsuitable habitat. It is a highland species, occurring up to 1,800m asl.
Population It is locally common to abundant.
Habitat and Ecology It breeds in natural forests, grassy forest fringes, and adjacent open grassland and gardens, but never far from forest. Nests have been found under stones with the female in attendance. It breeds by direct development, and is not associated with water.
Major Threats The main threats are loss of habitat due to afforestation, fire, fruit plantations, and subsistence agriculture.
Conservation Measures It occurs in several protected areas, including Blouberg Nature Reserve, Thabina Nature Reserve, and the Wolkberg Wilderness Area.
Bibliography: Channing, A. (2001), Minter, L.R. (1998), Minter, L.R. *et al.* (2004), Passmore, N.I. and Carruthers, V.C. (1995), Poynton, J.C. (1963), Poynton, J.C. (1964b), Wager, V.A. (1986)
Data Providers: Leslie Minter, Alan Channing

EN *Callulina kisiwamsitu* de Sá, Loader and Channing, 2004

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Tanzania
Current Population Trend: Decreasing

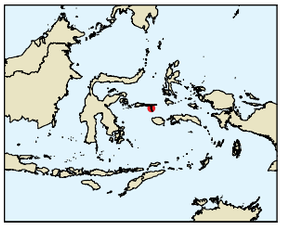


© Martin Vestergaard

Geographic Range This species is known from remnant forest patches in the West Usambara Mountains of Tanzania, namely: Mazumbai Forest Reserve; Ambangula Forest Reserve; Shume-Mugambo Forest Reserve; and Lushoto (=Philipshof). It is likely to occur widely in the West Usambaras, wherever forest remains.
Population There is no information on the population status of this species.
Habitat and Ecology It is found within forest habitats, and is presumed to be intolerant of habitat degradation. Males call at 0.5-2m above the ground from low bushes and other vegetation during the rainy season. One specimen was found to have relatively large arthropods (Hemiptera, Orthoptera, Diplopoda) in its gut. Breeding is presumed to take place by direct development.
Major Threats Habitat loss due to smallholder agriculture is likely to be a threat to unprotected forests within the range of this species. Habitat degradation may be a threat as a result of both logging activities and extraction of firewood, even in protected areas.
Conservation Measures Three of four known sites for this species are within forest reserves, but even these are subject to threats and there is a need for improved management of all of them.
Notes on taxonomy: This species has been separated from *Callulina kreffti.*
Bibliography: De Sá, R.O., Loader, S.P. and Channing, A. (2004)
Data Providers: Alan Channing, Kim Howell, Simon Loader

EN *Callulops kopsteini* (Mertens, 1930)

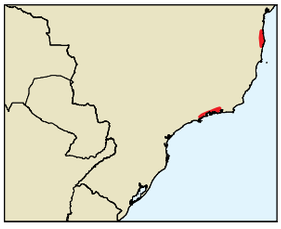
Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Indonesia
Current Population Trend: Decreasing



Geographic Range This species is known from Sanana Island, in the Sula Islands, Indonesia. It is known only from the type specimen, and there have been no records since it was first described.
Population There is no information available on the population status of this species.
Habitat and Ecology It presumably occurs in lowland forest, though there is no recent information. There is also no information on its breeding details, though it presumably breeds by direct development and is not dependent upon water.
Major Threats This species is likely to be seriously threatened by the extensive logging taking place on Sanana Island.
Conservation Measures It does not occur in any protected areas. This species is a priority for survey work, in order to establish its current population status.
Bibliography: Iskandar, D.T. and Colijn, E. (2000), Zweifel, R.G. (1972)
Data Providers: Djoko Iskandar, Mumpuni

EN *Chiasmocleis carvalhoi* Cruz, Caramaschi and Izecksohn, 1997

Endangered B2ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Brazil
Current Population Trend: Decreasing



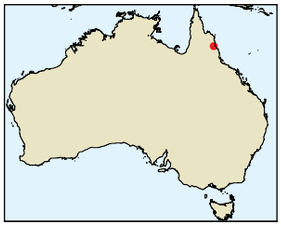
© Ana Telles Potsch de Carvalho e Silva

Geographic Range This species is known only from very low altitudes, up to 40m asl, in the states of Rio de Janeiro and São Paulo in south-eastern Brazil, with disjunct populations in the southern part of the state of Bahia in eastern Brazil. However, it might occur more widely than current records suggest.
Population It is an abundant species.
Habitat and Ecology It is found in primary and secondary forest, but not in open areas. It has been observed in temporary ponds inside lowland forest, and is known to be an explosive breeder.
Major Threats The major threat is habitat loss due to agriculture (including wood plantations and livestock grazing), logging, and human settlement.
Conservation Measures It occurs in several protected areas, although there is still a need for expanded protection of Atlantic forest habitats in this region of Brazil.
Bibliography: Cruz, C.A.G, Caramaschi, U. and Izeckson, E. (1997), Hartmann, M.T., Hartmann, P.A. and Haddad, C.F.B. (2002), Hartmann, M.T., Hartmann, P.A. and Haddad, C.F.B. (2002), Izecksohn, E. and Carvalho-e-Silva, S.P. (2001), Pimenta, B.V.S., Cruz, C.A.G. and Dixo, M. (2002)
Data Providers: Bruno Pimenta, Oswaldo Luiz Peixoto

VU *Cophixalus aenigma* Hoskin, 2004

TAPPING NURSERY-FROG

Vulnerable D2
Order, Family: Anura, Microhylidae
Country Distribution: Australia
Current Population Trend: Stable



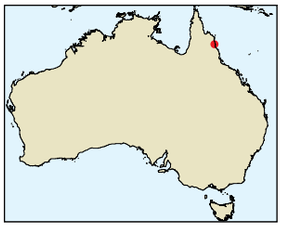
© Stephen Richards

Geographic Range This Australian endemic is known from the Mount Carbine Tableland, Thornton Uplands, Finnigan Uplands and Bakers Blue Mountain in north-eastern Queensland. It is generally recorded from above 750m asl, although it was once recorded from around 586m asl, although there is a suggestion that this record might be a misidentified *C. exiguous.*
Population It occurs at moderate to high densities, and is one of the most frequently encountered amphibians within its range.
Habitat and Ecology It is an inhabitant of moderate- to high-elevation tropical rainforest. Males are usually observed calling from amongst leaf-litter, or from under logs and roots and other debris on the forest floor. It is a terrestrial breeder, and the young develop directly into fully formed froglets.
Major Threats There is no information on threats to this species. Its very restricted range renders it susceptible to stochastic threatening processes.
Conservation Measures The range of this species includes a few protected areas within the Wet Tropics World Heritage Area. There is a need for close monitoring of the population status of this species given its very limited range.
Bibliography: Hoskin C.J. (2004), Shoo, L.P. and Williams, Y. (2004)
Data Providers: Conrad Hoskin

CR *Cophixalus concinnus* Tyler, 1979

BEAUTIFUL NURSERY-FROG

Critically Endangered B1ab(v)+2ab(v)
Order, Family: Anura, Microhylidae
Country Distribution: Australia
Current Population Trend: Stable

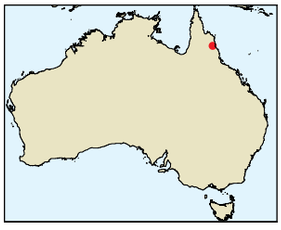


Geographic Range This Australian endemic is found at elevations above 1,100m asl on Thornton Peak, between Mossman and Cooktown in north-eastern Queensland. The area of suitable habitat available to this species is only 718ha.
Population It is known to be an abundant species, with a large population size.
Habitat and Ecology A terrestrial species, it inhabits rainforest and boulder fields at high elevations, and is often found in leaf-litter on the forest floor. It calls from tree trunks, logs, and bushes. It breeds by direct development; unpigmented eggs are laid in a string under rocks or logs in moist soil.
Major Threats The main threat to the species is habitat degradation as a result of human impacts associated with touristic activities and infrastructure development for these. However, overall, these threats are localized. Of greater significance is a predicted decline in the coming years because of climate change (C.J. Hoskin pers. comm.).
Conservation Measures The range of the species is wholly within Daintree National Park in the Wet Tropics World Heritage Area.
Bibliography: Barker, J., Grigg, G. and Tyler, M. (1995), Hoskin C.J. (2004), McDonald, K.R. (1992), Zweifel, R.G. (1985)
Data Providers: Jean-Marc Hero, Ross Alford, Michael Cunningham, Conrad Hoskin, Keith McDonald

VU *Cophixalus hosmeri* Zweifel, 1985

HOSMER'S FROG

Vulnerable D2
Order, Family: Anura, Microhylidae
Country Distribution: Australia
Current Population Trend: Stable



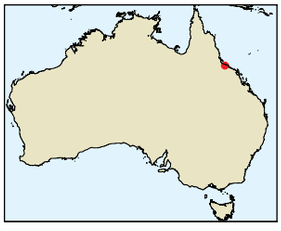
© Richard G. Zweifel

Geographic Range This Australian endemic is found in a small area north of Cairns and Mount Lewis, in northern Queensland. It has been recorded from between 800 and 1,370m asl.
Population The species has a relatively large population, and is one of the most frequently encountered amphibians within its known range.
Habitat and Ecology This species inhabits rainforest. Males call from sticks, palms, and vegetation up to 1m above ground. The eggs are laid terrestrially and develop directly into fully formed froglets.
Major Threats The major threat to this species comes mainly from human impacts on parks, for example, erosion following human traffic, and habitat degradation from the development of walking tracks and other tourist facilities. However, these threats are localized, and overall, the species is probably not significantly threatened at present. Climate change is a potential future threat.
Conservation Measures The range of this species includes a few protected areas within the Wet Tropics World Heritage Area. There is a need for close monitoring of the population status of this species given its very limited range.
Bibliography: Barker, J., Grigg, G. and Tyler, M. (1995), Hoskin C.J. (2004), McDonald, K.R. (1992), Shoo, L.P. and Williams, Y. (2004), Zweifel, R.G. (1985)
Data Providers: Jean-Marc Hero, Keith McDonald, Michael Cunningham, Conrad Hoskin, Ross Alford, Richard Retallick

EN *Cophixalus mcdonaldi* Zweifel, 1985

MCDONALD'S FROG

Endangered B1ab(v)+2ab(v)
Order, Family: Anura, Microhylidae
Country Distribution: Australia
Current Population Trend: Unknown



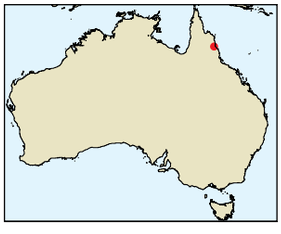
© Stephen Richards

Geographic Range This Australian endemic is found only in a small area called Bowling Green Bay National Park on Mount Elliott, south-east of Townsville in northern Queensland. It has been recorded at 900-1,200m asl.
Population It is an uncommon species.
Habitat and Ecology Individuals are usually seen on palm fronds in the rainforest. Breeding takes place by direct development.
Major Threats The threats to this species mainly come from human impacts on existing protected areas, primarily habitat degradation due to erosion following increased human traffic and development of walking tracks and other tourist facilities. The increased occurrence of wildfires is also a threat, and the species may be at risk of climate change.
Conservation Measures All populations occur within a protected area in the Wet Tropics World Heritage Area, which was inscribed in 1988. Plans for wildfire management and cool controlled burning have been developed.
Bibliography: Barker, J., Grigg, G. and Tyler, M. (1995), Hoskin C.J. (2004), McDonald, K.R. (1992), Zweifel, R.G. (1985)
Data Providers: Jean-Marc Hero, Richard Retallick, Conrad Hoskin, Keith McDonald

EN *Cophixalus monticola* Richards, Dennis, Trenberry and Werren, 1994

MOUNTAIN-TOP NURSERY-FROG

Endangered B1ab(v)+2ab(v)
Order, Family: Anura, Microhylidae
Country Distribution: Australia
Current Population Trend: Unknown

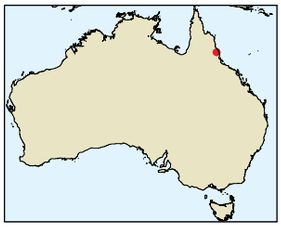


Geographic Range This Australian endemic is known only from a small area above 1,100m asl on the Carbine Tableland, north-west of Cairns in northern Queensland, Australia. Suitable habitat exists in the Daintree National Park/ Mossman Gorge section, but the presence of the animal has yet to be confirmed there.
Population It is not considered a common species and has a patchy distribution, although in some parts of its range it can occur at moderate to high densities. Its patchy distribution may be linked to its preference for understorey dominated by *Linospadix* palms, and the availability of this microhabitat.
Habitat and Ecology It is seen on leaf axils and crevices in branches, bark, roots or rocks in rainforest. Males call from, and eggs have been found in, *Linospadix* palms. The young develop directly into fully formed froglets.
Major Threats Potential threats include climate change (see Williams and Hilbert 2006) and habitat degradation, mainly from human impacts on the parks (for example, erosion following human traffic, increased visitation, habitat degradation, and infrastructure development, such as roads and telecommunications towers, walking tracks and other tourist facilities).
Conservation Measures All populations occur within the Wet Tropics World Heritage Area and the current tenure is a forest reserve under the Queensland Nature Conservation Act 1992. The area is currently managed by the Queensland National Parks and Wildlife Service, and is proposed for national park status. The area is included in the Wet Tropics Management Plan and the Wet Tropics Conservation Plan. Currently the access road onto the Carbine Tableland has been closed in most of the habitat suitable for this species, and the road is not maintained in the remainder.
Bibliography: Hoskin C.J. (2004), Richards, S.J. *et al.* (1994), Shoo, L.P. and Williams, Y. (2004), Williams, S.E. and Hilbert, D.W. (2006)
Data Providers: Jean-Marc Hero, Conrad Hoskin, Keith McDonald

EN *Cophixalus neglectus* Zweifel, 1962

NEGLECTED FROG

Endangered B1ab(v)+2ab(v)
Order, Family: Anura, Microhylidae
Country Distribution: Australia
Current Population Trend: Decreasing

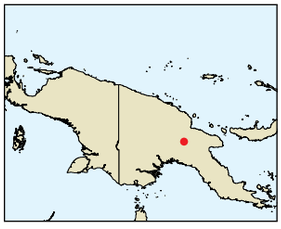


© Ross A. Alford

Geographic Range This Australian endemic is found between Cairns and Innisfail, in northern Queensland. The species occurs between approximately 900 and 1,500m asl, although there is evidence to suggest that the lower altitudinal limit is receding. In particular, recent surveys in 2000 and 2001 failed to record the species below 1,150m asl, and in 2001 to 2004, there were no records from below 1,200m asl.
Population It occurs at moderate to high densities in some parts of its range.
Habitat and Ecology This species is found beneath cover on the floor of high-altitude rainforest. It calls from under leaves and bark, for example. Eggs are laid on the ground; a group of 14 eggs were observed being attended by an adult frog (other clutches have been as large as 32 eggs). The young develop directly into fully formed froglets.
Major Threats The threats to this species mainly come from human impacts on existing protected areas, primarily habitat degradation due to erosion following increased human traffic and development of walking tracks and other tourist facilities. Climate change could have serious implications for this species and may already be impacting the lower elevational range of the species.
Conservation Measures All populations occur within a protected area in the Wet Tropics World Heritage Area, which was inscribed in 1988. Further monitoring of this species is needed in order to determine whether its range is receding altitudinally due to the impacts of climate change.
Bibliography: Barker, J., Grigg, G. and Tyler, M. (1995), Hoskin C.J. (2004), McDonald, K.R. (1992), Shoo, L.P. and Williams, Y. (2004), Zweifel, R.G. (1985)
Data Providers: Jean-Marc Hero, Richard Retallick, Conrad Hoskin

VU *Cophixalus nubicola* Zweifel, 1962

Vulnerable D2
Order, Family: Anura, Microhylidae
Country Distribution: Papua New Guinea
Current Population Trend: Unknown



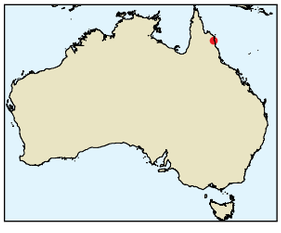
© Stephen Richards

Geographic Range This species is known only from the type locality, Mount Michael, Eastern Highlands Province, Papua New Guinea, at 3,100m asl. It has not been recorded from other mountain ranges nearby suggesting that it might be endemic to Mount Michael.
Population There are no records of this species since it was first described in 1962, but there have been no surveys of the area since.
Habitat and Ecology This species inhabits montane rainforest and alpine grassland. Like other species in the genus, it presumably breeds by direct development.
Major Threats There is a high human population density in the lowlands of Mount Michael, which is placing increasing pressure on the forests at higher elevations.
Conservation Measures Mount Michael is currently not included within any protected area. Survey work is needed to determine the current population status of this species, and to ascertain whether there are any major threats within its range.
Bibliography: Zweifel, R.G. (1962)
Data Providers: Stephen Richards, David Bickford

VU *Cophixalus saxatilis* Zweifel and Parker, 1977

ROCK FROG

Vulnerable D2
Order, Family: Anura, Microhylidae
Country Distribution: Australia
Current Population Trend: Stable

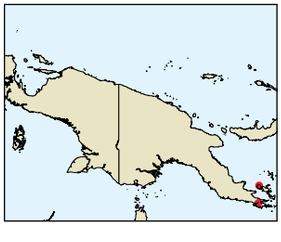


© Richard G. Zweifel

Geographic Range This Australian endemic is restricted to Black Mountain, south of Cooktown, in Far North Queensland.
Population There is no information on the population status of this species.
Habitat and Ecology The species inhabits rainforest patches. It is found on an unusual formation of granite boulders on Black Mountain where the frog lives in caverns formed between the huge boulders. It breeds by direct development.
Major Threats The main threats to this species derive mainly from human impacts on the parks, for example, erosion following human traffic, and habitat degradation as a result of the development of walking tracks and other tourist facilities.
Conservation Measures All populations are within Black Mountain National Park, which lies at the northern end of the Wet Tropics World Heritage Area. There is a need for close monitoring of the population status of this species given its very limited range.
Bibliography: Barker, J., Grigg, G. and Tyler, M. (1995), Hoskin C.J. (2004), McDonald, K.R. (1992), Zweifel, R.G. (1985)
Data Providers: Jean-Marc Hero, Ross Alford, Michael Cunningham, Conrad Hoskin, Keith McDonald, Richard Retallick

VU *Copiula minor* Menzies and Tyler, 1977

Vulnerable D2
Order, Family: Anura, Microhylidae
Country Distribution: Papua New Guinea
Current Population Trend: Unknown

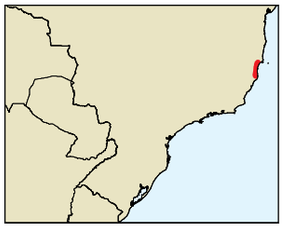


© Fred Kraus, Bishop Museum

Geographic Range This species is known from Goodenough Island and the Cloudy Mountains of the southernmost mainland of Milne Bay Province, Papua New Guinea. It has been recorded from about 800-1,600m asl.
Population Only two specimens were collected from Goodenough Island, but calls heard during collection suggested a common species within its small range.
Habitat and Ecology This species is found below ground in lowland hill forest to montane forest. It presumably breeds by direct development, like other species in the genus.
Major Threats The habitat on Goodenough Island is heavily impacted by gardening and fires, as well as expanding human populations, up to 300m asl, though it remains intact at higher altitudes.
Conservation Measures Its range includes Oia Mada Wara Wildlife Management Area on Goodenough Island. Further survey work is needed to better determine the population status and distribution of this species on other islands in Milne Bay, as well as on the mainland.
Bibliography: Kraus, F. and Allison, A. (2004a), Kraus, F. and Allison, A. (2004b), Menzies, J.I. and Tyler, M.J. (1977)
Data Providers: Stephen Richards, Allen Allison, Fred Kraus

VU *Dasypops schirchi* Miranda-Ribeiro, 1924

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Brazil
Current Population Trend: Decreasing

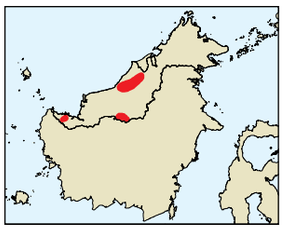


© Felipe Franco Curcio

Geographic Range This species occurs on the coastal plain of the states of Espírito Santo and southern Bahia, south-eastern Brazil, ranging up to 60m asl.
Population There is no information on the population status of this cryptic species.
Habitat and Ecology It is found in forest, including secondary forest and forest edges, but not open areas. It is an explosive breeder in temporary pools in forest and on the forest edge.
Major Threats The major threats are probably related to habitat loss due to agriculture, wood plantations, logging, industry, and human settlement.
Conservation Measures It occurs in the Reserva Biólogica de Sooretama, which forms part of the Discovery Coast Atlantic Forest Reserves World Heritage Site.
Bibliography: Bokermann, W.C.A. (1952), Cruz, C.A.G. and Peixoto, O.L. (1978)
Data Providers: Oswaldo Luiz Peixoto, Bruno Pimenta

VU *Gastrophrynoides borneensis* (Boulenger, 1897)

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Malaysia
Current Population Trend: Decreasing



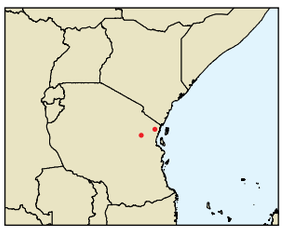
Geographic Range This species is endemic to Borneo and has been reported only from several lowland points in Sarawak (Malaysia). It probably occurs more widely than current records suggest, especially in areas between known sites, although the amount of available habitat is rapidly declining. It is likely to be found in north-western Kalimantan (Indonesia), but this has not yet been confirmed. It is present at elevations below 300m asl.
Population There is no information on the current population status of this secretive species.
Habitat and Ecology It lives in leaf-litter of the forest floor, but has also been found in tree holes. It has not been found outside forest. Nothing is known of its breeding habits.
Major Threats The major threat is forest loss and fragmentation, due to clear-cutting.
Conservation Measures It is not presently known from any protected areas, and improved protection and preservation of rainforest habitats is needed in Sarawak and Kalimantan.

Bibliography: Inger, R.F. (1966)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

EN *Hoplophryne rogersi* Barbour and Loveridge, 1928

USAMBARA BLUE-BELLIED FROG

Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Tanzania
Current Population Trend: Decreasing



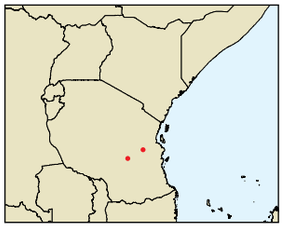
© N. J. Cordeiro

Geographic Range This species is known with certainty only from the East Usambara Mountains (including the Magrotto ridge) and the Nguu Mountains in north-eastern Tanzania. It ranges from 600m to at least 1,200m asl.
Population It is generally an uncommon species, and is very hard to find outside the breeding season. However, it is easily found in the Amani Botanic Garden in the East Usambaras during the breeding season due to the extensive stands of exotic bamboo, with which it is closely associated (30% of holes in broken bamboo stems have been found to contain eggs, larvae or adults).
Habitat and Ecology It is found in lowland and montane forest, and is sometimes associated with wild bananas. It appears to be very rare in heavily disturbed forest or in open areas. However, it is locally abundant in stands of introduced bamboo in the Amani Botanic Garden. The eggs are deposited in hollow bamboo stems or leaf axils (and perhaps tree holes) where water is trapped, and where the larvae develop.
Major Threats It is almost certainly adversely affected by ongoing forest loss, especially for small-scale agriculture. The habitat in the East Usambaras has recently come under serious threat as a result of the activities of illegal gold miners.
Conservation Measures It occurs in the Amani Nature Reserve, and in several forest reserves; there is a need for increased protection and improved management of these and other reserves in the East Usambaras.
Bibliography: Barbour, T. and Loveridge, A. (1928), Harper, E. and Vonesh, J.R. (2003), Howell, K.M. (1993)
Data Providers: Kim Howell, Simon Loader, James Vonesh, Michele Menegon

VU *Hoplophryne uluguruensis* Barbour and Loveridge, 1928

ULUGURU BLUE-BELLIED FROG

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Tanzania
Current Population Trend: Decreasing

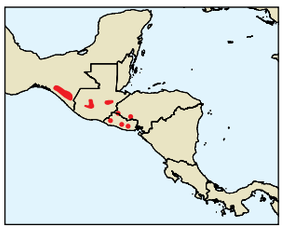


© Michele Menegon

Geographic Range This species is known only from the Uluguru and Udzungwa Mountains in eastern Tanzania. It is a montane species, but its elevational range is not clear, although it ranges higher than *Hoplophryne rogersi*.
Population It is an uncommon species.
Habitat and Ecology It inhabits montane forest, and is often found inside fallen bamboo stems or on wild bananas. It is not found in disturbed forest. The eggs are laid on the inner surface of banana leaves or in stems, or in split bamboo; the tadpoles develop in water trapped in leaf axils or in bamboo.
Major Threats It is almost certainly adversely affected by ongoing forest loss, especially due to small-scale agriculture and logging.
Conservation Measures It might occur in the Udzungwa National Park, but there have not so far been any records.
Bibliography: Barbour, T. and Loveridge, A. (1928), Howell, K.M. (1993), Poynton, J.C. (2003b)
Data Providers: Kim Howell, John Poynton, Simon Loader

VU *Hypopachus barberi* Schmidt, 1939

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: El Salvador, Guatemala, Honduras, Mexico
Current Population Trend: Decreasing

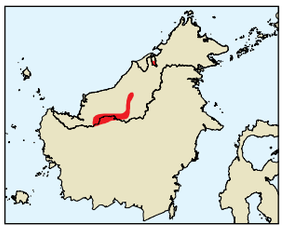


Geographic Range This species can be found from central Chiapas, Mexico, to Guatemala, El Salvador, and south-western Honduras, at elevations of 1,470-2,200m asl. It probably occurs more widely than current records suggest, especially in areas between known sites.
Population The status of this species is unknown in Guatemala and El Salvador. It is rare in Honduras, and uncommon and declining in Chiapas.
Habitat and Ecology This species occurs in humid pine-oak forests. It is able to tolerate some limited habitat destruction, but probably requires humid microclimates, and occurs in short-grasses and in coffee groves. It breeds in temporary to semi-permanent pools.
Major Threats The major threat to this species is habitat loss due in particular to logging of its pine-oak forest habitat.
Conservation Measures It occurs in several protected areas, including Reserve de la Biosfera El Triunfo (Mexico) and Reserva de la Biósfera Sierra de las Minas (Guatemala). There is a need for improved protection of the tropical cloud forests in central Chiapas.

Bibliography: Campbell, J.A. (2000), McCranie, J.R. and Wilson, L.D. (2002b), Mendelson III, J.R. *et al.* (2004), Nelson, C.E. (1973)
Data Providers: Georgina Santos-Barrera, Gunther Köhler, Manuel Acevedo, Gustavo Cruz, Larry David Wilson, Antonio Muñoz Alonso

VU *Kalophrynus intermedius* Inger, 1966

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Brunei Darussalam, Indonesia, Malaysia
Current Population Trend: Decreasing




© Rob Stuebing

Geographic Range This species is known only from a few localities in Borneo: in south-central Sarawak (Malaysia), around Betung Kerihun National Park in Kalimantan (Indonesia), and in Brunei Darussalam. It probably occurs more widely than current records suggest, especially in areas between known sites. It has an altitudinal range of 150-300m asl.
Population It is rarely found, and is known from only a few specimens.
Habitat and Ecology It lives in leaf-litter on the floor of closed-canopy forests. Breeding almost certainly occurs in small rain pools.
Major Threats Habitat loss due to logging is the principle threat.
Conservation Measures It is present in Lanjak Entimau Wildlife Sanctuary (Sarawak), Betung Kerihun National Park (Kalimantan), and Ulu Temburong National Park (Brunei). Protection of lowland forests in Sarawak and Kalimantan is the main conservation measure required for this species.
Bibliography: Inger, R.F. (1966), Inger, R.F. and Stuebing, R.B. (1997)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

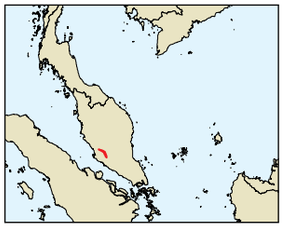
VU *Kalophrynus minusculus* Iskandar, 1998

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Indonesia
Current Population Trend: Decreasing

Geographic Range This recently described species is known only from Lampung on Sumatra, and Ujung Kulon National Park in west Java, Indonesia.
Population The population status of this species is unknown; there is only one recent record.
Habitat and Ecology It lives in lowland forest, and degraded, patchy forest. Its breeding habitat is unknown, but it probably breeds in small, still-water pools and puddles.
Major Threats The major threat is habitat loss due to logging and agricultural encroachment.
Conservation Measures On Java, it occurs in the Ujung Kulon National Park. Further survey work is needed to assess the current population status of this species.
Bibliography: Iskandar, D.T. (1998)
Data Providers: Djoko Iskandar, Mumpuni

EN *Kalophrynus palmatissimus* Kiew, 1984

Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Malaysia
Current Population Trend: Decreasing

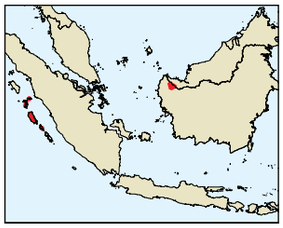



© Jeet Sukumaran

Geographic Range This species is known at present only from Pasoh Forest Reserve, Gombak Forest Reserve, Frim, and Templer's Park in Selangor and Negeri Sembilan States in Peninsular Malaysia. All records are from below 300m asl.
Population It is quite common within its restricted range.
Habitat and Ecology All records are from undisturbed lowland rainforest and associated bamboo stands (Kiew 1984a; Manthey and Grossmann 1997). Reproduction sites include water-filled bamboo stumps and other cavities.
Major Threats This species has a limited range, in which its available habitat is small, fragmented, and being converted to non-timber plantations and through infrastructure development.
Conservation Measures Although present in several forest reserves, and Templer's Park, these areas are in need of stronger legal protection and management.
Notes on taxonomy: Further work might show that some peninsular populations attributed to *Kalophrynus pleurostigma* are referable to *K. palmatissimus*.
Bibliography: Iskandar, D.T. and Prasetyo, A.H. (1996), Kiew, B.H. (1984a), Manthey, U. and Grossmann, W. (1997)
Data Providers: Norsham Yaakob, Jeet Sukumaran, Leong Tzi Ming

VU *Kalophrynus punctatus* Peters, 1871

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Indonesia, Malaysia
Current Population Trend: Decreasing



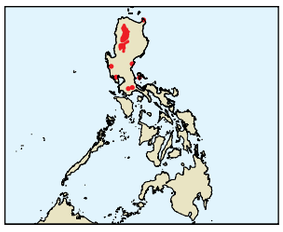
Geographic Range This species is only known from Sipura, Siberut, Tanah Masa, and Pini (Mentawai Islands, Indonesia), and Sarawak (Malaysia) and Kalimantan (Indonesia) on Borneo. The Kalimantan locality is less than 30km² from the town of Penrissen. The species is not known to occur below 1,000m asl.
Population There is no information available on the population status of this species.
Habitat and Ecology It is a forest floor species that occurs in sub-montane areas. It is presumed to breed in very small rain pools.
Major Threats The major threat to this species is forest loss due to clear-cutting.
Conservation Measures It presumably occurs in Siberut National Park and in Gunung Niut Penrisen Nature Reserve. There is a need to establish more effective protection of rainforest habitats at moderate elevations within the range of the species.

Notes on taxonomy: Further verification of the identity of the Mentawai population is needed.
Bibliography: Inger, R.F. (1966)
Data Providers: Robert Inger, Robert Stuebing, Djoko Iskandar, Mumpuni

VU *Kaloula kalingensis* Taylor, 1922

KALINGA NARROWMOUTH FROG

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Philippines
Current Population Trend: Decreasing



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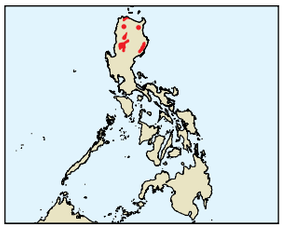
Geographic Range This species is found in the mountains of the Central Cordilleras and possibly in the Sierra Madres, on northern Luzon Island, and Polillo and Palaui in the Philippines.
Population It appears to be common, especially in forest and forest edge.
Habitat and Ecology It inhabits lower montane and lowland forests, but occasionally is also found in forest edge habitats. It lives in water-filled tree holes and hollows. Tadpoles have been collected in the same microhabitats.
Major Threats The most important threat to this species is the deforestation of lower montane and lowland forests in the Cordilleras. The montane forests are either being converted to vegetable farms or are being developed into real estate.
Conservation Measures Only a few protected areas, such as Pulag National Park, are currently found in this region of the Philippines. There is a need for increased protection of the remaining tracts of intact lowland and montane rainforest in the Cordilleras.
Notes on taxonomy: This species was removed from the synonymy of *Kaloula baleata.*
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Crombie, R.A. (n.d.), Diesmos, A.C., Brown, R.M. and Alcala, A.C. (2002), Frost, D.R. (1985), Inger, R.F. (1954), Inger, R.F. (1999), Parker, H.W. (1934), Ross, C.A. and Gonzales, P.C. (1992)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

VU *Kaloula rigida* Taylor, 1922

LUZON NARROW-MOUTHED FROG

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Philippines
Current Population Trend: Decreasing



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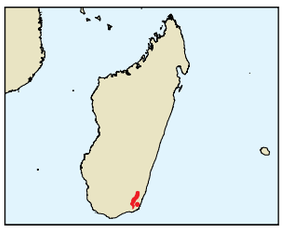
Geographic Range This species is found in the mountains of the Central Cordilleras and Sierra Madres of northern Luzon Island, in the Philippines.
Population It is common wherever it is found but has a very localized distribution.
Habitat and Ecology The primary habitats for this species are the lower montane and lowland forests, including streams and rivers. It is occasionally found in disturbed habitats adjacent to these forested areas.
Major Threats The most important threat to this species is the deforestation of lower montane and lowland forests in the Cordilleras, and the pollution of streams and rivers. The montane forests are either being converted to vegetable farms or are being developed into real estate.
Conservation Measures The range of this species includes a few protected areas, such as Pulag National Park. There is a need for increased protection of the remaining tracts of intact lowland and montane rainforest in the Cordilleras.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Diesmos, A.C., Brown, R.M. and Alcala, A.C. (2002), Frost, D.R. (1985), Inger, R.F. (1999), Parker, H.W. (1934)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Cynthia Dolino, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Liza Paguntalan, Marisol Pedregosa, Dondi Ubaldo, Baldwin Gutierrez

EN *Madecassophryne truebae* Guibé, 1974

Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing



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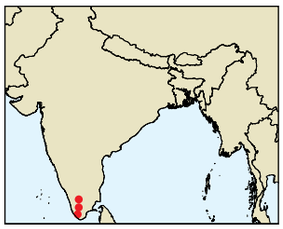
Geographic Range This species is known only from extreme south-eastern Madagascar, in the Anosyenne Mountains, Parc National d'Andohahela, and Tsitongambarika (north of Tolagnaro). It occurs at 700-1,900m asl.
Population It is apparently not common, but it is very hard to detect, and probably has a patchy occurrence.
Habitat and Ecology It occurs in forests in an area of extensive, continuous rainforest, and is thought to be associated with boulders and granitic outcrops. It is not known from disturbed habitats. The breeding biology of this species is completely unknown.
Major Threats The major threat is habitat loss due to subsistence agriculture, timber extraction, charcoal manufacture, the spread of invasive eucalyptus, livestock grazing, and expanding human settlements.
Conservation Measures It occurs in Parc National d'Andohahela and the Tolagnaro Fivondronana Classified Forest. Further research is needed to investigate the breeding biology of this species.
Bibliography: Blommers-Schlösser, R.M.A. and Blanc, C.P. (1991), Blommers-Schlösser, R.M.A. and Blanc, C.P. (1993), Glaw, F. and Vences, M. (1994), Guibé, J. (1974), Nussbaum, R.A. *et al.* (1999)
Data Providers: Ronald Nussbaum, Christopher Raxworthy, Franco Andreone

EN *Melanobatrachus indicus* Beddome, 1878

Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: India
Current Population Trend: Decreasing

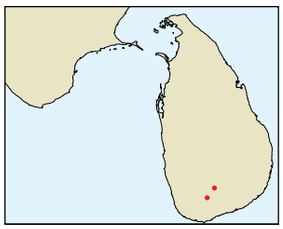


© K. Jayaram

Geographic Range This species is endemic to the southern Western Ghats of India, where it is known only from three sites: Kalakad in the Agasthyamala Hills; the Indira Ghandi National Park in the Anaimalai Hills, Tamil Nadu; and Periyar Tiger Reserve in Kerala. The altitudinal range of the species is reported to be 900-1,200m asl.
Population This is an extremely rare species that was only recently rediscovered. The population is fragmented and is presumed to be declining.
Habitat and Ecology It is terrestrial and associated with leaf-litter, rocks and other ground cover of moist evergreen tropical forest; it has been collected in patches of degraded tropical forest close to primary forest. It breeds in pools in streams where calling males have been observed (Daltry and Martin 1997). There is little further information on its breeding biology or larval ecology.
Major Threats The major threat to this species is conversion of forested areas to cultivated land (including eucalyptus, coffee, and tea plantations); the development of dams within the region may pose an additional threat.
Conservation Measures It has been recorded from several protected areas, including: Kalakkad-Mundanthurai Tiger Reserve and Indira Gandhi National Park, and from Periyar Tiger Reserve.
Bibliography: Biju, S.D. (2001), Daltry, J.C. and Martin, G. (1997), Dutta, S.K. (1997), Ishwar, N.M. (2000), Vasudevan, K. (1997), Vasudevan, K. (2000)
Data Providers: S.D. Biju, Karthikeyan Vasudevan, Gajanan Dasaramji Bhuddhe, Sushil Dutta, Chelmala Srinivasulu, S.P. Vijayakumar

CR *Microhyla karunaratnei* Fernando and Siriwardhane, 1996

Critically Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

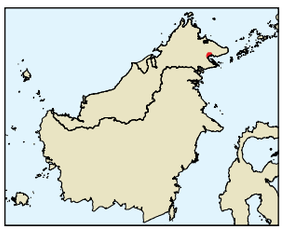


Geographic Range This species is known only from two sites in southern Sri Lanka: Morningside in eastern Sinharaja (06° 24'N; 80° 37'E), and Mahawalatenna in Balangoda (06° 35'N; 80° 45'E). The recorded elevation range is 515-1,110m asl.
Population It is an uncommon species.
Habitat and Ecology This is a terrestrial species associated with shaded, wet leaf-litter, in tropical moist forest. Larvae are found in inland wetlands, including old abandoned gem mining pits surrounded by tropical forest.
Major Threats It is threatened by habitat loss, due to the establishment of cardamom plantations, as well as by pollution resulting from agriculture.
Conservation Measures The species has been recorded from the Sinharaja World Heritage Site. Continued active management of this area is required, and further survey work is needed to monitor the population status of the species.

Bibliography: Dutta, S.K. (1997), Dutta, S.K. and Manamendra-Arachchi, K. (1996), Fernando, P. and Siriwardhane, M. (1996)
Data Providers: Kelum Manamendra-Arachchi, Anslem de Silva

VU *Microhyla maculifera* Inger, 1989

Vulnerable D2
Order, Family: Anura, Microhylidae
Country Distribution: Malaysia
Current Population Trend: Unknown

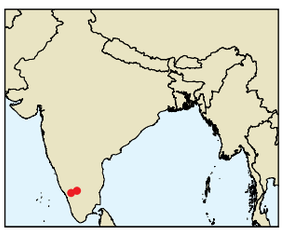


Geographic Range This species is presently known only from the Danum Valley Conservation Area, Sabah, Malaysian Borneo. It appears to have a genuinely restricted distribution. Specimens have been collected below 250m asl.
Population It is known only from two or three specimens.
Habitat and Ecology It lives in leaf-litter on the forest floor. Little is known of its habits, but presumably it breeds in small rain pools like most of its congeners.
Major Threats The Danum Valley is a well-protected area. However, its restricted range renders it susceptible to threatening processes.
Conservation Measures The only known population is within the Danum Valley Conservation Area, which is the largest protected lowland dipterocarp forest in Malaysian Borneo. There is a need for close monitoring of the population status of this species given that it is known only from a single protected area.

Bibliography: Inger, R.F. (1989)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

EN *Microhyla sholigari* Dutta and Ray, 2000

Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: India
Current Population Trend: Decreasing



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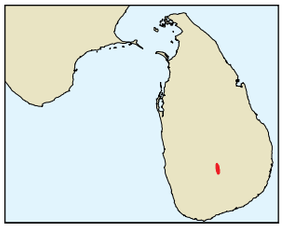
Geographic Range This species is known from Biligirirangan Hills (Karnataka) and Wayanad (Kerala) (Biju 2001) in the southern Western Ghats at elevations ranging between 600 and 1,800m asl.
Population There is no information on the population status of this recently described species.
Habitat and Ecology It is a terrestrial, leaf-litter species of hilly areas, associated with riparian vegetation (especially grassland) in moist evergreen tropical forest. It has also been recorded from lightly disturbed forest fringes. There is little information on its breeding biology, but it presumably breeds in water by larval development.
Major Threats In the past, the major threat to this species was habitat loss through conversion to agricultural land (cultivated fields) and the extraction of wood from tropical forests. Habitat loss due to urbanization in the region is now the main threat.
Conservation Measures It is known to occur in the Bilgiris Rangaswamy Wild Life Sanctuary in Karnataka, and Wayanad Wildlife Sanctuary in Kerala. Further survey work is needed to determine the current population status of this species, and to investigate further its breeding biology.
Bibliography: Biju, S.D. (2001), Dutta, S.K. and Ray, P. (2000)
Data Providers: S.D. Biju, Sushil Dutta, Gajanan Dasaramji Bhuddhe, Karthikeyan Vasudevan, Chelmala Srinivasulu

EN *Microhyla zeylanica* Parker and Hill, 1949

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

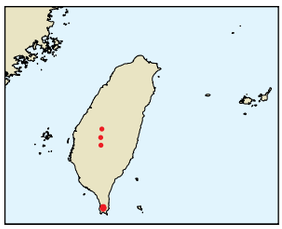


Geographic Range This species is endemic to the central hills of Sri Lanka at an altitude of 1,800-2,200m asl.
Population It is a rare species.
Habitat and Ecology It occurs in lentic habitats, in upper montane grassland and forest. Adults are generally found close to pool and grassland edges, while larvae are found in both permanent and seasonal pools.
Major Threats The major threat is habitat loss through conversion to intensive agricultural use (e.g. vegetables); other threats include droughts and fires, especially in Horton Plains National Park.
Conservation Measures Besides the Horton Plains National Park, it also has been recorded from the Pattipola Forest Reserve, Agra-Bopats Forest Reserve and Hakgala Strict Nature Reserve.

Bibliography: Chanda, S.K. (2002), Dutta, S.K. (1997), Dutta, S.K. and Manamendra-Arachchi, K. (1996), Kirtisinghe, P. (1957), Weerawardhena, S.R. and Costa, H.H. (1998b)
Data Providers: Kelum Manamendra-Arachchi, Anslem de Silva

EN *Micryletta steinegeri* (Boulenger, 1909)

Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Taiwan, Province of China
Current Population Trend: Decreasing

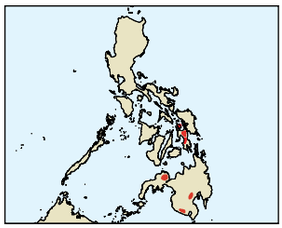


Geographic Range This species has a fragmented distribution in central and southern Taiwan, Province of China, and occurs below 1,000m asl.
Population Only three or four populations have ever been found of this species, and it is considered to be very rare.
Habitat and Ecology It inhabits broadleaf forests, and is sometimes also found in cultivated fields and orchards. It breeds by larval development in temporary rainwater pools, blocked ditches and cisterns.
Major Threats The major threat is habitat loss and degradation due to human settlement and small-scale agriculture.
Conservation Measures It is protected within Kenting National Park at the southern tip of Taiwan, Province of China, but other populations require stricter protection. It is a Class II protected species in Taiwan, Province of China.

Bibliography: Chou, W.-H. and Lin, J.-Y. (1997b), Lue, K.-Y., Tu, M.-C. and Hsiang, G. (1999), MacKinnon, J. *et al.* (1996), Yang, Y.-J. (1998)
Data Providers: Lue Kuangyang, Chou Wenhao

VU *Oreophryne anulata* (Stejneger, 1908)

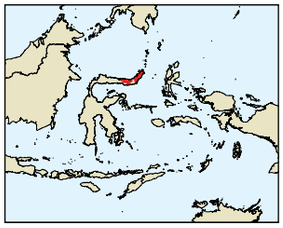
Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Philippines
Current Population Trend: Decreasing



Geographic Range This species is known from Biliran Island and several montane localities on Mindanao, in the Philippines. It is expected to be found on intervening islands.
Population It is common in suitable habitat.
Habitat and Ecology It inhabits arboreal microhabitats in mossy forest but has also been found in disturbed lower montane forest. Male calling aggregations have been observed beside ponds and lakes. It is known to breed by direct development, and does not require water for breeding.
Major Threats The major threat is the loss of lower montane and lowland rainforest on Mindanao due to agriculture (crops and plantations) and logging.
Conservation Measures Some populations of this species are protected in national parks, such as Mount Malindang National Park, although there is a need for increased protection of remaining forest habitats on Mindanao.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Brown, W.C. and Alcala, A.C. (1967), Frost, D.R. (1985), Inger, R.F. (1999), Parker, H.W. (1934)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

VU *Oreophryne celebensis* (F. Müller, 1894)

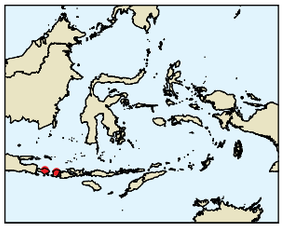
Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Indonesia
Current Population Trend: Decreasing



Geographic Range This species is known only from northern Sulawesi, Indonesia, above 1,000m asl.
Population The current population status of this species is unknown. Until it was rediscovered in 1999, it was known only from the holotype.
Habitat and Ecology It occurs in montane forest, and presumably lays eggs on the ground that develop directly without a larval stage.
Major Threats The area where it occurs is experiencing some of the most severe habitat loss in Sulawesi, with forest clearance having taken place almost up to the mountain summits.
Conservation Measures It probably occurs in the Bogani-Nani Wartabone National Park and the Tangkoko-Batu Angus and the Dua Sudara Nature Reserves. However, these two nature reserves have been very heavily deforested. There is a need for much strenghtened management of existing protected areas in this region, and also for further survey work to determine the population status of this species.
Bibliography: Iskandar, D.T. and Colijn, E. (2000), Iskandar, D.T. and Tjan, K.N. (1985)
Data Providers: Djoko Iskandar, Mumpuni

EN *Oreophryne monticola* (Boulenger, 1897)

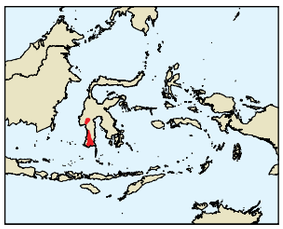
Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Indonesia
Current Population Trend: Decreasing



Geographic Range This species is known only from the islands of Bali and Lombok in Indonesia, from above 1,000m asl.
Population There is no recent information on this species, and it has not been recorded since the 1930s.
Habitat and Ecology It is known only from highland forest. It presumably lays eggs on the ground and breeds by direct development without a larval stage.
Major Threats The habitat of this species is being severely impacted by very large-scale international tourism.
Conservation Measures The mountain forests on Bali are protected, but for recreational purposes, not for biodiversity conservation. On Lombok the species presumably occurs in Gunung Rinjani Nature Reserve. There is clearly an urgent need for survey work to establish the current population status of this species on the two islands, and its presence within existing reserves.
Data Providers: Djoko Iskandar, Mumpuni

VU *Oreophryne variabilis* (Boulenger, 1896)

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Indonesia
Current Population Trend: Decreasing

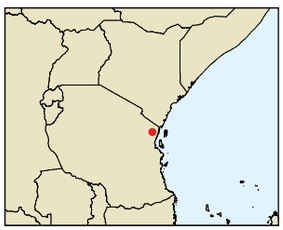


© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is known only from Mounts Lompobatang and Latimojong, above 1,000m asl in southern Sulawesi, and from Gunung Karua at 1,200m asl in south-central Sulawesi, Indonesia.
Population It appears to be an uncommon, and patchily distributed, species.
Habitat and Ecology It lives in undisturbed highland forested areas. It presumably lays eggs on the ground and breeds by direct development without a larval stage.
Major Threats The primary threat is habitat conversion due to smallholder farming.
Conservation Measures It occurs in the Gunung Lompobatang and Latimojong Nature Reserves.
Bibliography: Iskandar, D.T. and Colijn, E. (2000)
Data Providers: Rafe Brown, Djoko Iskandar, Mumpuni

CR *Parhoplophryne usambarica* Barbour and Loveridge, 1928

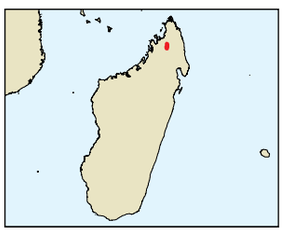
Critically Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Tanzania
Current Population Trend: Decreasing



Geographic Range This species is known only from the hills west of Amani, in the East Usambara Mountains, in north-eastern Tanzania, probably at around 900m asl.
Population It is known only from the holotype. There have been no records since the late 1920s, despite extensive herpetological work in the Amani area (though perhaps not quite in the area where this species occurs).
Habitat and Ecology It is apparently a forest species found in leaf-litter, with ecological and breeding requirements perhaps similar to those of the *Hoplophryne* species. No other information is available on its habitat and ecology.
Major Threats This species is likely to be adversely affected by ongoing forest loss, especially due to small-scale agricultural activities. Its habitat in the East Usambaras has recently come under serious threat as a result of the activities of illegal gold miners.
Conservation Measures It possibly occurs in the Amani Nature Reserve, although it has not so far been recorded there, despite intensive sampling. Additional survey work is needed to determine the status of this species and whether or not it even still survives in the wild.
Bibliography: Barbour, T. and Loveridge, A. (1928), Howell, K.M. (1993)
Data Providers: Simon Loader, Kim Howell, John Poynton

EN *Platypelis alticola* (Guibé, 1974)

Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing

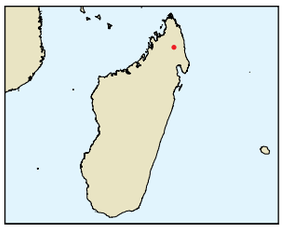


© Christopher J. Raxworthy

Geographic Range This species is known with certainty only from Tsaratanana at 2,000-2,600m asl in northern Madagascar. Records from Marojejy and Andringitra require confirmation.
Population It is a rare species.
Habitat and Ecology It lives in high-elevation rainforest and bamboo forest, and is not found in open areas. Its breeding is unknown, but presumably takes place by larval development in water-filled bamboo stems.
Major Threats The major threat is habitat loss due to subsistence agriculture, timber extraction, charcoal manufacture, spread of invasive eucalyptus, livestock grazing, and expanding human settlements. It is potentially susceptible to dry season fires.
Conservation Measures It occurs in the Réserve Naturelle Intégrale du Tsaratanana.
Bibliography: Blommers-Schlösser, R.M.A. and Blanc, C.P. (1991), Glaw, F. and Vences, M. (1994), Guibé, J. (1974), Guibé, J. (1978)
Data Providers: Ronald Nussbaum, Christopher Raxworthy

EN *Platypelis mavomavo* Andreone, Fenolio and Walvoord, 2003

Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing

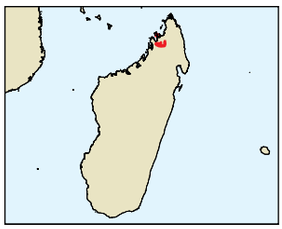


© Franco Andreone

Geographic Range This species is known only from north-eastern Madagascar, where it has been recorded from Ambolokopatrika and Anjanaharibe-Sud Massif. Current records are from 875-975m asl. It might occur more widely than current records suggest.
Population There is very little information on its population status, and it is thus far known from only six specimens.
Habitat and Ecology It lives in mid-high-altitude transitional forest, with tall trees and an abundance of epiphytic plants. It climbs on small tree trunks 2-4m above the ground. It is apparently not a phytotelm specialist, but probably hides in tree holes, under bark, and at the base of epiphytes. Breeding presumably takes place via larval development out of water. Its adaptability to secondary habitats is not known.
Major Threats The major threat is habitat loss due to subsistence agriculture, timber extraction, charcoal manufacture, the spread of invasive eucalyptus, livestock grazing, fires, and expanding human settlements.
Conservation Measures It occurs in the Réserve Spéciale d'Anjanaharibe-Sud.
Bibliography: Andreone, F., Fenolio, D.B. and Walvoord, M.E. (2003)
Data Providers: Franco Andreone

EN *Platypelis milloti* Guibé, 1950

Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing



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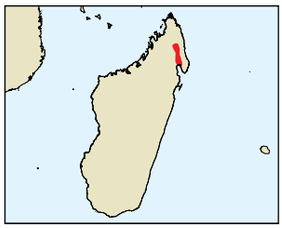
Geographic Range This species is apparently restricted to a small area in extreme north-western Madagascar, from Tsaratanana to Manongarivo, including the island of Nosy Be. It has been recorded from sea level up to 600m asl.
Population It can be a locally abundant species.
Habitat and Ecology It is found only in pristine rainforest. Breeding is by larval development in the axils of plants, such as screw pines (*Pandanus* spp.).
Major Threats The major threat is habitat loss due to subsistence agriculture, timber extraction, charcoal manufacture, spread of invasive eucalyptus, livestock grazing, fires and expanding human settlements. It occurs in a region where the rainforest is fragmented, and continuing loss of habitat can be expected. Its bright colouration might make it attractive for future commercial collecting. It might also be affected by the collection of screw pines, the leaves of which are used for the roofs of huts.
Conservation Measures It occurs in the Réserve Naturelle Intégrale de Lokobe, the Réserve Spéciale de Manongarivo, and the Réserve Naturelle Intégrale du Tsaratanana.
Bibliography: Andreone, F. *et al.* (2005b), Blommers-Schlösser, R.M.A. and Blanc, C.P. (1991), Glaw, F. and Vences, M. (1994)
Data Providers: Christopher Raxworthy, Frank Glaw

EN *Platypelis tetra* Andreone, Fenolio and Walvoord, 2003

Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing

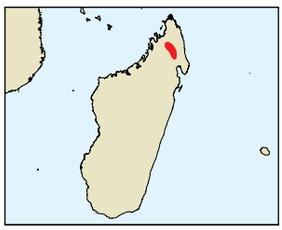


© Franco Andreone

Geographic Range This species is endemic to north-eastern Madagascar, where it has been recorded from Anjanaharibe-Sud Massif, Andapa Fivondronana and the Masoala Peninsula. It has been recorded at 600-1,250m asl.
Population It has only recently been discovered, but it appears to be moderately common in suitable habitat.
Habitat and Ecology It is a species of transitional forest and medium altitudes, with tall trees and abundant lichens, mosses and ferns. It appears to be closely associated with screw pines (*Pandanus* spp.). It has been found in degraded forest, providing that screw pines are still present. It presumably breeds by larval development in the leaf axils of screw pines.
Major Threats The major threat is habitat loss due to subsistence agriculture, timber extraction, charcoal manufacture, livestock grazing, and expanding human settlements. It is probably particularly sensitive to the collection of screw pines, which are used for making the roofs of huts.
Conservation Measures It occurs in Parc National de Marojejy and the Réserve Spéciale d'Anjanaharibe-Sud, and may also occur in Parc National de Masoala.
Bibliography: Andreone, F., Fenolio, D.B. and Walvoord, M.E. (2003), Lehtinen, R.M. (2003)
Data Providers: Franco Andreone

VU *Platypelis tsaratananaensis* Guibé, 1974

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing

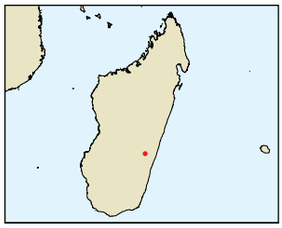


© Franco Andreone

Geographic Range This species is known from only three localities in northern Madagascar, including Tsaratanana and Anjanaharibe-Sud. It might occur more widely than is currently known. Its recorded altitudinal range is 1,300-2,600m asl.
Population It is a common species.
Habitat and Ecology It inhabits tall montane rainforest and bamboo, and is not found outside mature forest. It breeds in bamboo stems by larval development.
Major Threats Its forest habitat is receding due to subsistence agriculture (including livestock grazing), timber extraction, charcoal manufacture, the spread of invasive eucalyptus, and expanding human settlements. However, human impact is somewhat less severe at the elevations at which it occurs.
Conservation Measures It occurs in the Réserve Naturelle Intégrale du Tsaratanana and Réserve Spéciale d'Anjanaharibe-Sud.
Bibliography: Blommers-Schlösser, R.M.A. and Blanc, C.P. (1991), Glaw, F. and Vences, M. (1994), Guibé, J. (1974), Raxworthy, C.J. *et al.* (1998), Raxworthy, C.J. and Nussbaum, R.A. (1996b)
Data Providers: Christopher Raxworthy, Franco Andreone

EN *Plethodontohyla brevipes* Boulenger, 1882

Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing



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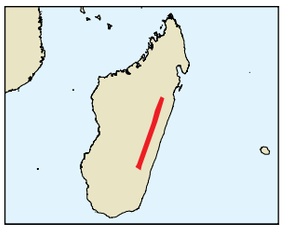
Geographic Range This species is known from only two localities in east-central Madagascar, one of them (East Betsileo) being very vague. The only precisely known locality is Parc National de Ranomafana. Although the species might occur in other rainforest areas, many have now been surveyed and the species has not been reported from any of them. It has been recorded at 900-1,100m asl.
Population It is a rare species, and only a few specimens are known.
Habitat and Ecology It is a terrestrial and sub-terrestrial species of rainforest, and has so far not been found in degraded habitats. Its breeding biology is unknown, though it is likely to be by larval development out of water, possibly underground, or in leaf axils, or in tree holes.
Major Threats The major threat is habitat loss due to subsistence agriculture, timber extraction, charcoal manufacture, spread of invasive eucalyptus, livestock grazing, and expanding human settlements. The habitat surrounding Parc National de Ranomafana continues to be degraded.
Conservation Measures It occurs in Parc National de Ranomafana, which is relatively well managed.
Bibliography: Andreone, F. *et al.* (2005b), Blommers-Schlösser, R.M.A. and Blanc, C.P. (1991), Glaw, F. and Vences, M. (1994)
Data Providers: Christopher Raxworthy, Frank Glaw

VU *Plethodontohyla coronata* Vences and Glaw, 2003

Vulnerable B2ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing



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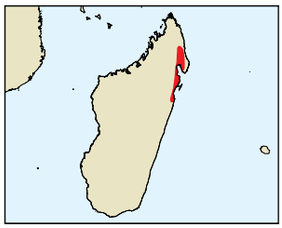
Geographic Range This species occurs in eastern Madagascar from Zahamena south to Andringitra, at 900-1,400m asl.
Population It is an uncommon to moderately common species.
Habitat and Ecology It is a terrestrial and fossorial species of primary and somewhat degraded rainforest, and also occurs in pine plantations. It is particularly associated with forests that are rich in moss and lichens. It is not found in open areas. Its breeding biology is unknown, though it is likely to take place by larval development out of water, possibly underground, or in leaf axils, or in tree holes.
Major Threats Its forest habitat is receding due to subsistence agriculture (including livestock grazing), timber extraction, charcoal manufacture, the spread of invasive eucalyptus, and expanding human settlements.
Conservation Measures It occurs in Parc National de Zahamena, Parc National de Mantadia and Parc National d'Andringitra.
Bibliography: Raxworthy, C.J. and Nussbaum, R.A. (1996a), Vences, M. and Glaw, F. (2003)
Data Providers: Christopher Raxworthy, Miguel Vences

VU *Plethodontohyla coudreaui* Angel, 1938

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing

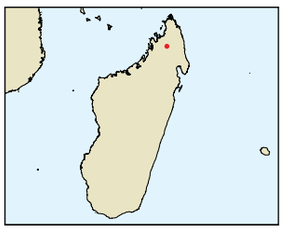


© Franco Andreone

Geographic Range This species is known from four localities in north-eastern and eastern Madagascar: Betampona; Marojejy; Ambolokopatrika; and Masoala. Its altitudinal range is approximately 200-1,000m asl.
Population It appears to be a rare species.
Habitat and Ecology It is a fossorial and terrestrial species of rainforest, including coastal rainforest. It has so far been found only in mature forest. There is no information on breeding, though it is likely to take place by larval development out of water, possibly underground, or in leaf axils, or tree holes.
Major Threats Its forest habitat is receding due to subsistence agriculture (including livestock grazing), timber extraction, charcoal manufacture, the spread of invasive eucalyptus, and expanding human settlements. The coastal rainforest is under particularly serious pressure as a result of human activities.
Conservation Measures It occurs in the Réserve Naturelle Intégrale de Betampona and Parc National de Marojejy, and probably in Parc National de Masoala and Parc National de Mananara Nord.
Bibliography: Andreone, F. (2003), Andreone, F. *et al.* (2005b), Blommers-Schlösser, R.M.A. and Blanc, C.P. (1991), Glaw, F. and Vences, M. (1994), Raselimanana, A.P., Raxworthy, C.J. and Nussbaum, R.A. (2000)
Data Providers: Franco Andreone, Christopher Raxworthy

EN *Plethodontohyla guentherpetersi* (Guibé, 1974)

Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing



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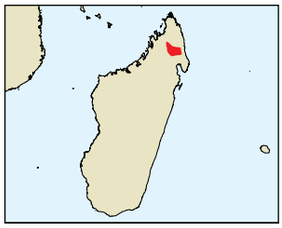
Geographic Range This species is known from a few localities in the Tsaratanana Massif in northern Madagascar, at 2,000-2,600m asl.
Population It is a rare species.
Habitat and Ecology It is terrestrial and occurs in high-elevation forest and perhaps montane grassland, and has not been recorded in degraded habitats. Its breeding is unknown, though it is likely to be by larval development out of water, possibly underground, or in leaf axils or in tree holes.
Major Threats The major threat is habitat loss due to subsistence agriculture, timber extraction, charcoal manufacture, spread of invasive eucalyptus, livestock grazing, fire, and expanding human settlements.
Conservation Measures It occurs in the Réserve Naturelle Intégrale du Tsaratanana.
Notes on taxonomy: This is likely to represent a species complex (C. Raxworthy pers. comm.).
Bibliography: Blommers-Schlösser, R.M.A. and Blanc, C.P. (1991), Glaw, F. and Vences, M. (1994), Guibé, J. (1974), Raxworthy, C.J. and Nussbaum, R.A. (1996b)
Data Providers: Ronald Nussbaum, Christopher Raxworthy

VU *Plethodontohyla serratopalpebrosa* (Guibé, 1975)

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing

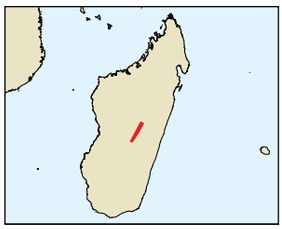


© Franco Andreone

Geographic Range This species is known with certainty only from northern Madagascar from Tsaratanana to Marojejy, at 900-2,100m asl. Records from further south in Madagascar refer to *Plethodontohyla coronata*.
Population It is a rare species.
Habitat and Ecology It is a species of middle- to high-elevation rainforest, and has not so far been recorded from degraded areas. Its breeding biology is unknown, though it is likely to take place by larval development out of water, possibly underground, or in leaf axils, or tree holes.
Major Threats Its forest habitat is receding due to subsistence agriculture (including livestock grazing), timber extraction, charcoal manufacture, the spread of invasive eucalyptus, and expanding human settlements.
Conservation Measures It occurs in the Réserve Naturelle Intégrale du Tsaratanana, Parc National de Marojejy, and Réserve Spéciale d'Anjanaharibe-Sud.
Bibliography: Blommers-Schlösser, R.M.A. and Blanc, C.P. (1991), Glaw, F. and Vences, M. (1994), Guibé, J. (1975), Raselimanana, A.P., Raxworthy, C.J. and Nussbaum, R.A. (2000), Raxworthy, C.J. *et al.* (1998), Vences, M. and Glaw, F. (2003)
Data Providers: Christopher Raxworthy, Franco Andreone

VU *Plethodontohyla tuberata* (Peters, 1883)

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing

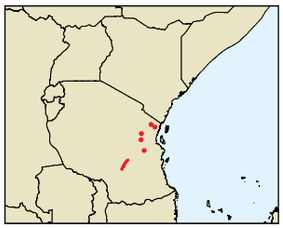


© Franco Andreone

Geographic Range This species is known with certainty only from central Madagascar from Angavokely, south to Zanzinakely. It probably occurs more widely in central Madagascar. Records from northern Madagascar (Tsaratanana) and extreme south-eastern Madagascar require confirmation and probably refer to other species. Its confirmed altitudinal range is 1,600-2,400m asl, although it probably also occurs at lower elevations.
Population It is a locally common species.
Habitat and Ecology It is a terrestrial species of rainforest, including open areas near rainforest. It has also been found in pine plantations, high-altitude grassland and heath land, and even in potato fields. Breeding takes place in a subterranean jelly nest, and they have non-feeding tadpoles that complete their development in the nest.
Major Threats Although it appears to be a relatively adaptable species, it is probably impacted by frequent fires and overgrazing by livestock.
Conservation Measures It is not known from any protected areas. There might be a need for improved habitat protection at sites where this species is known to occur.
Bibliography: Andreone, F. *et al.* (2005b), Blommers-Schlösser, R.M.A. and Blanc, C.P. (1991), Glaw, F. and Vences, M. (1994), Guibé, J. (1978), Raxworthy, C.J. and Nussbaum, R.A. (1996b)
Data Providers: Miguel Vences, Christopher Raxworthy

VU *Probreviceps macrodactylus* (Nieden, 1926)

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Tanzania
Current Population Trend: Decreasing



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Geographic Range This species occurs in the Usambara (East and West), Uluguru, Nguru, and Udzungwa Mountains in eastern Tanzania. In the northern Udzungwa Mountains it occurs very close to the range of *Probreviceps rungwensis*, and the two species are possibly sympatric. The subspecies *P. m. loveridgei* is endemic to the Uluguru Mountains. It occurs in the montane and submontane zones, and its altitudinal range in the Udzungwa Mountains is 900-2,100m asl.
Population It is a common species.
Habitat and Ecology It lives in montane and submontane forests, and can survive mild disturbance where good vegetation cover remains, but cannot tolerate complete forest clearance. It lives on the forest floor, where it is semi-fossorial. The eggs are deposited in burrows where they develop directly without a larval stage.
Major Threats It is almost certainly being adversely affected by ongoing forest loss, especially for small-scale agriculture. Its habitat in the East Usambaras has recently come under serious threat as a result of the activities of illegal gold miners.
Conservation Measures It occurs in the Amani Nature Reserve, and is likely to occur in the Udzungwa National Park, but has not so far been recorded from there.
Notes on taxonomy: We follow Poynton (2003b) in considering *Probreviceps rungwensis* to be distinct from *P. macrodactylus*. In addition, the subspecies *P. m. loveridgei* from the Uluguru Mountains might also be a valid species (S. Loader pers. comm.), but is provisionally retained in *P. macrodactylus*, pending clarification of its status.
Bibliography: Barbour, T. and Loveridge, A. (1928), Harper, E. and Vonesh, J.R. (2003), Howell, K.M. (1993), Loveridge, A. (1932b), Poynton, J.C. (2003b)
Data Providers: Simon Loader, John Poynton, Kim Howell, Michele Menegon

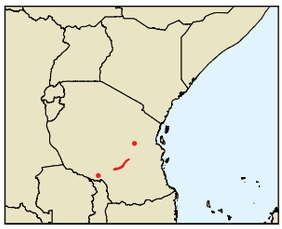
EN *Probreviceps rhodesianus* Poynton and Broadley, 1967

Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Zimbabwe
Current Population Trend: Decreasing

Geographic Range This species is known only from the eastern highlands of Zimbabwe, north of Mutare. It is likely to occur across the border in Mozambique, but has not so far been recorded there. It probably occurs mainly above 1,500m asl.
Population It is believed to be reasonably common within its small range.
Habitat and Ecology This is a terrestrial species of montane forest, usually found under rotten logs or under piles of leaf-litter; its adaptability to secondary habitats is not known. Breeding takes place by direct development, and it is not associated with water. The eggs are laid in a burrow, consisting of a hollow in humus beneath a layer of dead leaves.
Major Threats The high-altitude habitat of this species has remained relatively intact up until now, but it might be at increasing risk from wood plantations, overgrazing by livestock, and human settlement.
Conservation Measures It presumably occurs in Nyanga National Park and several neighboring state parks.
Bibliography: Channing, A. (2001), Lambiris, A.J.L. (1989b), Poynton, J.C. and Broadley, D.G. (1967), Poynton, J.C. and Broadley, D.G. (1985a)
Data Providers: Simon Loader, John Poynton

VU *Probreviceps rungwensis* Loveridge, 1932

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Tanzania
Current Population Trend: Decreasing

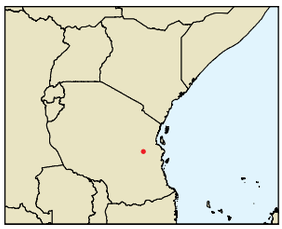


© Michele Menegon

Geographic Range This species occurs in the Udzungwa Mountains in eastern Tanzania, and on Mount Rungwe in southern Tanzania. In the northern Udzungwa Mountains it occurs very close to the range of *Probreviceps macrodactylus*, and the two species are possibly sympatric. It occurs in the montane and submontane zones, and its altitudinal range in the Udzungwa Mountains is 1,050-2,100m asl, and it has been found at 1,550m asl on Mount Rungwe.
Population It is an uncommon species.
Habitat and Ecology It lives in montane and submontane forests, and can survive mild disturbance where good vegetation cover remains, but cannot tolerate complete forest clearance. It lives on the forest floor, where it is semi-fossorial. The eggs are deposited in burrows where they breed by direct development without a larval stage.
Major Threats It is almost certainly adversely affected by ongoing forest loss, especially for small-scale agriculture.
Conservation Measures It is likely to occur in the Udzungwa National Park, but has not so far been recorded from there.
Notes on taxonomy: We follow Poynton (2003b) in considering this to be a species distinct from *Probreviceps macrodactylus*.
Bibliography: Loveridge, A. (1932b), Poynton, J.C. (2003b)
Data Providers: Simon Loader, John Poynton, Kim Howell

VU *Probreviceps uluguruensis* (Loveridge, 1925)

Vulnerable D2
Order, Family: Anura, Microhylidae
Country Distribution: Tanzania
Current Population Trend: Stable

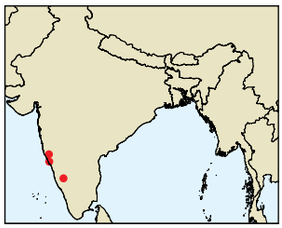


© Alan Channing

Geographic Range This species is known only from the upper elevations (1,800-2,500m asl) of the Uluguru Mountains in eastern Tanzania.
Population It is quite common.
Habitat and Ecology It is a species of montane grassland, where it lives on the ground and is semi-fossorial. It occurs marginally in montane forest close to grassland. The eggs are deposited in burrows where they breed by direct development without a larval stage.
Major Threats Its habitat is probably reasonably safe, and the species might not be seriously threatened, although it might be susceptible to burning of its grassland habitat.
Conservation Measures It occurs in the Uluguru North and South Forest Reserves, and is generally protected by the remoteness of the area in which it occurs. There is a need for close monitoring of the population status of this species given that it is known only from a single site.
Bibliography: Barbour, T. and Loveridge, A. (1928), Howell, K.M. (1993)
Data Providers: Simon Loader, John Poynton, Kim Howell, Michele Menegon

EN *Ramanella mormorata* Rao, 1937

Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: India
Current Population Trend: Decreasing

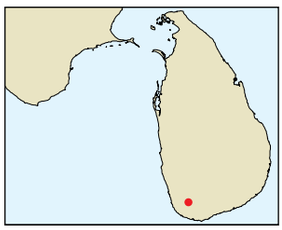


© K. Jayaram

Geographic Range This species is known only from three sites in the southern Western Ghats: Cotigao Wildlife Sanctuary (in Goa); Sakleshpur, Hassan District (in Kasrnataka); and Amboli (a hill station in Maharashtra). It can be expected to occur somewhat more widely than these current records suggest. It has been reported from 400-800m asl.
Population It is a locally common species.
Habitat and Ecology It is a terrestrial frog associated with tropical moist evergreen and deciduous forests, and can be found in disturbed secondary forest although this is not the preferred habitat. Rao (1937) reported specimens from the "whorls of banana leaves", but this requires confirmation. It presumably breeds by larval development, like other members of its genus, but it is not known whether or not it requires waterbodies for breeding.
Major Threats The major threat is habitat loss following conversion to agricultural land (including plantations) and infrastructure development (for industry, tourism, and human settlement).
Conservation Measures It was rediscovered in the Cotigao Wildlife Sanctuary in Goa, but the other populations remain unprotected.
Bibliography: Biju, S.D. (2001), Das, I. and Whittakar, R. (1997), Dutta, S.K. (1997), Rao, C.R.N. (1937)
Data Providers: S.D. Biju, Gajanan Dasaramji Bhuddhe, Sushil Dutta, Karthikeyan Vasudevan, Chelmala Srinivasuluulu, S.P. Vijayakumar

VU *Ramanella nagaoi* Manamendra-Arachchi and Pethiyagoda, 2001

Vulnerable D2
Order, Family: Anura, Microhylidae
Country Distribution: Sri Lanka
Current Population Trend: Stable

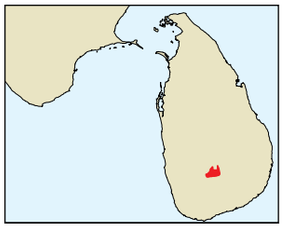


Geographic Range This species is endemic to Sri Lanka. The type series was collected at 150m asl in Kanneliya Forest Reserve (near Galle).
Population It is known only from the type locality, and is considered to be locally rare.
Habitat and Ecology Adults are terrestrial and arboreal and prefer lowland moist forest habitats. Breeding takes place, and tadpoles have been found in, tree holes. It has not been recorded from modified habitats.
Major Threats The species' habitat is protected within the Kanneliya Forest Reserve. However, its restricted range renders it vulnerable to stochastic threatening processes.
Conservation Measures The only known population is protected within the Kanneliya Forest Reserve. There is a need for close monitoring of the population status of this species given that it is currently known only from a single site.

Bibliography: Manamendra-Arachchi, K. and Pethiyagoda, R. (2001b)
Data Providers: Kelum Manamendra-Arachchi, Anslem de Silva

EN *Ramanella palmata* Parker, 1934

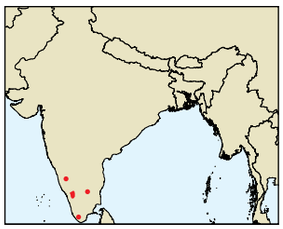
Endangered B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



Geographic Range This species is endemic to the central hills of Sri Lanka where it has been recorded at elevations of 1,830-2,135m asl.
Population It is a rare species.
Habitat and Ecology It is generally restricted to montane tropical moist forest habitats. Adults can be found in leaf-litter (and are at least partially fossorial), under stones and other ground cover, beneath bark, on the trunks of trees, and in the canopy. Breeding is thought to take place by larval development, like other members of its genus, but it is not known whether or not it requires water for breeding.
Major Threats The principal cause of decline appears to be habitat loss through the conversion of forests to cultivated land (tea plantations), logging with subsequent replanting of plantation forests (in Pattipola) and droughts and fire (especially in Horton Plains National Park). Die-back of mature trees in Horton Plains National Park and Hakgala Strict Nature Reserve is also a key threat to the species (although the causes of this die-back are not known).
Conservation Measures Besides Horton Plains National Park and Hakgala Strict Nature Reserve, it is also recorded from Agra-Bopats Forest Reserve and Pattipola Forest Reserve. Further research is needed to investigate the breeding biology of this species, and also to understand the reasons for the die-back of mature trees in some of its key protected habitats.
Bibliography: Dutta, S.K. (1997), Dutta, S.K. and Manamendra-Arachchi, K. (1996), Kirtisinghe, P. (1957)
Data Providers: Kelum Manamendra-Arachchi, Anslem de Silva

VU *Ramanella triangularis* (Günther, 1876)

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: India
Current Population Trend: Decreasing

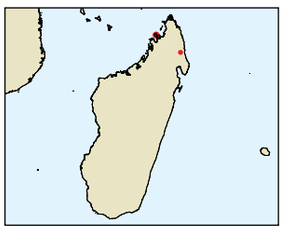


© S.U. Saravanakumar

Geographic Range This species is believed to be restricted to the southern Western Ghats, Ponmudi Hills (Kerala and Tamil Nadu), Wayanad and the Silent Valley (Kerala), and Saklespur, Hassan District (Karnataka) in India. The distribution record in the Shevaroys Hills of the Eastern Ghats, as reported in Dutta (1997), requires further confirmation. It has been reported from elevations of 300-950m asl.
Population It is a locally common species.
Habitat and Ecology It is found in tropical moist evergreen and deciduous forests, and coffee plantations with a natural canopy cover. It can be found in tree holes between two and four metres above ground level (Inger *et al.* 1984), and in the leaf-litter substrate. It may also be found in abandoned eucalyptus plantations close to forest. It presumably breeds by larval development, like other members of its genus, but it is not known whether or not it requires waterbodies for breeding.
Major Threats The major threat to this species is habitat loss due to conversion to agricultural land (including coffee plantations) and human settlements.
Conservation Measures It has been recorded from Wynaad Wildlife Sanctuary and Silent Valley National Park, both in Kerala, which form part of the Nilgiri Biosphere Reserve. It is also present in the Ponmudi Hills of Kerala.
Notes on taxonomy: The taxonomy of this species needs to be resolved, as current collections probably represent more than one taxon.
Bibliography: Biju, S.D. (2001), Chanda, S.K. (2002), Dutta, S.K. (1997), Günther, A. (1876), Inger, R.F. *et al.* (1984), Parker, H.W. (1934)
Data Providers: S.D. Biju, Gajanan Dasaramji Bhuddhe, Sushil Dutta, Karthikeyan Vasudevan, Chelmala Srinivasulu, S.P. Vijayakumar

VU *Rhombophryne testudo* Boettger, 1880

Vulnerable D2
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Unknown

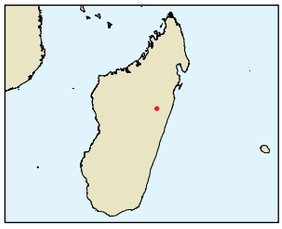


© Frank Glaw and Miguel Vences

Geographic Range This species occurs on two islands (Nosy Be and Nosy Komba) off the north-west coast of Madagascar, and in north-eastern Madagascar between Sambava and Andapa. An old record from "Imerina" is too vague to be of value, while records from Réunion Island are erroneous. It has been recorded from sea level up to 300m asl.
Population It is a common species on Nosy Be. There is no information from elsewhere, but it is clearly much more rare on the mainland of Madagascar.
Habitat and Ecology It lives in lowland rainforest, heavily degraded secondary vegetation, and plantations, provided there is sufficient shade, tree cover and leaf-litter. It is a terrestrial species found in leaf-litter and in burrows. It breeds in underground nests with parental care, but it is not known if breeding takes place by larval or direct development.
Major Threats Its forest habitat is receding due to subsistence agriculture (including livestock grazing), timber extraction, charcoal manufacture, fire, and expanding human settlements.
Conservation Measures It occurs in the Réserve Naturelle Intégrale de Lokobe.
Notes on taxonomy: It is not clear that the populations on the mainland of Madagascar belong to the same species as those on Nosy Be and Nosy Komba (M. Vences, F. Glaw, F. Andreone and C.J. Raxworthy pers. comm.).
Bibliography: Andreone, F. *et al.* (2003b), Andreone, F. *et al.* (2005b), Blommers-Schlösser, R.M.A. and Blanc, C.P. (1991), Glaw, F. and Vences, M. (1994), Glaw, F. and Vences, M. (2002b), Köhler, J., Glaw, F. and Vences, M. (1997)
Data Providers: Ronald Nussbaum, Christopher Raxworthy, Franco Andreone, Frank Glaw, Miguel Vences

EN *Scaphiophryne boribory* Vences, Raxworthy, Nussbaum and Glaw, 2003

Endangered B1ab(iii,v)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing



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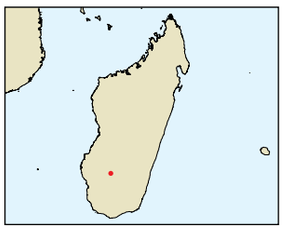
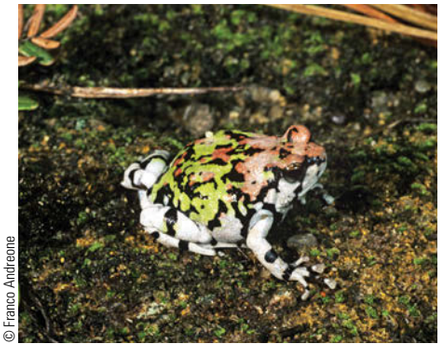
Geographic Range This species is known only from Fierenanan, at 950m asl, in eastern Madagascar (though it might occur more widely).
Population There is little information on the current population status of this species. However, it is presumably locally common, at least according to evidence from commercial collectors.
Habitat and Ecology It is probably restricted to large, flooded forest areas on sandy ground, and presumably breeds in swamps. Its adaptability to altered habitats is unknown.
Major Threats The major threat is forest loss due to subsistence agriculture, timber extraction, charcoal manufacture, spread of invasive eucalyptus, livestock grazing, and expanding human settlements. It might also be affected by over-collecting for the international pet trade.
Conservation Measures It is not known from any protected areas, making this a priority species for immediate habitat protection. There is also a need for controlled, sustainable trade in this species.
Bibliography: Andreone, F. *et al.* (2005b), Vences, M. *et al.* (2003c)
Data Providers: Miguel Vences, Christopher Raxworthy, Frank Glaw

CR *Scaphiophryne gottlebei* Busse and Böhme, 1992

Critically Endangered B2ab(iii,v)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing
CITES: Appendix II



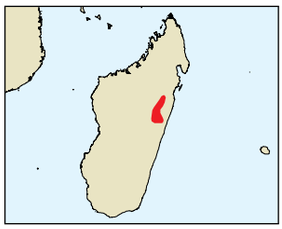


© Franco Andreone

Geographic Range This species is restricted to a few areas within the Isalo Massif (at 700-1,000m) near Isalo (in the Province of Fianarantsoa) in south-western Madagascar. It has been found inside the Parque Nacional de Isalo boundary, and also further to the north at Ilakaka. Intensive surveys close to these areas have not recorded any further populations.
Population It appears to be locally abundant in the humid canyons.
Habitat and Ecology It is found in open, rocky areas, generally in dry forest, and in more humid vegetation in canyons. It is partly rupicolous and able to climb vertical walls within the narrow canyons of the Isalo Massif. Breeding is presumed to take place in shallow, temporary pools.
Major Threats Over-collection for the international pet trade could be a significant threat to this restricted-range species, and it is still commonly recorded in international trade (the high level of mortality among captive animals might be contributing to the high level of trade). Its habitat might also be at risk from fire, wood extraction, overgrazing by livestock, and recent sapphire mining activities in areas adjacent to the species' known range. Disturbance by tourists within the range of the species are reported to have increased, but the impacts of this are unclear.
Conservation Measures It occurs in Parque Nacional de Isalo. Controlled, sustainable trade of this species is required, possibly involving a trade quota.
Bibliography: Andreone, F. and Luiselli, L.M. (2003), Busse, K. and Böhme, W. (1992), Glaw, F. and Vences, M. (1994), Raxworthy, C.J. and Nussbaum, R.A. (1996b)
Data Providers: Christopher Raxworthy, Frank Glaw

VU *Scaphiophryne marmorata* Boulenger, 1882

Vulnerable B1ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing



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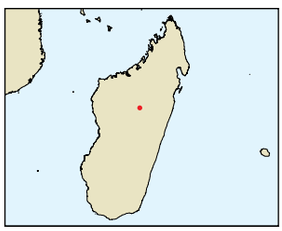
Geographic Range This species occurs in east-central Madagascar from Zahamena south to the Andasibe area. It has been recorded at 100-1,000m asl.
Population It is locally abundant.
Habitat and Ecology It is a species of rainforest and degraded secondary vegetation in the east, and deciduous dry forest in the west. It does not survive in very open areas. Breeding takes place by larval development in shallow, temporary pools.
Major Threats Its forest habitat is receding due to subsistence agriculture (including livestock grazing), timber extraction, charcoal manufacture, the spread of invasive eucalyptus, fire, and expanding human settlements. The bright colouration of this species might make it more attractive for commercial collecting in the future. There are currently small numbers in the pet trade, but probably not at a level to have a negative impact on the species.
Conservation Measures It occurs in the Réserve Spéciale d'Analamazaotra, Parc National de Mantadia and Parc National de Zahamena.
Notes on taxonomy: *Scaphiophryne spinosa* has been separated from *S. marmorata* by Vences at al. (2003) and western populations have recently been separated as *S. menabensis* (Glos, Glaw and Vences 2005).
Bibliography: Andreone, F. (1994), Blommers-Schlösser, R.M.A. and Blanc, C.P. (1991), Glaw, F. and Vences, M. (1994), Glos, J., Glaw, F. and Vences, M. (2005), Raxworthy, C.J. and Nussbaum, R.A. (1996a), Vences, M. *et al.* (2003c)
Data Providers: Miguel Vences, Frank Glaw

CR *Stumpffia helenae* Vallan, 2000

Critically Endangered B2ab(iii)
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Decreasing



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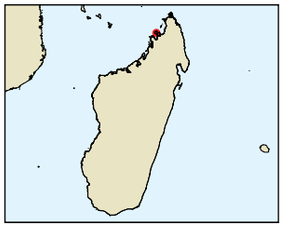
Geographic Range This species is known only from two small habitat fragments in the vicinity of Ambohitantely, in central Madagascar, at 1,500m asl.
Population It is very rarely found.
Habitat and Ecology It is a terrestrial species, inhabiting montane forest, and has not been found in altered habitats. Breeding is unknown, but is likely to be similar to that of *Stumpffia gimeli* (terrestrial nests with non-feeding larvae).
Major Threats The forest is disappearing very rapidly at its only known locality due to the impacts of fire, illegal woodcutting by local people, and overgrazing by livestock. No other suitable habitat is found anywhere nearby.
Conservation Measures It occurs in the Reserve Speciale d'Ambohitantely, which is very poorly protected. Improved management and protection of the remaining habitat of this species is clearly urgently needed.
Bibliography: Andreone, F. *et al.* (2005a), Vallan, D. (2000a), Vallan, D. (2000b)
Data Providers: Denis Vallan, Christopher Raxworthy

VU *Stumpffia pygmaea* Vences and Glaw, 1991

Vulnerable D2
Order, Family: Anura, Microhylidae
Country Distribution: Madagascar
Current Population Trend: Unknown



© Frank Glaw and Miguel Vences

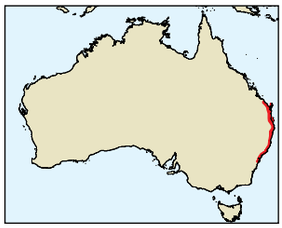
Geographic Range This species is apparently restricted to two small islands: Nosy Be and Nosy Komba off the north-west coast of Madagascar. It might occur on the adjacent mainland, but it has not been found there during recent surveys. It has been recorded from sea level up to 300m asl.
Population It is an extremely abundant species.
Habitat and Ecology It lives in pristine and secondary rainforest, coffee plantations, and dense vegetation along roads. Although it is somewhat adaptable, it needs some shade and leaf-litter. It breeds in a foam nest in leaves on the ground, with non-feeding tadpoles in the nest.
Major Threats High human population density and urbanization on the islands of Nosy Be and Nosy Komba are undoubtedly contributing to a reduction in the availability of suitable habitat. Any factors resulting in the loss of humid leaf-litter, such as expanding sugarcane cultivation, will be very detrimental for this species. Other possible threats include fires and pollution from agricultural pesticides.
Conservation Measures It occurs in Réserve Naturelle Intégrale de Lokobe on Nosy Be. There is a need for close population monitoring of this species given its very limited range.
Bibliography: Andreone, F. *et al.* (2003b), Andreone, F. *et al.* (2005b), Glaw, F. and Vences, M. (1994), Vences, M. and Glaw, F. (1991)
Data Providers: Miguel Vences, Franco Andreone

MYOBATRACHIDAE

VU *Crinia tinnula* Straughan and Main, 1966

TINKLING FROGLET

Vulnerable B2ab(ii,iii,iv,v)
Order, Family: Anura, Myobatrachidae
Country Distribution: Australia
Current Population Trend: Decreasing



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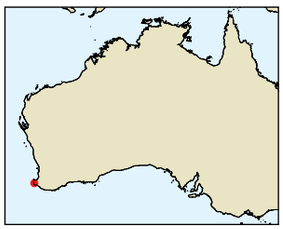
Geographic Range This Australian endemic occurs from Litabella National Park on the south-east coast of Queensland, south to Kurnell in mid-eastern New South Wales. It also occurs on a number of offshore islands including Fraser Island, Bribie Island, Moreton and North Stradbroke Island.
Population There is no information on the current population status of this species.
Habitat and Ecology This species is found in a range of habitats, usually in association with coastal sand plains and dunes; it is commonly associated with acidic swamps, and may breed in drainage ditches as well as shallow ephemeral waters in marsh/swamp areas. It breeds throughout the year, though breeding peaks in colder months. Eggs are deposited in water with a pH value of 4.3-5.2.
Major Threats The major threat to this species is habitat loss due to mining, infrastructure development (for human settlement and for tourism), and the spread of invasive species.
Conservation Measures It is protected in some National Parks in both Queensland and New South Wales (including Fraser Island).
Bibliography: Barker, J., Grigg, G. and Tyler, M. (1995), Ehmann, H. (1997b), Hines, H., Mahony, M. and McDonald, K. (1999), Ingram, G.J. and Corben, C.J. (1975), Straughan, I.R. and Main, A.R. (1966)
Data Providers: Harry Hines, Jean-Marc Hero, Ed Meyer, David Newell, John Clarke

CR *Geocrinia alba* Wardell-Johnson and Roberts, 1989

WHITE-BELLIED FROG

Critically Endangered B2ab(ii,iii,iv,v)
Order, Family: Anura, Myobatrachidae
Country Distribution: Australia
Current Population Trend: Decreasing



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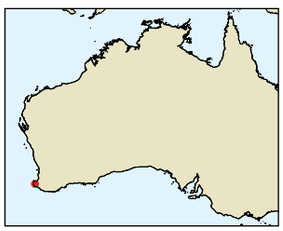
Geographic Range This is an Australian endemic known from north and west of the Blackwood River between Margaret River and Augusta, in extreme south-west Western Australia (Roberts *et al.* 1999). It is known from Leeuwin-Naturaliste National Park and Forest Grove and Witchcliffe State Forests (Tyler 1997). The greater portion of this species' range occurs on privately owned land (Roberts *et al.* 1999). The extent of occurrence of the species is approximately 130km² and the area of occupancy is less than 2.5km² (Roberts *et al.* 1999). The estimated altitudinal range of the species is from 0-150m asl.

Population Most of the 56 subpopulations are small, with less than 50 adult male frogs (Wardell-Johnson *et al.* 1995). Long term population monitoring data, based on calling males, is available for three populations for the period 1992-1997. Populations varied in size over this period with a maximum number of approximately 110 individuals being recorded in 1994 at Forest Grove South (Roberts *et al.* 1999). Current population size is approximately 3,000 and declining. There is no movement between the 56 subpopulations.
Habitat and Ecology The species inhabits swamp systems of the coastal, high rainfall zone (Roberts *et al.* 1997). Males call from small depressions beneath leaf-litter or moss in the peaty soil of broad drainage lines (Driscoll 1998). Females lay eggs inside burrows where the eggs develop directly (Driscoll 1998). There is no free-swimming tadpole stage (Roberts, Wardell-Johnson and Barendse 1990). Breeding takes place in spring and early summer (Roberts *et al.* 1999).
Major Threats Clearing, grazing, and repeated fires are all major threats. Approximately 70% of creek systems suitable for breeding have been cleared since European settlement and consequently populations have been lost. The species' small native range has been radically reduced and severely fragmented.
Conservation Measures Several conservation measures have been put in place for this species, including: a) fenced populations on cleared farmland; b) establishment of new reserves; c) regulated burning regime; d) annual population surveys; e) and a population viability assessment (according to which, the species has low risk of extinction in 100 years). Its range includes Leeuwin-Natuaraliste National Park and Forest Grove and Witchcliffe State Forests.
Bibliography: Barker, J., Grigg, G. and Tyler, M. (1995), Conroy, S.D.S. (2001), Driscoll, D.A. (1997), Driscoll, D.A. (1998), Driscoll, D.A. and Roberts, J.D. (1997), Roberts, D., Conroy, S. and Williams, K. (1999), Roberts, J.D., Wardell-Johnson, G. and Barendse, W. (1990), Tyler, M.J. (1997), Tyler, M.J., Smith, L.A. and Johnstone, R.E (1994), Tyler, M.J., Smith, L.A. and Johnstone, R.E (2000), Wardell-Johnson, G. *et al.* (1995), Wardell-Johnson, G. and Roberts, J.D. (1993)
Data Providers: Jean-Marc Hero, Dale Roberts

VU *Geocrinia vitellina* Wardell-Johnson and Roberts, 1989

ORANGE-BELLIED FROG

Vulnerable D2
Order, Family: Anura, Myobatrachidae
Country Distribution: Australia
Current Population Trend: Stable



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Geographic Range This species, an Australian endemic, is confined to a 6.3km² area east of the Leeuwin-Naturaliste Ridge in the extreme south-west of Western Australia (Tyler 1997).
Population Only six populations of this species are known (Roberts, Wardell-Johnson and Barendse 1999). Population estimates are available for Spearwood North and South from 1992 to 1998 (Driscoll 1998, 1999; Roberts, Wardell-Johnson and Barendse 1999) and Geo Creek from 1993 to 1994 (Driscoll 1998, 1999). Estimates of calling males for the three locations varied between approximately 30 and 160 individuals (Driscoll 1998, 1999; Roberts, Wardell-Johnson and Barendse 1999). Populations at Spearwood varied in size over the survey period with no obvious decline or increase at either site (Roberts, Wardell-Johnson and Barendse 1999). In 1994 the maximum total number of adults of the species was estimated at 2,230 frogs (Wardell-Johnson *et al.* 1995 in Roberts *et al.* 1999).
Habitat and Ecology This species occurs in permanently moist sites in relatively dry and seasonal climatic zones in mixed Jarrah/marsh forest. It is found in undisturbed areas of riparian vegetation and seepages along broad creeks on Mosa side of Blackwood River, at an elevation of 120m asl in broad U-shaped valleys where there is marked topographic relief. It is a summer breeder. Males call from small depressions in clay under dense vegetation cover. Eggs are deposited in small depressions and are often associated with calling males. Eggs hatch and the tadpoles develop in a jelly mass with no free-swimming or feeding stage.
Major Threats There are a number of potential threats to the species, including: fire and changes to water seepages; high visitation rates by tourists to the Blackwood River system; and the impacts of feral pigs. The genetic structuring of the populations indicates that movement is extremely limited with little or no migration. However, the population of the species appears to be stable, and it is probably able to withstand these threats at present.
Conservation Measures Conservation measures in place for the species at present include: a) extended fuel reduction burn cycle; b) checks for pig activity; c) population presence/absence checked annually; d) protection within State Forest; and e) most of the species range has been recommended for gazetting as a Nature Reserve as part of the Regional Forest Agreement.
Bibliography: Barker, J., Grigg, G. and Tyler, M. (1995), Conroy, S.D.S. (2001), Driscoll, D.A. (1997), Driscoll, D.A. (1998), Driscoll, D.A. (1999), Roberts, D., Conroy, S. and Williams, K. (1999), Roberts, J.D., Wardell-Johnson, G. and Barendse, W. (1990), Tyler, M.J. (1997), Tyler, M.J., Smith, L.A. and Johnstone, R.E (1994), Wardell-Johnson, G. *et al.* (1995), Wardell-Johnson, G. and Roberts, J.D. (1993)
Data Providers: Dale Roberts, Jean-Marc Hero

VU *Pseudophryne australis* (Gray, 1835) — RED-CROWNED TOADLET

Vulnerable B1ab(ii,iii,iv)
Order, Family: Anura, Myobatrachidae
Country Distribution: Australia
Current Population Trend: Decreasing

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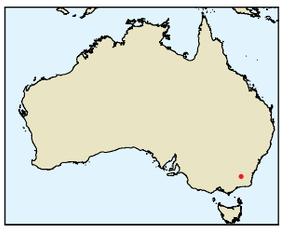
Geographic Range This Australian endemic occurs in Hawkesbury Sandstone region from the Royal National Park in the south, to Gosford and Newcastle in the north. It occurs between 10 and 1,000m asl.
Population It is often found in colonies of 20-30 individuals. Populations at the edge of the range are known to be decreasing and are being adversely affected by urbanization and human-mediated disturbances. Historically, it was found at 471 sites, but in 1998 there were only 56 extant breeding sites.
Habitat and Ecology This species is a Sydney sandstone specialist, around the Hawkesbury region. It prefers heath woodland and hides in sandstone rock crevices where water seepages have eroded a labyrinth of caverns and tunnels. It is a spring and summer breeder, and a terrestrial egg layer with decreased clutch size (about 20) and increased egg size. Males have been observed tending the nest. Rainfall releases the tadpoles from the nests into ephemeral pools and tadpoles take 1-3 months to develop. Females can lay multiple clutches in a year.
Major Threats The entire population is centred around an area of intense human development. Intensified fire regimes, hydrological changes, and increased pollution levels (at edges and wherever human development encroaches into more core areas) are major threats, while the collection of rocks from its habitat, the spread of invasive weeds, and low recruitment rate (about 1% of each clutch survives to metamorphosis) pose additional threats.
Conservation Measures Most of the range of the species occurs in conservation reserves, but these are under human pressure.
Bibliography: Barker, J., Grigg, G. and Tyler, M. (1995), Ehmann, H. (1997b), Thumm, K. (1997), Thumm, K. and Mahony, M.J. (1999)
Data Providers: Jean-Marc Hero, Frank Lemckert, Peter Robertson, Harold Cogger, Murray Littlejohn

CR *Pseudophryne corroboree* Moore, 1953 — CORROBOREE FROG

Critically Endangered A2ace+3ce; B2ab(ii,iii,iv,v); C1
Order, Family: Anura, Myobatrachidae
Country Distribution: Australia
Current Population Trend: Decreasing

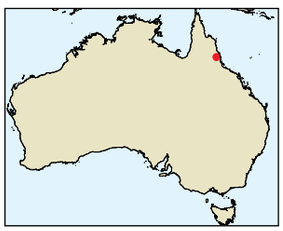


© Hal Cogger

Geographic Range Prior to the detailed survey undertaken by Osborne (1989), there were museum records of *P. corroboree* from only seven locations, all in the Snowy Mountains of southeastern New South Wales, Australia (Guthega, Smiggin Holes, Happy Jacks Plain, Round Mt., Alpine Hut, Pretty Plain and Tooma Swamp). Osborne (1989) subsequently recorded the species at most of these sites (although was unable to find the species near Guthega and Alpine Hut) in a survey that included 257 potential breeding sites, recording the species at 63 locations. The extent of occurrence of the species was reported to be about 400km² in a relatively narrow band between 1,240 and 1,710m asl (Osborne 1989). Osborne, Hunter and Hollis (1999) surveyed 170 potentially suitable breeding sites across the known historical range of the species and detected *P. corroboree* still inhabiting 63 sites during the period 1995-1998. However, in this survey only a single individual was found in the southernmost extent of the former range, few extant populations were found along the entire eastern edge of the former distribution and only a single individual was found at low-altitude sites near Tooma Dam in the northern Snowy Mountains. In the central region of the former distribution the species was only located at 21 sites with the numbers at each site being critically low. This represents an extensive collapse of the population in this region.
Population The population size in the wild is now believed to number fewer than 250 mature individuals.
Habitat and Ecology The Corroboree Frog is a habitat specialist, restricted to montane and sub-alpine woodlands, heathland and grassland above about 1,000m asl. Breeding sites are associated with shallow pools, fens, seepages, wet grassland, and wet heaths. Non-breeding habitat occurs in forest, woodland and heath adjacent to breeding sites. It breeds in shallow pools or seepages. Osborne (1990b) summarised the main features of their reproductive ecology (after Pengilley 1966, 1971, 1973; W.S. Osborne unpubl.). Field measurements (Pengilley 1973) suggest that the species reaches sexual maturity at three years of age (i.e., one year as an embryo/tadpole and two years as a juvenile/sub-adult), which is consistent with observations of captive-reared individuals (Osborne 1990b). It is unlikely that many adults survive for more than one breeding season (Osborne 1990b). Breeding occurs from January to February (Pengilley 1966, 1973; W.S. Osborne unpubl.) and 16-40 eggs (Pengilley 1973) of ovum diameter 3.1-3.6mm (capsule diameter 6.0-10.0mm W.S. Osborne unpubl.) are deposited terrestrially (Pengilley 1966; W. Osborne unpubl.). Tadpoles develop within the egg capsule and hatching occurs when high ground-water levels after rain cause the nest to become flooded (Osborne 1990b). Hatching occurs at four to six months (W.S. Osborne unpubl.) and the tadpole development period is six to eight months (Pengilley 1966, 1973; W.S. Osborne unpubl.). Metamorphosis occurs between December and early February (Pengilley 1966, 1973; W.S. Osborne unpubl.).
Major Threats The Corroboree Frog is one of a number of Australian alpine amphibian species that have experienced pronounced population declines for unknown reasons (Osborne, Hunter and Hollis 1999). There is no single aspect of the field biology of these species that stands out as a feature in common, and that might help explain the declines (Osborne, Hunter and Hollis 1999). *Pseudophryne pengilleyi* is still widespread and abundant at lower altitudes (Osborne, Hunter and Hollis 1999). Osborne, Hunter and Hollis (1999) reviewed some of the possible factors contributing to population declines at high altitudes including long-term weather patterns and pathogens such as the chytrid fungus (Berger, Speare and Hyatt 1999). Chytrid fungus has recently been detected in museum specimens of the Corroboree Frog by R. Speare, although the level of virulence in wild populations is unknown (W.S. Osborne pers. comm.). Planting of exotic trees, such as Willows (*Salix* spp.), has been widespread in the Snowy Mountains (Osborne 1990b). Although no breeding sites are directly threatened by willow invasion, in the longer-term the spread of willows by vegetative growth along seepages and streams might present a problem for the management of some sites (Osborne 1990b). Excavation by feral pigs has also been identified as a potentially threatening process (Osborne 1990b; W.S. Osborne pers. comm.). The bushfires of 2002/2003 destroyed over 90% of the species' habitat.
Conservation Measures Research is currently being undertaken to examine the potential role of captive husbandry in aiding the recovery of small populations through direct manipulation of recruitment to the terrestrial development stage (Hunter *et al.* 1999). The range of the species includes Kosciusko National Park. Since 2001, Melbourne Zoo has raised/maintained tadpoles and frogs as part of the national recovery program. After the devastating bushfires of 2003/2003, all eggs were removed from the wild to increase the intensity of the captive-breeding program.
Bibliography: Berger, L., Speare, R. and Hyatt, A. (1999), Hunter, D. *et al.* (1999), Osborne, W., Hunter, D. and Hollis, G. (1999), Osborne, W.S. (1989), Osborne, W.S. (1990b), Osborne, W.S. and Norman, J.A. (1991), Pengilley, R.K. (1966), Pengilley, R.K. (1971), Pengilley, R.K. (1973), Tyler, M.J. (1997)
Data Providers: Jean-Marc Hero, Graeme Gillespie, Peter Robertson, Frank Lemckert

EN *Pseudophryne covacevichae* Ingram and Corben, 1994 — MAGNIFICENT BROODFROG

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Myobatrachidae
Country Distribution: Australia
Current Population Trend: Decreasing



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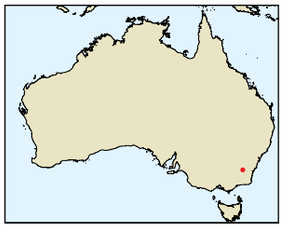
Geographic Range This species is known only from a small area near Ravenshoe, north Queensland, were it has been found at 22 discrete sites with 36 populations (McDonald *et al.* 2000). The species has only a small area of occupancy (less than 50ha; McDonald *et al.* 2000). All records of the species have been from above 800m asl (McDonald *et al.* 2000). It is known from Timber Reserve 245, State Forest 754,488, and 251; Millstream National Park and Ravenshoe rubbish dump reserve, road reserves and freehold land (Ingram and Corben 1994; McDonald *et al.* 2000).
Population Limited information is available on its population size, although known populations cover small areas (the largest being approximately 0.5ha, but most less than 0.1ha) and the number of calling males at each site ranges from 1-20 (McDonald *et al.* 2000).
Habitat and Ecology This species appears to be restricted to specific habitats with all records being from the rhyolites of the Glen Gorden Volcanics (McDonald *et al.* 2000). It has been found around seepage areas in open eucalypt forests with an understorey comprising *Themeda triandra*, *Xanthorrhoea* sp., *Gahnia* sp., *Lophostemon suaveolens*, *Allocasuarina littoralis* and *A. torulosa* (McDonald *et al.* 2000). In areas where cattle grazing has reduced ground cover the species has also been located in leaf-litter build up in first order streams (McDonald *et al.* 2000). Its non-breeding habitat is unknown. It generally calls from seepage areas at the base of grass tussocks on wet summer and autumn nights (McDonald *et al.* 2000). Though primarily nocturnal, it may also call on overcast days (McDonald *et al.* 2000). The call is very similar to the winter-breeding *Pseudophryne major*, from south and central Queensland (Ingram and Corben 1994). From 6-82 eggs are laid on moist soil in or near seepage, usually under vegetation (McDonald *et al.* 2000). Observations suggest that the development of eggs pauses prior to hatching (McDonald *et al.* 2000). After hatching, the larva makes its way down the seepage or is washed into first order streams where development continues in small pools (McDonald *et al.* 2000).
Major Threats Habitat loss and degradation appears to be the major threat. Its habitat occurs on land under a variety of tenures, including national parks, state forests, local government reserves, grazing leasehold properties, crown land, freehold lands and road reserves. Ninety-seven percent of frog sites are located on unprotected land, most of which is in state forest or timber reserve. There are several activities likely to occur on these lands, which may impact on the amount and quality of the frog's habitat, including grazing, logging, road works, clearing and development. Habitat in the south-east of Timber Reserve 245 and Tumoulin State Forest has been severely affected by cattle grazing. Grazing and trampling has the potential to degrade and destroy the seepage areas used by the frogs for breeding. Similarly, erosion and subsequent siltation may cover seepage areas if future logging or clearing occurs. Roads and cuttings can alter the water quality and hydrology and may affect seepage areas and first order streams. Regrowth forest uses more water than old growth and therefore has the potential to reduce seepages. The population at the Ravenshoe rubbish dump has declined. Dump activities have destroyed or modified habitat, and previously known populations are now absent.
Conservation Measures It is listed as threatened in Australian legislation. A comprehensive recovery plan was developed for this species (McDonald *et al.* 2000), and is now probably in need of revision.
Bibliography: Ingram, G.J. and Corben, C.J. (1994), McDonald, K.R. *et al.* (2000)
Data Providers: Jean-Marc Hero, Ross Alford, Michael Cunningham, Keith McDonald, Richard Retallick

EN *Pseudophryne pengilleyi* Wells and Wellington, 1985

NORTHERN CORROBOREE FROG

Endangered B1ab(ii,iv,v)+2ab(ii,iv,v)
Order, Family: Anura, Myobatrachidae
Country Distribution: Australia
Current Population Trend: Decreasing



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Geographic Range Examination of museum records indicate that this species, an Australian endemic (recorded at the time as the northern form of the Corroboree Frog *Pseudophryne corroboree*; see Pengilley 1966; Osborne, Zentelis and Lau 1996) was most frequently collected in the Brindabella and Bimberi Ranges near Canberra. Specimens were examined from Snowy Flats, Ginini Flats, Bulls Head, Lees Spring, Coree Flats, California Flats and Hume Sawmill. Osborne (1989) found that the species was still present at most of these sites, but was unable to find frogs in the vicinity of Hume Sawmill at the northern extremity of its range. Osborne (1989) also found the species to be widely distributed and common throughout the Fiery Range and Mount Bogong. This species occurs in two allopatric populations (Osborne 1989): the Fiery Range population occurs from Yarrangobilly to Buccleuch State Forest at 960-1,520m asl (Osborne 1989), while the Brindabella Range population occupies only 60km² from California Flats to Mount Bimberi at 1,090-1,840m asl (Osborne 1989).

Population Between 1994 and 1998, restricted surveys were undertaken (mainly along vehicle tracks) throughout the known range in the Fiery Range and Mount Bogong. More extensive surveys were conducted in the Brindabella Range and Bimberi Range (Osborne and Hunter unpubl.). The species was still relatively abundant and widespread in the Fiery Range; however, it was not found in the Yarrangobilly-Peppercorn Hill area where it was previously recorded by Pengilley (1966) and Osborne (1989). It was found at breeding sites (often remote from each other) throughout suitable parts of the Brindabella and Bimberi Range, both in the Australian Capital Territory and contiguous areas of New South Wales (Osborne, Hunter and Hollis 1999). The numbers present at breeding sites in the region were considerably lower than was recorded by Osborne (1989 and unpubl.). Long-term monitoring was only undertaken in the Brindabella Range. Only one population, Ginini Flats-a sub-alpine site (1,600m asl) in the Australian Capital Territory was subject to annual monitoring. Numbers present at Ginini Flats declined substantially during the first few years of monitoring and have remained low ever since. Less-regular monitoring was undertaken at Coree Flats (980m asl) in New South Wales. By contrast, the Coree Flats population has supported a larger number of calling males (at least during the years the survey was carried out). However, monitoring at Coree Flats commenced after a major drop in numbers had occurred at other sites. Earlier collecting and observations by Pengilley (1966 and pers. comm.) at this site indicated that the population was very large (perhaps over 500 individuals). The low numbers detected in 1998 are likely to be a direct response to the extreme drought conditions prevailing during the breeding season. The Northern Corroboree Frog has declined at higher altitudes (above 1,400m asl) but remains common at montane altitudes in the Fiery Range (Osborne, Hunter and Hollis 1999). The species is known from Namadgi National Park (Australian Capital Territory), Kosciuszko National Park (New South Wales) and Buccleuch State Forest.

Habitat and Ecology The Northern Corroboree Frog is restricted to montane and sub-alpine woodlands, heathland and grassland above about 1,000m asl (Osborne 1990a). It prefers to breed in sphagnum bogs and wet heath in sub-alpine areas and dense patches of herbaceous vegetation in openings or seepages amongst fallen tussocks at lower elevations (W. Osborne pers. comm.). Non-breeding habitat occurs in forest, woodland and heath adjacent to breeding sites (Osborne 1990a). It breeds in bog pools at high altitudes (above 1,400m asl) and in shallow seepage pools in gullies at lower altitudes (1,000-1,400m asl) (Osborne 1990a). Osborne (1990a) summarized the main features of the reproductive ecology of this species (after Pengilley 1966, 1971, 1973; W. Osborne unpubl.). Field measurements (Pengilley 1973) suggest that the species reaches sexual maturity at three years of age (i.e. one year as an embryo/larva and two years as a juvenile/sub-adult), which is consistent with observations of captive-reared individuals (Osborne 1990a). It is unlikely that many adults survive for more than one breeding season (Osborne 1990a). Breeding occurs from January to March (Pengilley 1966, 1973; W. Osborne unpubl..) and 16-40 eggs (Pengilley 1973) of ovum diameter 3.1-3.6mm (capsule diameter 6.0-10.0mm, W. Osborne unpubl.) are deposited terrestrially (Pengilley 1966; W. Osborne unpubl.). Larvae develop within the egg capsule and hatching occurs when high ground-water levels after rain cause the nest to become flooded (Osborne 1990a). Hatching occurs at 4-6 months (W. Osborne unpubl.) and the larval development period is 6-8 months (Pengilley 1966, 1973; W. Osborne unpubl.). Metamorphosis occurs between December and early February (Pengilley 1966, 1973; W. Osborne unpubl.).

Major Threats The Northern Corroboree Frog is one of a number of Australian alpine amphibian species that have experienced pronounced population declines for unknown reasons (Osborne, Hunter and Hollis 1999). There is no single aspect of the field biology of these species that stands out as a feature in common that may help explain the declines (Osborne, Hunter and Hollis 1999). Osborne, Hunter and Hollis (1999) reviewed some of the possible factors contributing to population declines at high altitudes including long-term weather patterns and pathogens such as the chytrid fungus (Berger, Speare and Hyatt 1999). Chytrid fungus has recently been detected in some museum specimens by R. Speare (W. Osborne pers. comm.). Management of Buccleuch State Forest in the northern Fiery Range and exotic conifer plantations, which cover a considerable extent of the northern part of the region, is also a concern (Osborne 1990a). Osborne (1990b) noted that invasive exotic plant species occurred at a number of breeding sites in the Fiery Range and northern Brindabella Range. The two most prominent species in terms of their potential to cover large areas of breeding habitat were Blackberry *Rubus fruticosus* and Monkey Musk *Mimulus moschatus*. Blackberry has the potential to completely smother and shade breeding habitat rendering it unsuitable for frogs. In contrast, Monkey Musk, a short, broad-leafed herb, forms dense patches in seepages where it often occurs with a similar-sized native species, *Gratiola latifolia*. Breeding was observed in areas with Monkey Musk and it is not known if it has any detrimental affect. Excavation by feral pigs and trampling by horses have also been identified as potentially threatening processes for the species (Osborne 1990a; W. Osborne pers. comm.).

Conservation Measures It is listed as endangered in Australian legislation. Much of the species' habitat is protected within reserves and state forests. Research and monitoring protocols are in place for this species.

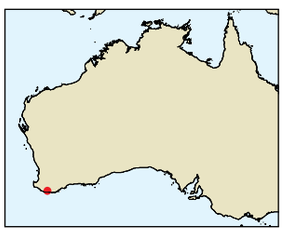
Bibliography: Berger, L., Speare, R. and Hyatt, A. (1999), Osborne, W., Hunter, D. and Hollis, G. (1999), Osborne, W.S. (1988), Osborne, W.S. (1989), Osborne, W.S. (1990b), Osborne, W.S. (1990c), Osborne, W.S. and Norman, J.A. (1991), Osborne, W.S., Zentelis, R.A. and Lau, M.W.N. (1996), Pengilley, R.K. (1966), Pengilley, R.K. (1971), Pengilley, R.K. (1973)

Data Providers: Jean-Marc Hero, Graeme Gillespie, Peter Robertson, Frank Lemckert, Murray Littlejohn

VU *Spicospina flammocaerulea* Roberts, Horwitz, Wardell-Johnson, Maxson and Mah, 1997

SUNSET FROG

Vulnerable D2
Order, Family: Anura, Myobatrachidae
Country Distribution: Australia
Current Population Trend: Stable



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Geographic Range This species, an Australian endemic, was discovered in 1994 (Roberts *et al.* 1997). When first described in 1997, the species was only known from three well-separated peat swamps in the south-west corner of Western Australia (Roberts *et al.* 1997). However, survey work undertaken from 1997 to 2000 increased the number of known populations to 27, all occurring near the Western Australia south coast, east and north-east of Walpole (Roberts, Conroy and Williams 1999; Burbidge and Roberts 2001). This species has a small area of occupancy (135ha) and a very fragmented range (Roberts, Conroy and Williams 1999; Burbidge and Roberts 2001).

Population No reliable data on population size are available, however, counts of males have been recorded at several sites from 1994-1997 (Roberts, Conroy and Williams 1999). Surveys of calling males usually report less then ten individuals, however, 150 males were estimated to be present at Trent Road (Bow River) in 1997 (Roberts *et al.* 1997). An apparent decline in the number of calling males has been recorded at Mountain Road (north and south) where 120 males were observed calling in 1994 and three years later only two males were recorded (Roberts, Conroy and Williams 1999). The actual population size at sites with few or no calling males is unknown (D. Roberts pers. comm.). Two sites with a long history of visitation and no calling activity contained individuals in 2000 (D. Roberts pers. comm.). Overall, there is little evidence of a decline, and the population is probably stable (D. Roberts pers. comm.).

Habitat and Ecology *Spicospina flammocaerulea* is a habitat specialist. The region from which it has been recorded is thought to have undergone a change from a subtropical wet to a seasonally arid climate about 5 to 6 million years ago and the peat swamps where the species occurs are considered to be relicts of an earlier environment (Wardell-Johnson, Roberts and Horwitz 1996). The persistence of the species in well-separated swamps is no doubt attributable to this change in environment (Wardell-Johnson, Roberts and Horwitz 1996). The species is found in isolated and permanently moist peat-based swamps with organically rich soils (Roberts *et al.* 1997), in a high rainfall area of moderate relief with granite outcrops and associated ranges of hills rising to 300-400m asl (Roberts, Conroy and Williams 1999). These sites have high moisture content in the soil and are protected from climatic extremes, often by local seepages that maintain water availability uncharacteristically into spring and summer (Roberts *et al.* 1997). Males call between October and December from shallow pools, water seepages, large hollows containing water, or in open water along creek margins (Wardell-Johnson, Roberts and Horwitz 1996; Roberts *et al.* 1997). Less than 200 eggs are deposited singly and may be supported by algal mats just below the waters surface (Roberts *et al.* 1997). The tadpole stage is presumably free swimming (Roberts *et al.* 1997). Explosive breeding appears unlikely as numbers of calling males have been observed to remain relatively stable over extended periods throughout the breeding season at some sites (Roberts, Conroy and Williams 1999).

Major Threats An extremely small geographic range makes this species particularly susceptible to local catastrophes. An apparent decline in frog numbers at one locality (Mountain Road, Mount Franklin National Park) following wildfires in 1994 suggests a possible risk from fire (Roberts, Conroy and Williams 1999). Frequency of fire varies between localities but the majority of sites have experienced wildfires in the last 50 years (Roberts, Conroy and Williams 1999). This suggests some capacity to recover post-fire but the time and conditions required for full recovery, which could set an optimal fire interval and intensity regime, are unknown (Roberts, Conroy and Williams 1999). Fires, which burn the substrate (peaty swamps), or changing fire regimes, which lead to a greater propensity of substrate ignition, might well be detrimental to the persistence of the species (Roberts *et al.* 1997). Loss of vegetation through fire or disease (such as the fungus *Phytophthora*) might alter soil water tables affecting both availability of breeding sites and peat formation and maintenance (Wardell-Johnson, Roberts and Horwitz 1996; Roberts *et al.* 1997). Excavation by feral pigs is common in swamps close to the type locality and pigs might have a direct impact on frog survival (Roberts *et al.* 1997). However, monitoring of known populations and adjacent control sites from 1997-1998 has shown little indication of pig damage (Roberts, Conroy and Williams 1999).

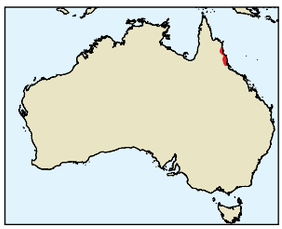
Conservation Measures Fourteen populations are on private property north, west and east of Bow Bridge, with the remainder in the Mount Franklin National Park or on land designated to form part of the Mount Roe-Mount Lindesay National Park but not yet declared (Roberts, Conroy and Williams 1999; D. Roberts pers. comm.). There are no threats to populations on publicly owned lands that cannot be controlled by appropriate management but there has been no analysis of threats to populations found on private property (Roberts, Conroy and Williams 1999). Fieldwork is currently being undertaken to evaluate declines and variation in population size by assessing population size more directly using mark-recapture techniques and surveys of tadpole populations (Roberts, Conroy and Williams 1999).

Bibliography: Burbidge, A.A. and Roberts, J.D. (2002), Roberts, D., Conroy, S. and Williams, K. (1999), Roberts, J.D. *et al.* (1997), Wardell-Johnson, G., Roberts, J.D. and Horwitz, P. (1996)

Data Providers: Dale Roberts, Jean-Marc Hero

CR *Taudactylus acutirostris* (Andersson, 1916) — SHARP SNOUTED DAY FROG

Critically Endangered A2ace; B2ab(i,ii,iii,iv,v); C2a(i); D
Order, Family: Anura, Myobatrachidae
Country Distribution: Australia
Current Population Trend: Decreasing



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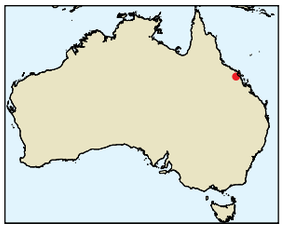
Geographic Range This species, an Australian endemic, was widely distributed from Mount Graham to the Big Tableland, north Queensland, at altitudes of 300-1,300m asl (McDonald 1992). The former extent of occurrence of the species was less than 9,000km² (Hero *et al.* 2002.).
Population Formerly a conspicuous inhabitant of upland rainforest streams because of its diurnal habits and historical abundance, the species started disappearing in the southern part of its range in 1988 and had disappeared from south of the Daintree River by 1992 (Richards, McDonald and Alford 1993). In the past the species was considered locally abundant and in 1989, 48 calling males were recorded along a 100-m stream transect (Richards, McDonald and Alford 1993). When surveys of the same site were undertaken in 1990, only one adult and several tadpoles were located (Richards, McDonald and Alford 1993). The decline of this species is well documented and, in approximately five years from 1988 to 1993, it disappeared from an area spanning about 2.5 degrees latitude (Ingram 1993). Possible sightings of a single individual in a small tributary of the South Johnstone River in 1996 (Marshall 1998), and in 1997, a gravid female seen near Mount Hartley (Hero *et al.* 1998), are the only records of the species since 1994 (Hero *et al.* 2002; Schloegel *et al.* 2006). It is possible that this species is now extinct.
Habitat and Ecology The species was known to be a habitat specialist, endemic to the Wet Tropics Bioregion (Williams and Hero 1998, 2001) occurring along small creeks in rainforest and wet sclerophyll forest (Liem and Hosmer 1973). The species was seen on the rocks during the day near swift-flowing streams or in the rainforest leaf-litter during wet weather (McDonald 1992). Males call during the day, from first light to early evening, near rainforest streams from beneath rocks or leaves (McDonald 1992). Males appear to establish territories, possibly as a response to seemingly low numbers of females (Dennis 1982). Breeding has been observed from late November through to January (Liem and Hosmer 1973). Eggs are laid as a gelatinous clump of about 25-40 eggs (2.2-2.7mm diameter) amongst rocks in the water usually in heavily shaded locations (Liem and Hosmer 1973). Liem and Hosmer (1973) described the tadpole of the species as lotic benthic. Tadpoles generally inhabit debris in pools or slow flowing sections of streams (Liem and Hosmer 1973).
Major Threats Richards, McDonald and Alford (1993) found no obvious evidence that drought, floods, habitat destruction or pollution by pesticides, inorganic ions or heavy metals were responsible for the population declines seen in this species. Big Tableland, the area where the species was at its highest density in 1991-1992, has been mined since 1887 and logging ceased in that area in 1963 (Richards, McDonald and Alford 1993). Rather, research suggests the rapid, catastrophic decline of this species was due to infection with chytridiomycosis (Berger, Speare and Hyatt 1999; Schloegel *et al.* 2006). The effects that having very small isolated populations might have on the recovery of the species remain largely unknown, but might include low genetic variability, increased susceptibility to disease and general demographic instability (Hero *et al.* 1998). Feral pigs are a potential cause of riparian habitat damage and adult frog mortality (Richards, McDonald and Alford 1993). The activity of feral pigs has been recorded to have increased over the period 1989-1992 in an area previously inhabited by this species (Richards, McDonald and Alford 1993). There is very little research, however, into the impact of feral pigs on native frog populations (Richards, McDonald and Alford 1993).
Conservation Measures Much of the species' habitat is protected within National Parks. Research and monitoring is in place for the species. There was a captive-rearing programme run by the Melbourne Zoo and the Queensland Department of the Environment, starting in 1996. Tadpoles were raised to metamorphosis and a single frog to adult stage, but all subsequently succumbed to chytridiomycosis. There are no longer any animals in captivity.
Bibliography: Berger, L., Speare, R. and Hyatt, A. (1999), Dennis, A. (1982), Dennis, A. and Mahony, M. (1984), Hero, J.-M. *et al.* (1998), Hero, J.-M. *et al.* (2002), Hero, J.-M. and Fickling, S. (1994), Ingram, G.J. (1980), Liem, D.S. and Hosmer, W. (1973), Marshall, C.J. (1998), McDonald, K.R. (1992), Richards, S.J., McDonald, K.R. and Alford, R.A. (1993), Schloegel, L.M., Hero, J-M., Berger, L., Speare, R., McDonald, K. & Daszak, P. (2006), Tyler, M.J. (1997), Williams, S.E. and Hero, J.-M. (1998), Williams, S.E. and Hero, J.-M. (2001)
Data Providers: Jean-Marc Hero, Keith McDonald, Michael Cunningham, Ross Alford, Richard Retallick

CR *Taudactylus eungellensis* Liem and Hosmer, 1973 — EUNGELLA TORRENT FROG

Critically Endangered B2ab(v)
Order, Family: Anura, Myobatrachidae
Country Distribution: Australia
Current Population Trend: Decreasing



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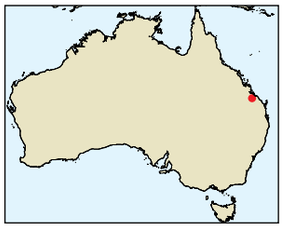
Geographic Range This species, an Australian endemic, is restricted to the ranges west of Mackay, mid-eastern Queensland, from Clarke Range in the north to Finch Hatton Gorge and Credition in the south at altitudes between 200 and 1,000m asl (Ingram 1980; Covacevich and McDonald 1993).
Population This species was considered common across its range until January 1985 when the first signs of decline (Winter and McDonald 1986) were observed at lower altitudes (i.e., about 400m asl). At higher altitudes the frogs were common until March 1985, but were absent in June of that year (McDonald 1990). A small population was recorded in the south of its distribution in June 1986, but disappeared after that date (McDonald 1990). Tadpoles were present in the southern areas of the distribution until May 1987 (McDonald 1990). After a period of apparent absence, an individual was rediscovered in 1992 (Couper 1992) and the species has subsequently been recorded at nine scattered locations within Eungella National Park (McNellie and Hero 1994; Retallick, Hero and Alford 1997; Hero *et al.* 1998; Retallick 1998). Populations of the species were monitored throughout 1994-1998 along sections of streams at altitudes between 180 and 980m asl (Retallick, Hero and Alford 1997; Retallick 1998). Population sizes differed noticeably between sites but appeared to be consistent over time. Interestingly, a significant proportion of each population was recaptured with each visit, which suggests that the population turnover is low, and that the population size is also low. The monitored populations are a large population at Rawson Creek, a medium-sized population at Dooloomai Falls, and a small population at Tree Fern Creek. Frogs at other sites were caught too irregularly to provide useful information. Although the numbers of frogs found at these sites are encouraging and appear to be slowly increasing (Retallick, Hero and Alford 1997), at Dooloomai Falls the current number of frogs remain substantially lower than were recorded before the precipitous population declines in 1985/1986 (McDonald, in Retallick, Hero and Alford 1997). Regular monitoring since 1999 has found low numbers at nine streams and high numbers at one stream. Numbers might have declined at several sites since 1997 but there has been drought for much of this time, which might have reduced numbers and/or activity.
Habitat and Ecology It occurs along small and large streams in rainforest as well as wet sclerophyll forest (Liem and Hosmer 1973). The immediate streamside habitat is dense rainforest with ferns, vines, palms and epiphytes in the understorey (Retallick, Hero and Alford 1997). The species inhabits exposed steep, rocky sections of streams especially within splash zones of waterfalls and cascades (McNellie and Hero 1994; Retallick, Hero and Alford 1997) and may be found under rocks and crevices or on emergent rocks in the stream (Liem and Hosmer 1973; Retallick, Hero and Alford 1997). Tadpoles are found in first to third order streams in large and relatively still mid-stream pools, or partially connected streamside pools (Retallick and Hero 1998). Tadpoles have been observed in the benthic layer among rocks, litter, and detritus (Retallick and Hero 1998). It is a stream-dwelling/stream-breeding species. Males call during the day throughout most of the year with a peak in activity and calling during autumn and the warmer months of the year (Retallick, Hero and Alford 1997). About 30-50 pigmented eggs are laid though sites of oviposition are unknown (Liem and Hosmer 1973; Retallick and Hero 1998). Retallick and Hero (1998) described the tadpole of the species. Peak-breeding season is between January and May, but tadpoles of all sizes and developmental stages may be found throughout the year (Retallick and Hero 1998). Newly hatched tadpoles have been recorded in April, May and December (Retallick, Hero and Alford 1997). Metamorphosis occurs mainly between November and January (Retallick and Hero 1998).
Major Threats The cause(s) of the decline remains unknown. McDonald (1990) found no obvious evidence that seasonal rarity, over-collecting, drought, floods, habitat destruction, heavy parasite loads or stress due to handling and data collection were responsible for the population declines. Sick and dying frogs have occasionally been encountered (Hero *et al.* 1998, 2002) and it might be that the fungal disease, chytridiomycosis, has had an impact on the population (Berger *et al.* 1998). Studies of tissue samples collected between 1994 and 1998 show that the chytrid fungus had infected some individuals of this species. Forest grazing and trampling of streamside vegetation by livestock have been identified as possible threats to the species, but there is no evidence to support this (Dadds 1999). Cane toads *Bufo marinus* might be able to penetrate natural habitats along roadways and utilize ponds for breeding, but there is no evidence of this occurring (Dadds 1999) or that this would have a negative impact on the species (R.W.R. Retallick pers. comm.).
Conservation Measures Much of the species' remaining habitat is protected within National Parks and State Forests. It is listed as endangered in Australian legislation. Research and monitoring of populations is in place.
Bibliography: Ben-Ari, E. (2005), Berger, L. *et al.* (1998), Couper, P.J. (1992), Covacevich, J.A. and McDonald, K.R. (1993), Dadds, B. (1999), Hero, J.-M. *et al.* (1998), Hero, J.-M. *et al.* (2002), Ingram, G.J. (1980), Liem, D.S. and Hosmer, W. (1973), McDonald, K.R. (1990), McNellie, M. and Hero, J,-M. (1994), Oke, C.S. (1996), Retallick, R.W.R. (1998), Retallick, R.W.R. and Hero, J.-M. (1998), Retallick, R.W.R., Hero, J.-M. and Alford, R.A. (1997), Tyler, M.J. (1997), Winter, J. and McDonald, K. (1986)
Data Providers: Jean-Marc Hero, Richard Retallick, Keith McDonald, Ross Alford, Michael Cunningham, John Clarke

CR *Taudactylus pleione* Czechura, 1986

KROOMBIT TINKER FROG

Critically Endangered B1ab(v)+2ab(v)
Order, Family: Anura, Myobatrachidae
Country Distribution: Australia
Current Population Trend: Decreasing



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Geographic Range The distribution of this species, an Australian endemic, is extremely restricted and is confined to nine small (up to 54ha) unconnected patches of rainforest (totalling about 200ha) above 500m asl at Kroombit Tops, south-west of Gladstone (Clarke *et al.* 1999; J. Clarke pers. comm.). It is believed to be a relict species, restricted to Kroombit Tops through habitat fragmentation that disrupted rainforest connections between south and north-east Queensland (Czechura 1986a). Within the rainforest patches, populations are clumped around drainage lines and seepage areas (J. Clarke pers. comm.). The extent of occurrence is estimated to be 18km² and the area of occupancy is estimated to be 60ha (J. Clarke pers. comm). Surveys in February 1997 and regular surveys since 1998 have greatly expanded the known distribution of the species (Clarke *et al.* 1999; J. Clarke pers. comm.). All potential sites on the Kroombit Tableland and escarpment have been searched at least once during the calling season although additional potential habitat for the species exists on the Dawes Range and Mount Roberts (M. Cunningham pers. comm.). To date, surveys of suitable habitat on the Dawes Range and Mount Roberts have failed to find this species (E. Meyer pers. comm.).

Population The only regularly monitored population, in the head of Kroombit Creek, appears to have declined (Hines, Mahony and McDonald 1999). The species was regularly encountered at this site prior to 1997 but was not heard or seen at this site during the 1997/1998 seasons despite systematic monitoring (Clarke *et al.* 1999). Data from monitoring transects on Kroombit Plateau indicate a significant decline in numbers over the past 6-7 years, and numbers upstream have declined dramatically since 1997 (E. Meyer pers. comm.). During 1997/1998 little other monitoring work was undertaken in the area but the species was heard calling at three recently discovered sites (Hines, Mahony and McDonald 1999). Estimates of population size are highly conjectural with no more than 13 individuals being recorded from one site at any one time, and only three females have ever been recorded (J. Clarke pers. comm.). No information is available on population structure, genetic variation or metapopulation dynamics. Some populations are almost certainly isolated from others but this has not yet been shown.

Habitat and Ecology The species is highly cryptic and mainly associated with Piccabeen Palm (*Archontophoenix cunninghamiana*) rainforest and boulder scree gullies (Czechura 1986a; Clarke *et al.* 1999; Meyer, Hines and Hero 2001c). It is found around rocky shelves and boulders, under rocks. or in deep rock piles near temporary streamlines, seepage zones, and in sheltered rocky scree (Clarke *et al.* 1999). Most sites have little or no surface water (J.M. Clarke pers. comm.). It has never been observed basking (Czechura 1986b). Activity seems to be initiated by the first heavy falls of rain during the spring-summer period (Czechura 1996a). Calling has been heard between September and March, with calling peaks on warm, wet nights from September to February (Clarke *et al.* 1999; J. Clarke pers. comm.). Calling is usually most intense at dusk and early evening (Czechura 1986a; Borsboom, Clarke and Cunningham 1998; Clarke *et al.* 1999) although the species will call all night and all day if conditions are suitable (J. Clarke pers. comm.). The males usually call partially or completely concealed in rock crevices or under leaf-litter and often exhibit territorial behaviour by segregating themselves along the stream (Czechura 1986a), although the species is frequently recorded away from streams or seepages (J. Clarke pers. comm.). Only three gravid females have ever been found: one (the holotype) in early February, another in mid-January and a third (partly gravid) in early December (Clarke *et al.* 1999; E. Meyer pers. comm.). Large unpigmented eggs were visible through the abdominal wall of specimens found in late January and December (Meyer, Hines and Hero 2001c). Eggs, tadpoles and oviposition sites have not been observed (Clarke *et al.* 1999). It almost certainly does not breed in streams (H. Hines and E. Meyer pers. comm.). Despite regular searching along creeks, tadpoles of the species have never been found (E. Meyer pers. comm.). The large eggs moreover suggest direct or partially direct development (E. Meyer pers. comm.). The species occurs in situations where water is highly ephemeral, or doesn't pool above the ground (e.g., steep rocky slopes) (E. Meyer pers. comm.). Thus, it seems likely that breeding takes place at the bottom of rock piles, which retain water even when there is little or no surface water available (E. Meyer pers. comm.).

Major Threats The apparent low population, isolation and extremely restricted distribution of the species make it highly susceptible to demographic instability, disturbance and extinction. Clarke *et al.* (1999) and Borsboom, Clarke and Cunningham (1998) list five main potential threats to the species: wildfire; domestic and feral animals (as mentioned above); unknown agent(s) responsible for declines of other Queensland frogs; visitor pressure and timber harvesting. Timber harvesting has ceased in the catchments above all known populations (Hines, Mahony and McDonald 1999), but might be a threat to any new populations on leasehold land. Visitor numbers are low at present, but increased visitation might disrupt breeding or impact on habitat. A high-intensity wildfire in 1994 burned into many rainforest patches used by the species (Hines, Mahony and McDonald 1999). A later flood altered stream hydrology and removed leaf-litter in the area (Clarke *et al.* 1999). The wildfire might be partially responsible for the decline of the species at the monitoring site (Hines, Mahony and McDonald 1999). Modified fire management procedures have now been put in place to reduce the risk of further high-intensity fires (Hines, Mahony and McDonald 1999). Chytrid fungus, a disease found by Berger *et al.* (1998) to be associated with frog deaths and declines elsewhere in Australia and Central America, was isolated from animals of a sympatric species (*Litoria pearsonia*). Clarke *et al.* (1999) and Borsboom, Clarke and Cunningham (1998) list domestic cattle, horses and feral pigs as potential threats to the species. The majority of the Kroombit Tops State Forest is under grazing lease and stock pose a threat to the species mainly through the destruction of habitat and fouling of water (Clarke *et al.* 1999). A fence has been constructed to exclude stock, but impacts at the head of Kroombit Creek continue. Feral pigs, which might prey upon this species, destroy habitat and act as potential vectors of chytrid fungus (by carrying infected mud to new sites), and have recently been found at all sites occupied by this species (J. Clarke pers. comm.).

Conservation Measures Much of the species' habitat is protected within Kroombit Tops State Forest Scientific Area No 48. It is listed as endangered in Australian legislation. Research and monitoring of the populations is in place.

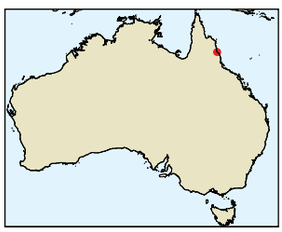
Bibliography: Berger, L. *et al.* (1998), Borsboom, A., Clarke, J. and Cunningham, M. (1998), Clarke, J.M. *et al.* (1999), Czechura, G.V. (1986a), Czechura, G.V. (1986c), Hines, H., Mahony, M. and McDonald, K. (1999), Ingram, G.J. and McDonald, K.R. (1993), Meyer, E., Hines, H. and Hero, J.-M. (2001c), Tyler, M.J. (1997)

Data Providers: Jean-Marc Hero, Harry Hines, Ed Meyer, Michael Cunningham, John Clarke

CR *Taudactylus rheophilus* Liem and Hosmer, 1973

NORTHERN TINKER FROG

Critically Endangered A2ac; B2ab(v)
Order, Family: Anura, Myobatrachidae
Country Distribution: Australia
Current Population Trend: Unknown



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Geographic Range This species, an Australian endemic, is restricted to five mountaintops from Thornton Peak to Mount Bellenden Ker, northern Queensland, at altitudes of 940-1,400m asl (McDonald 1992; Hero *et al.* 1998). It does not occur in habitat between the mountaintops. The extent of occurrence of the species is less than 4,700km² (map in McDonald 1992).

Population The species has undergone a sudden range contraction and had apparently disappeared by October 1991 (Richards, McDonald and Alford 1993). After a period of apparent absence, five individuals were heard calling in a small, high-altitude tributary of the Mulgrave River, and a further seven individuals were heard calling and one was captured in a small, high-altitude tributary of the Mitchell River, Mount Carbine (Marshall 1998). Further records of the species from the south-east slope of Mount Bellenden Ker (Hero *et al.* 1998) include a single juvenile in February 1998 (Hero *et al.* 1998) and 3-5 individuals in December 2000 (Freeman 2000; and see Freeman 2003) at approximately 1,400m asl.

Habitat and Ecology This is a montane specialist, endemic to the Wet Tropics Bioregion (Williams and Hero 1998) occurring along rocky streams in upland rainforest (Liem and Hosmer 1973). It is usually found under rocks and logs beside fast-flowing streams and prefers seepage and trickle areas near streams (McDonald 1992). Individuals recorded in 1996 were found hidden from view in small gaps beneath or between boulders that were at least one metre in diameter (Marshall 1998). One juvenile on Bellenden Ker was captured from under a small rock approximately 30cm in diameter, in the streambed (J.-M. Hero pers. obs.). The species is active all year (Richards, McDonald and Alford 1993) and calls mainly during the day (Ingram 1980). Male calling sites are usually under boulders, rocks or roots and individuals may be partially submerged (Ingram 1980; Marshall 1998). Egg masses and tadpoles of the species have not been identified (Liem and Hosmer 1973; McDonald and Alford 1999), but large eggs (1.8-2.4mm diameter), numbering 35-50 have been found in gravid females (Liem and Hosmer 1973). Juveniles were collected in December and May (Liem and Hosmer 1973).

Major Threats The causes of the decline remain unknown. Richards, McDonald and Alford (1993) found no obvious evidence that drought, floods, habitat destruction or pollution by pesticides, inorganic ions or heavy metals were responsible for the population declines. Current research is examining the possibility that disease, such as a viral infection or chytrid fungus, might have contributed to the decline of this species (Berger, Speare and Hyatt 1999). The effects that having very small isolated populations might have on the recovery of the species remain largely unknown, but might include low genetic variability, increased susceptibility to disease and general demographic instability (Hero *et al.* 2002). Feral pigs are a potential cause of riparian habitat damage and adult frog mortality (Richards, McDonald and Alford 1993). The activity of feral pigs has been recorded to have increased over the period 1989-1992 in an area previously inhabited by this species (Richards, McDonald and Alford 1993). However, there is very little research into the impact of feral pigs on native frog populations (Richards, McDonald and Alford 1993).

Conservation Measures Much of the species' habitat is protected within Daintree and Wooroonooran National Parks. It is listed as endangered in Australian legislation. Research and monitoring of populations is in place.

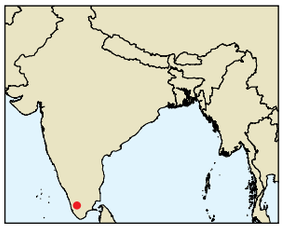
Bibliography: Berger, L., Speare, R. and Hyatt, A. (1999), Freeman, A. (2000), Freeman, A. (2003), Hero, J.-M. *et al.* (1998), Hero, J.-M. *et al.* (2002), Ingram, G.J. (1980), Liem, D.S. and Hosmer, W. (1973), Marshall, C.J. (1998), McDonald, K. and Alford, R. (1999), McDonald, K.R. (1992), Richards, S.J., McDonald, K.R. and Alford, R.A. (1993), Tyler, M.J. (1992), Tyler, M.J. (1997), Williams, S.E. and Hero, J.-M. (1998), Williams, S.E. and Hero, J.-M. (2001)

Data Providers: Jean-Marc Hero, Ross Alford, Keith McDonald, Michael Cunningham, Richard Retallick

NASIKABATRACHIDAE

EN *Nasikabatrachus sahyadrensis* Biju and Bossuyt, 2003

Endangered B1ab(iii)
Order, Family: Anura, Nasikabatrachidae
Country Distribution: India
Current Population Trend: Decreasing



© S.D. Biju

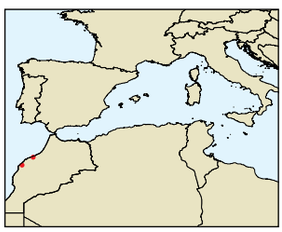
Geographic Range This species is endemic to the Western Ghats in India, and is known from only two localities, both in Idukki District in the Cardomom Hills in Kerala: Kattapana; and near Idukki town. Its recorded altitudinal range is 850-1,000m asl. It is likely to occur more widely.
Population It is a rare species, though very hard to find. Only 135 specimens have so far been observed, and, of these, only three have been females.
Habitat and Ecology It has been found in disturbed secondary forest contiguous with montane evergreen forest, but presumably occurs in undisturbed forest as well (though apparently it does not survive in open, completely cleared habitats). For most of the year it is a fossorial species, living from 1.3-3.7m below ground. It comes to the surface for a few weeks a year to breed in temporary and permanent ponds and ditches by larval development. It often breeds in ponds close to streams.
Major Threats The main threat is forest loss due to expanding cultivation (of coffee, cardamom, ginger and other species).
Conservation Measures It has not yet been recorded from any protected areas, making the protection of forest habitat within its range an urgent priority.
Notes on taxonomy: This species has been reported from several additional localities, although these likely refer to undescribed species (S.D. Biju pers. comm.).
Bibliography: Biju, S.D. and Bossuyt, F. (2003), Dutta, S.K. *et al.* (2004), Hedges, S.B. (2003)
Data Providers: S.D. Biju

PELOBATIDAE

EN *Pelobates varaldii* Pasteur and Bons, 1959

VARALDI'S SPADEFOOT TOAD

Endangered B2ab(iii)
Order, Family: Anura, Pelobatidae
Country Distribution: Morocco
Current Population Trend: Decreasing



© Pierre-André Crochet

Geographic Range This species is known only from fragmented localized areas on the coastal plains of north-western Morocco. The northernmost location is the town of Larache, while the southernmost population is known from the north-eastern part of the salt marshes of Oualida. The species may range further south than Oualidia, and this possible range extension requires further investigation. Yus Ramos and Cabo Hernandez (1986) mentioned the presence of *Pelobates cultripes* in the Melilla region (Spain), which might refer to *P. varaldii*, though this record is far outside the known range of any *Pelobates* species. *P. varaldii* is not found above 350m asl.
Population There is no information on the population status of this species, although it is believed to be declining.
Habitat and Ecology It is generally fossorial, inhabiting lowland sandy uncultivated soils, sometimes in the vicinity of cork woodlands. The spawning sites are most often still temporary waterbodies (such as dayas and rain puddles). It does not occur in anthropogenically modified habitats.
Major Threats The major threats include habitat loss and degradation due to the conversion of land to livestock pasture, and the pollution of stagnant waters with livestock droppings (Schleich, Kästle and Kabisch 1996). In addition, arable agriculture may be leading to the loss or disturbance of the sandy substrate soil habitat, with which the species is strongly associated. Populations of the species are now often restricted to temporary ponds, and those remaining in permanent waterbodies are being eliminated through the presence of predatory fishes (specifically *Gambusia holbrooki*).
Conservation Measures It is not known whether the species occurs in any protected areas, though it may be present in the Merja Zerga Biological Reserve. There is certainly a need for improved protection of the habitat of this species.
Bibliography: Bons, J. and Geniez, P. (1996), Busack, S.D., Maxson, L.R. and Wilson, M.A. (1985), Crochet, P.-A. and Geniez, P. (2003), Dorda, J. (1984), Herrero, P. and Talavera, R.R. (1988), Mateo, J.A. *et al.* (2003), Pasteur, G. and Bons, J. (1959), Salvador, A. (1996), Schleich, H.H., Kästle, W. and Kabisch, K. (1996), Yus Ramos, R. and Cabo Hernandez, J.M. (1986)
Data Providers: Alfredo Salvador, David Donaire-Barroso, Tahar Slimani , El Hassan El Mouden, Philippe Geniez

PETROPEDETIDAE

EN *Anhydrophryne rattrayi* (Hewitt, 1919)

HOGSBACK FROG

Endangered B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v)
Order, Family: Anura, Petropedetidae
Country Distribution: South Africa
Current Population Trend: Decreasing

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Geographic Range This species is known only from the Amotola, Katberg and Keiskammahoek Mountains in the Eastern Cape Province of South Africa. There is a record from near Patensie, some 200km south-west of the main range, but it has not been found in this area since it was discovered in 1961. It occurs above 1,100m asl.
Population It can be common in suitable places.
Habitat and Ecology It inhabits the leaf-litter of montane forest and lives on the forest edge, being particularly associated with the grassland-forest ecotone, and with small patches of grass and wetland inside forest. However, it is not found outside forest. It makes a terrestrial nest, and lays 11-20 eggs, which develop directly, without a larval stage.
Major Threats The main threat is habitat loss due to human settlement, afforestation, invasive plants and fire. Pines are often planted right up to the natural forests, destroying the grassland-forest ecotone. Its remaining habitat is very restricted and patchy.
Conservation Measures It occurs in several state forests and nature reserves, including Hogsback Indigenous Forest, Katberg Forest, and Stutterheim Nature Reserve.
Bibliography: Branch, W.R. (1988), Castley, J.G. (1997), Channing, A. (2001), Minter, L.R. *et al.* (2004), Passmore, N.I. and Carruthers, V.C. (1995), Visser, J. (1979b), Wager, V.A. (1986)
Data Providers: Leslie Minter, Alan Channing, James Harrison

CR *Arthroleptella ngongoniensis* Bishop and Passmore, 1993

NGONI MOSS FROG

Critically Endangered B2ab(ii,iii,iv,v)
Order, Family: Anura, Petropedetidae
Country Distribution: South Africa
Current Population Trend: Decreasing

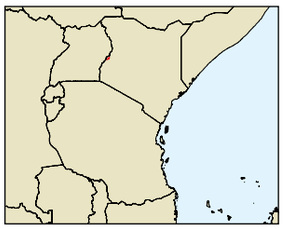
© Richard Boycott

Geographic Range This species is endemic to a small area of mist belt on the eastern escarpment of KwaZulu-Natal Province and East Griqualand (Eastern Cape Province), south-eastern South Africa. It occurs above 1,000m asl. Six fragmented and isolated sub-populations are known (Minter *et al.* 2004).
Population The total population size appears to be very small.
Habitat and Ecology It is known only from high-altitude grassland, and has also been found in montane forest. Most sites from which it has been recorded are surrounded by exotic tree plantations. It generally prefers steep slopes, close to seepages. It breeds in decaying vegetation at the base of grass and sedge tussocks on grassy slopes in the mist belt of the escarpment. Males call from well-concealed positions at the bases of grass tussocks by day, while at night they climb to calling positions about 20cm below the tips of grass stems. The eggs are laid on damp soil or vegetation and develop directly, without a larval stage.
Major Threats The habitat of this species is experiencing a rapid rate of loss, due to afforestation, the spread of invasive wattle trees (lowering the water table), and the impact of hot fires.
Conservation Measures Although it occurs in the Ngele Forest Reserve, most of the habitat of this species is not protected, so improved protection and maintenance of the remaining habitat is a priority.
Bibliography: Armstrong, A. (2001), Bishop, P.J. and Passmore, N.I. (1993), Channing, A. (2001), Minter, L.R. *et al.* (2004), Passmore, N.I. and Carruthers, V.C. (1995)
Data Providers: Leslie Minter, James Harrison

CR *Arthroleptides dutoiti* Loveridge, 1935

DU TOIT'S TORRENT FROG

Critically Endangered B2ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Kenya
Current Population Trend: Decreasing

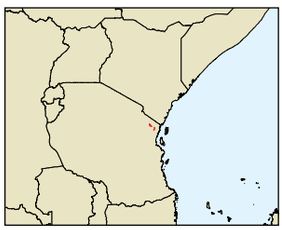


Geographic Range This species is known only from Mount Elgon, Kenya, at around 2,100-2,200m asl. It was last recorded in 1962, and four attempts to locate the species (in wet and dry seasons) since 2001 have been unsuccessful. There have been no records from the Ugandan side of Mount Elgon.
Population There is no information on the population status of this species, and it has been suggested that it might be extinct.
Habitat and Ecology It is associated with seeps and fast-flowing streams in montane forest. Breeding is presumably as with other species in genus, with eggs laid on wet rocks close to torrential streams and waterfalls, and the larvae developing on the rocks, out of the water.
Major Threats The habitat of this species appears to be generally in good condition, although it might be adversely impacted by logging and general encroachment of the forest on Mount Elgon. However, the species cannot now be found at its type locality, or in other streams on Mount Elgon. In view of the disappearance of other montane stream-dwelling species elsewhere in the humid tropics, the impact of disease, such as chytridiomycosis, cannot be ruled out.
Conservation Measures The type locality, which is not very precise, might be inside, or very close to the Mount Elgon National Park, although its presence there has not been confirmed. Further survey work is needed to determine the status of this species in the wild.
Bibliography: Channing, A., Moyer, D.C. and Howell, K.M. (2002), Howell, K.M. (1993), Klemens, M.W. (1998), Lötters, S. *et al.* (2004)
Data Providers: Stefan Lötters, Simon Loader, Kim Howell

EN *Arthroleptides martiensseni* Nieden, 1911

USAMBARA TORRENT FROG

Endangered B2ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Tanzania
Current Population Trend: Decreasing

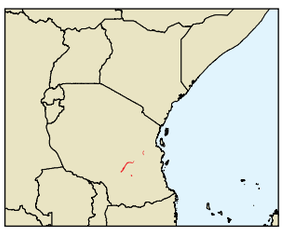


© Elizabeth Harper

Geographic Range This species is known only from the East and West Usambara Mountains (including the Magrotto ridge) in north-eastern Tanzania, at 600-1,800m asl.
Population It is common in its specialized habitat.
Habitat and Ecology It is associated with rocky streams in montane forests, and is generally confined to mature forest. It lays its eggs on rocks over which water is trickling, close to torrential streams and waterfalls. The larvae remain attached to the rocks, where they develop. When not breeding, the adults can be found on the forest floor, in holes on the ground, and in rock crevices.
Major Threats This species is adversely affected by general encroachment and degradation of the forest, and siltation of streams. A potential future threat might be the fungal disease, chytridiomycosis, since the related species, *A. yakusini*, has been shown to carry this fungus. Its habitat in the East Usambaras has recently come under serious threat as a result of the activities of illegal gold miners.
Conservation Measures It occurs in the Amani Nature Reserve, but there is a need for expanded and strengthened protection of forests in the Usambara Mountains. The species also requires close population monitoring, particularly given the possible threat of chytridiomycosis.
Notes on taxonomy: Records of this species away from the Usambara Mountains are now assigned to a new species, *Arthroleptides yakusini* (Channing, Howell and Moyer 2002).
Bibliography: Channing, A., Moyer, D.C. and Howell, K.M. (2002), Drewes, R.C., Altig, R. and Howell, K.M. (1989), Harper, E. and Vonesh, J.R. (2003), Howell, K.M. (1993), Klemens, M.W. (1998)
Data Providers: Simon Loader, Kim Howell

EN *Arthroleptides yakusini* Channing, Howell and Moyer, 2002

Endangered B2ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Tanzania
Current Population Trend: Decreasing



© Elizabeth Harper

Geographic Range This species is known only from the Uluguru, Udzungwa and Mahenge Mountains in eastern Tanzania, with an altitudinal range of approximately 350-1,950m asl.
Population It is regularly encountered in suitable habitat, and is not uncommon.
Habitat and Ecology It is associated with rocky streams in montane forests, and is generally confined to mature forest (though is possibly more tolerant of open woodland situations than *Arthroleptides martiensseni*). It lays its eggs on rocks over which water is trickling, close to torrential streams and waterfalls. The larvae remain attached to the rocks, where they develop. When not breeding, the adults can be found on the forest floor, in holes on the ground, and in rock crevices.
Major Threats This species is adversely affected by general encroachment and degradation of the forest, and siltation of streams. This species has been confirmed as carrying the fungus that causes chytridiomycosis, but it is not yet known if this will lead to a catastrophic reduction in populations, as has been the case with amphibians in other parts of the world.
Conservation Measures It occurs in the Udzungwa National Park. Populations should be carefully monitored, particularly since chytrid has been confirmed in this species.
Bibliography: Channing, A., Moyer, D.C. and Howell, K.M. (2002), Poynton, J.C. (2003b)
Data Providers: Simon Loader, Kim Howell

VU *Cacosternum capense* Hewitt, 1925

CAPE CACO

Vulnerable B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)
Order, Family: Anura, Petropedetidae
Country Distribution: South Africa
Current Population Trend: Decreasing

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Geographic Range This species is endemic to the Cape lowlands (below 280m asl) west of the Cape Fold Mountains, in the Western Cape Province of South Africa. It occurs from the Cape Flats, through the wheat-growing region known as the Swartland, northwards for approximately 200km to Graafwater, with two relictual populations occurring in the Olifants and Breede River valleys. Its range has contracted over the last few decades, in tandem with increased urbanization, and it is now extirpated from the urban areas and immediate surrounds of Cape Town.

Population It is now fairly rare, with populations widely scattered and densities (as assessed by chorus intensity) not reaching those of historical levels. Most of the populations that were close to regions of heavy urbanization have been lost in the last decade.
Habitat and Ecology It lives in undulating low-lying areas with poorly drained loamy to clay soils, although it is known from some shallow sand habitats. The dominant vegetation in which it historically occurred was Renosterveld heath land, which can leach and acidify the surface water. However, its contemporary presence in disturbed agricultural land indicates that acidic water is not a prerequisite for this species. It breeds in vleis and depressions in flat low-lying areas. The eggs are laid in small clusters attached to submerged vegetation. It can tolerate some disturbance, and survives in many regularly ploughed wheat fields, possibly due to its burrowing to depths below the reach of conventional ploughs (they aestivate in burrows during the dry season).
Major Threats This species occurs in a habitat that is in high demand for urbanization and agriculture, and over 90% of its former habitat has been transformed by agriculture or urbanization. The long-term viability of populations living in disturbed agricultural fields, which contain high levels of agro-chemicals, is uncertain. Climate change is also considered to be a threat to this species.
Conservation Measures It is known to occur in three protected areas: J.N. Briers-Louw Provincial Nature Reserve (near Paarl), Elandsberg Private Nature Reserve (near Hermon) and the adjoining Voëlvlei Provincial Nature Reserve.
Bibliography: Branch, W.R. (1988), Channing, A. (2001), De Villiers, C.G.S. (1929), Harrison, J.A. *et al.* (2001), Minter, L.R. *et al.* (2004), Passmore, N.I. and Carruthers, V.C. (1995), Wager, V.A. (1986)
Data Providers: Elizabeth Scott, Leslie Minter

EN *Ericabatrachus baleensis* Largen, 1991

Endangered B1ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Ethiopia
Current Population Trend: Decreasing

© M.J. Largen

Geographic Range This species is restricted to the Bale Mountains of Ethiopia, at 2,400-3,200m asl. It has so far been found only in two localities near Katcha, but probably occurs a little more widely.

Population It seemed to be reasonably numerous at the type locality in 1986. The absence of subsequent records is due to the lack of survey effort.
Habitat and Ecology It is known only from giant geath (*Erica arborea*) woodland and adjoining *Schefflera-Hagenia* forest, where it is found on the grassy banks of small, fast-flowing streams. The breeding behaviour is unknown, but female specimens contain large and unpigmented ova. The presence of such eggs is generally considered to be indicative of either direct development or at least a terrestrial nest. If true in this case, the eggs are most likely to be deposited amongst herbaceous vegetation on the banks of small, swift-flowing streams, which is the habitat where fully mature females have been found.
Major Threats Direct damage to the narrow belt of giant heath (with which this animal is most closely associated), by either humans or their livestock, does not seem very likely in the foreseeable future, but could be disastrous if it did occur. A more worrying threat is the possibility of logging in contiguous tall *Schefflera-Hagenia* forests at slightly lower elevations.
Conservation Measures It occurs in Bale Mountains National Park, although this protected area has not yet been formally gazetted. Conservation of *Erica* woodland and high-altitude forest throughout the Bale Mountains is a priority. Clearly, there is an urgent need for further survey work to determine the current population status of this species, and to determine whether it might occur more widely than currently known.
Bibliography: Largen, M.J. (1991), Largen, M.J. (2001)
Data Providers: Malcolm Largen

CR *Microbatrachella capensis* (Boulenger, 1910)

Critically Endangered B2ab(i,ii,iii,iv,v)
Order, Family: Anura, Petropedetidae
Country Distribution: South Africa
Current Population Trend: Decreasing

© Atherton de Villiers

Geographic Range This species occurs only in the coastal lowlands in the south-western part of Western Cape province, South Africa, where it formerly ranged from Cape Town east to the Agulhas Plain. However, it is now extinct on the Cape Flats near Cape Town, except for at one locality at Kenilworth Race Course. Its eastern distribution is much more fragmented than is shown on the map, since it occurs only in very isolated localities. It is found at very low altitudes.
Population It occurs at high densities at breeding sites, which are few and far between.
Habitat and Ecology This species lives in sandy, coastal fynbos heathland, and it is not generally found in anthropogenic habitats. It is associated with semi-permanent seepage pools and seasonal vleis, and depends on black peaty waters for breeding. Providing that the water remains of this quality, it can tolerate very limited habitat disturbance. When their wetland habitat dries up, they bury themselves and estivate through the dry season. Eggs are attached to submerged vegetation, and larval development is slow.
Major Threats It has a very restricted range in an area that is subject to the impacts of urbanization, agricultural expansion, the spread of alien vegetation (leading to drying out of breeding pools), and drainage of breeding habitats.
Conservation Measures Agulhas National Park is the only statutory protected area in which it occurs, although it is also present in various other local authority and private nature reserves. Further survey work is needed to monitor the population status of the species carefully.
Bibliography: Baard, E.H.W. (1989), Branch, W.R. (1988), Channing, A. (2001), De Villiers, A.L. (1997), Minter, L.R. *et al.* (2004), Passmore, N.I. and Carruthers, V.C. (1995), Visser, J. (1979a), Wager, V.A. (1986)
Data Providers: James Harrison, Leslie Minter, Alan Channing

EN *Natalobatrachus bonebergi* Hewitt and Methuen, 1912

Endangered B2ab(ii,iii,iv)
Order, Family: Anura, Petropedetidae
Country Distribution: South Africa
Current Population Trend: Decreasing

© Louis du Preez

Geographic Range This species is restricted to south-eastern South Africa, where it ranges from Dwesa Nature Reserve in the Eastern Cape Province east to southern and central KwaZulu-Natal Province. It occurs below 900m asl.
Population It is a rare species.
Habitat and Ecology It lives in coastal forests and gallery forests, where it is usually found along streams, and does not survive in open areas. It breeds in streams, hanging its eggs above water on branches, and sometimes on rock faces. The larvae fall into the water where they develop.
Major Threats Much of the forest habitat of this species has been lost for sugar cane cultivation and other agriculture, woodcutting, afforestation and urbanization. It is also threatened by pollution and siltation of streams.
Conservation Measures It occurs in several protected areas, including Umtamvuna Nature Reserve and Oribi Gorge Nature Reserve.
Bibliography: Channing, A. (2001), Kok, D.J. and Seaman, M.T. (1988), Kok, D.J. and Seaman, M.T. (1989), Minter, L.R. *et al.* (2004), Passmore, N.I. and Carruthers, V.C. (1995), Poynton, J.C. (1964b), Wager, V.A. (1986)
Data Providers: Leslie Minter, Alan Channing, James Harrison

EN *Nothophryne broadleyi* Poynton, 1963

Endangered B1ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Malawi, Mozambique
Current Population Trend: Decreasing

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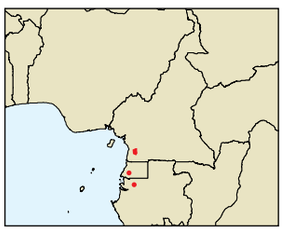
Geographic Range This species is known only from Mount Mulanje in southern Malawi and Mount Ribaue in Mozambique, where it occurs above 1,200m asl up to almost 3,000m asl. It probably occurs more widely in the mountains of south-eastern Malawi and northern Mozambique.
Population It is abundant on Mount Mulanje, breeding in vast numbers.
Habitat and Ecology It is particularly associated with rocky areas in both montane forest and grassland. The eggs are laid in wet moss at the edge of rivulets running over rocks, and the larvae disperse by migration across wet rocks.
Major Threats Although somewhat protected, the habitat on Mount Mulanje continues to be lost in places as a result of subsistence agriculture and extraction of wood. Other threats include uncontrolled fires and the spreading of exotic pines throughout the plateaus (pines are invading and locally replacing the natural vegetation as they regrow faster after fires).
Conservation Measures It occurs in the Mulanje Mountain Forest Reserve (which is in need of continued and strenghtened management), although Mount Ribaue remains unprotected.
Bibliography: Channing, A. (2001), Poynton, J.C. (1963), Poynton, J.C. (1964a), Poynton, J.C. (1966b), Poynton, J.C. and Broadley, D.G. (1985b), Stevens, R.A. (1974), Stewart, M.M. (1967)
Data Providers: Lovemore Mazibuko, John Poynton

EN *Petropedetes palmipes* Boulenger, 1906

Endangered B1ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Cameroon, Equatorial Guinea, Gabon
Current Population Trend: Decreasing

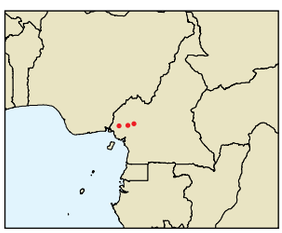


© Ignacio De La Riva

Geographic Range This species is known only from the western slope of the southern Cameroon plateau, Cameroon, from Monte Alen in mainland Equatorial Guinea, and from Barrage de Kinguele in north-western Gabon.
Population It is a rare species.
Habitat and Ecology It lives in rocky areas in lowland forest, usually near flowing water, and cannot survive significant modification of its forest habitat. The eggs are laid, and the larvae develop, on rocks outside water, but in the splash zone of streams and small waterfalls.
Major Threats It is presumably threatened by the loss of forest habitat for agriculture, logging and human settlements.
Conservation Measures It occurs in Monte Alen National Park in Equatorial Guinea and Monts de Cristal National Park in Gabon (created in 2002); it may occur in Campo Ma'an National Park in Cameroon.
Bibliography: Amiet, J.-L. (1973a), De la Riva, I. (1994b), Frétey, T. and Blanc, C.P. (2000), Lamotte, M., Perret, J.-L. and Dzieduszycka, S. (1959), Lasso, C.A. *et al.* (2002), Lötters, S. *et al.* (2001), Perret, J.-L. (1966), Perret, J.-L. (1984)
Data Providers: Jean-Louis Amiet, Marius Burger

EN *Petropedetes perreti* Amiet, 1973

Endangered B1ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Cameroon
Current Population Trend: Decreasing

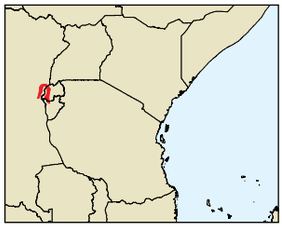


© Andreas Schmitz

Geographic Range This species occurs only in the mountains of western Cameroon: on the southern slopes of Mount Manenguba; Mount Nlonako; the Rumpi Hills; and the southern slopes of the Bamileke Plateau at Mount Bana, Petit Diboum, and the Mbos Cliffs. Its altitudinal range is 950-1,500m asl.
Population It is a common species.
Habitat and Ecology It is found in submontane forest, including secondary growth, where it characteristically sits on rocks in the middle of fast-flowing streams, or on vegetation near the streams. The eggs are deposited on wet rock surfaces in the splash zone of waterfalls that are guarded by the male. The larvae develop on these rocks, and do not enter water.
Major Threats It is presumably threatened by the loss of forest habitat due to agriculture, logging and human settlements.
Conservation Measures It is not known to occur in any formal protected areas, and there is a need for improved and expanded protection of montane forests in western Cameroon, particularly on Mount Manenguba and in the Rumpi Hills.
Bibliography: Amiet, J.-L. (1973a), Amiet, J.-L. (1975), Böhme, W. (1975), Herrmann, H.-W. *et al.* (2005), Lawson, D.P. (1993), Perret, J.-L. (1984)
Data Providers: Jean-Louis Amiet

VU *Phrynobatrachus acutirostris* Nieden, 1912

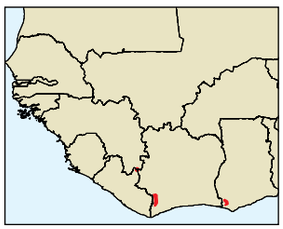
Vulnerable B1ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Burundi, Congo, D.R., Rwanda
Current Population Trend: Decreasing



Geographic Range This very poorly known species has been recorded only from the "Lake Region" of eastern Democratic Republic of Congo, western Rwanda, and north-western Burundi. There do not appear to be any recent records of this species, presumably because of lack of herpeological work within its range. It is presumably a montane species, but its altitudinal range is not recorded.
Population There is no information on the population status of this species.
Habitat and Ecology It is probably a forest species. It has been recorded as occurring in forest streams, where it presumably breeds.
Major Threats Assuming that it is a forest species, it is probably affected by the increased collection of firewood and building materials.
Conservation Measures It has apparently been recorded from the Nyungwe National Park in Rwanda and the Virunga National Park in the Democratic Republic of Congo, and presumably occurs in Kahuzi-Biega National Park. However, the effectiveness of the conservation of these areas is probably compromised by the unstable political situation within its range. There is a need for further survey work in this region to better determine the distribution and current population status of this species.
Bibliography: Laurent, R.F. (1983), Witte, G.-F. de (1941)
Data Providers: Martin Pickersgill, Robert Drewes

EN *Phrynobatrachus annulatus* Perret, 1966

Endangered B2ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Côte d'Ivoire, Ghana, Guinea, Liberia
Current Population Trend: Decreasing

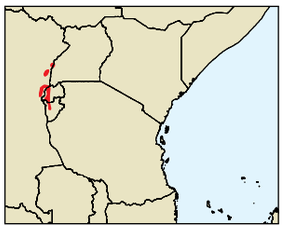


© Mark-Oliver Rödel

Geographic Range This species is known only from the Mount Nimba area in extreme south-eastern Guinea and north-eastern Liberia, from the Taï National Park in south-western Côte d'Ivoire, and from Draw River and Boi Tano Forest Reserves, Ghana. It presumably occurs a little more widely than this, although it has not been found in surveys of many intervening areas.
Population It is an extremely rare species.
Habitat and Ecology All specimens have been found in primary forest close to inselbergs in leaf-litter. Its biology and breeding are unknown, although most records have come from drier parts of the forest suggesting that it is not dependent on water for breeding.
Major Threats It is affected by the loss of forest habitat for agriculture, logging and human settlements. On Mount Nimba it is also threatened by potential mining concessions.
Conservation Measures It occurs in Taï National Park and the Mount Nimba World Heritage Site.
Bibliography: Perret, J.-L. (1966), Perret, J.-L. (1988a), Rödel, M.-O. (2000b), Rödel, M.-O. *et al.* (2005), Rödel, M.-O. and Ernst, R. (2002a)
Data Providers: Mark-Oliver Rödel, Arne Schiøtz

VU *Phrynobatrachus bequaerti* (Barbour and Loveridge, 1929)

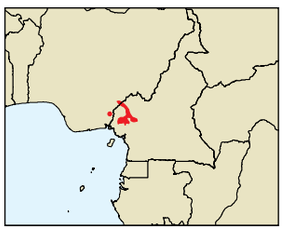
Vulnerable B1ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Burundi, Congo, D.R., Rwanda
Current Population Trend: Decreasing



Geographic Range This very poorly known species occurs in the mountains of eastern Democratic Republic of Congo, from the region of Mount Ruwenzori, south to west of Lake Kivu, and in western Rwanda, and north-western Burundi. It is very likely to occur in Uganda, but there appear to be no confirmed records. It occurs at very high altitudes, from at least 2,400m asl (perhaps lower) to over 3,000m asl.
Population There is little recent information on the population status of this species, but it is apparently not uncommon in suitable habitat.
Habitat and Ecology It is a species of swamps and marshes in both montane forest and montane grassland. It presumably breeds in swamps.
Major Threats It is probably affected by the mass movement and settlement of refugees, and the resultant increased demands for firewood and building materials.
Conservation Measures It occurs in the Virunga National Park (Democratic Republic of Congo) and the Volcanoes National Park (Rwanda). However, the quality of habitat in these protected areas has declined due to the influx and settlement of refugees as a result of regional political instability.
Bibliography: Grandison, A.G.C. and Howell, K.M. (1983), Laurent, R.F. (1972), Laurent, R.F. (1983), Witte, G.-F. de (1941)
Data Providers: Martin Pickersgill, Robert Drewes

VU *Phrynobatrachus cricogaster* Perret, 1957

Vulnerable B1ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Cameroon, Nigeria
Current Population Trend: Decreasing



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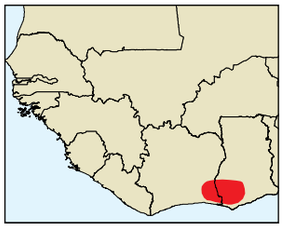
Geographic Range This species is restricted to the mountains of eastern Nigeria and western Cameroon at 850-1,850m asl. There are records from the Obudu Plateau and the higher parts of the Oban Hills in Nigeria, and from the Rumpi Hills, Mount Kupe, Mount Manenguba, Mount Nlonako, and the Bamileke plateau (Petit Diboum, Mount Bana, Fotabong an Foto) in Cameroon.
Population It is abundant at 1,400m asl on Mount Manenguba, but rare at 1,000m asl on Mount Nlonako.
Habitat and Ecology It lives in submontane and montane primary and secondary forest, degraded forest, and dense brush where it breeds in still pools along mountain streams. It does not appear to survive in completely open habitats.
Major Threats Although it is somewhat adaptable, it is probably affected by agricultural expansion, logging, and human settlements when these lead to serious opening up of the habitat.
Conservation Measures It occurs in the Cross River National Park in Nigeria. There is a need for improved habitat protection of montane forest habitats in Cameroon.
Bibliography: Amiet, J.-L. (1971b), Amiet, J.-L. (1973b), Amiet, J.-L. (1975), Gartshore, M.E. (1986), Herrmann, H.-W. *et al.* (2005), Joger, U. (1982), Lawson, D.P. (1993), Mertens, R. (1968), Perret, J.-L. (1957b), Perret, J.-L. (1966), Schiøtz, A. (1963)
Data Providers: Jean-Louis Amiet, Mary Gartshore

EN *Phrynobatrachus ghanensis* Schiøtz, 1964

Endangered B1ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Côte d'Ivoire, Ghana
Current Population Trend: Decreasing



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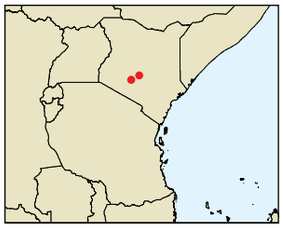
Geographic Range This species is known only from the heavily fragmented forest region of south-western Ghana and south-eastern Côte d'Ivoire. It is known from Banco National Park in Côte d'Ivoire and from five localities in Ghana: Kakoum National Park; Boi-Tano Forest Reserve; Draw River Forest Reserve; the Ankasa Conservation Area, a twin wildlife protected area comprising Nini-Suhien National Park to the north and the Ankasa Forest Reserve to the south; and Bobiri Forest Reserve.
Population There is very little information concerning its population status, since only a few specimens are known. It is a very inconspicuous forest floor species, so it is probably often overlooked or mistaken for other *Phrynobatrachus* species.
Habitat and Ecology It is usually found on the floor of swampy primary rainforest, but it has also been found at the edge of small temporary pools in bamboo forest and close to forest edge. Its breeding is unknown, though it is likely to take place in water.
Major Threats It is presumably affected by the loss of forest habitat for agriculture, logging, and human settlements.
Conservation Measures It occurs in several protected areas across its range. There is a need for further survey work in order to determine the current population status of this species.
Bibliography: Assemian, N.E.,Kouamé, N.G., Tohé, B., Gourène, G. & Rödel, M.-O. (2006), Perret, J.-L. (1988a), Rödel, M.-O. *et al.* (2005), Schiøtz, A. (1964a)
Data Providers: Mark-Oliver Rödel, Arne Schiøtz

EN *Phrynobatrachus irangi* Drewes and Perret, 2000

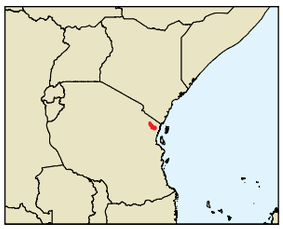
Endangered B1ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Kenya
Current Population Trend: Decreasing



Geographic Range This species is currently known from only two montane localities in Kenya: Irangi Forest on the south-eastern slopes of Mount Kenya; and Kimande on the south-eastern slopes of the Aberdare Mountains. It probably occurs a little more widely in the Kenyan highlands (at least on Mount Kenya and the Aberdare Mountains). Its currently known altitudinal range is approximately 1,900-2,300m asl.
Population There is little information on its population status since it is a difficult species to locate.
Habitat and Ecology It appears to be a diurnal species. Males have been found calling on the banks of small streams in montane forest, from under roots or logs, and from holes in the mud. It is probably dependent upon montane forest for its survival. It possibly reproduces in streams, although this requires confirmation.
Major Threats It is possible that the Kimande population is now extinct because of severe modification of the native habitat by local subsistence farming. This is also likely to be a threat to the species elsewhere in its range.
Conservation Measures Although not recorded from Mount Kenya and the Aberdares National Parks, it is possible that it does occur there, but further survey work is needed to better understand the distribution of this species in the Kenyan highlands.
Bibliography: Drewes, R.C. and Perret, J.-L. (2000), Lötters, S. *et al.* (2004)
Data Providers: Robert Drewes, Kim Howell, Stefan Lötters

EN *Phrynobatrachus krefftii* Boulenger, 1909

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Tanzania
Current Population Trend: Decreasing

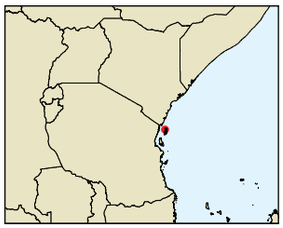


© Elizabeth Harper

Geographic Range This species is known only from the East and West Usambara Mountains (including the Magrotto ridge) in north-eastern Tanzania. Its altitudinal range is 700-1,500m asl.
Population It is widespread and common within its small range.
Habitat and Ecology It is generally associated with montane and submontane forest, and is also found in rural gardens and in open areas, but generally not far from forest and certainly not in completely open landscapes. Breeding takes place in small streams, marshes and pools.
Major Threats The encroachment and degradation of the forest for agriculture, human settlement and wood is probably adversely affecting this species to some extent, despite the fact that it is somewhat adaptable. Its habitat in the East Usambaras has recently come under serious threat as a result of the activities of illegal gold miners.
Conservation Measures It occurs in several forest reserves, including the Amani Nature Reserve and in the University of Dar es Salaam's nature reserve at Mazumbai. There is a need for improved management and protection of forest reserves in the Usambara Mountains.
Bibliography: Drewes, R.C. and Perret, J.-L. (2000), Harper, E. and Vonesh, J.R. (2003), Howell, K.M. (1993)
Data Providers: Simon Loader, John Poynton, Kim Howell

EN *Phrynobatrachus pakenhami* Loveridge, 1941

Endangered B1ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Tanzania
Current Population Trend: Decreasing



Geographic Range This species is known only from the northern part of Pemba Island, Tanzania, where it has been recorded from three localities: Machengwe Swamp; Wete; and Ngezi Forest Reserve.
Population It is a common species in Ngezi Forest Reserve. It is not clear that it survives elsewhere on the island, although intensive surveys have not yet been carried out.
Habitat and Ecology It is mainly associated with forest fringes and clearings, and has not been found in areas away from the forest. It breeds in pools, marshes and puddles in and near tropical evergreen lowland forest.
Major Threats It is probably greatly reduced in population size because of the almost complete loss of indigenous broadleaf lowland forest in Pemba, largely for agriculture. There has been widespread introduction of clove trees throughout the island, and it seems not to be present in clove thicket. It is now intrinsically at risk because of the small size of its remaining distribution.
Conservation Measures It occurs in the Ngezi Forest Reserve, which protects the last remaining stand of indigenous rainforest on the island. Continued management and protection of this forest reserve is essential to the long-term survival of this species. Further survey work is needed to determine whether the species still survives elsewhere on Pemba.
Notes on taxonomy: It has been suggested that this species is a synonym of *Phrynobatrachus acridoides*, but recent surveys indicate that it differs both in vocalizations and ecology (M. Pickersgill pers. comm.).
Bibliography: Loveridge, A. (1941), Pakenham, R.H.W. (1983)
Data Providers: Martin Pickersgill, Kim Howell

VU *Phrynobatrachus steindachneri* Nieden, 1910

Vulnerable B1ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Cameroon, Nigeria
Current Population Trend: Decreasing

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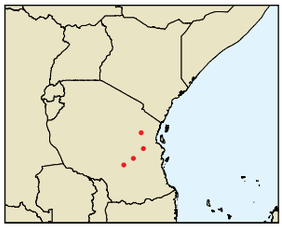
Geographic Range This species is restricted to the mountains of eastern Nigeria and western Cameroon. In Nigeria it is known from the Obudu Plateau, and in Cameroon it occurs in the Bamenda highlands at Mount Oku, Bangwa, Banyo, the Bamboutos Mountains and Foulassi. It occurs up to 2,100m asl on Mount Oku.
Population It is common, even abundant, within its small range.
Habitat and Ecology It is associated with slow-flowing watercourses in montane forests, forest strips, and montane grassland. It can be found in very open situations. It breeds in still water and marshes.
Major Threats It is presumably adversely affected by the ongoing loss of forest and the degradation of montane grassland within its range due to agricultural expansion (particularly overgrazing by livestock), wood extraction, and expanding human settlements.
Conservation Measures A conservation project has been conducted on Mount Oku for several years by BirdLife International, involving community management of the area by local villages. This project needs to take into account the conservation needs of *Phrynobatrachus steindachneri*. The species might also occur in the Bafut-Ngemba Forest Reserve.
Bibliography: Amiet, J.-L. (1971b), Böhme, W. (1975), Gartshore, M.E. (1986), Mertens, R. (1968), Perret, J.-L. (1966), Schiøtz, A. (1966)
Data Providers: Jean-Louis Amiet

VU *Phrynobatrachus uzungwensis* Grandison and Howell, 1984 "1983"

Vulnerable B1ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Tanzania
Current Population Trend: Decreasing

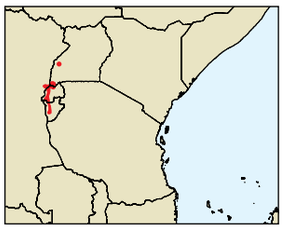


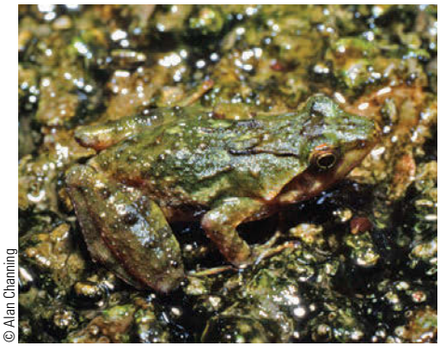
© Michele Menegon

Geographic Range This species is known only the southern and eastern Udzungwa Mountains, northern Uluguru Mountains, and the Nguu Mountains in eastern Tanzania, generally occurring above 900m asl. It presumably occurs in some other mountains of the Eastern Arc range.
Population It is regularly encountered within its small range.
Habitat and Ecology It inhabits submontane and montane forest, where it is associated with mountain streams. Its breeding biology is unknown, though it presumably takes place by larval development in small streams. It has not been found in degraded habitats.
Major Threats It is adversely affected by the loss of forest habitat for agriculture, logging, and human settlements.
Conservation Measures It occurs in the Udzungwa National Park and in the Uluguru North Forest Reserve.
Bibliography: Grandison, A.G.C. and Howell, K.M. (1983), Howell, K.M. (1993), Poynton, J.C. (2003b)
Data Providers: Kim Howell, Simon Loader, Michele Menegon

VU *Phrynobatrachus versicolor* Ahl, 1924

Vulnerable B1ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Burundi, Congo, D.R., Rwanda, Uganda
Current Population Trend: Decreasing



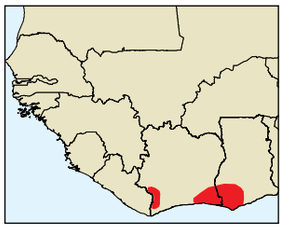


© Alan Channing

Geographic Range This species occurs in eastern Democratic Republic of Congo, western Rwanda, north-western Burundi and south-western Uganda. It probably occurs mainly above 1,500m asl, ranging to at least 2,300m asl.
Population In Uganda, the species is recorded as being common in the Bwindi Impenetrable Forest, but uncommon in Kibale Forest.
Habitat and Ecology It is a leaf-litter species of mountain forest that is particularly associated with swamps and rivulets. The eggs are laid, and the larvae develop, in these waterbodies. It occurs only in undisturbed habitats.
Major Threats Little information is available, though it is likely to be impacted by loss of habitat for agriculture (crops and livestock), wood extraction, and human settlements.
Conservation Measures It has been recorded from Virunga National Park (Democratic Republic of Congo), Kibale National Park (Uganda), and Bwindi Impenetrable National Park (Uganda).
Bibliography: Drewes, R.C. and Vindum, J.V. (1994), Laurent, R.F. (1972), Vonesh, J. (2001)
Data Providers: Robert Drewes, Martin Pickersgill

VU *Phrynobatrachus villiersi* Guibé, 1959

Vulnerable B2ab(iii)
Order, Family: Anura, Petropedetidae
Country Distribution: Côte d'Ivoire, Ghana
Current Population Trend: Decreasing



© Mark-Oliver Rödel

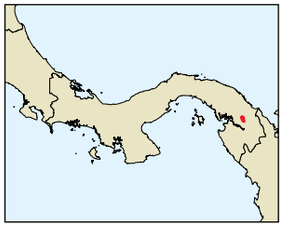
Geographic Range This species is known only from south-western and south-eastern Côte d'Ivoire, and from south-western Ghana. It might occur in Liberia, but there have not been any records so far.
Population It is a very common species in suitable habitat.
Habitat and Ecology It is a species of primary forest, and is not found in secondary forest. It deposits eggs on dried-up puddles just before the rains, and the larvae develop in very small puddles.
Major Threats It is adversely affected by the loss of forest habitat for agriculture, logging, and human settlement.
Conservation Measures It occurs in several protected areas including Taï National Park, Haute Dodo Classified Forest, and Banco National Park in Côte d'Ivoire, and Kakoum National Park in Ghana.
Bibliography: Guibé, J. (1959), Perret, J.-L. (1988a), Rödel, M.-O. (2000b), Rödel, M.-O. *et al.* (2005), Rödel, M.-O. and Branch, W.R. (2002), Rödel, M.-O. and Ernst, R. (2002a), Schiøtz, A. (1964a)
Data Providers: Mark-Oliver Rödel, Arne Schiøtz

PIPIDAE

EN *Pipa myersi* Trueb, 1984

MYERS' SURINAM TOAD

Endangered B1ab(iii)
Order, Family: Anura, Pipidae
Country Distribution: Panama
Current Population Trend: Decreasing



Geographic Range This species has been recorded from the Río Ucurgantí and Río Canglon of Darien Province, Panama, and tentatively from Río Zulia in Norde de Santander, in northern Colombia. It occurs up to 30m asl.
Population There is no information available on the population status of this species.
Habitat and Ecology It is an aquatic species restricted to swamps and other suitable wetlands. The eggs presumably develop on the back of the female, either by larval or direct development.
Major Threats The major threat is habitat loss and destruction of forests surrounding the wetlands (due to logging, subsistence agriculture, and livestock farming); water pollution is also a threat.
Conservation Measures It has been recorded from the Reserva Canclon Hidrologica in Panama, but additional protection of the wetland habitat of this species is needed. Further research is necessary to determine the current population status of this species.

Bibliography: Ibáñez, R. *et al.* (2000), Trueb, L. (1984), Young, B. *et al.* (1999)
Data Providers: Frank Solís, Roberto Ibáñez, César Jaramillo, Querube Fuenmayor

EN *Xenopus gilli* Rose and Hewitt, 1927

CAPE PLATANNA

Endangered B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)
Order, Family: Anura, Pipidae
Country Distribution: South Africa
Current Population Trend: Decreasing

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Geographic Range This species is endemic to extreme south-western South Africa, occurring on the Cape Peninsula and the south-western Cape coast. It is a low-altitude species occurring at 10-140m asl, and always within 10km of the coast.
Population It is very rare and declining.
Habitat and Ecology It is found only in cold, black, acid water in Cape fynbos heathland. It breeds very early in the spring, with *Xenopus laevis* breeding later in the year when it is warmer. It aestivates if waterbodies dry up. It does not tolerate alteration of its habitat, and the larvae are very sensitive to changes in water quality.
Major Threats The main threats are habitat loss due to urbanization and the effects of spreading alien plants. It is also like to be threatened by hybridization with *X. laevis*, and there have been concerns about how many populations of this species represent pure *X. gilli*, but this is not now believed to be particularly significant. *X. laevis* does not favour the acid water that *X. gilli* requires. The liming of water holes for game animals was a threat in the past, but it is not a major factor today.
Conservation Measures It occurs in Cape Peninsula National Park and Agulhas National Park, both of which are relatively well managed, although there is a need to control the spread of invasive plants within these areas.
Bibliography: Baard, E.H.W. (1989), Branch, W.R. (1988), Channing, A. (2001), Evans, B.J. *et al.* (1997), Evans, B.J. *et al.* (1998), Minter, L.R. *et al.* (2004), Picker, M.D. and de Villiers, A.L. (1989), Picker, M.D., Harrison, J.A. and Wallace, D. (1996), Picker, M.D., McKenzie, C.J. and Fielding, P. (1993), Rau, R.E. (1978), Simmonds, M.P. (1985), Tinsley, R.C. and Kobel, H.R. (1996), Vigny, C. (1979)
Data Providers: James Harrison, John Measey, Richard Tinsley, Leslie Minter

CR *Xenopus longipes* Loumont and Kobel, 1991

LAKE OKU CLAWED FROG

Critically Endangered B1ab(v)+2ab(v)
Order, Family: Anura, Pipidae
Country Distribution: Cameroon
Current Population Trend: Stable

© David C. Blackburn

Geographic Range This species is endemic to Lake Oku at 2,200m asl on Mount Oku, western Cameroon. It might occur elsewhere in the Cameroon highlands, but there are few lakes with ecological characteristics similar to Lake Oku.
Population It is abundant in Lake Oku.
Habitat and Ecology Lake Oku is a shallow, eutrophic lake completely surrounded by montane rainforest. This species is entirely water-dependent, quite inept on land, and is the main aquatic vertebrate in the lake, filling the ecological niche of a fish.
Major Threats The main threat to this species would appear to be the risk of introduction of a predatory fish species into Lake Oku, which could wipe out this restricted-range species. Such a scenario is highly plausible given the high protein demands of surrounding communities.
Conservation Measures A conservation project has been conducted on Mount Oku for several years by BirdLife International, involving community management of the area involving the local villages. This project needs to take into account the conservation needs of this species. A captive-breeding programme should be considered in view of the risk of a catastrophic collapse of the population if a predatory fish species is introduced to the lake.
Notes on taxonomy: Uniquely among vertebrates (except *Xenopus ruwenzoriensis*), this is a dodecaploid species, and it is therefore of considerable conservation interest. It was probably formed by both hybridization and polyploidization (Loumont and Kobel 1991).
Bibliography: Gartshore, M.E. (1986), Kobel, H.R., Barundun, B. and Thiebaud, C.H. (1998), Loumont, C. and Kobel, H.R. (1991), Tinsley, R.C. and Kobel, H.R. (1996)
Data Providers: Richard Tinsley, John Measey

RANIDAE

EN *Afrana inyangae* (Poynton, 1966)

INYANGANI RIVER FROG

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Zimbabwe
Current Population Trend: Decreasing

© Alan Channing

Geographic Range This species is known only from the eastern highlands of Zimbabwe, on Inyangani Mountain and in Chimanimani National Park. It occurs above 2,000m asl. It is likely to occur in nearby Mozambique, but there have not so far been any records.
Population There is little recent information on the population status of this species.
Habitat and Ecology It lives in and around rocky, fast-flowing streams in montane grassland. Adults have been found sitting on rock ledges behind waterfalls, or on rocks in the middle of rapids; juveniles frequent more quiet backwaters. The eggs are laid in shallow rocky pools.
Major Threats The high-altitude habitat of this species has been relatively intact up until now, but it might be at risk from wood plantations, overgrazing by livestock, and human settlement.
Conservation Measures It occurs in Chimanimani National Park and adjacent state forests, as well as Rhodes Nyanga National Park.
Bibliography: Channing, A. (2001), Lambiris, A.J.L. (1985b), Lambiris, A.J.L. (1989b), Poynton, J.C. (1966a), Poynton, J.C. and Broadley, D.G. (1985b), Visser, J. and Channing, A. (1997)
Data Providers: John Poynton

EN *Afrana johnstoni* (Gunther, 1894 "1893")

JOHNSTON'S RIVER FROG

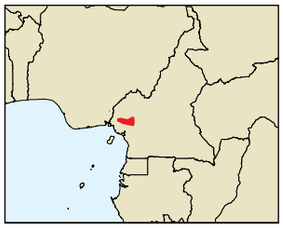
Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Malawi
Current Population Trend: Decreasing

© Colin Tilbury

Geographic Range This species is known only from Mount Mulanje in southern Malawi, where it occurs above 2,000m asl.
Population It is common in its restricted range.
Habitat and Ecology It is a strongly aquatic species associated with pools in cold mountain streams in montane grassland and forest, but it does not survive in secondary habitats. It breeds in streams, and the larvae apparently remain in the water for two years before metamorphosing.
Major Threats Although somewhat protected, the habitat on Mount Mulanje continues to be lost in places as a result of subsistence agriculture, and the extraction of wood (which in turn probably results in the siltation of streams).
Conservation Measures It occurs in the Mulanje Mountain Forest Reserve, which is in need of continued and strengthened management.
Bibliography: Channing, A. (2001), Poynton, J.C. (1966a), Poynton, J.C. and Broadley, D.G. (1985b), Stevens, R.A. (1974), Stewart, M.M. (1967), Visser, J. and Channing, A. (1997)
Data Providers: Lovemore Mazibuko, John Poynton

EN *Amnirana asperrima* (Perret, 1977)

Endangered B2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Cameroon, Nigeria
Current Population Trend: Decreasing

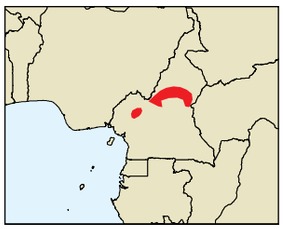


© Mary E. Gartshore

Geographic Range This species is known from a small area of western Cameroon, from the Rumpi Hills to the southern slopes of the Bamileke Plateau, and Nkongsamba, and from the Oban Hills in Nigeria where it has recently been recorded (M. Gartshore pers. comm.). Its altitudinal range is not clear, but it is probably found mainly at intermediate elevations.
Population It is uncommon.
Habitat and Ecology This is a forest species known from hilly country in the foothills of the Cameroonian mountains, and it does not survive in degraded habitats. It lives close to fast-flowing streams, where it breeds; the larvae can be found in calmer areas of these streams.
Major Threats It is adversely affected by the loss of forest habitat for agriculture, logging, and human settlements.
Conservation Measures It occurs in Cross River National Park in Nigeria, but there is a need for improved and strengthened protection of the forest habitat of this species in western Cameroon.
Bibliography: Amiet, J.-L. (1983a), Amiet, J.-L. (1986), Amiet, J.-L. (1989), Herrmann, H.-W. *et al.* (2005), Perret, J.-L. (1977)
Data Providers: Jean-Louis Amiet, Mary Gartshore

VU *Amnirana longipes* (Perret, 1960)

Vulnerable B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Cameroon
Current Population Trend: Decreasing

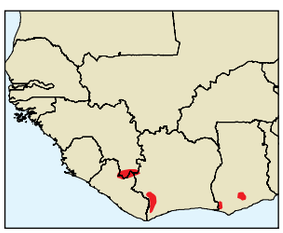


Geographic Range This species is known only from western and central Cameroon on the Bamiléké and Adamawa Plateaus, generally above 1,000m asl. There are records from Bangwa, Ibong, Ndom, Banen, Bagam, Ngaoundere, Tibati, Mount Nganha, and Mayo Darle.
Population There is no information on its population status.
Habitat and Ecology It lives in the submontane zone along water courses bordered by gallery forest. It also occurs at lower elevations in forest outliers. Males sing in chorus in flooded areas in gallery forest, and tadpoles have been found in pools in small streams.
Major Threats It is adversely affected by the loss of forest habitat for agriculture (crops and livestock grazing), logging, and human settlements.
Conservation Measures It is not known to occur in any protected areas. There is a need for improved protection of montane forest habitat at sites where this species is known to occur.

Notes on taxonomy: J.-L. Amiet (pers. comm.) considers this to be a high-altitude savannah form of *Amnirana albolbris*, since there is a gradual transition between the two forms, and there are no call differences.
Bibliography: Böhme, W. and Schneider, B. (1987), Gartshore, M.E. (1986), Joger, U. (1982), Perret, J.-L. (1960), Perret, J.-L. (1966), Perret, J.-L. (1977)
Data Providers: Jean-Louis Amiet

EN *Amnirana occidentalis* (Perret, 1960)

Endangered B2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Côte d'Ivoire, Ghana, Guinea, Liberia
Current Population Trend: Decreasing

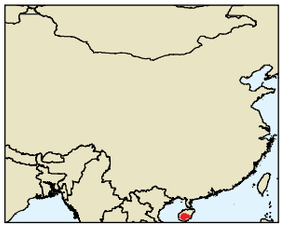


© Piotr Naskrecki

Geographic Range This species is known from several records in West Africa: southern Guinea (Mount Nimba and Ziama Forest); northern Liberia (Mount Nimba); south-western Côte d'Ivoire (Haute Dodo Classified Forest and Taï National Park); and south-western Ghana (Kakoum National Park, Boi Tano Forest Reserve and the Ankasa Conservation Area). Perret (1977) noted its presence in Nigeria, but no localities were given in Perret (1983), so its occurrence in Nigeria requires confirmation.
Population It is a very rare species, and is rarely encountered.
Habitat and Ecology It inhabits lowland forest, and is known only from undisturbed primary forest. It presumably breeds in temporary pools.
Major Threats The major threat to the species is habitat loss and degradation due to agriculture, logging, and human settlement.
Conservation Measures It occurs in a number of protected areas, including Taï National Park (Côte d'Ivoire), Mount Nimba World Heritage Site (Guinea and Liberia), Kakoum National Park (Ghana), Boi Tano Forest Reserve (Ghana) and the Ankasa Conservation Area (ACA), a twin wildlife protected area comprising Nini-Suhien National Park (166km^2) to the north and the Ankasa Forest Reserve (343km^2) to the south (Ghana).
Bibliography: Perret, J.-L. (1960), Perret, J.-L. (1977), Perret, J.-L. (1983), Rödel, M.-O. (2000b), Rödel, M.-O. *et al.* (2005), Rödel, M.-O. and Branch, W.R. (2002)
Data Providers: Mark-Oliver Rödel

EN *Amolops hainanensis* (Boulenger, 1900)

Endangered B2ab(iii,v)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing



© Michael Wai Neng Lau / Kadoorie Farm & Botanic Garden

Geographic Range This species is endemic to south-west and central Hainan Province, China, and has been recorded from 80-960m asl.
Population It is not a common species.
Habitat and Ecology It inhabits hill streams and cascades fringed by forests.
Major Threats The major threat is habitat loss due to subsistence agriculture and the construction of hydroelectric plants. Exploitation for human consumption is also a major threat to this species.
Conservation Measures Much of its existing range is within nature reserves and forest parks. There is a need to control harvest and trade in this species.
Bibliography: Fei, L. *et al.* (1999), MacKinnon, J. *et al.* (1996)
Data Providers: Shi Haitao, Bosco Chan

VU *Amolops jinjiangensis* Su, Yang and Li, 1986

Vulnerable B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing

© Jiang Jianping

Geographic Range This species is only known from Deqing and Zhongdian in north-western Yunnan Province, and Daliangshan in Sichuan Province, China, from 1,020-2,000m asl.
Population It is a common species.
Habitat and Ecology It inhabits hill streams inside forest, and breeds in streams.
Major Threats The major threat to this species is habitat loss due mainly to smallholder farming activities.
Conservation Measures Part of the range of this species falls within the Baimaxueshan National Nature Reserve, which forms part of the Three Parallel Rivers of Yunnan Protected Areas World Heritage Site.
Notes on taxonomy: Zhao and Adler (1993) considered this species to be synonymous with *Amolops liangshanensis* but Liu and Yang (1995) provided evidence to show that both species are valid.
Bibliography: Liu, W. and Yang, D. (2000), Liu, W.-Z. and Yang, D.-T. (1995), MacKinnon, J. *et al.* (1996), Su, C.-Y., Yang, D.-T. and Li, S.-M. (1986), The Comprehensive Scientific Expedition to the Qinghai-Xizang Plateau (1997), Zhao, E.-M. and Adler, K. (1993)
Data Providers: Yang Datong, Wu Guanfu

VU *Amolops kangtingensis* (Liu, 1950)

Vulnerable B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing

© Jiang Jianping

Geographic Range This species is endemic to Kangding County in west Sichuan Province, China. It has been recorded from 2,600-3,500m asl.
Population It is known from only three locations, but is considered to be common at all three.
Habitat and Ecology It inhabits montane streams in forest, and breeds in streams.
Major Threats The major threat is habitat loss due to infrastructure development.
Conservation Measures It is not known whether or not this species occurs in any protected areas, though there are several nature reserves within its range.
Notes on taxonomy: Although Liu (1950) synonymized this species with *Amolops mantzorum* (as *Staurois mantzorum*), he stated that in the wild it was easy to distinguish the two taxa. Wu, Tan and Zhao (1987) resurrected this species based on cytological evidence.
Bibliography: Liu, C.C. (1950), Liu, C.-C. and Hu, S.-Q. (1961), MacKinnon, J. *et al.* (1996), Wu, G.-F., Tan, A.-M. and Zhao, E.-M. (1987), Zhao, E.-M. and Adler, K. (1993)
Data Providers: Wu Guanfu, Zhao Wenge

VU *Amolops loloensis* (Liu, 1950)

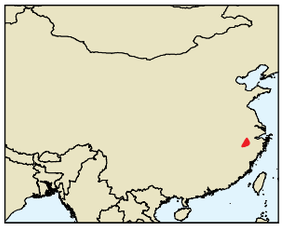
Vulnerable A2ac
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing

© Li Cheng

Geographic Range This species is restricted to Zhaojue, Mianning, Hongya, Luding and Baoxing in southern Sichuan Province, China. It has been recorded from 1,840-3,700m asl.
Population It is known from ten locations. Several populations have been experiencing declines, with one poulation known to have declined by more than 50 per cent.
Habitat and Ecology It inhabits small mountain streams in forests and grasslands, and also breeds in streams.
Major Threats The main threat to this species is continuing infrastructure development for human settlement. There is also significant water pollution from the mining industry.
Conservation Measures Part of the species' range overlaps with Wawushan National Forest Park.
Bibliography: Fei, L. *et al.* (1999), Liu, C.C. (1950), MacKinnon, J. *et al.* (1996)
Data Providers: Fei Liang, Ye Changyuan

VU *Amolops tormotus* (Wu, 1977)

Vulnerable B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing

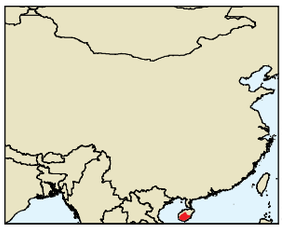


© Li Pipeng

Geographic Range This species is restricted to Huangshan in Anhui Province, and Jiande and Anji counties in Zhejiang Province, China. It has been recorded from 150-700m asl.
Population It is very rare and known from fewer than five locations.
Habitat and Ecology It occurs in hill streams and the surrounding habitats, and breeds in streams. The existence of tadpoles has not been recorded for this species. This is the only amphibian known to make use of ultrasonic communication; males produce diverse bird-like melodic calls with pronounced frequency modulations that often contain spectral energy in the ultrasonic range (Feng *et al.* 2006).
Major Threats The main threat to this species is habitat loss due to agriculture and clear-cutting.
Conservation Measures Part of the range of this species is within Huangshan Scenic Area.
Notes on taxonomy: Tadpoles of this species have never been recorded, and so it has been argued that this form should not be assigned to the genus *Amolops* but instead to *Rana*.
Bibliography: Fei, L. *et al.* (1999), Feng, A.S., Marins, P.M., Xu, C-H., Lin W-Y., Yu, Z-L., Qui, Q., Xu, Z-M. & Shen, J-X. (2006), Huang, M.-H., Cai, C.-M., Jin, Y.-L., Gu, H.-Q., Zhang, S.-D., *et al.* (1990), MacKinnon, J. *et al.* (1996), Zhao, E.-M. (1998)
Data Providers: Gu Huiqing, Zhao Ermi

VU *Amolops torrentis* (Smith, 1923)

Vulnerable B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing



© Peter Paul van Dijk / Conservation International / Darwin Initiative

Geographic Range This species is an endemic of central and south-western Hainan, China, and has been recorded from 80-780m asl.
Population It is not a common species.
Habitat and Ecology It inhabits medium- to large-sized streams, and surrounding riparian habitats. Breeding takes place in streams.
Major Threats The major threat is habitat destruction and degradation due, in particular, to agricultural activities.
Conservation Measures It is present in several protected areas in Hainan (nature reserves and forest parks).
Bibliography: Fei, L. *et al.* (1999), MacKinnon, J. *et al.* (1996)
Data Providers: Michael Wai Neng Lau, Shi Haitao

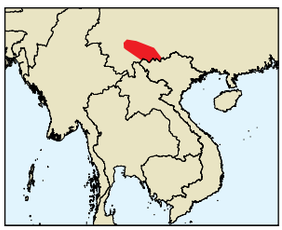
VU *Amolops tuberodepressus* Liu and Yang, 2000

Vulnerable D2
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Stable

Geographic Range This species is restricted to two mountains, Wuliang and Ailao, in Jingdong County, Yunnan Province, China. It has been recorded from 1,000-2,400m asl.
Population It is a very rare species.
Habitat and Ecology It inhabits montane streams in sub-tropical, evergreen, broad-leaved forests, both during the breeding and non-breeding season.
Major Threats There are no known current threats to this species. However, its restricted range makes it more susceptible to stochastic threatening processes.
Conservation Measures It occurs in the Ailaoshan and Wuliangshan National Nature Reserves. There is a need for close population monitoring of this species given its very limited range.
Bibliography: Liu, W. and Yang, D. (2000), MacKinnon, J. *et al.* (1996), Yang, D.-T. (1991b)
Data Providers: Yang Datong, Lu Shunqing

EN *Chaparana unculuanus* (Liu, Hu and Yang, 1960)

Endangered A2ad
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing

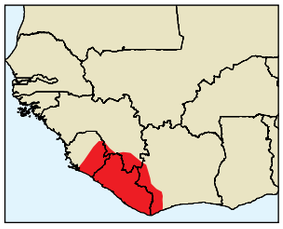


© Wen-hao Chou

Geographic Range This species is restricted to central and southern Yunnan Province, China, from 1,650-2,200m asl. It presumably occurs in northern parts of Southeast Asia, in particular in northern Viet Nam, but this has not yet been confirmed.
Population It is a rare species, but its habits make it hard to find. It appears to be in serious decline.
Habitat and Ecology It inhabits fast-flowing hill streams and riparian habitats in forests and grassland, as well as drainage ditches by roadsides, and ponds. Breeding takes place in water.
Major Threats Over-collecting for food is a serious threat to this species; habitat loss due to subsistence agriculture and wood extraction is an additional threat.
Conservation Measures The range of this species includes several protected areas, including Wuliangshan and Huanglianshan National Nature Reserves. There is a need to control harvest and trade in this species.
Bibliography: Fei, L. *et al.* (1999), Liu, C.-C., Hu, S.-Q. and Yang, F.H. (1960), MacKinnon, J. *et al.* (1996), Yang, D.-T. (1991b), Ye, C.-Y, Fei, L. and Hu, S.Q. (1993)
Data Providers: Wu Guanfu, Lu Shunqing, Yang Datong, Fei Liang

VU *Conraua alleni* (Barbour and Loveridge, 1927)

Vulnerable B2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Côte d'Ivoire, Guinea, Liberia, Sierra Leone
Current Population Trend: Decreasing



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Geographic Range This species ranges from northern Sierra Leone, through southern Guinea and Liberia to south-western Côte d'Ivoire. It occurs from low altitudes to more than 1,000m asl. Records from eastern Ghana and Togo refer to *Conraua derooi*. A record from eastern Côte d'Ivoire refers to a juvenile *Hoplobatrachus occipitalis*.
Population It is extremely localized, but abundant wherever it occurs.
Habitat and Ecology It lives in or near fast-flowing permanent streams in rainforest in hilly country. It is forest-dependent, and is not found in open areas. It breeds in streams and the tadpoles are usually found in the slow-flowing or nearly stagnant sections of streams.
Major Threats It is adversely affected by the loss of forest habitat for agriculture, logging, and human settlements. In certain places its habitat is also being lost due to mining, for instance at Simandou in the Pic de Fon Classified Forest in Guinea, and Mount Nimba in Guinea and Liberia. Mining is probably also leading to the pollution of breeding streams.
Conservation Measures It occurs in several protected areas, including Pic de Fon Classified Forest (Guinea), Haute Dodo Classified Forest and Mont Sangbe National Park (Côte d'Ivoire), and the Mount Nimba World Heritage Site (Liberia and Guinea).
Notes on taxonomy: *Conraua alleni* is a species complex (M.-O. Rödel pers. comm.).
Bibliography: Guibé, J. and Lamotte, M. (1958), Lamotte, M. and Perret, J.-L. (1968), Perret, J.-L. (1966), Rödel, M.-O. (2003), Rödel, M.-O. and Agyei, A.C. (2003), Rödel, M.-O. and Bangoura, M.A. (2004), Rödel, M.-O. and Branch, W.R. (2002), Schiøtz, A. (1964a)
Data Providers: Mark-Oliver Rödel, Arne Schiøtz

CR *Conraua derooi* Hulselmans, 1972

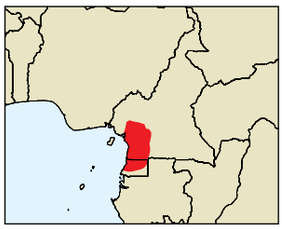
Critically Endangered B2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Ghana, Togo
Current Population Trend: Decreasing

© Annika Hillers

Geographic Range This species was described from Misahohé in western Togo, and all records of *Conraua alleni* from eastern Ghana and Togo refer to this species. It is likely that the species is endemic to the Togo-Volta Highlands of eastern Ghana and western Togo.
Population It was probably once quite abundant, but a recent survey in Ghana failed to find it, suggesting a serious decline. There is no recent information from Togo.
Habitat and Ecology It is a forest-dependent species living in or near fast-flowing water. The tadpoles have been found in streams.
Major Threats Most of the forest habitat within its small range has been lost, and so this species is probably very seriously threatened, if not extinct. Habitat loss is taking place as a result of agricultural expansion, logging, and human settlements. Stream sedimentation might be having an affect on breeding.
Conservation Measures There are some small protected areas within the range of the species, including Kiabobo National Park in Ghana, but it has not been confirmed from any of these. Improved protection and maintenance of the remaining habitat in the range of the species is recommended. Surveys are urgently needed to determine whether or not this species survives. Captive breeding might need to be considered.
Bibliography: Hughes, B. (1988), Hulselmans, J.L.J. (1971), Lamotte, M. and Perret, J.-L. (1968), Rödel, M.-O. and Agyei, A.C. (2003), Schiøtz, A. (1964a)
Data Providers: Mark-Oliver Rödel, Arne Schiøtz

EN *Conraua goliath* (Boulenger, 1906) GOLIATH FROG

Endangered A2d+3d
Order, Family: Anura, Ranidae
Country Distribution: Cameroon, Equatorial Guinea
Current Population Trend: Decreasing



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Geographic Range The world's largest frog is known only from south-western Cameroon from the region of Nkongsamba, and south to Monte Alen in mainland Equatorial Guinea. It is generally found at low to medium altitudes, below 1,000m asl.
Population It has decreased significantly as a result of harvesting for food.
Habitat and Ecology It lives in or near fast-flowing rivers and streams in rainforest, preferring warmer, slower rivers than *Conraua robusta*, though faster rivers than *C. crassipes*. It can survive in secondary habitats close to rivers, as well as in forest, but not in very heavily degraded areas (farm bush). Breeding occurs in streams and small rivers. The young rest by flowing water during the day. Around Nkongsamba in western Cameroon, *C. goliath*, *C. crassipes* and *C. robusta* occur sympatrically.
Major Threats The most important threat to this species is hunting for food, and new, sophisticated traps for catching this species are now being used in the Nkongsamba area of Cameroon. Animals are also imported from Cameroon to the USA on a regular basis by animal dealers for zoos, the pet trade and competitive frog races (one estimate of this trade is 300 animals per year). It is also adversely affected by the loss of forest habitat for agriculture, logging, and human settlements, as well as by sedimentation of its breeding streams.
Conservation Measures It presumably occurs in several protected areas, and is confirmed from Monte Alen National Park in Equatorial Guinea. Measures are needed to work with local communities to manage the harvest at sustainable levels. A captive-breeding programme should be considered.
Bibliography: Amiet, J.-L. (1972d), Amiet, J.-L. (1975), Amiet, J.-L. (1986), Amiet, J.-L. and Perret, J.-L. (1969), De la Riva, I. (1994b), Gewalt, W. (1977), Herrmann, H.-W. *et al.* (2005), Joger, U. (1982), Lamotte, M. and Perret, J.-L. (1968), Lamotte, M., Perret, J.-L. and Dzieduszycka, S. (1959), Lasso, C.A. *et al.* (2002), Pawley, R. (1987), Perret, J.-L. (1957a), Perret, J.-L. (1960), Perret, J.-L. (1966), Perret, J.-L. (1987), Perret, J.-L. and Mertens, R. (1957), Sabater-Pi, J. (1962), Sabater-Pi, J. (1967), Sabater-Pi, J. (1985)
Data Providers: Jean-Louis Amiet

VU *Conraua robusta* Nieden, 1908

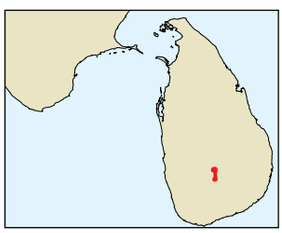
Vulnerable B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Cameroon, Nigeria
Current Population Trend: Decreasing

© Mary E. Gartshore

Geographic Range This species occurs in the foothills of the main mountain range in western Cameroon (excluding Mount Cameroon). It is known from Nkongjock, Nta Ali, the Bamileke Plateau, Mount Manenguba, Mount Kupe, and the Rumpi Hills. It has recently been recorded from the Oban Hills in Nigeria (M. Gartshore pers. comm.). Its altitudinal range is 750-1,400m asl.
Population It is an uncommon species.
Habitat and Ecology It lives in and near cold, fast-flowing streams, in grassland as well as forest. It does not require tree cover, and in Nkongsamba it can be found in urban areas. It prefers colder, faster water than does *Conraua goliath*, and the tadpoles live in fast, even torrential, water. Around Nkongsamba, *Conraua robusta*, *C. crassipes* and *C. goliath* occur sympatrically.
Major Threats This large species is harvested for food and is considered a delicacy. Despite being somewhat adaptable, it is presumably adversely affected by the loss of forest habitat for agriculture, logging, and human settlements; the sedimentation of its breeding streams is probably also having a detrimental impact on the species.
Conservation Measures It occurs in the Cross River National Park in Nigeria. There is a need to work with local communities to ensure that the harvest of this species from the wild is managed sustainably.
Bibliography: Amiet, J.-L. (1972d), Amiet, J.-L. (1975), Amiet, J.-L. (1978b), Amiet, J.-L. (1983a), Böhme, W. (1975), Gartshore, M.E. (1986), Herrmann, H.-W. *et al.* (2005), Lamotte, M. and Perret, J.-L. (1968), Lawson, D.P. (1993), Mertens, R. (1968), Perret, J.-L. (1966)
Data Providers: Jean-Louis Amiet, Mary Gartshore

EN *Fejervarya greenii* (Boulenger, 1904)

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

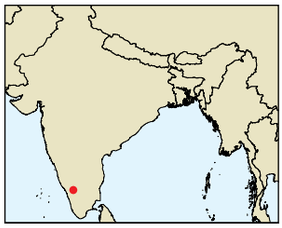


© Miguel Vences

Geographic Range This species is restricted to the central hills of Sri Lanka. Krishnamurthy and Shakunthala (1993) reported it from Karnataka, India. Dutta (1997) rejected the species' presence in India, but notes that there is an unspecified form of *Fejervarya* in Karnataka and Maharashtra that is closely related to *F. greenii* (S. Dutta pers. comm.). It has an altitudinal range of 1,700-2,135m asl.
Population It is a rare species.
Habitat and Ecology It is associated with wetland habitats (including riparian vegetation) within montane tropical moist forest, and is not present in modified habitats (since there are only pockets of natural habitat within these). Adults are both aquatic and terrestrial, and may be found under grass tussocks. Larvae are present in shallow, vegetated, slow-flowing waters and marshes.
Major Threats The loss of forest habitat through conversion to cultivated land (tea plantations), pollution (principally by agrochemicals), desiccation of wetlands and forest fires in Horton Plains, and predation by introduced trout (*Salmo* sp.) are the main threats to this species.
Conservation Measures It has been recorded from Horton Plains National Park, Agra-Bopats Forest Reserve, Pattipola Forest Reserve and the Hakgala Strict Nature Reserve.
Bibliography: Dubois, A. (1984c), Dubois, A. and Ohler, A. (2000), Dutta, S.K. (1997), Dutta, S.K. and Manamendra-Arachchi, K. (1996), Krishnamurthy, S.V. and Sakunthala, K. (1993), Weerawardhena, S.R. (2001), Weerawardhena, S.R. and Costa, H.H. (1998a), Weerawardhena, S.R. and Costa, H.H. (1998b)
Data Providers: Kelum Manamendra-Arachchi, Anslem de Silva

CR *Fejervarya murthii* (Pillai, 1979)

Critically Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing

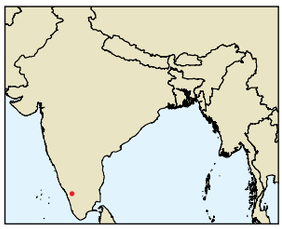


Geographic Range This species is known with certainty only from the type series collected from Naduvattom, Tamil Nadu (not Kerala as stated in the type description) in the southern Western Ghats. It is a montane species found at elevations of around 2,200m asl.
Population There is no information available on its population status.
Habitat and Ecology This little-known species of tropical moist forest is generally terrestrial in nature. It presumably breeds in water by larval development.
Major Threats This species is threatened by a continuing loss of habitat caused by the conversion of forest to agricultural use and for commercial timber plantations.
Conservation Measures The species appears to have been recorded from the Nilgiri Biosphere Reserve, and it is protected by national legislation. Further systematic work and field studies are urgently required to determine the current taxonomic and population status of this species.

Notes on taxonomy: This species is known only from the type series, and further taxonomic studies are required.
Bibliography: Biju, S.D. (2001), Daniels, R.J.R. (1997), Dubois, A. and Ohler, A. (2000), Dutta, S.K. (1997), Pillai, R.S. (1979)
Data Providers: S.D. Biju, Sushil Dutta, M.S. Ravichandran

EN *Fejervarya nilagirica* (Jerdon, 1853)

Endangered B2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing



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Geographic Range This species is known with certainty from only two populations, in Wayanad in Kerala and the Nilgiris in Tamil Nadu, in the southern Western Ghats of India. Reports of this species from Maharashtra require further confirmation and are not included as part of this assessment. It has been recorded from 800-1,600m asl.
Population It is a locally common species.
Habitat and Ecology It is associated with stagnant and running waters in disturbed forest and cultivated areas adjacent to forests, and is not found in cultivated areas away from the forest. Breeding takes place in both artificial and natural ponds. There is little information on its larval ecology.
Major Threats The main threats to this species are continuing habitat loss due to agriculture (involving crops, livestock farming, and plantations) and human settlement.
Conservation Measures It is present in the Nilgiri Biosphere Protected Area, and is protected by national legislation. It is included as part of ongoing field studies from 1998 onwards (S.D. Biju pers. comm.).
Bibliography: Biju, S.D. (2001), Chanda, S.K. (2002), Dubois, A. (1984c), Dubois, A. and Ohler, A. (2000), Dutta, S.K. (1997), Jerdon, T.C. (1853), Padhye, A.D., Mahabaleshwarkar, M. and Ghate, H.V. (2002)
Data Providers: S.D. Biju, Sushil Dutta, Robert Inger

VU *Huia masonii* (Boulenger, 1884)

JAVAN TORRENT FROG

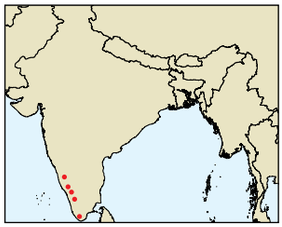
Vulnerable B2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Indonesia
Current Population Trend: Decreasing

© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is endemic to Java, Indonesia. From current knowledge it occurs only in west and central Java from 50-1,200m asl.
Population It is a common species in its specialized habitat.
Habitat and Ecology It is restricted to unpolluted, clear, fast-flowing streams and torrents, in forests and in somewhat more open areas. Breeding takes place in streams.
Major Threats Soil erosion and the sedimentation of streams, as well as agro-chemical pollution, are the main threats to this species. These threats, which result from habitat modification taking place around streams, are leading to a rapid loss of suitable habitats within its range.
Conservation Measures It is found in Halimun National Park, Ujong Kulon National Park, Gunung Gede Pangrango National Park, and Dieng Nature Reserve.
Bibliography: Iskandar, D.T. (1998), Iskandar, D.T. and Colijn, E. (2000)
Data Providers: Djoko Iskandar, Mumpuni

EN *Indirana brachytarsus* (Günther, 1876)

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing



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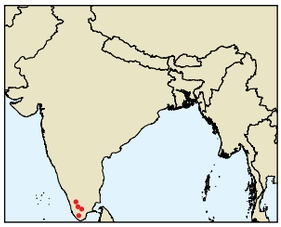
Geographic Range This species is endemic to the southern Western Ghats of India. Populations occur at Ponmudi, Periyar Tiger Reserve and Wayanad Wildlife Sanctuary (in Kerala), Kalakad-Mundanthurai Tiger Reserve (in Tamil Nadu) and Coorg and Kudremukh National Park (in Karnataka). It has an altitudinal range of 800-1,200m asl.
Population It is locally common.
Habitat and Ecology It is a terrestrial species associated with hill streams in wet evergreen and semi-evergreen tropical forests and swamps. It may be found at forest edges, but not in agricultural land. Breeding takes place on wet rocks, and the larvae are found on wet rock surfaces next to streams.
Major Threats The main threat to this species is the loss of forested areas following conversion to agricultural land (including coffee, tea and cardamom plantations), and harvesting of wood and timber by local people for subsistence purposes.
Conservation Measures It has been recorded from Kudremukh National Park (in Karnataka), Kalakad-Mundanthurai Tiger Reserve (in Tamil Nadu) and Wayanad Wildlife Sanctuary and Periyar Tiger Reserve (in Kerala). It has been included in field studies by Ravichandran (1995-1997) and Biju (2000-present). It is protected by national legislation.
Notes on taxonomy: A number of specimens referred to this species in the past are likely to have been misidentified (S.D. Biju pers. comm.).
Bibliography: Biju, S.D. (2001), Dutta, S.K. (1997), Günther, A. (1876), Inger, R.F. *et al.* (1984), Reddy, A.H.M. *et al.* (2003)
Data Providers: S.D. Biju, Sushil Dutta, Robert Inger

EN *Indirana diplosticta* (Günther, 1875)

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing



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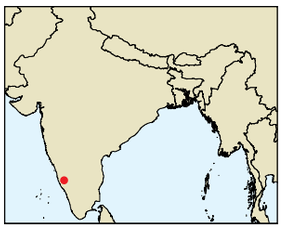
Geographic Range This species is endemic to the southern Western Ghats of India. It is known from Srivilliputhur, Indira Ghandi National Park, Kalakad-Mundanthurai Tiger Reserve (in Tamil Nadu), and Idukki Wildlife Sanctuary, Ponmudi Hills and Athirimala (all in Kerala). It has an altitudinal range of 600-1,000m asl.
Population It is locally uncommon, and believed to be declining.
Habitat and Ecology It is a terrestrial species associated with hill streams in primary wet evergreen and semi-evergreen tropical forests and swamps, and is not present in secondary forest or modified habitats. Breeding takes place on wet rocks, and the larvae are found on wet rock surfaces next to streams.
Major Threats The main threat is the loss of forested areas through conversion to agricultural land (including coffee and tea plantations), and the harvesting of wood and timber by local people for subsistence purposes. Road construction, especially in Ponmudi and surroundings, is an additional threat to the habitat of this species.
Conservation Measures It has been recorded from Kalakad-Mundanthurai Tiger Reserve and Indira Ghandi National Park (in Tamil Nadu), and Idukki Wildlife Sanctuary (in Kerala). It has been included in field studies by Ravichandran (1995-1997) and Biju (1997-present). It is protected by national legislation.
Bibliography: Biju, S.D. (2001), Dutta, S.K. (1997), Günther, A. (1876), Inger, R.F. *et al.* (1984), Ravichandran, M.S. (1996a), Vasudevan, K., Kumar, A. and Chellam, R. (2001)
Data Providers: S.D. Biju, Sushil Dutta, Robert Inger, M.S. Ravichandran

CR *Indirana gundia* (Dubois, 1986)

Critically Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing

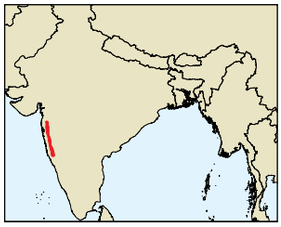


© K. Jayaram

Geographic Range This species is known only from the type locality: "Gundia, forêt de Kemphole, à l'ouest de Sakleshpur, Karnataka, Inde" in the Western Ghats of India. The type locality is at an elevation of around 200m asl.
Population There is no information on the population status of this species.
Habitat and Ecology It is a terrestrial species of moist tropical forest. Breeding takes place on wet rocks, and the larvae are found on wet rock surfaces next to streams.
Major Threats The species is threatened by habitat loss caused by intensive livestock production, harvesting of wood and timber by local people, road construction, and the development of tourism facilities.
Conservation Measures It is not known to be present in any protected areas. Further surveys are required at the type locality, and within suitable nearby forests, to determine the range and population status of this species. It is protected by national legislation.
Bibliography: Biju, S.D. (2001), Chanda, S.K. and Deuti, K. (1997), Dubois, A. (1986), Dutta, S.K. (1997)
Data Providers: S.D. Biju, Sushil Dutta, Robert Inger

VU *Indirana leithii* (Boulenger, 1888)

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing

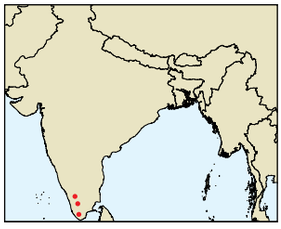


© S.D. Biju

Geographic Range This taxon is known with certainty only from the Western Ghats of Maharashtra State in India. All additional records are believed to refer to other taxa. Further taxonomic studies are needed to clarify the precise identity of specimens currently assigned to this species collected outside Maharashtra State. It has an altitudinal range of 400-1,200m asl.
Population It is locally common, even in degraded forest areas.
Habitat and Ecology It is a terrestrial species associated with leaf-litter of moist, tropical, semi-evergreen forest. It is also found in degraded forest. Breeding takes place on wet rocks, and the larvae are found on moist surfaces next to streams.
Major Threats It is mostly threatened by the conversion of forested land to intensive agricultural use. Harvesting of wood for subsistence use by local people and road construction are also threats. The type locality (Matheran) is threatened by tourism development.
Conservation Measures It has been recorded in the following Wildlife Sanctuaries of Maharashtra State: Bhimashankar, Chandoli, Kalsubai Harishchandra, Koyna National Park, and Phansad. It is protected by national legislation.
Bibliography: Biju, S.D. (2001), Dutta, S.K. (1997), Padhye, A.D. and Ghate, H.V. (2002), Radhakrishnan, C. (1996)
Data Providers: S.D. Biju, Sushil Dutta, Anand Padhye, Robert Inger

EN *Indirana leptodactyla* (Boulenger, 1882)

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing



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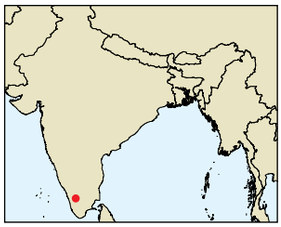
Geographic Range This species is endemic to the Western Ghats of India. It is known from the Agasthyamala Hills, Kalakkad-Mundanthuai, Athirimala, Periyar Tiger Reserve (a recent collection by S.D. Biju) and Eravikulam National Park (in Kerala) and the Anamalai Hills of Parambikulam and Indira Ghandi National Park (in Kerala and Tamil Nadu). It occurs at elevations above 800m asl.
Population It is locally uncommon.
Habitat and Ecology It is a terrestrial species associated with the leaf-litter substrate of moist tropical semi-evergreen forest, and it is not known from modified habitats. Breeding takes place on wet rocks, and the larvae are found on wet rock surfaces next to streams.
Major Threats The major threat is clearance of forested land for agricultural use (including tea plantations), timber plantations, and the harvesting of wood by local people for subsistence use.
Conservation Measures It has been recorded from the protected areas of Athirimala Wildlife Sanctuary, Periyar Tiger Reserve, Parambikulam Wildlife Sanctuary and Eravikulam National Park (all in Kerala), and Indira Gandhi National Park and Kalakkad-Mundanthuai Wildlife Sanctuary (both in Tamil Nadu). It is protected by national legislation.
Bibliography: Biju, S.D. (2001), Daniels, R.J.R. (1997), Dutta, S.K. (1997), Vasudevan, K., Kumar, A. and Chellam, R. (2001)
Data Providers: S.D. Biju, Sushil Dutta

CR *Indirana phrynoderma* (Boulenger, 1882)

Critically Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing



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Geographic Range This species is known only from a restricted area in the Anamalai Hills of the Western Ghats in India. It is found at an elevation of around 500m asl. It has also been reported from Maharashtra, but this record requires further investigation and is not included in this account.
Population It is very rare and is known to be declining at its only known site.
Habitat and Ecology A terrestrial species associated with leaf-litter in tropical moist forest. It presumably breeds like other members of the genus, with larvae being found on wet rocks next to streams.
Major Threats The major threat to this species is habitat loss due to subsistence wood collecting.
Conservation Measures The species is present in Indira Ghandi National Park. It is included as part of field studies by Biju (1997) and Vijaykumar (1999 and ongoing). It is protected by national legislation.
Bibliography: Biju, S.D. (2001), Boulenger, G.A. (1882a), Dubois, A. (1986), Dutta, S.K. (1997), Padhye, A.D. and Ghate, H.V. (2002)
Data Providers: S.D. Biju, S.P. Vijayakumar, Sushil Dutta

VU *Ingerana liui* (Yang, 1983)

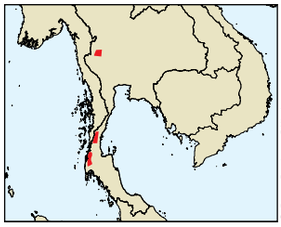
Vulnerable B2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing

© Wen-hao Chou

Geographic Range This species is known from southern Yunnan Province (Mengla, Jinghong and Cangyuan Counties) in China. It is expected to occur in adjacent Lao People's Democratic Republic and Myanmar, but due to lack of survey effort and taxonomic problems it has not yet been recorded. It occurs at elevations of 550-760m asl.
Population This is a rare species that is very difficult to find.
Habitat and Ecology It occurs in or near streams in forested areas. It uses soft, muddy soil for its nests. The eggs are laid in a hole in the ground covered with leaves, and are guarded by the male. It breeds by direct development.
Major Threats Habitat destruction and degradation is the major threat to this species, in particular due to agriculture, and infrastructure development for tourism.
Conservation Measures It occurs in the Xishuagbanna National Nature Reserve and in the Xishuangbanna Botanical Garden of the Chinese Academy of Sciences.
Notes on taxonomy: This species is sometimes placed in the genus *Liurana* (see Fei *et al.* 1999). The taxonomy of this species is unclear at present; it might be a synonym of a Southeast Asian species.
Bibliography: Fei, L. *et al.* (1999), MacKinnon, J. *et al.* (1996), Yang, D.-T. (1983), Yang, D.-T. (1991b)
Data Providers: Yang Datong, Annemarie Ohler, Lu Shunqing

VU *Ingerana tasanae* (Smith, 1921)

Vulnerable B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Thailand
Current Population Trend: Decreasing

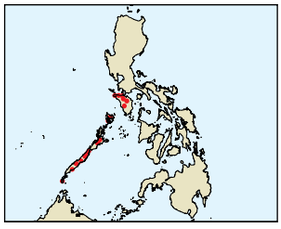


© Peter Paul van Dijk / Conservation International / Darwin Initiative

Geographic Range This species is known from five locations in Thailand: Tasan (in Chumphon Province); Mamoh and Khlong Naka Wildlife Sanctuary (in Renong Province); Khlong Saeng National Park (in Surat Thani Province); and Khaolak Lamru National Park (in Phagnga Province), near the Isthmus of Kra. One recent record is from Tong Pha Phume in Kanchanaburi Province further north in western Thailand (Wichase Khonsue pers. comm.). Possible records from Phuket (P. van Dijk pers. comm.) remain to be verified. It probably occurs in southern Tenasserim (Myanmar), but this has not yet been confirmed. It has been recorded at around 1,000m asl.
Population It is an uncommon species.
Habitat and Ecology It lives in primary rainforest near streams. It has also been observed on near-vertical bedrock in the spray zone of rainforest waterfalls. It presumably breeds by direct development, like other members of its genus.
Major Threats The major threat is loss of forest habitat due to subsistence wood collection, agriculture, and human settlement.
Conservation Measures It occurs in Khlong Naka Wildlife Sanctuary, Khlong Saeng Wildlife Sanctuary and Khaolak Lamru National Park. The species is fully protected from exploitation under Thailand's WARPA law.
Bibliography: OEPP - Office of Environmental Planning and Policy [of Thailand] (1997), Smith, M.A. (1930), Taylor, E.H. (1962)
Data Providers: Yodchaiy Chuaynkern, Wichase Khonsue, Tassanee Eamkamon

VU *Limnonectes acanthi* (Taylor, 1923)

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing

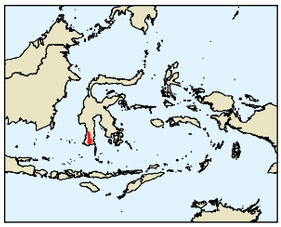


© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is endemic to the Philippine islands of Balabac, Busuanga, Culion and Palawan. At present, the population on Mindoro is also attributed to this species. It probably occurs more widely than current records suggest, especially in areas between known sites on Palawan.
Population It is a common species.
Habitat and Ecology It inhabits streams, rivers and pools in lower montane and lowland forests. Eggs are deposited on rocks or vegetation beside rivers and streams usually above water. It is somewhat adaptable, especially to modified wetland habitats.
Major Threats Threats include deforestation due to agriculture, and the pollution of streams and rivers from agricultural pesticides, herbicides, and mine-tailings. Harvesting for human subsistence is a possible threat.
Conservation Measures There remains a need for much improved protection of the remaining rainforest habitats on Palawan, especially riverine habitats and gallery forests. Conservation measures must include the regulation and proper disposal of pesticides and herbicides. Human exploitation of this species needs to be investigated to determine if this activity needs to be regulated.
Notes on taxonomy: Taxonomic studies are needed to determine the status of the various populations of this species.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Brown, W.C. and Alcala, A.C. (1955), Dubois, A. (1992), Emerson, S.E., Inger, R.F. and Iskandar, D. (2000), Frost, D.R. (1985), Inger, R.F. (1958), Inger, R.F. (1966), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

EN *Limnonectes arathooni* (Smith, 1927)

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Indonesia
Current Population Trend: Decreasing

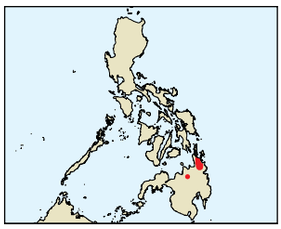


© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is known only from Mount Lompobatang and Mount Latimojong, in south-western Sulawesi, Indonesia, above 1,200m asl.
Population It is an uncommon species.
Habitat and Ecology It lives in undisturbed highland forest, usually close to small rivers and streams, and breeds on land. The eggs are laid on the ground, where they are guarded by the male. The larvae hatch on land and slide and tumble downhill into slow- to medium-flowing streams, where they develop further.
Major Threats The main threat is forest clearance for smallholder farming, which has resulted in extensive forest loss on mountain slopes within its range, and the drying up of the streams on which the species depends.
Conservation Measures It is found in the Gunung Latimojong Nature Reserve and Gunung Lompobatang Protection Forest. There is a need for improved habitat protection throughout its range.
Bibliography: Brown, R.M. and Iskandar, D.T. (2000), Iskandar, D.T. and Tjan, K.N. (1985)
Data Providers: Djoko Iskandar, Mumpuni, Rafe Brown

VU *Limnonectes diuatus* (Brown and Alcala, 1977)

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing



Geographic Range This species is recorded from the Diuata Mountains and Mount Kitanglade, in Mindanao, in the Philippines. It probably occurs more widely than current records suggest, especially in areas between known sites.
Population It is a common species.
Habitat and Ecology It inhabits streams and rivers in lower montane and lowland forests. It presumably breeds by larval development in streams.
Major Threats Threats to this species include deforestation due to agriculture, and the pollution and siltation of streams and rivers from agricultural pesticides, herbicides, and mine tailings. Harvesting for human subsistence is a possible threat.
Conservation Measures There remains a need for much improved protection of the remaining rainforest habitats on Mindanao, especially riverine habitats and gallery forests. Conservation measures must include the regulation and proper disposal of pesticides and herbicides. Human exploitation of this species needs to be investigated to determine if this activity needs to be regulated.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Brown, W.C. and Alcala, A.C. (1977), Dubois, A. (1992), Emerson, S.E., Inger, R.F. and Iskandar, D. (2000), Frost, D.R. (1985), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

VU *Limnonectes fragilis* (Liu and Hu, 1973)

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing

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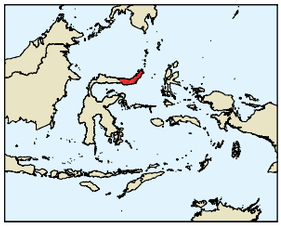
Geographic Range This species is known from hilly areas in central and south-western Hainan, China, from 290-1,000m asl.
Population It is not a common species.
Habitat and Ecology It inhabits small, low-gradient streams, seepages and marshes in forested areas, and breeds in streams.
Major Threats The major threat is habitat loss, in particular due to agriculture and infrastructure development.
Conservation Measures It is present in several protected areas on the island.
Bibliography: Fei, L. *et al.* (1999), Liu, C.-C., Hu, S.-Q. and Fei, L. (1973)
Data Providers: Michael Wai Neng Lau, Zhao Ermi, Shi Haitao

VU *Limnonectes heinrichi* (Ahl, 1933)

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Indonesia
Current Population Trend: Decreasing

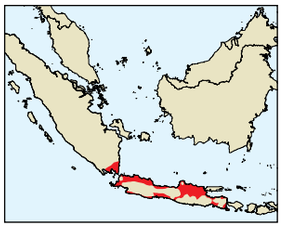


Geographic Range This species is endemic to the province of North Sulawesi, in Indonesia. It is a lowland species occurring below 600m asl.
Population It is an uncommon species, and only a few specimens have been collected.
Habitat and Ecology It lives near medium- to fast-flowing streams in forest. It can survive in secondary forest provided there is suitable canopy cover. It breeds in streams.
Major Threats The primary threat is forest clearance due to smallholder farming activities. It is also occasionally harvested for food.
Conservation Measures It occurs in the Bogani Nani Wartabone National Park. Further research is needed to determine the population status of this species, and the degree to which it is being harvested for food.
Notes on taxonomy: This species is part of the *Limnonectes modestus* complex (D. Iskandar pers. comm.).
Bibliography: Iskandar, D.T. and Tjan, K.N. (1985)
Data Providers: Djoko Iskandar, Mumpuni

VU *Limnonectes macrodon* (Duméril and Bibron, 1841)

FANGED RIVER FROG

Vulnerable B2ab(iii,iv,v)
Order, Family: Anura, Ranidae
Country Distribution: Indonesia
Current Population Trend: Decreasing

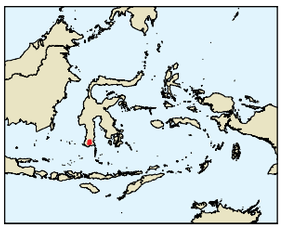


Geographic Range This species is found throughout Java and Lampung Province in the south of Sumatra, Indonesia. It occurs up to at least 700m asl.
Population Although formerly common, this species is now generally considered to be uncommon, though not rare.
Habitat and Ecology It inhabits forested areas near streams. It can survive in secondary forest where suitable canopy cover remains. Breeding takes place in streams.
Major Threats The major threats to this species are habitat destruction (due to agriculture and subsistence wood collection), and water pollution. It is highly exploited as a food source, and animals from eastern Java are found in international trade.
Conservation Measures It occurs in Ujung Kulon National Park on Java. The harvest of this species from the wild needs to be managed in a sustainable manner.

Notes on taxonomy: This species is here considered to be restricted to Java and Sumatra. Records from mainland Southeast Asia are referred to *Limnonectes blythii*. Records of this species from the Andaman Islands in India belong to an undescribed species (I. Das pers. comm.). An old record from Sikkim in north-east India cannot be traced to a specimen and is not considered here to belong to this species (I. Das pers. comm.).
Bibliography: Chanda, S.K. (1986), Dutta, S.K. (1997), Iskandar, D.T. (1998)
Data Providers: Djoko Iskandar, Mumpuni, Indraneil Das, Tej Kumar Shrestha, Annemarie Ohler

EN *Limnonectes microtympanum* (van Kampen, 1909)

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Indonesia
Current Population Trend: Decreasing

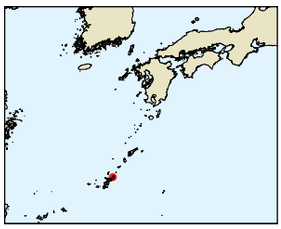


© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is known only from Mount Lompobatang in south-west Sulawesi, Indonesia. It lives above 1,000m asl.
Population It is a common species within its restricted range.
Habitat and Ecology It lives in and around streams in montane forest, and it is not known whether or not it can live in disturbed forest. Breeding takes place in streams.
Major Threats It is threatened by forest loss caused by the expansion of smallholder farming.
Conservation Measures It occurs in Gunung Lompobatang Natural Reserve.
Notes on taxonomy: This species is part of the *Limnonectes modestus* complex (D. Iskandar pers. comm.).
Bibliography: Iskandar, D.T. and Tjan, K.N. (1985)
Data Providers: Djoko Iskandar, Mumpuni

EN *Limnonectes namiyei* Stejneger, 1901

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Japan
Current Population Trend: Decreasing

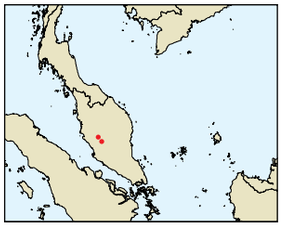


Geographic Range This species is endemic to Japan and is found only on Okinawa-jima.
Population It used to be a common species, but it has declined considerably.
Habitat and Ecology It inhabits upstream regions surrounded by primary broad-leaved evergreen forest, where it breeds in streams. It preys mainly on crustaceans and earthworms.
Major Threats Until the early 1970s this species ranged over nearly the entire northern half of the island. However, recent deforestation accompanied by road and dam construction in its original range has drastically reduced its habitat. It has also been impacted by invasive mongooses.
Conservation Measures It has been designated a natural monument by the Okinawa Prefecture and is totally protected. However, there remains a need for improved protection of the habitat of this species in northern Okinawa.

Bibliography: Maeda, N. and Matsui, M. (1999), Ota, H. (2000d), Sengoku, S. *et al.* (1996)
Data Providers: Yoshio Kaneko, Masafumi Matsui

EN *Limnonectes nitidus* (Smedley, 1932 "1931")

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Malaysia
Current Population Trend: Decreasing



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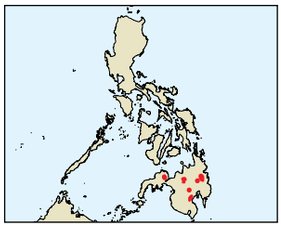
Geographic Range This species is known only from the Cameron Highlands and Fraser's Hills of Pahang, Peninsular Malaysia. Other records are attributable to *L. tweediei* (Dring 1979). The altitudinal range is 900-1,500m asl.
Population It can be locally common within its small range (Leong Tzi Ming pers. comm.).
Habitat and Ecology It is known from montane rainforest and congregates and breeds in permanently wet seepage areas (Dring 1979; Manthey and Grossmann 1997; Chan-ard *et al.* 1999; Leong Tzi Ming pers. comm.).
Major Threats Development of the Cameron Highlands and Fraser's Hills for agriculture (tea and vegetables) and tourism, and plans for industrial estates, pose real threats to this species.
Conservation Measures Although montane forest in this part of Peninsular Malaysia is relatively secure in some places, there is still a need for improved protection of montane forest habitats. Surveys are needed to determine whether *L. nitidus* is genuinely restricted to the Cameron Highlands and the Fraser's Hills.
Notes on taxonomy: This species was previously thought by Berry (1975) and Kiew (1975) to include *Limnonectes tweediei*. However, Dring (1979), Grandison (1982) and Leong Tzi Ming (pers. comm.) consider the two forms to be distinct.
Bibliography: Berry, P.Y. (1975), Chan-ard, T. *et al.* (1999), Dring, J.C.M. (1979), Kiew, B.H. (1975), Leong, T.M. and Lim, K.K.P. (2003), Manthey, U. and Grossmann, W. (1997)
Data Providers: Leong Tzi Ming, Norsham Yaakob

VU *Limnonectes parvus* (Taylor, 1920)

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing



© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is found in several localities on Mindanao Island, in the Philippines. It probably occurs more widely than current records suggest, especially in areas between known sites.
Population It is locally common where present.
Habitat and Ecology It inhabits undisturbed and disturbed streams and rivers in lower montane and lowland forests; it is apparently absent from non-forested areas. Breeding takes place by larval development.
Major Threats Threats include habitat loss due to agriculture, and the pollution of streams and rivers from agricultural toxins and mine-tailings.
Conservation Measures Its range includes a few protected areas, including Mount Malindang National Park and Mount Apo Natural Park. Conservation measures must include the regulation and proper disposal of pesticides and herbicides, and the protection of the remaining rainforest habitats, especially riverine habitats and gallery forests.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Dubois, A. (1992), Emerson, S.E., Inger, R.F. and Iskandar, D. (2000), Frost, D.R. (1985), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

VU *Limnonectes toumanoffi* (Bourret, 1941)

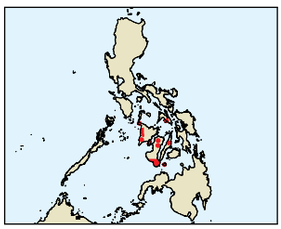
Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Cambodia, Viet Nam
Current Population Trend: Decreasing

Geographic Range This species is known from eastern Cambodia and the neighbouring area of Viet Nam in Ta Dung Mountains, Lam Dong Province (B. Stuart, R. Bain and T. Nguyen pers. comm.). It is found up to 900m asl.
Population This species was originally known only from a single specimen collected in 1941 (Bourret 1942), but it has recently been rediscovered at the type locality and in other localities.
Habitat and Ecology It inhabits small streams in dry evergreen forests. Its breeding habits are unknown, but it is presumably by larval development in forest streams.
Major Threats The major threat is forest loss and degradation as a result of fire, logging, and agricultural clearing; hydrological changes also might be a threat to this species.
Conservation Measures Two of the three known localities are within protected areas. The Ta Dung locality is not in a protected area. More information on the species' population status, habitat requirements and threats are required before conservation actions can be determined.

Bibliography: Bourret, R. (1942), Chanda, S.K. (2002)
Data Providers: Peter Paul van Dijk, Nguyen Quang Truong, Bryan Stuart

VU *Limnonectes visayanus* (Inger, 1954)

Vulnerable B1ab(iii,v)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing



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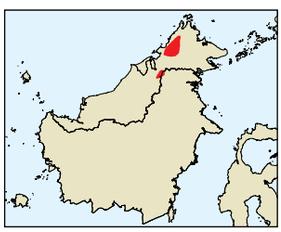
Geographic Range This species is known from Masbate, Cebu, Negros, Guimaras, Panay and Siquijor (the central islands) in the Philippines.
Population It is a common species. It has been observed in good numbers even in disturbed habitats near forest, but might have declined in some areas due to over-harvesting.
Habitat and Ecology It inhabits cool streams and rivers in lower montane and lowland forests. It also thrives in forest edges, agricultural areas and artificial habitats near natural forests. Eggs are deposited outside the water, typically on vegetation or rocks just above the water.
Major Threats Although it is somewhat adaptable, it is threatened by severe deforestation and the pollution of streams and rivers from agricultural effluents and mine-tailings. It is also heavily exploited by humans for food, which is thought to have lead to localized declines.
Conservation Measures Although it is recorded from several protected areas, there is a need for improved protection of the remaining rainforest on the islands, especially riverine habitats and gallery forests. Conservation measures must include the regulation and proper disposal of pesticides and herbicides. There might be a need to work with local communities to ensure that human exploitation of this species is managed sustainably.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Dubois, A. (1992), Emerson, S.E., Inger, R.F. and Iskandar, D. (2000), Frost, D.R. (1985), Inger, R.F. (1966), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Cynthia Dolino, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Liza Paguntalan, Marisol Pedregosa, Dondi Ubaldo, Baldwin Gutierrez

VU *Meristogenys amoropalamus* (Matsui, 1986)

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Indonesia, Malaysia
Current Population Trend: Decreasing

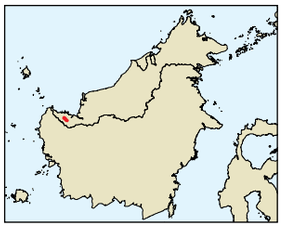


Geographic Range This species is known only from northern Borneo in Sabah and north-eastern Sarawak (Malaysia), and north-eastern Kalimantan (Indonesia). It possibly occurs a little more widely than current records suggest, especially in areas between known sites. It has an altitudinal range of 1,000-2,000m asl.
Population It can be locally abundant.
Habitat and Ecology It has been observed only along the banks of clear, rocky streams in montane forests. Larvae cling to rocks in the rapids of clear streams and feed on lithophytes.
Major Threats Habitat loss due to logging is a major threat to this species.
Conservation Measures It has been recorded from several protected areas, including Gunung Kinabalu National Park, Taman Negara National Park, and the Crocker Range. Expansion of effective protection of submontane and montane forests is essential.

Bibliography: Malkmus, R. *et al.* (2002), Matsui, M. (1986)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

VU *Meristogenys jerboa* (Günther, 1872)

Vulnerable D2
Order, Family: Anura, Ranidae
Country Distribution: Malaysia
Current Population Trend: Stable

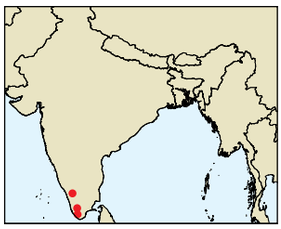


© Indraneil Das

Geographic Range This species is known only from Matang in western Sarawak (Malaysia), Borneo. The type locality is below 700m asl.
Population It has been recorded as abundant at the type locality.
Habitat and Ecology It occurs in lowland rainforest and breeds along small, clear, rocky streams. Larvae cling to the rocks in rapids and probably feed on lithophytic algae.
Major Threats The only known locality of this species is within a protected area, and its habitat is not currently threatened. However, its restricted range renders it vulnerable to stochastic threatening processes.
Conservation Measures It is known only from Matang Forest Reserve, in Sarawak. Directed surveys in adjacent areas of suitable habitat are needed to determine whether or not the species ranges more widely.
Bibliography: Inger, R.F. (1966), Inger, R.F. and Stuebing, R.B. (1997), Yang, D.-T. (1991a)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

EN *Micrixalus gadgili* Pillai and Pattabiraman, 1990

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing

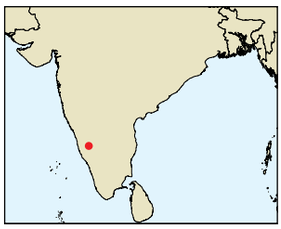


© S.D. Biju

Geographic Range This species is known from three sites: Ponmudi and Sabarigiri in Kerala, and Siruvani in Tamil Nadu, in the southern Western Ghats of India. It has an altitudinal range of 300-750m asl.
Population It is locally uncommon.
Habitat and Ecology This is a forest species associated with hill streams, riparian habitats and leaf-litter in moist tropical evergreen forest, and so far not known from modified habitats. It has aquatic larvae and breeds in streams.
Major Threats The primary threat to this species is the loss of forest habitat through the localized harvesting of wood and timber for subsistence use. Siltation of streams resulting from deforestation is also a threat.
Conservation Measures Its range includes the Nilgiri Biosphere Reserve, and it is protected by national legislation. Further surveys are required to better determine the population status and range of this species.
Bibliography: Biju, S.D. (2001), Dutta, S.K. (1997), Pillai, R.S. and Pattabiraman, R. (1990)
Data Providers: S.D. Biju, Sushil Dutta, Robert Inger

CR *Micrixalus kottigeharensis* (Rao, 1937)

Critically Endangered B2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing

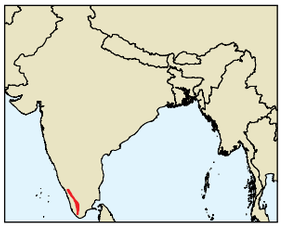


© S.D. Biju

Geographic Range This species is known only from the type locality "Kottigehar, Kadur", and from a recently discovered population at Bhadrea, in Chicamangalore District, Karnataka, in the Western Ghats of India. The altitude of the type locality is not known, but it was most recently collected at an altitude of approximately 1,000m asl. It appears to have a very small distribution.
Population The population status of this species is unknown.
Habitat and Ecology Presumably a forest species, it was recently collected close to a road and a stream. Like other members of the genus, it probably has aquatic larvae in streams.
Major Threats The major threat to the species is general habitat loss as a result of agriculture, including paddy fields and cash crops such as coconut and cashew.
Conservation Measures It is not known whether or not this species occurs in any protected areas. Further survey work is required to determine the current population status of the species and the limits of its distribution range. It is protected by national legislation.
Notes on taxonomy: Rao (1937) originally described this taxon as *Philautus kottigeharensis* based on a single specimen from Kottigehar. Bossuyt and Dubois (2001) transferred the species from *Philautus* to *Micrixalus*. The holotype was lost and recently Bossuyt and Milinkovitch (2001) relocated the species from Bhadrea in Chicamangalore District very near to the type locality. Formal designation of the neotype is under way (S.D. Biju pers. comm.).
Bibliography: Biju, S.D. (2001), Bossuyt, F. and Dubois, A. (2001), Bossuyt, F. and Milinkovitch, M.C. (2001), Dutta, S.K. (1997)
Data Providers: S.D. Biju, Robert Inger, Gopalakrishna Bhatta, Raju Vyas, M.S. Ravichandran

VU *Micrixalus nudis* Pillai, 1978

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing



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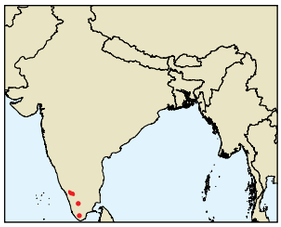
Geographic Range This species is known from the southern Western Ghats of Kerala and Tamil Nadu, in India. The range map shows the distribution of specimens currently assigned to *M. nudis*; however, there is a need for further clarification of the range of this species. It has been collected at 800m asl.
Population It is a common species at the type locality and in the surrounding area (S.D. Biju pers. comm.).
Habitat and Ecology It is a terrestrial species associated with hill streams (but not in the streams) in moist tropical forests. It may be found in lightly degraded forest. Breeding takes place in streams by larval development.
Major Threats It is largely threatened by the clearance of forested land for agricultural use, and subsistence wood collection by local people within Wayanad Wildlife Sanctuary.
Conservation Measures It has been recorded from Aralam Wildlife Sanctuary, Wayanad Wildlife Sanctuary, Silent Valley National Park in Kerala, and Kalakad Wildlife Sanctuary in Tamil Nadu. It is included as part of ongoing field studies by Biju (1999 and onwards). It is protected by national legislation.
Notes on taxonomy: A number of specimens assigned to *Micrixalus nudis* are thought to be misidentifications. A detailed taxonomic study is required for further clarification (S.D. Biju pers. comm.).
Bibliography: Biju, S.D. (2001), Dutta, S.K. (1997), Pillai, R.S. (1978a)
Data Providers: S.D. Biju, Sushil Dutta, Robert Inger

VU *Micrixalus phyllophilus* (Jerdon, 1853)

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing

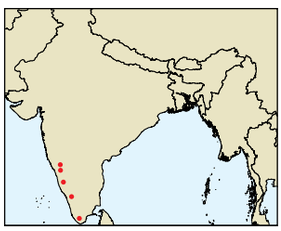


© K. Jayaram

Geographic Range This species is restricted to the Nilgiri Biosphere Reserve (in Kerala and Tamil Nadu), the Eravikulam National Park (in Kerala) and Kalakad-Mundanthurai Tiger Reserve (in Tamil Nadu) in the southern Western Ghats of India. It possibly occurs more widely than current records suggest, especially in areas between known sites. It has an altitudinal range of 300-1,400m asl.
Population It is a locally common species.
Habitat and Ecology It is associated with hill streams in moist tropical forests. It is found in areas of the forest floor with high humus levels. It is not present in modified habitats. Breeding takes place in streams by larval development.
Major Threats It is mostly threatened by the clearance of forested land for agricultural use, and the subsistence harvesting of wood and timber by local people.
Conservation Measures It has been recorded from Wayanad Wildlife Sanctuary, and Mukurthi National Park, and from Eravikulam National Park, in Kerala and Tamil Nadu, and Kalakad-Mundanthurai Tiger Reserve, in Tamil Nadu. The species is included as part of ongoing field studies by Biju (1998 and onwards). It is protected by national legislation.
Bibliography: Biju, S.D. (2001), Dubois, A. (1987), Dutta, S.K. (1997), Jerdon, T.C. (1853), Ravichandran, M.S. (1996a)
Data Providers: S.D. Biju, Sushil Dutta, M.S. Ravichandran

VU *Micrixalus saxicola* (Jerdon, 1853)

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing

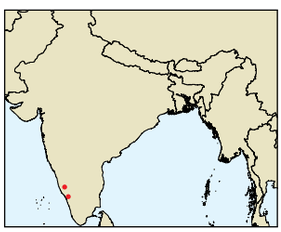


© S.U. Saravanakumar

Geographic Range This species is endemic to the Western Ghats of India. It has an altitudinal range of 400-1,400m asl.
Population It is a locally abundant species.
Habitat and Ecology It is associated with rocky streams within moist evergreen tropical forest. It can be found at forest edges and in slightly disturbed forest. Breeding takes place in streams by larval development.
Major Threats It is threatened by commercial deforestation (clear-cutting) of its forest habitat, the modification of waterways (through dam construction), and the construction of human settlements. It is possible that these threats, especially deforestation, have significantly increased levels of stream sedimentation.
Conservation Measures It has been recorded from Nilgiri Biosphere Reserve (in Kerala and Tamil Nadu), Kalakad-Mundanthurai Tiger Reserve (in Tamil Nadu), and Kudremukh National Park (in Karnataka). The species is included as part of ongoing field studies by Addoor in Karnataka (1997 and onwards). It is protected by national legislation.
Bibliography: Biju, S.D. (2001), Daniels, R.J.R. (1992), Dutta, S.K. (1997), Jerdon, T.C. (1853), Krishnamurthy, S.V. and Hussain (2000), Vasudevan, K., Kumar, A. and Chellam, R. (2001)
Data Providers: S.D. Biju, Sushil Dutta, Gopalakrishna Bhatta, Surya Adoor

EN *Minervarya sahyadris* Dubois, Ohler and Biju, 2001

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing

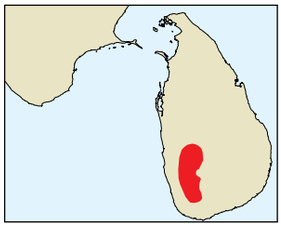


© S.D. Biju

Geographic Range This species is restricted to Gundia in Karnataka, and Calicut and adjoining areas in Kerala, in the southern Western Ghats of India. Other surveys in the vicinity of the two known sites have not revealed any additional populations. The altitudinal range of this lowland species is between 40 and 200m asl.
Population It is common where it occurs.
Habitat and Ecology This is a semi-aquatic, terrestrial species recorded from grassy areas adjacent to paddy fields, disturbed (open) moist tropical forest, stream banks and abandoned quarries. There is no information on the breeding biology or larval ecology of this species.
Major Threats Habitat loss and degradation as a result of the expansion of commercial, intensive agriculture is the major threat to the species.
Conservation Measures Although protected by national legislation, it is not known from any protected areas and there is an urgent need for improved habitat protection. It was recently the subject of field studies by Biju (1996 -2001). Further research is required to investigate the breeding biology of this species.
Bibliography: Biju, S.D. (2001), Dubois, A., Ohler, A. and Biju, S.D. (2001)
Data Providers: S.D. Biju, Gajanan Dasaramji Bhuddhe, Sushil Dutta, Karthikeyan Vasudevan, Chelmala Srinivasulu, S.P. Vijayakumar

VU *Nannophrys ceylonensis* Günther, 1869

Vulnerable B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

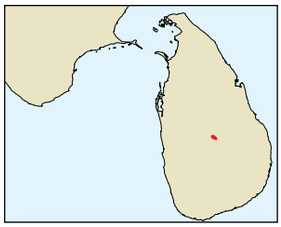


© Peter Janzen

Geographic Range This species is endemic to central, western and southern Sri Lanka. It has an altitudinal range of 60-1,200m asl.
Population It is a common species.
Habitat and Ecology It is a largely aquatic species, found mostly in rocky cascades, on wet rock surfaces and under boulders, in lowland and sub-montane tropical moist forest. Tadpoles are found on wet rock surfaces. It may also be found in disturbed areas provided there is suitable aquatic habitat for breeding.
Major Threats Water pollution due to agrochemicals, and the desiccation of habitats during periods of drought, are the main threats to this species.
Conservation Measures It is presumed to occur in many protected areas. Measures are needed to regulate and ensure the proper use and disposal of pesticides and herbicides.
Bibliography: Clarke, B.T. (1983), Dutta, S.K. (1997), Dutta, S.K. and Manamendra-Arachchi, K. (1996), Kirtisinghe, P. (1957)
Data Providers: Kelum Manamendra-Arachchi, Anslem de Silva

CR *Nannophrys marmorata* Kirtisinghe, 1946

Critically Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

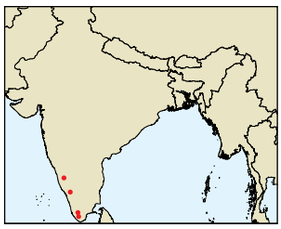


© Miguel Vences

Geographic Range This species, a Sri Lankan endemic, is restricted to the Knuckles Mountain range at 200-1,220m asl.
Population It is considered to be a rare species.
Habitat and Ecology It is largely aquatic, and adults are found in crevices, under boulders, and on other flat, wet surfaces in rocky hill streams of montane forest. Tadpoles are found on wet rock surfaces.
Major Threats The main threats to this species include habitat loss due to the grazing of livestock and disturbance by local tourism, and water pollution (agrochemicals) from tea and cardamom estates.
Conservation Measures It has been recorded in the Knuckles Forest Reserve, but improved protection and maintenance of existing habitat is needed.
Bibliography: Clarke, B.T. (1983), Dutta, S.K. (1997), Dutta, S.K. and Manamendra-Arachchi, K. (1996), Kirtisinghe, P. (1957), Rathnayake, N.D. (2001), Rathnayake, N.D. and Weerasinghe, N. (2000)
Data Providers: Kelum Manamendra-Arachchi, Anslem de Silva

EN *Nyctibatrachus aliciae* Inger, Shaffer, Koshy and Bakde, 1984

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing

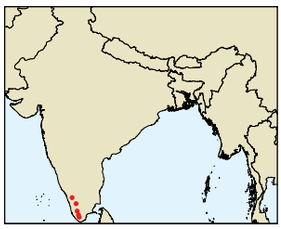


© K. Jayaram

Geographic Range This species has been reported from the Ponmudi Hills, Athirimala and Wayanad in Kerala, Kalakad-Mundanthurai Tiger Reserve in Tamil Nadu, and Kudremukh National Park within the Western Ghats of India. Records from Kudremukh require further investigation to confirm that they belong to this species. It has an altitudinal range of 300-1,000m asl.
Population It is a locally abundant species.
Habitat and Ecology It occurs in riparian habitats and hill streams in tropical moist evergreen and semi-evergreen forest, and may also be present in slightly degraded habitats. There is little information on its breeding biology or larval development, though breeding presumably takes place by larval development in streams.
Major Threats The main threat to this species is the loss of forest habitat as a result of the harvesting of wood and timber by local people for subsistence purposes.
Conservation Measures It has been recorded from Kudremukh National Park in Karnataka, Neyar Wildlife Sanctuary and Wayanad Wildlife Sanctuary, both in Kerala, and Kalakad-Mundanthurai Tiger Reserve in Tamil Nadu. It is included as part of ongoing studies by Biju (1997-present) and Addoor (1997-present). It is protected by national legislation.
Bibliography: Biju, S.D. (2001), Dutta, S.K. (1997), Inger, R.F. *et al.* (1984), Ravichandran, M.S. (1996a), Vasudevan, K., Kumar, A. and Chellam, R. (2001)
Data Providers: S.D. Biju, Sushil Dutta, M.S. Ravichandran, Robert Inger

EN *Nyctibatrachus beddomii* (Boulenger, 1882)

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing

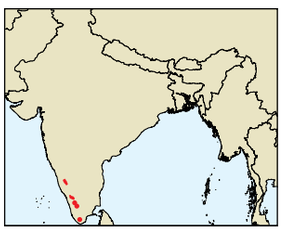


© S.D. Biju

Geographic Range This species is endemic to the southern region of the Western Ghats in India at 400-1,800m asl.
Population The population is fragmented, and its status varies between localities.
Habitat and Ecology It is associated with evergreen and semi-evergreen moist and deciduous forest, and is not found in agricultural areas. It is a semi-terrestrial frog that is largely found in the leaf-litter and also under rocks and logs. There is little information on its breeding biology, though breeding is presumably by larval development in streams.
Major Threats The forest habitat of this species is being cleared for conversion to agricultural land (including tea plantations), and it is being exploited for timber and wood by local people. The construction of dams is also threat.
Conservation Measures It has been recorded from Periyar Tiger Reserve, Silent Valley National Park, Parambikulam Wildlife Sanctuary and Neyar Wildlife Sanctuary, all in Kerala, and from Kalakad-Mundanthurai Tiger Reserve and Indira Ghandi National Park, both in Tamil Nadu. It is protected by national legislation.
Bibliography: Biju, S.D. (2001), Dutta, S.K. (1997), Myers, G.S. (1942a), Myers, G.S. (1942b), Pillai, R.S. and Pattabiraman, R. (1990), Shaffer, H.B. (1988), Vasudevan, K., Kumar, A. and Chellam, R. (2001)
Data Providers: S.D. Biju, Sushil Dutta, M.S. Ravichandran

VU *Nyctibatrachus deccanensis* Dubois, 1984

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing



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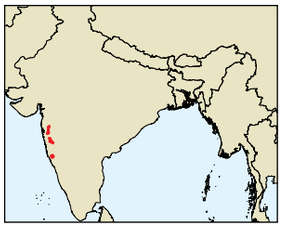
Geographic Range This species is endemic to the southern parts of the Western Ghats of India. It has an altitudinal range of 500-2,000m asl.
Population It is a locally common species.
Habitat and Ecology It occurs in riparian habitats and streams of tropical moist evergreen forest; it is not present in degraded areas. There is little information on breeding, though it presumably takes place by larval development in streams.
Major Threats The major threat is the loss of habitat following conversion to both non-timber (tea) and timber plantations (pine and eucalyptus), and exploitation for timber and wood by local people.
Conservation Measures It has been recorded from Parambikulam Wildlife Sanctuary, Eravikulam National Park, and Wayanad Wildlife Sanctuary, all in Kerala, and from Kalakad-Mundanthurai Tiger Reserve, Indira Ghandi National Park, and Nilgiris State Forests all in Tamil Nadu, and from Kudremukh National Park and its surroundings in Karnataka. The species is included as part of ongoing studies by S.D. Biju. It is protected by national legislation.
Bibliography: Biju, S.D. (2001), Dubois, A. (1984b), Dutta, S.K. (1997), Günther, A. (1876), Ravichandran, M.S. (1996a), Ravichandran, M.S. (1996b)
Data Providers: S.D. Biju, Sushil Dutta, M.S. Ravichandran

VU *Nyctibatrachus humayuni* Bhaduri and Kripalani, 1955

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing

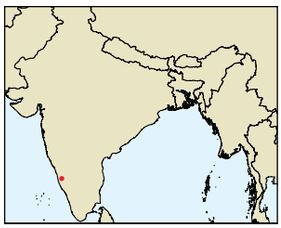



© Varad Giri

Geographic Range This species is endemic to the Western Ghats of Maharashtra State in India. It has been recorded from Konya Valley, Bhimashankar, and Amboli. Records outside Maharashtra need further confirmation. It has an altitudinal range of 200-1,200m asl.
Population It is a locally common species.
Habitat and Ecology It occurs in torrential hill streams in riparian habitat of tropical moist evergreen and semi-evergreen forest. It has also been collected from disturbed forest edge habitats. They are often found inhabiting crevices between rocks in the streams. It presumably breeds by larval development in streams.
Major Threats The conversion of forest to agricultural areas, water pollution by agrochemicals, the siltation of streams resulting from deforestation, and the construction of roads and the development of tourism in the region, are all considered threats to this species.
Conservation Measures It has been recorded from Koyna and Bhimashankar Wildlife Sanctuaries in Maharashtra State. It is protected by national legislation.
Bibliography: Bhaduri, J.L. and Kriplani, M.B. (1955), Biju, S.D. (2001), Chanda, S.K. and Deuti, K. (1997), Dutta, S.K. (1997), Padhye, A.D. and Ghate, H.V. (2002), Padhye, A.D., Mahabaleshwarkar, M. and Ghate, H.V. (2002)
Data Providers: S.D. Biju, Sushil Dutta, Anand Padhye, Anandanarayanan, Varad Giri

EN *Nyctibatrachus hussaini* Krishnamurthy, Reddy and Gururaja, 2001

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Unknown

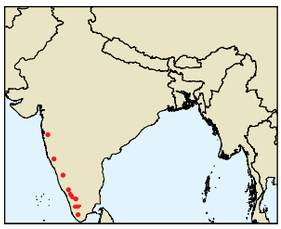



© K. Jayaram

Geographic Range This species is endemic to the Western Ghats of India in Karnataka State, where it is currently only known from Kudremukh National Park (though it might occur a little more widely). It is found at around 900m asl.
Population The population status of this species is unknown.
Habitat and Ecology It has been recorded from torrential hill streams in riparian habitat in tropical evergreen forest, and is not known from disturbed habitats. The species inhabits caves beneath boulders in the riffle zone of water. It presumably breeds by larval development in streams.
Major Threats The Kudremukh National Park is threatened by mining activities, and the harvesting of wood and timber by the local people. The development of recreation activities in the area is also considered a threat.
Conservation Measures It is protected by national legislation, and is included as part of ongoing field studies by Addoor (1997-present).
Notes on taxonomy: The original description of this species does not provide any information about the type specimen. Hence, its taxonomy/nomenclature needs further investigation and amendments (Biju 2001; Das and Kunte 2005; S.K. Dutta pers. comm.).
Bibliography: Biju, S.D. (2001), Das, I. and Kunte, K. (2005), Krishnamurthy, S.V., Manjunath, A.H. and Gururaja, K.V. (2001)
Data Providers: S.D. Biju, Sushil Dutta, M.S. Ravichandran

VU *Nyctibatrachus major* Boulenger, 1882

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing

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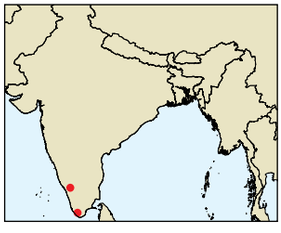
Geographic Range This species has a wide distribution in the Western Ghats of India. It has been recorded from elevations up to 1,000m asl in Kerala.
Population There is no information on the population status of this species, partly hindered by the large degree of intraspecific variation evident in this species.
Habitat and Ecology It inhabits torrential streams in evergreen, moist deciduous forest. Although it may be found in forest edge, it does not occur in degraded habitats. Breeding takes place in streams.
Major Threats The conversion of forested land to agricultural use (including tea, coffee, and paddy fields), and the harvesting of wood and timber by local people are threats to this species. The construction of roads and the development of tourism in the region are leading to further loss and degradation of the species' habitat.
Conservation Measures The species has been recorded from several protected areas throughout the Western Ghats. There is an urgent need for a taxonomic revision of this species, since it almost certainly represents a complex of several distinct and isolated forms. It is protected by national legislation.
Notes on taxonomy: There is quite considerable intraspecific variation in this taxon (Biju 2001).
Bibliography: Biju, S.D. (2001), Dutta, S.K. (1997), Krishnamurthy, S.V. (1997), Krishnamurthy, S.V. and Hussain (2000), Krishnamurthy, S.V., Katre, S. and Reddy, S.R. (1992), Padhye, A.D., Mahabaleshwarkar, M. and Ghate, H.V. (2002), Pillai, R.S. (1978b), Pillai, R.S. and Pattabiraman, R. (1990), Ravichandran, M.S. (1996b), Vasudevan, K., Kumar, A. and Chellam, R. (2001)
Data Providers: S.D. Biju, M.S. Ravichandran, Anand Padhye, Sushil Dutta

EN *Nyctibatrachus minor* Inger, Shaffer, Koshy and Bakde, 1984

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing

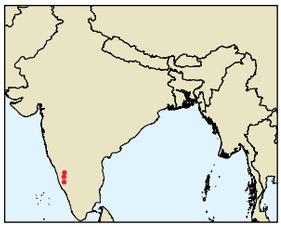



© S.D. Biju

Geographic Range This species is endemic to the southern region of the Western Ghats of India, where it has been recorded from the Ponmudi Hills and Wayanad Wildlife Sanctuary, both in Kerala. Unpublished reports of this species outside Kerala require confirmation and hence are not mapped here, although it probably occurs more widely than current records suggest. It has an altitudinal range of 300-1,150m asl.
Population It is an uncommon species.
Habitat and Ecology It is semi-aquatic and has been recorded from riparian habitats and hill streams in tropical moist evergreen forest; it may be found at the forest edge, but not in heavily cultivated land. There is little information on its breeding habitats, though breeding presumably takes place by larval development in streams.
Major Threats The major threat is the conversion of forest habitat to agricultural land and plantations (tea and coffee).
Conservation Measures It has been reported from Wayanad Wildlife Sanctuary, and is protected by national legislation.
Bibliography: Biju, S.D. (2001), Dutta, S.K. (1997), Inger, R.F. *et al.* (1984)
Data Providers: S.D. Biju, Sushil Dutta, Robert Inger

EN *Nyctibatrachus sanctipalustris* Rao, 1920

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing



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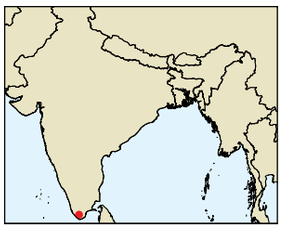
Geographic Range This species is known with certainty only from three locations: Kudremukh National Park, and Jog (Shimoga) and Kemphole Ghats, all in Karnataka, in the Western Ghats of India (though it may occur a little more widely). It has been collected at an elevation of 1,200m asl.
Population It is not an uncommon species.
Habitat and Ecology It is semi-aquatic and inhabits marshes within moist tropical forest (and is not present in very disturbed forest). There is little information available on the species' ecology or breeding habitats, though it presumably breeds by larval development in water.
Major Threats Habitat loss and degradation as a result of logging, agriculture, and mining (in Kudremukh) is the major threat to this species.
Conservation Measures It has been recorded from Kudremukh National Park in Karnataka, although the other localities are apparently unprotected. It is included in national legislation.
Bibliography: Biju, S.D. (2001), Chanda, S.K. and Das, I. (1997), Dutta, S.K. (1997), Rao, C.R.N. (1920)
Data Providers: S.D. Biju, Sushil Dutta, Robert Inger

EN *Nyctibatrachus vasanthi* Ravichandran, 1997

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing



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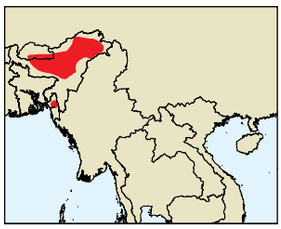
Geographic Range This species is known only from the type locality within Kalakad-Mundanthurai Tiger Reserve in Tamil Nadu, in the southern Western Ghats of India, at an elevation of 700m asl.
Population It is a recently described frog that has only been recorded twice, and is reportedly not a common species (Ravichandran pers. comm.).
Habitat and Ecology The original collection took place in shallow water within disturbed tropical moist forest, close to a cardamom plantation. It is also believed to occur within undisturbed forest. It presumably breeds by larval development in streams.
Major Threats The major threat to this species is the cultivation of cardamom and tea in the buffer zone of Kalakad-Mundanthurai Tiger Reserve.
Conservation Measures It is currently known only from the Kalakad-Mundanthurai Tiger Reserve in Tamil Nadu, and it is included in national legislation. There is a need for further survey work to determine whether the species might occur outside the type locality.
Bibliography: Biju, S.D. (2001), Dutta, S.K. (1997), Ravichandran, M.S. (1997), Vasudevan, K., Kumar, A. and Chellam, R. (2001)
Data Providers: S.D. Biju, Sushil Dutta, Robert Inger, M.S. Ravichandran

VU *Occidozyga borealis* (Annandale, 1912) NORTHERN FROG

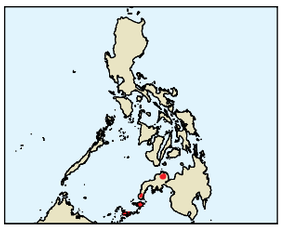
Vulnerable B2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Bangladesh, Bhutan, India
Current Population Trend: Decreasing



Geographic Range This species is known from north-eastern India and Bhutan, although its distribution in Bhutan is not clear. It has also been recorded from Rangamati Hill-district in Bangladesh. Recent field studies indicate a wider distribution range than previously recorded in north-east India (A. Ohler pers. comm.). It is a lowland species that occurs below 400m asl.
Population It is considered to be a rare species.
Habitat and Ecology It is associated with small, still waters and slow-moving waters in tropical moist forest. Reproduction takes place in small ponds and ditches.
Major Threats Water pollution due to agrochemicals is the principal threat to this species, although habitat loss and degradation due to small-scale agriculture and wood collection is also a threat.
Conservation Measures It has been recorded from Mouling, Aru, and Nameri National Parks and Dihang-Dibang Biosphere Reserve in India. It is protected by national legislation in India.
Bibliography: Ao, J.M., Bordoloi, S. and Ohler, A. (2003), Asmat, G.S.M. *et al.*(2003), Bordoloi, S. *et al.* (2002), Chanda, S.K. (2002), Dubois, A. (1992), Dutta, S.K. (1997), Fei, L. *et al.* (1999), MacKinnon, J. *et al.* (1996), Md. Firoz Ahmed (2001), Pawar, S.S. and Birand, A. (2001)
Data Providers: Michael Wai Neng Lau, Sushil Dutta, Annemarie Ohler, Sabitry Bordoloi, Ghazi S.M. Asmat

VU *Occidozyga diminutivus* (Taylor, 1922) SMALL-HEADED FROG

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing



Geographic Range This species is known from several localities on the islands of Mindanao, Basilan, and the Sulus, in the southern Philippines. It probably occurs more widely than current records suggest, especially in areas between known sites.
Population It is a common species.
Habitat and Ecology It inhabits and breeds in streams and quiet pools of water in undisturbed and disturbed lowland forests. Very little information is known about its ecology or habitat requirements.
Major Threats Important threats to this species are the loss of lowland rainforests and the pollution of mountain streams and rivers, especially due to agricultural effluents.
Conservation Measures Its range does include a few protected areas, such as Mount Malindang, but the designation of remaining rainforests on the island of Mindanao as protected areas is a necessary conservation measure for this species.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Dubois, A. (1992), Frost, D.R. (1985), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

EN *Paa boulengeri* (Günther, 1889)

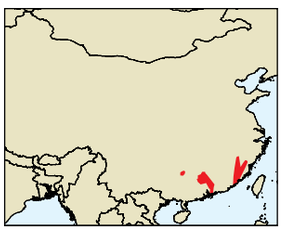
Endangered A2acd
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing

© Li Cheng

Geographic Range This species is endemic to central and southern China, and occurs from 300-1,900m asl.
Population It is a very common species, although there has been an observed decline.
Habitat and Ecology It inhabits hill streams and nearby ponds, and breeds in streams, the eggs being laid in water under stones.
Major Threats The major threats to the species are over-exploitation for human consumption, habitat destruction and degradation (mainly due to wood collecting), and water pollution.
Conservation Measures It is present in several protected areas, but many are in need of improved and strengthened management. There is a need to ensure that the offtake of this species from the wild for human consumption is managed sustainably.
Bibliography: Fei, L. *et al.* (1999), MacKinnon, J. *et al.* (1996), Ye, C.-Y, Fei, L. and Hu, S.Q. (1993), Zhao, E.-M. (1998)
Data Providers: Michael Wai Neng Lau, Yuan Zhigang, Zhao Ermi, Bosco Chan

VU *Paa exilispinosa* (Liu and Hu, 1975)

Vulnerable A2acd
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing



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Geographic Range This species is endemic to central and southern China and is found in Fujian, Hunan, Guangdong and Guangxi provinces, including Hong Kong. It probably occurs more widely than current records suggest, especially in areas between known sites. It has been recorded from just above sea level to 1,400m asl.
Population It is a very common species, although it is believed to be in decline.
Habitat and Ecology It inhabits small, hill streams in forests or shrublands. It sometimes also occurs in seepages, stream-fed marshes, and forests. It breeds in streams, the eggs being laid in water under stones.
Major Threats The major threat to this species is over-collecting for human consumption, and habitat destruction and degradation.
Conservation Measures It is present in several protected areas in the region.
Bibliography: Fei, L. *et al.* (1999), Lau, M.W.N. (1998), MacKinnon, J. *et al.* (1996), Sichuan Biological Research Institute and Beijing Institute of Zoology (1975)
Data Providers: Michael Wai Neng Lau, Geng Baorong

VU *Paa fasciculispina* (Inger, 1970)

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Cambodia, Thailand
Current Population Trend: Decreasing

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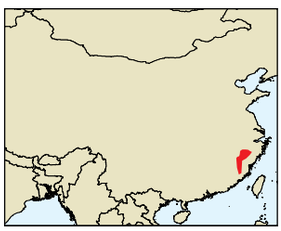
Geographic Range This species is known from the Cardamom region of south-eastern Thailand and south-western Cambodia (Inger 1970; Ohler, Swan and Daltry 2002). It has been recorded from 150-1,000m asl.
Population It was reported as being "reasonably abundant ... along forested mountain streams in SE Thailand" (Inger, in Humphrey and Bain 1990), though these authors also note the limited size of available suitable habitat and exploitation pressures.
Habitat and Ecology An inhabitant of swift-flowing mountain streams in evergreen forest. It is a stream-breeding amphibian and is usually found in, or very close to, streams on large boulders.
Major Threats It is collected for consumption by local villagers using flashlights (Brockelman, in Humphrey and Bain 1990). It is also under threat from habitat loss through fires, agriculture, and logging.
Conservation Measures The Thai population is wholly within several protected areas, as is the range in Cambodia. The species should probably be protected under the WARPA law of Thailand, and under Cambodian wildlife legislation. Studies of exploitation pressure are needed.
Bibliography: Humphrey, S.R. and Bain, J.R. (1990), Inger, R.F. (1970), OEPP - Office of Environmental Planning and Policy [of Thailand] (1997), Ohler, A., Swan, S.R. and Daltry, J.C. (2002)
Data Providers: Peter Paul van Dijk, Steven Swan

VU *Paa jiulongensis* (Huang and Liu, 1985)

Vulnerable B2ab(iii,v)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing

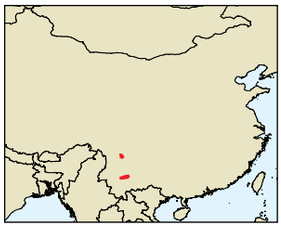


© Fei, L., Ye, C.-Y., Huang, Y.-Z. and Liu, M.-Y. 1999

Geographic Range This species is restricted to Zhejiang and Fujian Provinces in central China, and occurs above 800m asl.
Population The population status of this species is unknown.
Habitat and Ecology It inhabits hill streams in forests, and breeds in streams, the eggs being laid in water under stones.
Major Threats Over-collecting for human consumption is a major threat to this species. Habitat destruction and degradation, in particular due to logging and infrastructure development, is also a threat.
Conservation Measures The range of the species includes three small sub-national protected areas: Ruoliaojian, Daiyunshan, and Jiulongshan.
Bibliography: Fei, L. *et al.* (1999), Huang, Z.Y. and Liu, B.J. (1985), MacKinnon, J. *et al.* (1996)
Data Providers: Gu Huiqing, Geng Baorong

VU *Paa liui* (Dubois, 1987)

Vulnerable B1ab(iii,v)+2ab(iii,v)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing



© Fei, L., Ye, C.-Y., Huang, Y.-Z. and Liu, M.-Y. 1999

Geographic Range This species is only known from Ninglang, Jingdong and Shuangbai counties, in Yunnan, Yanyuan, and Sichuan provinces in China. It probably occurs a little more widely than current records suggest, especially in areas between known sites. It occurs from 2,100-2,650m asl.
Population It is a rare species.
Habitat and Ecology It inhabits the quiet shores of lakes, and small islands in the lakes. Breeding takes place in the lakes, the eggs being laid in water under stones.
Major Threats A major threat to this species is the negative impact of tourism on the habitat around the lakes in which this species occurs. It is also subject to over-harvesting for food.
Conservation Measures The location in Yunnan is in the Lugu Lake Nature Reserve.
Bibliography: Fei, L. *et al.* (1999), MacKinnon, J. *et al.* (1996), Su, C.-Y. and Li, S.M. (1986), The Comprehensive Scientific Expedition to the Qinghai-Xizang Plateau (1997)
Data Providers: Lu Shunqing, Yang Datong

EN *Paa maculosa* (Liu, Hu and Yang, 1960)

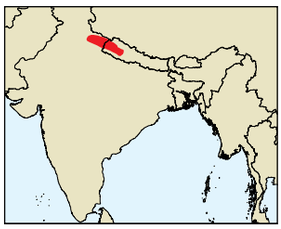
Endangered B2ab(v)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing

© Fei, L., Ye, C.-Y., Huang, Y.-Z. and Liu, M.-Y. 1999

Geographic Range This species is endemic to central Yunnan Province (Jingdong and Shuangbai Counties) in China, and occurs from 1,800-2,600m asl.
Population It is a rare species.
Habitat and Ecology It inhabits and breeds in forest streams, the eggs being laid in water under stones.
Major Threats The major threat is overharvesting by the local people for food.
Conservation Measures It occurs in the Ailaoshan and Wuliangshan National Nature Reserves. There is a need to ensure that the offtake of this species from the wild for human consumption is managed sustainably.
Bibliography: Liu, C.-C., Hu, S.-Q. and Yang, F.H. (1960), MacKinnon, J. *et al.* (1996), Yang, D.-T. (1991b), Ye, C.-Y, Fei, L. and Hu, S.Q. (1993)
Data Providers: Lu Shunqing, Yang Datong

VU *Paa minica* (Dubois, 1975)

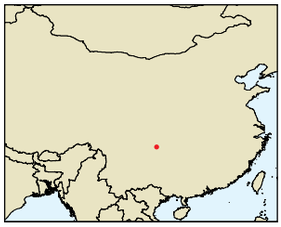
Vulnerable B2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India, Nepal
Current Population Trend: Decreasing



Geographic Range This species is restricted to western Nepal and northern India (Himachal Pradesh and Uttaranchal). It is present at elevations of 1,000-2,400m asl.
Population It is reportedly a fairly common species.
Habitat and Ecology It is associated with montane subtropical forests and streams. Breeding takes place in streams; however, there is no information available on larval ecology.
Major Threats Loss of available habitat through the localized clearance of forest is a major threat. It is also threatened by changes in waterway management, for example, following dam construction.
Conservation Measures It is not known whether or not this species occurs in any protected areas, though there are several within its range. It is protected by national legislation in India.
Bibliography: Chanda, S.K. (2002), Dubois, A. (1975), Dutta, S.K. (1997), Molur, S. and Walker, S. (1998)
Data Providers: Annemarie Ohler, Sushil Dutta, Tej Kumar Shrestha

EN *Paa robertingeri* (Wu and Zhao, 1995)

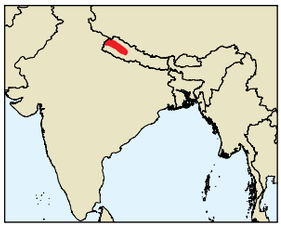
Endangered B1ab(v)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing



Geographic Range This species is only known from Hejiang County, in south-eastern Sichuan Province, China, from 650-1,500m asl.
Population It is a rare species.
Habitat and Ecology It inhabits hill streams and surrounding riparian habitat. Breeding takes place in streams, the eggs being laid in water under stones.
Major Threats The main threat to this species is over-harvesting for human consumption.
Conservation Measures The range of this species includes Changling Nature Reserve. There is a need to ensure that the offtake of this species from the wild for human consumption is managed sustainably.
Bibliography: MacKinnon, J. *et al.* (1996), Wu, G.-F. and Zhao, E.-M. (1995)
Data Providers: Wu Guanfu, Wang Yuezhao

VU *Paa rostandi* (Dubois, 1974)

Vulnerable B2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Nepal
Current Population Trend: Decreasing



© David Emmett

Geographic Range This species is endemic to Nepal. It is known from Lac-Kutsab-Terna Tal (the type locality) and Royal Chitwan National Park. It has been recorded at elevations between 2,500 and 3,500m asl.
Population It is generally considered to be a rare species.
Habitat and Ecology It is associated with high-altitude streams, springs, and other running waterbodies within forest and grassland habitats. There is no information available on larval habitat and ecology.
Major Threats The main threat is loss of habitat due to subsistence wood collecting.
Conservation Measures It has been recorded from Royal Chitwan National Park.
Bibliography: Dubois, A. (1974), Schleich, H.H. (1993)
Data Providers: Sushil Dutta, Annemarie Ohler

VU *Paa shini* (Ahl, 1930)

Vulnerable A2abc
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing

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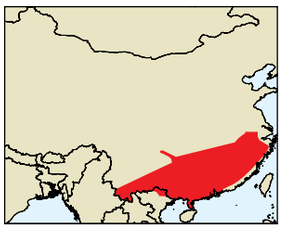
Geographic Range This species is endemic to central China and is known from Sichuan, Guizhou, Hunan and Guangxi provinces. It has been recorded from 510-1,500m asl.
Population This species is currently believed to be in decline.
Habitat and Ecology It inhabits and breeds in streams in forested regions; the eggs are laid in water under stones.
Major Threats Over-collecting for human consumption is a threat to this species. It is also threatened by habitat destruction and degradation, in particular dam construction and logging.
Conservation Measures It is present in several protected areas in the region.
Bibliography: Fei, L. *et al.* (1999), MacKinnon, J. *et al.* (1996), Zhang, Y. and Wen, Y. (2000)
Data Providers: Michael Wai Neng Lau, Yuan Zhigang

VU *Paa spinosa* (David, 1875)

Vulnerable A2abc
Order, Family: Anura, Ranidae
Country Distribution: China, Viet Nam
Current Population Trend: Decreasing



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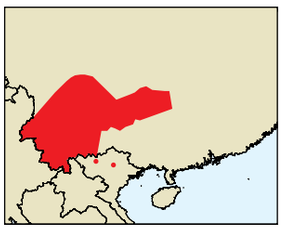
Geographic Range This species is found in central, south-western and southern China, including Hong Kong. Its range in Viet Nam is difficult to define since many older records of *P. spinosa* probably refer to other *Paa* taxa, including *P. verrucospina* and *P. yunnanensis*. Bourret (1942:291) stated that he encountered *P. spinosa* only from Mao Son and Bac-Kan. It has been recorded from 200-1,500m asl.
Population This species is believed to have undergone a dramatic decline in China. Bourret (1942) encountered rather large numbers in Mao Son, but also noted intensive collection. It was recorded to be common in Ha Giang Province, Viet Nam (R. Bain pers. comm.).
Habitat and Ecology It lives and breeds in rocky streams in evergreen forest and open countryside on hills and mountains. It breeds in streams, and the eggs are laid in water under stones.
Major Threats It has been collected for consumption throughout its range for many decades and such harvesting still continues; even in the 1930s it was traded from Mao Son as far as Hanoi (Bourret 1942). It is presumably also impacted by extensive habitat degradation, due to agriculture and the construction of dams (the latter involving changes in hydrology).
Conservation Measures It is present in several protected areas in China. One location in Viet Nam is within Tay Con Linh II Nature Reserve. Harvest management or cessation, and the safeguarding of suitable habitat are priorities for the conservation of this species. Clarification of the taxonomic identity and the distribution of *Paa* frogs in this region are necessary.
Bibliography: Bourret, R. (1942), Fei, L. *et al.* (1999), MacKinnon, J. *et al.* (1996), Tran, K. *et al.* (1992), Zhao, E.-M. (1998)
Data Providers: Michael Wai Neng Lau, Geng Baorong, Gu Huiqing, Peter Paul van Dijk, Raoul Bain

EN *Paa yunnanensis* (Anderson, 1879 "1878")

Endangered A2acd
Order, Family: Anura, Ranidae
Country Distribution: China, Viet Nam
Current Population Trend: Decreasing

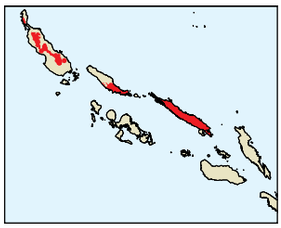


© Li Cheng

Geographic Range This species is known from south-western and central China in Sichuan, Yunnan, Guizhou, Hunan and possibly also Hubei Provinces. The only reasonably reliable records from mainland Southeast Asia are from Sa Pa (Bourret 1942, as *Rana yunnanensis* and *R. phrynoides*). Records from the Kakhien Hills of Myanmar may be a consequence of Bourret (1942) considering *Paa feae* a synonym. However, *P. yunnanensis* is recorded from most of Yunnan Province adjoining eastern Myanmar (Fei and Ye 1999). It probably occurs more widely than current records suggest. In China it is known from elevations of 1,500-2,950m asl, and in Viet Nam from 800-1,000m asl (Bourret 1942).
Population Although there are no available data on the population status of Southeast Asian populations, in China it is a common species (though it has declined significantly).
Habitat and Ecology It has been recorded from rocky streams in high mountains in closed-canopy forest and grassland, and has also been found in ditches. The eggs are laid under stones in streams.
Major Threats Over-collecting for human consumption is the major threat to this species. It is also threatened by habitat destruction and degradation (caused by agricultural expansion), and water pollution.
Conservation Measures It is present in several protected areas in China. The two localities in Viet Nam are within Hoang Lien Son National Park and Tam Dao National Park. Studies of the intensity of harvesting of this species are required, and there is a need to ensure that the offtake of this species from the wild for human consumption is managed sustainably. Further survey work is needed to determine the population status of populations in Southeast Asia, and there is also a need for further taxonomic work to clarify the taxonomic status of frogs in the genus present in mainland Southeast Asia and the Himalayan foothills.
Bibliography: Bourret, R. (1942), Fei, L. *et al.* (1999), Inger, R.F. *et al.* (1990), MacKinnon, J. *et al.* (1996), Ye, C.-Y, Fei, L. and Hu, S.Q. (1993), Zhao, E.-M. (1998)
Data Providers: Lu Shunqing, Yang Datong, Peter Paul van Dijk, Steven Swan

VU *Palmatorappia solomonis* (Sternfeld, 1920)

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Papua New Guinea, Solomon Islands
Current Population Trend: Decreasing

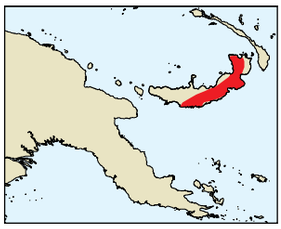


© Stephen Richards

Geographic Range This species is known from several large islands in the Solomon archipelago, including Bougainville and Buka in Papua New Guinea. Recent studies (S. Richards, unpubl.) suggest that this species might have a wide distribution in the Solomon Islands. It has been recorded from 700-1,500m asl on Bougainville, but in the Solomons it has been recorded only up to 250m asl.
Population It is a very uncommon species.
Habitat and Ecology It is found on low vegetation and trees in tropical rainforest, and also in good quality secondary forest. It breeds by direct development.
Major Threats Logging might be impacting some populations, particularly in the Solomons.
Conservation Measures It has not been recorded from any protected areas. Given the increasing rate of forest loss within the Solomon Islands, especially at lower elevations, there is a definite need for improved habitat protection at sites where this species is known to occur.
Notes on taxonomy: This form probably represents two separate species.
Bibliography: Brown, W.C. (1952)
Data Providers: Stephen Richards, Fred Parker

VU *Platymantis akarithyma* Brown and Tyler, 1968

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Papua New Guinea
Current Population Trend: Decreasing



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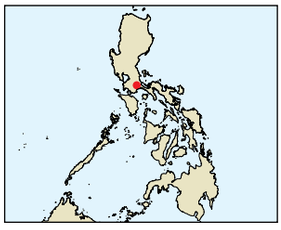
Geographic Range This species is known from three locations in southern and eastern New Britain, Papua New Guinea: the Pomugu area north-west of Kandrian; the Wide Bay area; and the Baining Mountains. It has been recorded up to 450m asl, but might occur at higher elevations.
Population It was abundant at the Wide Bay area when visited in 2000 (S. Richards pers. comm).
Habitat and Ecology Males call from within leaf-litter on the forest floor in lowland and foothill rainforest. It is a species that breeds by direct development and lays its eggs on the ground. It has not been recorded from disturbed habitats.
Major Threats The threats are unknown, but despite its extensive distribution in New Britain, logging on the island might be of concern for local populations if the species is unable to utilize regrowth forests.
Conservation Measures It is not known from any protected areas. Further research is needed to assess the population status, distribution and habitat requirements of this species.
Notes on taxonomy: The species name is amended to *akarithyma* from *akarithymus* following Günther 1999 (by implication).
Bibliography: Brown, W.C. and Tyler, M.J. (1968), Günther, R. (1999)
Data Providers: Stephen Richards, Fred Parker

VU *Platymantis banahao* Brown, Alcala, Diesmos and Alcala, 1997

Vulnerable D2
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Stable

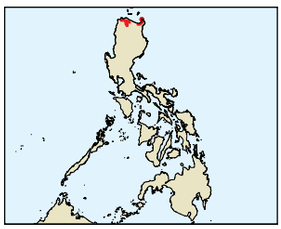


© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is known only from Mount Banahaw (Banahaw and San Cristobal peaks), on Luzon Island, in the Philippines. It ranges from around 700-1,700m asl (R. Brown pers. comm.).
Population It is common to very common at the type locality, and populations appear to be stable at present.
Habitat and Ecology It inhabits arboreal microhabitats in mossy and montane rainforests. It breeds and deposits eggs in arboreal ferns and pandanus. It breeds by direct development.
Major Threats The immediate threats are relatively limited since it occurs in the high-elevation montane forests, which are relatively less susceptible to deforestation and other human disturbance. The south-west side of Mount Banahaw is heavily impacted by religious pilgrims and tourists who damage habitat while building campsites. A new road-building project in the Municipality of Tayabas will no doubt result in increased access to the mountain and increased disturbance, especially at lower elevations. The collection of aerial ferns and tree ferns as ornamentals represents a possible threat, as these plants are the preferred microhabitats for reproduction.
Conservation Measures The most important conservation measure is the continued management of Mount Banahaw-San Cristobal National Park. There is also a need for continued monitoring of the population status of this species given that it is known only from this single site.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1999), Brown, R.M., Diesmos, A.C. and Alcala, A.C. (2001), Brown, W.C. *et al.* (1997), Diesmos, A.C. (1998)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

EN *Platymantis cagayanensis* Brown, Alcala and Diesmos, 1999

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing



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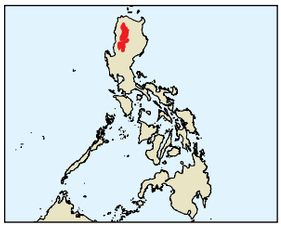
Geographic Range This species is known thus far from several localities along the north coast of Luzon Island and on Palaui Island, in the Philippines, at elevations from sea level up to perhaps 200m asl.
Population It is known to be common to very common.
Habitat and Ecology It inhabits the forest floor stratum in undisturbed and disturbed lower montane and lowland forests, occasionally being found in human-controlled environments beside the forest. It breeds by direct development, and is presumed to breed and nest in the leaf-litter of the forest.
Major Threats The major threat is habitat loss due to shifting agriculture and logging of the lowland rainforest (which is the primary habitat of this species).
Conservation Measures It is likely to occur in the Bawa River Watershed Forest Reserve (and Palaui Island is a marine reserve), but there is clearly a need for further protection of the remaining lowland rainforests and the rehabilitation of degraded forests, especially adjacent to protected forested parks.
Bibliography: Alcala, A.C. and Brown, W.C. (1999), Brown, R.M., Diesmos, A.C. and Alcala, A.C. (2001), Brown, W.C., Alcala, A.C. and Diesmos, A.C. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

VU *Platymantis cornuta* (Taylor, 1922)

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing

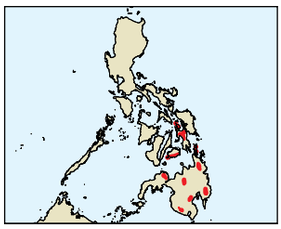


© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is found in the mountains of the Central Cordilleras, on northern Luzon, in the Philippines. It ranges from around 500 to more than 900m asl (R. Brown pers. comm.).
Population It is apparently common in appropriate forest habitats, but it is so rarely recorded or observed that concern regarding its current population status is warranted.
Habitat and Ecology It inhabits arboreal microhabitats in mossy and montane rainforests. It breeds by direct development. Limited ecological information is available for this species.
Major Threats It inhabits high-elevation forests, which are relatively less threatened by habitat conversion and agriculture and human encroachment. Regardless, some populations of this species are still subjected to these threats.
Conservation Measures Only a few protected areas are currently found in this region (as yet, though, there are no records from Pulag National Park), and there is a need for more effective management and protection of remaining tracts of intact lowland and montane rainforest in the Cordilleras.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1999), Frost, D.R. (1985), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

VU *Platymantis guentheri* (Boulenger, 1882)

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing



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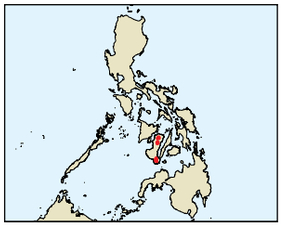
Geographic Range This species occurs in the rainforests of Bohol, Leyte, Biliran, Maripipi, Dinagat, Panglao, and Mindanao Islands in the Philippines, from sea level to 700m asl. It probably occurs a little more widely than current records suggest, especially in areas between known sites.
Population It is common to very common in humid forest.
Habitat and Ecology It inhabits arboreal microhabitats in lower montane and lowland forests; it also survives in disturbed habitats adjacent to forested areas. It breeds by direct development and is believed to deposit its eggs in leaf axils, epiphytes, and aerial ferns.
Major Threats The major threat is the loss of habitat due to shifting agriculture and the logging of lowland rainforest.
Conservation Measures The range of this species includes a few protected areas, including Mount Malindang National Park and Mount Apo Natural Park. The designation of the remaining rainforests on the islands of Mindanao, Leyte, Bohol, and Dinagat as protected areas is needed.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1995), Alcala, A.C. and Brown, W.C. (1999), Brown, W.C. *et al.* (1997), Brown, W.C. and Alcala, A.C. (1963)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

EN *Platymantis hazelae* (Taylor, 1920)

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing

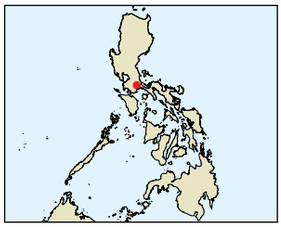


© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species occurs at high elevations (600-1,700m asl) on the mountains of Negros and possibly Masbate Islands (see taxonomic note), in the Philippines.
Population It is common at high elevations in moist upper elevation rainforests, but it is rare or absent in disturbed habitats.
Habitat and Ecology It inhabits arboreal microhabitats in mossy and montane rainforests. Eggs are deposited on leaves, and breeding takes place by direct development.
Major Threats The major threat is habitat loss and degradation due to the conversion of habitat to agriculture, logging, and large-scale disturbance of the remaining rainforest by geothermal explorations and related activities.
Conservation Measures It occurs in Mount Kanlaon National Park. There is a need for the designation of remaining rainforests of southern Negros and Masbate as protected areas. The Masbate population should be the target for population status surveys in the near future, and there is a particular need to resolve the taxonomic status of this population.
Notes on taxonomy: Information from recent faunal surveys indicates that the Masbate populations that have been synonymized with this species need to be re-examined.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1999), Brown, W.C., Brown, R.M. and Alcala, A.C. (1997), Frost, D.R. (1985), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Cynthia Dolino, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Liza Paguntalan, Marisol Pedregosa, Dondi Ubaldo, Baldwin Gutierrez

VU *Platymantis indeprensus* Brown, Alcala and Diesmos, 1999

Vulnerable D2
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Stable



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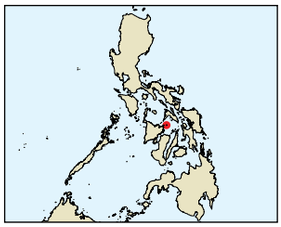
Geographic Range This species is known from the mid-montane rainforests (600-1,400m asl) of Mount Banahaw, on southern Luzon Island, in the Philippines.
Population It is common in suitable habitat.
Habitat and Ecology It inhabits the forest floor stratum and herb layer vegetation in mossy and montane rainforest. It lays its eggs in terrestrial nests and breeds by direct development.
Major Threats It is currently known to occur in a generally well-protected locality on Luzon Island, and existing threats (shifting agriculture and logging) are not presently significant.
Conservation Measures The most important conservation measure is the continued management of Mount Banahaw-San Cristobal National Park. There is also a need for continued monitoring of the population status of this species given that it is known only from this site.
Bibliography: Alcala, A.C. and Brown, W.C. (1999), Brown, R.M., Diesmos, A.C. and Alcala, A.C. (2001), Brown, W.C., Alcala, A.C. and Diesmos, A.C. (1999), Diesmos, A.C. (1998)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

CR *Platymantis insulata* Brown and Alcala, 1970

Critically Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing



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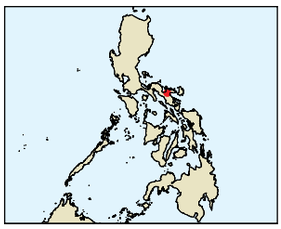
Geographic Range This species is known only from South Gigante Island, in the central Philippines.
Population It is common at the type locality, especially in appropriate atmospheric conditions (heavy rains).
Habitat and Ecology It inhabits limestone karst forest and caves in forested lowlands. It breeds by direct development.
Major Threats Major threats are shifting agriculture, human encroachment of the forest over the limestone karst and caves, guano mining, and the quarrying of limestone. The latter two threats are especially detrimental to the habitat of this species.
Conservation Measures The small island of South Gigante, the only locality thus far known for this species, should be designated as a special protected area.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1999), Brown, W.C. and Alcala, A.C. (1970), Frost, D.R. (1985), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Cynthia Dolino, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Liza Paguntalan, Marisol Pedregosa, Dondi Ubaldo, Baldwin Gutierrez

VU *Platymantis isarog* Brown, Brown, Alcala and Frost, 1997

Vulnerable D2
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Stable



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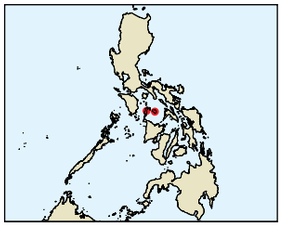
Geographic Range This species is known only from Mount Isarog (1,200-1,800m asl), on south-eastern Luzon Island, in the Philippines. It might also occur on Mount Malinao, from 650-1,500m asl.
Population It is common in mid- to upper-montane forests on Mount Isarog, and its populations appear to be stable.
Habitat and Ecology It inhabits arboreal microhabitats in mossy and montane rainforests, and deposits its eggs on leaves in shrub layer vegetation. It breeds by direct development.
Major Threats It inhabits high-elevation forests in what is presently a generally well-protected locality, and is relatively less threatened by habitat loss due to agriculture and human encroachment. Nonetheless, it remains susceptible to these threats particularly given its very small range.
Conservation Measures The most important conservation measure needed at present is the continued management of Mount Isarog National Park. There is also a need for continued monitoring of the population status of this species.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1999), Brown, R.M., Diesmos, A.C. and Alcala, A.C. (2001), Brown, W.C., *et al.* (1997), Brown, W.C., Brown, R.M. and Alcala, A.C. (1997)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

EN *Platymantis lawtoni* Brown and Alcala, 1974

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing

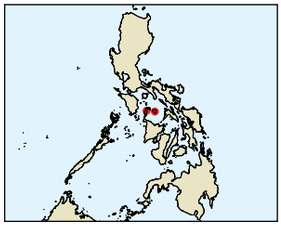


Geographic Range This species occurs in the rainforests of Romblon, Tablas, and Sibuyan Islands in the Philippines at elevations between 800 and 1,200 m asl.
Population There is no recent information on the population status of this species.
Habitat and Ecology It inhabits arboreal microhabitats in lower montane and lowland forests, and breeds by direct development.
Major Threats The populations on the smaller islands of Tablas and Romblon are particularly threatened by continuing habitat loss due to small-scale logging and conversion of lowland rainforest to agricultural land.
Conservation Measures The most important conservation measure needed at present is the designation of the remaining rainforests of the islands of Romblon and Tablas as protected areas. The population on Sibuyan Island is generally well protected. Further survey work is needed to determine the current population status of the species on the three islands.

Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1999), Brown, W.C. and Alcala, A.C. (1974), Frost, D.R. (1985), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Mae Leonida Diesmos, Liza Paguntalan, Marisol Pedregosa

EN *Platymantis levigata* Brown and Alcala, 1974

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing



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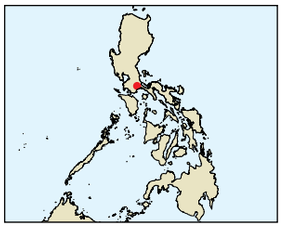
Geographic Range This species occurs in the rainforests of Romblon, Tablas, and Sibuyan Islands in the Philippines from sea level up to 800 or 900m asl.
Population It is very common in forested areas on Sibuyan Island, but there is no information available on its population status on Tablas and Romblon.
Habitat and Ecology It inhabits the forest floor stratum in lower montane and lowland forests, and breeds by direct development.
Major Threats The populations on the smaller islands of Tablas and Romblon are particularly threatened by continuing habitat loss due to small-scale logging and conversion of lowland rainforest to agricultural land.
Conservation Measures The most important conservation measure needed at present is the designation of the remaining rainforests of the islands of Romblon and Tablas as protected areas. The population on Sibuyan Island is generally well protected. Further survey work is needed to determine the current population status of the species on Tablas and Romblon.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1999), Brown, W.C. and Alcala, A.C. (1974), Frost, D.R. (1985), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Mae Leonida Diesmos, Liza Paguntalan, Marisol Pedregosa

VU *Platymantis montana* (Taylor, 1922)

Vulnerable D2
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Stable



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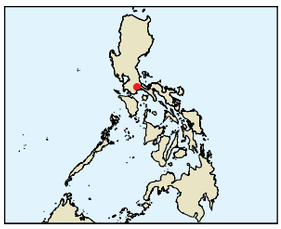
Geographic Range This species is known only from Mount Banahaw, on Luzon Island, in the Philippines.
Population It is very common above 800m asl on Mount Banahaw, and populations appear to be stable.
Habitat and Ecology It inhabits arboreal microhabitats in mossy and montane rainforests. It deposits its eggs in shrub layer vegetation, in tree ferns, aerial ferns, and pandanus. It breeds by direct development.
Major Threats There are no major threats to this species at present since it occurs in the high-elevation montane forests, which are relatively less subjected to deforestation and other human disturbance. However, its restricted range makes it vulnerable to these threatening processes.
Conservation Measures The most important conservation measure is the continued management of Mount Banahaw-San Cristobal National Park. There is also a need for continued monitoring of the population status of this species given that it is known only from this site.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1999), Brown, W.C., Brown, R.M. and Alcala, A.C. (1997), Frost, D.R. (1985), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

VU *Platymantis naomiae* Alcala, Brown and Diesmos, 1998

Vulnerable D2
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Stable

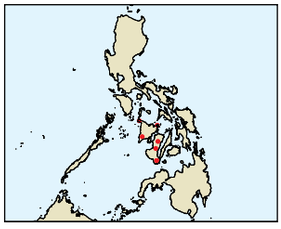


© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is known only from Mount Banahaw, on Luzon Island, in the Philippines.
Population It is very common above 800m asl on Mount Banahaw, and the population is apparently stable.
Habitat and Ecology It inhabits the forest floor stratum in mossy and montane rainforests, and breeds in the leaf-litter and deposits its eggs in terrestrial nests. It breeds by direct development.
Major Threats This species is not likely to be threatened at present since it occurs in the high-elevation montane forests, which are relatively less subjected to deforestation and other human disturbance. However, its restricted range renders it vulnerable to these threatening processes.
Conservation Measures The most important conservation measure is the continued management of Mount Banahaw-San Cristobal National Park. There is also a need for continued monitoring of the population status of this species given that it is known only from this site.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1999), Alcala, A.C., Brown, W.C. and Diesmos, A.C. (1998), Brown, R.M., Diesmos, A.C. and Alcala, A.C. (2001), Diesmos, A.C. (1998)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

EN *Platymantis negrosensis* Brown, Alcala, Diesmos and Alcala, 1997

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing



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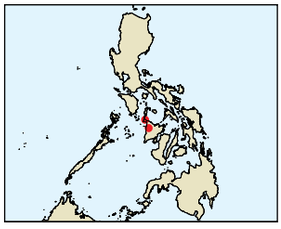
Geographic Range This species is known from the rainforests of Negros and Panay Islands, in the Philippines, between 600 and 1,800m asl.
Population Populations have declined, even in the remaining preferred habitat on Negros, although the populations on Panay have not been recently surveyed.
Habitat and Ecology It inhabits arboreal microhabitats in lower montane and lowland forests. It breeds in aerial ferns and lays its eggs in the moist detritus that has accumulated in ferns. It breeds by direct development.
Major Threats The major threat is habitat loss due to small-scale logging and the conversion of lowland rainforest to agricultural land.
Conservation Measures It occurs in several protected areas, including Mount Kanlaon National Park, but there is a need for further protection of the remaining rainforests of southern Negros. Survey work is needed to determine the population status of the species on Panay.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1999), Brown, R.M., Diesmos, A.C. and Alcala, A.C. (2001), Brown, W.C. *et al.* (1997), Brown, W.C. and Alcala, A.C. (1963)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Cynthia Dolino, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Liza Paguntalan, Marisol Pedregosa, Dondi Ubaldo, Baldwin Gutierrez

EN *Platymantis panayensis* Brown, Brown and Alcala, 1997

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing

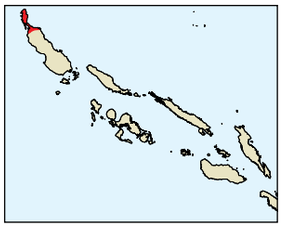


Geographic Range This species is known only from western Panay Island, in the Philippines, from 400-1,750 m asl.
Population It is common to abundant in a few localities at high elevations, but scarce at lower elevations.
Habitat and Ecology It inhabits arboreal microhabitats in mossy and montane rainforests. It breeds by direct development in shrub layer vegetation, laying its eggs on the upper surfaces of leaves.
Major Threats Although populations occurring at higher elevations may currently be subject to fewer threats, populations found at lower elevations are threatened by extensive habitat loss due to agriculture, logging, and infrastructure development.
Conservation Measures Its range includes a few protected areas, such as the Aklan River Watershed Forest Reserve. However there is clearly a need for improved protection of remaining forest habitats on the island of Panay, and for rehabilitation of tracts of degraded forest.

Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1999), Brown, R.M., Diesmos, A.C. and Alcala, A.C. (2001), Brown, W.C., Brown, R.M. and Alcala, A.C. (1997)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Cynthia Dolino, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Liza Paguntalan, Marisol Pedregosa, Dondi Ubaldo, Baldwin Gutierrez

VU *Platymantis parkeri* (Brown, 1965)

Vulnerable D2
Order, Family: Anura, Ranidae
Country Distribution: Papua New Guinea
Current Population Trend: Unknown

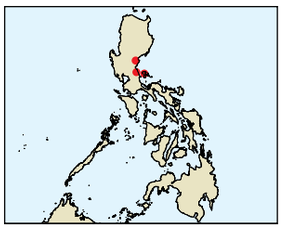


© Fred Parker

Geographic Range This species is known only from the northern end of Bougainville Island and from Buka Island, North Solomons Province, Papua New Guinea. It occurs below 100m asl, but only on uplifted coral. It certainly does not occur further south in Bougainville due to the lack of uplifted coral landscapes.
Population Its abundance is very hard to determine, since it is a diminutive species and very hard to find.
Habitat and Ecology It is a terrestrial species found in lowland rainforest and regrowth forest, rural gardens, villages, and other anthropogenic habitats. It presumably breeds by direct development.
Major Threats It is an adaptable species, but might be at risk from stochastic threatening processes, owing to its very small distribution.
Conservation Measures It is not known from any protected areas. There is a need for close monitoring of the population status of this species.
Notes on taxonomy: Brown (1965) described two subspecies within *Platymantis parkeri*. *P. p. parkeri* from Bougainville; and *P. p. bukanensis* from Buka.
Bibliography: Brown, W.C. (1965)
Data Providers: Stephen Richards, Fred Parker

EN *Platymantis polillensis* (Taylor, 1922)

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing



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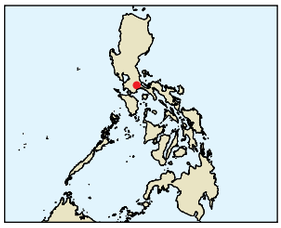
Geographic Range This species is known from the lowland rainforests of Polillo Island and the adjacent coast of Luzon Island in Aurora Province, in the Philippines. It has been recorded from 50-350m asl.
Population The number of mature frogs possibly falls within the range of 100-300 individuals on Polillo Island. It is uncommon on eastern Luzon.
Habitat and Ecology It inhabits arboreal microhabitats in lower montane and lowland forests, and is active in shrub-layer vegetation. It breeds by direct development.
Major Threats Small-scale logging and the conversion of its major habitat, lowland rainforest, to agricultural land is a major threat. Recent field studies show that the Polillo Island population of this species is possibly in decline due to the continued destruction of the lowland dipterocarp forest. This species has recently been rediscovered on the adjacent mainland of Luzon, but populations there are also subject to high levels of disturbance.
Conservation Measures The continued protection of the remaining forest on Polillo should be a priority in order to ensure the long-term survival of this species, while degraded forest habitats also need to be rehabilitated. Its range on Luzon Island includes Aurora Memorial National Park in Aurora Province.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1999), Brown, W.C., Brown, R.M. and Alcala, A.C. (1997), Crombie, R.A. (n.d.), Frost, D.R. (1985), Hampson, K. (1999a), Hampson, K. (1999b), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

VU *Platymantis pseudodorsalis* Brown, Alcala and Diesmos, 1999

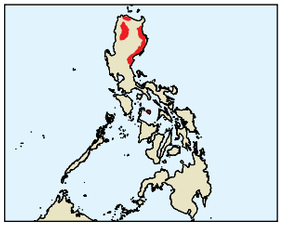
Vulnerable D2
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Stable



Geographic Range This species is known only from Mount Banahaw and Mount San Cristobal, on Luzon Island, in the Philippines. It ranges from 1,350-1,500m asl (R. Brown pers. comm.).
Population It is characterized as uncommon at the type locality, but its population is apparently stable.
Habitat and Ecology It inhabits the forest floor stratum in mossy and montane rainforests. It breeds by direct development with breeding presumably taking place in leaf-litter and eggs laid in terrestrial nests.
Major Threats This species is not likely to be threatened at present since it occurs in the middle- to high-elevation montane forests, which are relatively less subjected to deforestation and other human disturbances. However, its restricted range makes it more vulnerable to these threatening processes.
Conservation Measures The most important conservation measure is the continued management of Mount Banahaw-San Cristobal National Park. There is also a need for continued monitoring of the population status of this species given that it is known only from this site.
Bibliography: Alcala, A.C. and Brown, W.C. (1999), Brown, R.M., Diesmos, A.C. and Alcala, A.C. (2001), Brown, W.C., Alcala, A.C. and Diesmos, A.C. (1999), Diesmos, A.C. (1998)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

VU *Platymantis pygmaea* Alcala, Brown and Diesmos, 1998

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing



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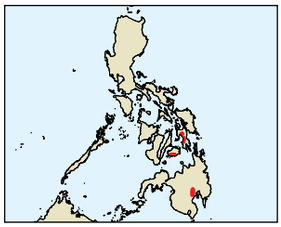
Geographic Range This species is found in the mountains of the Central Cordilleras and Sierra Madres, on northern Luzon Island, and on Sibuyan Island, in the Philippines. It ranges from 400-1,000m asl (R. Brown pers. comm.).
Population It is common in many of the known localities.
Habitat and Ecology It inhabits the forest floor litter of montane and lowland rainforests, and breeds by direct development. The males form calling aggregations.
Major Threats The major threat is the loss of lowland rainforest due to small-scale logging and conversion to agricultural land.
Conservation Measures Its range includes a few protected areas, but there remains a need for improved protection of remaining forests in the Central Cordilleras and Sierra Madres on Luzon. As its species name suggests, this is one of the smallest frogs in the Philippines (as small as 15mm in snout-vent length), and so could represent an important flagship species for conservation efforts in the region. There is also a need for further taxonomic research to resolve what might be a species complex.
Notes on taxonomy: This species probably represents a complex of more than one species.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1999), Alcala, A.C., Brown, W.C. and Diesmos, A.C. (1998), Brown, R.M., Diesmos, A.C. and Alcala, A.C. (2001)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

VU *Platymantis rabori* Brown, Alcala, Diesmos and Alcala, 1997

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing

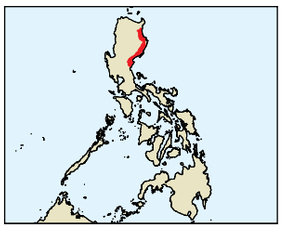


Geographic Range This species occurs in the rainforests of Bohol, Leyte, and Mindanao Islands, in the Philippines, at 300-1,400m asl. It probably occurs a little more widely than current records suggest, especially in areas between known sites.
Population It is uncommon throughout its range. It occurs at very low densities in several localities, and is known to have declined, presumably due to habitat loss.
Habitat and Ecology It inhabits arboreal microhabitats in lower montane and lowland forests. It breeds by direct development and lays its eggs in nests in tree ferns and pandanus.
Major Threats The major threat is the loss of lowland rainforest due to small-scale logging and conversion to agricultural land.
Conservation Measures Its range includes a few protected areas, but there remains a need for improved protection of the remaining rainforests on the islands of Bohol, Leyte, and Mindanao.

Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1999), Brown, R.M., Diesmos, A.C. and Alcala, A.C. (2001), Brown, W.C. *et al.* (1997)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Cynthia Dolino, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Liza Paguntalan, Marisol Pedregosa, Dondi Ubaldo, Baldwin Gutierrez

VU *Platymantis sierramadrensis* Brown, Alcala, Ong and Diesmos, 1999

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing

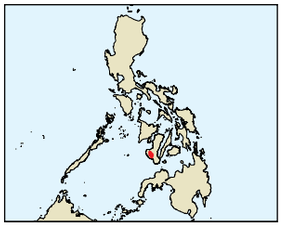



© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is found in the Sierra Madres, on north-eastern Luzon Island, in the Philippines, at 600-1,200m asl.
Population It is common in intact and lightly disturbed lowland forests, but is uncommon at higher elevations.
Habitat and Ecology It inhabits arboreal microhabitats in lower montane and lowland forests. Breeding is by direct development.
Major Threats The major threat is the loss of lowland rainforest due to small-scale logging and conversion to agricultural land.
Conservation Measures It is known to occur in Aurora National Park, but there remains a need for improved protection of the remaining forests in the Sierra Madres.
Bibliography: Alcala, A.C. and Brown, W.C. (1999), Brown, R.M., Diesmos, A.C. and Alcala, A.C. (2001), Brown, W.C. *et al.*. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Marisol Pedregosa, Dondi Ubaldo, Baldwin Gutierrez

EN *Platymantis spelaea* Brown and Alcala, 1982

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing

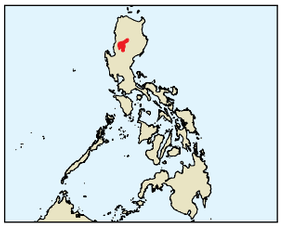



© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is known only from limestone karst and caves on southern Negros Island, at 20-400m asl, in the central Philippines.
Population It is common in forested limestone areas. A recent survey conducted by researchers from Silliman University in the Phillipines found individuals in 86 of 147 caves surveyed, with 6-16 individuals in each cave (and the population was hence estimated to be about 800 individuals).
Habitat and Ecology It inhabits caves and limestone forest in lowland forests. Breeding takes place by direct development.
Major Threats The major threat is habitat loss and degradation as a result of shifting agriculture, human encroachment, guano mining, and the quarrying of limestone. The latter two threats are particularly detrimental to the very specific habitat of this species.
Conservation Measures It is not known whether it occurs in any protected areas, but the protection of its unique habitat, the limestone karst and caves of southern Negros, should be prioritised in order to ensure the survival of the remaining populations of this species. Public education campaigns focusing on the significance of this species and its habitat are needed.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1999), Brown, W.C. and Alcala, A.C. (1982), Frost, D.R. (1985), Inger, R.F. (1999), Zippel, K. (2005)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Cynthia Dolino, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Liza Paguntalan, Marisol Pedregosa, Dondi Ubaldo, Baldwin Gutierrez

EN *Platymantis subterrestris* (Taylor, 1922)

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing

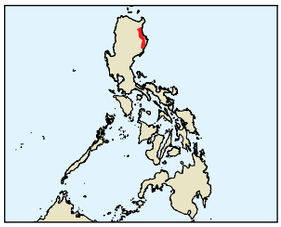



© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is found in a few localities of the central cordilleras, on northern Luzon Island in the Philippines. It might also occur on Mount Polis and Mount Pulog. It has been recorded from 1,850-2,200m asl.
Population The number of mature frogs likely to occur at the type locality (Mount Data) falls within the range of 100-300 individuals. However, it has been found in other localities away from Mount Data in recent years, and so the total population of the species is not as small as was once thought.
Habitat and Ecology It inhabits arboreal microhabitats in mossy and montane rainforests. It breeds by direct development, presumably in shrub layer vegetation.
Major Threats The most important threat to this species is the continued loss of montane forests in the cordilleras due to conversion of habitat to vegetable farms, quarrying, mining of mineral resources, and real estate development. Pollution from agricultural pesticides, which are intensively used to maintain vegetable farms, is likely to be a major factor in the loss of some populations of this species from the remaining montane forests at the type locality.
Conservation Measures Although present in several protected areas, including Pulag and Mount Data National Parks, remaining tracts of intact montane rainforest in the cordilleras require protection. The application and disposal of agricultural pesticides in the numerous vegetable farms needs to be monitored and regulated.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Alcala, A.C. and Brown, W.C. (1999), Brown, W.C., Brown, R.M. and Alcala, A.C. (1997), Crombie, R.A. (n.d.), Frost, D.R. (1985), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

EN *Platymantis taylori* Brown, Alcala and Diesmos, 1999

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing

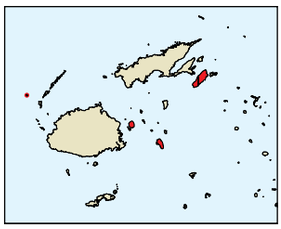


Geographic Range This species is found in the Sierra Madres, on north-eastern Luzon Island in the Philippines. It has been recorded from 100-400m asl.
Population It is common and widespread.
Habitat and Ecology It inhabits the forest floor stratum in lower montane and lowland forests, breeding and making its nests in leaf-litter. Breeding takes place by direct development.
Major Threats The major threat is habitat loss due to shifting agriculture and logging of the lowland rainforest, which is the primary habitat of this species.
Conservation Measures Its range includes a few vast protected areas in the Sierra Madres. Intensive public education campaigns are needed to supplement current efforts to protect the remaining forests in these areas.
Bibliography: Alcala, A.C. and Brown, W.C. (1999), Brown, R.M., Diesmos, A.C. and Alcala, A.C. (2001), Brown, W.C., Alcala, A.C. and Diesmos, A.C. (1999)

Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

EN *Platymantis vitiana* (Duméril, 1853) FIJI GROUND FROG

Endangered B1ab(v)
Order, Family: Anura, Ranidae
Country Distribution: Fiji
Current Population Trend: Decreasing

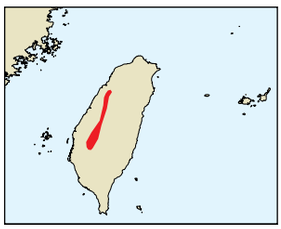



© Craig Morley

Geographic Range This species once occurred widely in Fiji, but is now restricted to the mongoose-free islands of Ovalau, Gau, Taveuni, and Viwa. It used to occur on the two large islands of Viti Levu and Vanua Levu, and on Bequa, but it is now extinct there. The last, unconfirmed, record from Vanua Levu was from the 1960s, when it was reported as part of the diet of mongooses in the Nadarivatu (Monosavu) area.
Population It occurs widely, but in small numbers, on Ovalau, Viwa, and Gau, and is fairly common on Taveuni.
Habitat and Ecology Although presumably originally a forest species, it is also found in anthropogenic habitats, including degraded forest, rural gardens, plantations, and even close to the beach. It is terrestrial and breeds by direct development, although the eggs are very hard to find.
Major Threats Introduced mongooses, released in 1883, caused a major decline, much of this having taken place by the early 20th century. It now survives only on mongoose-free islands. Mongooses are the only predators known to wipe the species out completely. It might also be impacted by introduced *Rattus praetor* and *Rattus exulans*, which arrived in Fiji some 2,500-3,000 years ago, as well as by *Bufo marinus* and introduced cats, but it is known to co-exist with all of these (on the small island of Viwa it has co-existed with *B. marinus* for over 30 years).
Conservation Measures The most important conservation measure is the prevention of the spread of mongooses to islands where the species still survives. It occurs in the Ravilevu Nature Reserve and Bouma Natural Heritage Park, both on Taveuni, but neither of these actively protects wildlife.
Bibliography: Gorham, S.W. (1965), Gorham, S.W. (1968), Gorham, S.W. (1971), Ryan, P. (1985), Ryan, P. (2000), Watling, D. and Zug, G.R. (1998), Zug, G.R. (1983)
Data Providers: George Zug, Dick Watling, Clare Morrison

EN *Pseudoamolops sauteri* (Boulenger, 1909)

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Taiwan, Province of China
Current Population Trend: Decreasing

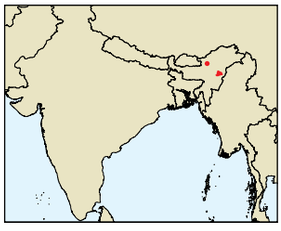



© Fei, L., Ye, C.-Y., Huang, Y.-Z. and Liu, M.-Y. 1999

Geographic Range This species is endemic to lowland areas in western Taiwan, Province of China, from 170 to about 500m asl.
Population It is a common species.
Habitat and Ecology It inhabits low-altitude hill forests and the associated streams. Breeding normally takes place in streams and ditches with running water, but has also been observed occasionally in still-water pools.
Major Threats The major threat to this species is habitat loss due to agriculture and infrastructure development.
Conservation Measures It is not recorded from any protected areas, and there is a need for improved protection of low-altitude hill forests within its range.
Notes on taxonomy: We follow Fei, Ye and Jiang (2000) in transferring this species from *Rana* to *Pseudoamolops*. The high-altitude population is now regarded as a separate species, *Pseudoamolops multidenticulatus* (Chou and Lin 1997a).
Bibliography: Chou, W.-H. and Lin, J.-Y. (1997a), Chou, W.-H. and Lin, J.-Y. (1997b), Fei, L., Ye, C.-Y. and Jiang, J.P. (2000), Lue, K.-Y., Tu, M.-C. and Hsiang, G. (1999), MacKinnon, J. *et al.* (1996), Yang, Y.-J. (1998)
Data Providers: Michael Wai Neng Lau, Chou Wenhao

VU *Pterorana khare* Kiyasetuo and Khare, 1986 INDIAN FLYING FROG

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing




© J. Meren Ao

Geographic Range This species has been recorded from disjunct areas in north-east India. The main part of the distribution appears to be within central and western Nagaland; a second population has been reported from the Pakhui Wildlife Sanctuary and nearby Nameri National Park in Assam. Reports of this species from Manipur by Dutta (1997) require further investigation and are not mapped here. It is likely to occur somewhat more widely. It is present at elevations of 200-1,600m asl.
Population It is considered to be a rare species.
Habitat and Ecology It is largely aquatic and associated with hill streams in wet tropical evergreen forest. Breeding occurs in streams, and the males guard the developing tadpoles.
Major Threats The major threat to this species is the pollution of streams by toxins used to capture fish.
Conservation Measures The species has been reported from Nameri National Park and Pakhui Wildlife Sanctuary in Assam. Recent field studies have been undertaken by Sengupta at Nameri and Pakhui (from 2000 to 2001), and by Bardoloi and Ao at Sanuoru, Rukhrona and Jakhama, in Nagaland (from 2000 to 2002). It is protected by national legislation.
Bibliography: Ao, J.M., Bordoloi, S. and Ohler, A. (2003), Chanda, S.K. (1992), Chanda, S.K. (2002), Dutta, S.K. (1997), Kiyasetuo and Khare, M.K. (1986)
Data Providers: Sushil Dutta, Saibul Sengupta, Sabitry Bordoloi

EN *Ptychadena broadleyi* Stevens, 1972

BROADLEY'S RIDGED FROG

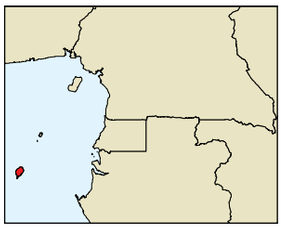
Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Malawi
Current Population Trend: Decreasing

Geographic Range This species is known only from Mulanje Mountain and the Zomba Plateau in southern Malawi. Its altitudinal range is unclear, although it presumably occurs above 1,000m asl.
Population The population status of this species is unknown.
Habitat and Ecology It is a rupicolous species, associated with open rock faces, often hiding in clumps of vegetation growing out of cracks in the rock. The surrounding environment is usually moist savannah or montane forest. The larvae develop on rock faces covered by a film of water, where they feed on algae.
Major Threats Little direct information is available on its threats, but presumably the ongoing loss of forest and woodland habitat might result in a reduction of water seeping over rocks, thus destroying its breeding habitat.
Conservation Measures It occurs in the Mulanje Mountain and Zomba Mountain Forest Reserves. Additional survey work is needed to determine the population status of this species, and to better understand the immediate threats.

Bibliography: Channing, A. (2001), Poynton, J.C. and Broadley, D.G. (1985b), Stevens, R.A. (1972), Stevens, R.A. (1974)
Data Providers: Lovemore Mazibuko, John Poynton

EN *Ptychadena newtoni* (Bocage, 1886)

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: São Tomé and Príncipe
Current Population Trend: Decreasing



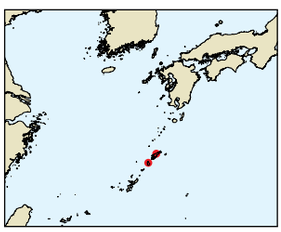
© R.C. Drewes

Geographic Range This species is restricted to the island of São Tomé, in São Tomé and Príncipe, in the Gulf of Guinea. It is a lowland species, occurring from sea level up to approximately 600m asl. Some of the localities listed in Loumont (1992) may not be accurate, but the lowland records are more likely to be accurate than the higher elevation records. Many of the localities are in the vicinity of São Tomé town but also include Diogo Vaz, to the north. A recent survey (Drewes and Stoelting 2004) collected adults in São Tomé town in a vacant lot, several in a riverine situation also in the town, and larvae from a place called Java. The two São Tomé town sites are not far apart, but Java is nearly 600m asl.
Population It was once considered a common species, but many sites have now dried up and populations have disappeared. It was previously reported from marshy places in urban areas but now appears to be absent from many previously recorded sites. It has been recently collected at a few sites but the number of sites where it can still be found is diminishing.
Habitat and Ecology It has been found in marshy areas on the outskirts of town, and in banana plantations and cultivated land close to small bodies of water. It is associated with still water, including ponds, drainage ditches and puddles, but generally appears to require permanent water. It is believed to breed in ponds, and is not thought to breed in streams.
Major Threats The primary threat is drainage of wetland habitat and ponds for agriculture and urban expansion.
Conservation Measures It is not recorded from any protected areas (though it may be present in the proposed Obo National Park).
Bibliography: Drewes, R.C. (2002), Drewes, R.C. and Stoelting, R.E. (2004), Loumont, C. (1992), Perret, J.-L. (1976b)
Data Providers: Robert Drewes

EN *Rana amamiensis* Matsui, 1994

AMAMI TIP-NOSED FROG

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Japan
Current Population Trend: Decreasing



© Timothy Johnson

Geographic Range This species is endemic to Japan, being only on Amamioshima and Tokunoshima of the central Ryukyu Islands.
Population The population status of this species is unknown.
Habitat and Ecology It only inhabits streams surrounded by primary or well recovered secondary broad-leaved evergreen forest.
Major Threats The major threat is habitat loss due to logging and the construction of roads, and on Tokunoshima the range of the species is particularly limited and presently very fragmented. Other threats include alteration of rivers, pollution from pesticides, and predation by invasive mongooses.
Conservation Measures It might occur in some protected areas, but this requires confirmation. Further survey work is needed to determine the population status of this species.
Bibliography: Maeda, N. and Matsui, M. (1999), Ota, H. (2000a), Sengoku, S. *et al.* (1996)
Data Providers: Yoshio Kaneko, Masafumi Matsui

VU *Rana attigua* Inger, Orlov and Darevsky, 1999

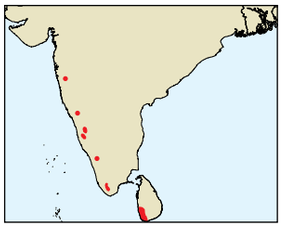
Vulnerable B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Lao P.D.R., Viet Nam
Current Population Trend: Decreasing

© Nikolai L. Orlov

Geographic Range This species is known from the southern Annamite Mountains of Viet Nam and Lao People's Democratic Republic (Inger, Orlov and Darevsky 1999; Stuart 1999). It has been recorded between 700 and 1,200m asl, and is so far known from only four localities.
Population The species can be locally common, a series of 33 and 17 specimens were collected in a single night each (Inger, Orlov and Darevsky 1999). It was regularly encountered when collected in Lao People's Democratic Republic (B. Stuart pers. comm.), but was considered not to be common when collected in some areas of Viet Nam (Nguyen pers. comm.).
Habitat and Ecology All records of this species are from streams in wet evergreen forest. It is a stream-breeding amphibian.
Major Threats The species' habitat is under threat from forest degradation due to clearance for agriculture and logging (Inger, Orlov and Darevsky 1999, BirdLife International 2001). Long-term changes to hydrology might also be a threat.
Conservation Measures One location in Viet Nam is within Kon Chan Ran Nature Reserve and the whole population in Lao People's Democratic Republic is within the Xe Sap National Biodiversity Conservation Area. Establishing a secure protected area on the Tay Nguyen Plateau is a high conservation priority (Kon Cha Ran is decreed as a Nature Reserve, but no conservation action has been implemented; BirdLife International 2001).
Bibliography: Birdlife International (2001), Inger, R.F., Orlov, N. and Darevsky, I.S. (1999), Stuart, B.L. (1999)
Data Providers: Peter Paul van Dijk, Bryan Stuart

VU *Rana aurantiaca* Boulenger, 1904

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India, Sri Lanka
Current Population Trend: Decreasing

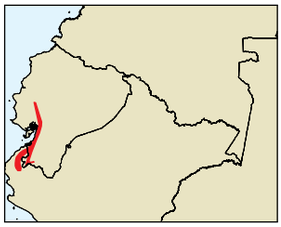


© Cristina Mittermeier

Geographic Range Specimens currently assigned to this species have been collected in the southern Western Ghats of India and in Sri Lanka. Reports of this species from other parts of the Western Ghats appear to be misidentifications. It has an altitudinal range of 200-1,400m asl in India, and from 5-660m asl in Sri Lanka.
Population It is locally abundant at confirmed localities in the southern Western Ghats and in Sri Lanka.
Habitat and Ecology It is a semi-arboreal, and semi aquatic frog, associated with wetlands in tropical moist forest, swamp forest, and coastal regions. Adults are frequently found on rocks in waterbodies. In India, the larvae are reported to occur in streams and other running waters; they can also be found in tea and coffee plantations, but only at the forest edge.
Major Threats There is continuing loss of the habitat of this species largely caused by the conversion of land for agricultural use (including the drainage of wetlands) and the development of mining. Agrochemical pollution is also a threat.
Conservation Measures It is present in many protected areas in Sri Lanka, and might occur in Kudremukh National Park in Karnataka, India. It is protected by national legislation in India.
Notes on taxonomy: The population in Sri Lanka assigned to *Rana aurantiaca* probably belongs to an undescribed species (S.D. Biju and K. Manamendra-Arachchi pers. comm.). However, pending taxonomic revision, *Rana aurantiaca* is treated here as a single species.
Bibliography: Biju, S.D. (2001), Boulenger, G.A. (1904), Dutta, S.K. (1997), Dutta, S.K. and Manamendra-Arachchi, K. (1996), Krishnamurthy, S.V. and Shakuntala, K. (1996), Padhye, A.D. and Ghate, H.V. (2002)
Data Providers: S.D. Biju, Kelum Manamendra-Arachchi, Sushil Dutta, Robert Inger, Anslem de Silva

VU *Rana bwana* Hillis and de Sa, 1988

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Ecuador, Peru
Current Population Trend: Decreasing



© Mario Humberto Yánez-Muñoz

Geographic Range This species is known only from the Pacific versant of the Huancabamba Depression, in tributaries of the Río Chira, in the departments of Piura and Tumbes, Peru, and the provinces of El Oro and Loja, Ecuador, at elevations of 300-700m asl.
Population It is locally common in permanent waterbodies.
Habitat and Ecology This species occurs in tropical forest, but has also been found in disturbed habitats. It occurs near fast-flowing rivers and reproduces in pools of water near rivers.
Major Threats The major threat is ongoing habitat loss, mainly as a result of agricultural expansion and human settlement.
Conservation Measures It occurs in the Reserva Ecológica Manglares Churute in Ecuador, and might also occur in Zona Reservada de Tumbes, Parque Nacional Cerros de Amotape, and Coto de Caza El Angolo in Peru.
Notes on taxonomy: This species is currently under taxonomic revision and the southern populations might be described as a new species.
Bibliography: Hillis, D.M. and de Sá, R. (1988), Instituto Nacional de Recursos Naturales (INRENA) (2000), Rodríguez, L.O., Cordova, J.H. and Icochea, J. (1993)
Data Providers: Ariadne Angulo, Luis A. Coloma, Santiago Ron, Diego Almeida, Fernando Nogales, Mario Yánez-Muñoz

EN *Rana cerigensis* Beerli, Hotz, Tunner, Heppich and Uzzell, 1994

KARPATHOS FROG

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Greece
Current Population Trend: Decreasing

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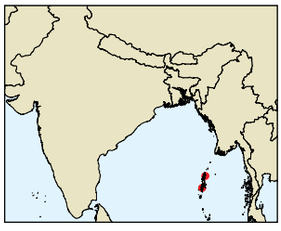
Geographic Range This species is known only from Karpathos Island and Rhodos Island [Rhodes], Greece. On Karpathos Island, it is currently only known with certainty from a single river, near Olimbos in the mountains on the north side of the island, and it does not appear to range more widely; on Rhodos the species is found only in higher altitude, forested areas.

Population The known population on Karpathos is reported to be 'modest' (Beerli *et al.* 1994). Earlier literature sources from the 1960s have indicated that water frogs were abundant on the island, but around 1992 they were difficult to find (with very few adults being observed, but several juveniles) (P. Beerli pers. comm.). Recent reports indicate that it is quite common in its singe site on Karpathos.
Habitat and Ecology It is a mostly aquatic species, largely restricted to permanent still or slow-running waters and apparently sensitive to habitat change. Breeding and larval development presumably take place in these waterbodies.
Major Threats The major threat is habitat loss and degradation of suitable aquatic habitats, largely caused by subsistence agriculture, logging and infrastructure development, as well as from over extraction of water and pollution by agricultural, tourist and domestic sources.
Conservation Measures It is listed on Appendix III of the Berne Convention. It probably occurs in a protected area on Karpathos, but there is a need for further research into the range and low population of this species on Karpathos. The taxonomic status of the population on Rhodos needs to be examined.
Notes on taxonomy: The taxonomic status of this frog is still unclear. Frogs from Karpathos have a set of unique electrophoretic enzyme alleles, and voice recordings are very different from Anatolian populations of *Rana bedriagae*, but short mtDNA-sequences suggest that the same haplotypes occur in Anatolia and Karpathos (P. Beerli pers. comm.). Frogs on Rhodos are very similar to the ones on Karpathos, but on Rhodos there are electrophoretic enzyme alleles that occur on the mainland and not on Karpathos. This could be simply due to the small population size on Karpathos or it could be due to an introduction of Anatolian frogs onto Rhodos (P. Beerli pers. comm.).
Bibliography: Arnold, E.N. (2003), Beerli, P. (1994), Beerli, P. *et al.* (1994), Beerli, P., Hotz, H. and Uzzell, T. (1996), Gasc, J.-P. *et al.* (eds.) (1997)
Data Providers: Peter Beerli, Thomas Uzzell, Petros Lymbakis

CR *Rana charlesdarwini* Das, 1998

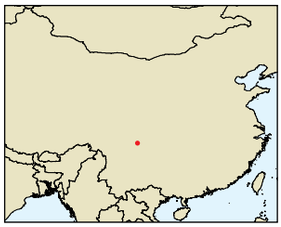
Critically Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: India
Current Population Trend: Decreasing



Geographic Range This species appears to be endemic to small parts of South Andaman and North Andaman in the Andaman Islands of India, below 500m asl, where it is currently known only from Mount Harriet and Saddle Peak.
Population It is not an uncommon species.
Habitat and Ecology It is thought to be an arboreal species of tropical moist forest. Breeding takes place in tree holes by larval development.
Major Threats The major threat to this species is forest loss due to clear-cutting.
Conservation Measures It has been recorded from Mount Harriet National Park and Saddle Peak National Park, and is protected by national legislation in India.
Bibliography: Das, I. (1998b)
Data Providers: Indraneil Das, Sushil Dutta, S.P. Vijayakumar

CR *Rana chevronta* Hu and Ye, 1978

Critically Endangered B2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing



© Fei, L., Ye, C.-Y., Huang, Y.-Z. and Liu, M.-Y. 1999

Geographic Range This species is only known from Mount Emei, in Sichuan Province, China. It has been recorded from 1,600-1,800m asl.
Population It is known from only one location, and has not been seen since 1983, despite many searches.
Habitat and Ecology It is an inhabitant of mixed forests, and breeds in still-water pools and ponds.
Major Threats Small-scale agriculture is continuing on parts of Mount Emei, and atmospheric pollution is leading to the acidification of streams.
Conservation Measures The only known location for this species is inside the Mount Emei Scenic Area World Heritage Site. However, further survey work is required on Mount Emei to determine whether or not this species still survives in the wild.
Bibliography: Fei, L. *et al.* (1999), Hu, S.-Q., Fei, L. and Ye, C.-Y. (1978), MacKinnon, J. *et al.* (1996)
Data Providers: Wu Guanfu, Ye Changyuan

CR *Rana chichicuahutla* Cuellar, Méndez-De La Cruz and Villagrán-Santa Cruz, 1996

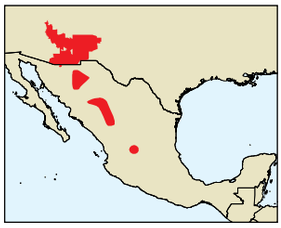
Critically Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Mexico
Current Population Trend: Decreasing

Geographic Range This species is known only from the Lago de Las Minas, about 6km southeast of San Jose Alchichica, Puebla, Mexico. Lago de Las Minas is approximately 1km long by 0.5km wide. It might be found in other similar habitats within the same valley, although this has yet to be determined. Nevertheless, its range is likely to be very restricted. It occurs at approximately 2,324m asl.
Population This species is known to be quite scarce.
Habitat and Ecology It is known only from the vegetation (bullrushes) surrounding the eastern shore of Lago de Las Minas, and presumably breeds in the lakes' waters. It is not known if this species can adapt to modified habitats.
Major Threats The water-level in the lake has dropped approximately 2m since the 1950s, principally through extensive groundwater pumping for agricultural development. There is also continued deterioration in the quality of habitat surrounding the lake.
Conservation Measures The species is not present in any protected areas, and maintenance of the vegetation surrounding the lake should be a priority conservation action. The population status of this species requires careful monitoring.
Bibliography: Cuellar, O., Méndez-De La Cruz, F. and Villagrán-Santa Cruz, M. (1996)
Data Providers: Georgina Santos-Barrera

VU *Rana chiricahuensis* Platz and Mecham, 1979

CHIRICAHUA LEOPARD FROG

Vulnerable A2ace
Order, Family: Anura, Ranidae
Country Distribution: Mexico, United States of America
Current Population Trend: Decreasing

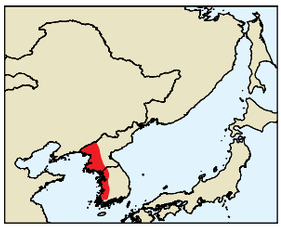


© Kenny Wray

Geographic Range This species is known from Arizona and New Mexico in the United States, and from Mexico (Platz and Mecham 1979). The range of this species is divided into two areas. The first includes northern montane populations along the southern edge of the Colorado Plateau (= Mogollon Rim) in central and eastern Arizona and west-central New Mexico. The second includes southern populations located in the mountains and valleys south of the Gila River in south-eastern Arizona and south-western New Mexico, and extends into Mexico along the eastern slopes of the Sierra Madre Occidental (Platz and Mecham 1979). Populations in the northern portion of the range might soon be described as a new species (Platz pers. comm.). Elevations of Chiricahua Leopard Frog localities range from 1,000-2,710m asl (Platz and Mecham 1979; Sredl *et al.* 1997; Smith and Chiszar 2003).
Population It is rare in suitable habitat. It is known from several dozen locations in Arizona and New Mexico, in addition to others elsewhere in the range. Local abundance appears to fluctuate greatly. Populations in stock tanks generally include fewer than 100 individuals. Historically, it occurred at 212 sites in Arizona, 170 in New Mexico, and 12-13 in Mexico (USFWS 2000). These numbers pertain to both *R. chiricahuensis* and the undescribed new species from the northern portion of the range. It is now absent from many historical localities and numerous mountain ranges, valleys, and drainages within its former range (USFWS 2000). Where still present, populations often are few, small, and widely scattered (USFWS 2000). Possibly some disappearances from historical sites represent natural fluctuations rather than long-term declines caused by human impacts, but in most areas disappearances appear to reflect real, on-going declines (USFWS 2000).
Habitat and Ecology This species occurs in a wide variety of permanent and semi-permanent aquatic systems in oak, mixed oak and pine woodlands, chaparral, grassland, and even desert habitats (Stebbins 1985b). The perennial or near-perennial habitats from which they are known or likely to have occurred and reproduced include springs, cienegas, earthen cattle tanks, small creeks, and slack water of main-stem rivers (Sredl and Jennings 2005). Many habitats are modified or artificial aquatic systems (Sredl *et al.* 1997; Sredl and Saylor 1998). Deep areas, root masses, and undercut banks are used when escaping capture. Habitat heterogeneity is likely important. The frogs will move into newly created suitable habitat rapidly, if near to occupied habitat (Sredl and Jennings 2005).
Major Threats The most important threats are disease (chytridiomycosis, documented in this species as early as 1992), non-native predators and competitors (bullfrogs, sport fish, crayfish), effects of small, isolated populations, loss of aquatic habitat through drying, damming, diverting, or siltation, and heavy grazing (USFWS 2002).
Conservation Measures It occurs in Coconino, Tonto, Apache, Sitgreaves, Gila, and Coronado national forests (Jennings 1995; Sredl *et al.* 1997). Both the northern and southern populations of *R. chiricahuensis* are listed as threatened under the Endangered Species Act in 2002, and a recovery team was established in 2003. Conservation actions will include both short-term interim actions to prevent further deterioration of the species' status, and longer-term planning for eventual recovery of the species. Arizona Game and Fish Commission Order 41 prohibit the collection of this species from the wild in Arizona. It is included as Wildlife of Special Concern in Arizona (Arizona Game and Fish Department 1996). Priority research topics include identification of the importance of disease, pesticides and other contaminants, climate change, UV radiation, fire management, and possibly other threats to the status and recovery potential of the Chiricahua Leopard Frog. Also, research is needed on key aspects of the frog's status, distribution, and ecology.
Notes on taxonomy: Northern populations of this species might represent a distinct species. Leopard frog populations in the Huachuca Mountains that are currently diagnosed as *Rana subaquavocalis* might be *R. chiricahuensis*. Smith and Ciszar (2003) consider the record of *Rana pustulosa* from 13km W Matáchic, Chihuahua, Mexico, to actually refer to *Rana chiricahuensis*.
Bibliography: Arizona Game and Fish Department (1996), Blackburn, L., Nanjappa, P. and Lannoo, M.J. (2001), Bradley, G.A. *et al.* (2002), Clarkson, W.R. and Rorabaugh, J.C. (1989), Degenhardt, W.G., Painter, C.W. and Price, A.H. (1996), Fernandez, P.J (1996), Frost, J.S. and Bagnara, J.T. (1977), Frost, J.S. and Platz, J.E. (1983), Goldberg, C.S., Field, K.J. and Sredl, M.J. (2003), Green, D.M. and Delisle, D.M. (1985), Hillis, D.M. (1988), Hillis, D.M., Frost, J.S. and Wright, D.A. (1983), Jennings, R.D. (1988), Jennings, R.D. (1995), Jennings, R.D. (Unpublished), Jennings, R.D. and Scott, Jr. (1993), Mecham, J.S. (1968a), Platz, J.E. and Mecham, J.S. (1979), Platz, J.E. and Mecham, J.S. (1984), Rosen, P.C. *et al.* (1995), Schwalbe, C.R. (1993), Scott Jr, N.J. and Jennings, R.D. (1985), Smith, H.M. and Chiszar, D. (2003), Sredl, M.J (1993), Sredl, M.J. *et al.* (1997), Sredl, M.J. and Jennings, R.D. (2005), Sredl, M.J. and Saylor, L.S. (1998), Stebbins, R.C. (1985b), U.S. Fish and Wildlife Service (2000e), U.S. Fish and Wildlife Service (2002b)
Data Providers: Georgina Santos-Barrera, Geoffrey Hammerson, Michael Sredl

VU *Rana chosenica* Okada, 1931

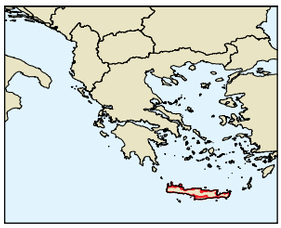
Vulnerable B2ab(iii,iv)
Order, Family: Anura, Ranidae
Country Distribution: Korea, D.P.R., Korea, Republic
Current Population Trend: Decreasing



Geographic Range This species is known from the Democratic People's Republic of Korea and the Republic of Korea.
Population It is greatly reduced in numbers, and has recently been recorded from only four locations.
Habitat and Ecology It inhabits rice paddies and ponds.
Major Threats Habitat destruction and degradation are the major threats to this species, in particular due to changes in agricultural land use from rice to other crops, which is greatly reducing the habitat available to the species. Infrastructure development and water pollution pose additional threats.
Conservation Measures The range of this species overlaps with a few protected areas. It is currently included in legislation by the Ministry of the Environment of the Republic of Korea.
Bibliography: Shannon, F.A. (1956), Szyndlar, Z. (1984), Yang, S.-Y. and Yu, C.H. (1978)
Data Providers: Masafumi Matsui

EN *Rana cretensis* Beerli, Hotz, Tunner, Heppich and Uzzell, 1994 — CRETAN FROG

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Greece
Current Population Trend: Decreasing




© Lars Bergendorf

Geographic Range This species is endemic to the island of Crete, Greece, where it is patchily distributed in the lowlands over a wide area generally below 100m asl.
Population It does not appear to be particularly abundant, and is especially difficult to find in dry years.
Habitat and Ecology It is associated with wetlands including slow-moving rivers and streams, lakes and marshes. Breeding and larval development presumably take place in these waterbodies.
Major Threats The loss of aquatic habitats is the principal threat to this species. Extraction of stream water in the uplands for agricultural irrigation (for bananas) leaves many lowland reaches dry during the summer months. Additional habitat loss may be occurring through infrastructure and tourism development. It might be impacted by the introduction of *Rana catesbeiana*.
Conservation Measures The species is listed on Appendix III of the Berne Convention. Although it occurs in many protected areas, several are not well protected or managed for biodiversity conservation. Further research into the population status and distribution of this species is urgently needed.
Notes on taxonomy: The species status of *Rana cretensis* is "confirmed" by short mtDNA sequences and a large number of private allozyme alleles not found in any other water frog (P. Beerli pers. comm.).
Bibliography: Arnold, E.N. (2003), Beerli, P. (1994), Beerli, P. *et al.* (1994), Beerli, P., Hotz, H. and Uzzell, T. (1996), Gasc, J.-P. *et al.* (eds.) (1997)
Data Providers: Peter Beerli, Thomas Uzzell, Petros Lymbakis

EN *Rana dunni* Zweifel, 1957

Endangered A2ae; B1ab(iii,v)+2ab(iii,v)
Order, Family: Anura, Ranidae
Country Distribution: Mexico
Current Population Trend: Decreasing

Geographic Range This species is known from Lake Pátzcuaro, Lake Cuitzeo and the surrounding streams in Río de Morelia, central Michoacán, Mexico.
Population It used to be common but over harvesting has greatly reduced the population.
Habitat and Ecology It is an aquatic species that lives in deep water with abundant nutrients; eggs are laid in the streams.
Major Threats This species is locally exploited for human consumption, particularly around the Lake Pátzcuaro area where it is considered a delicious dish. However, no data are available regarding the number of individuals in the local trade.
Conservation Measures It is not known from any protected areas. The effect of the local trade on the population status of the species in the Lake Pátzcuaro area needs to be evaluated, and there is a need to manage the offtake of this species for human consumption in a sustainable manner. This species is protected by Mexican law under the "Special Protection" category (Pr).
Notes on taxonomy: This species is a member of the *Rana pipiens* complex.
Bibliography: Hillis, D.M., Frost, J.S. and Wright, D.A. (1983), Zweifel, R.G. (1957)
Data Providers: Georgina Santos-Barrera, Oscar Flores-Villela

VU *Rana epeirotica* Schneider, Sofianidou and Kyriakopoulou-Sklavounou, 1984 — EPIRUS WATER FROG

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Albania, Greece
Current Population Trend: Decreasing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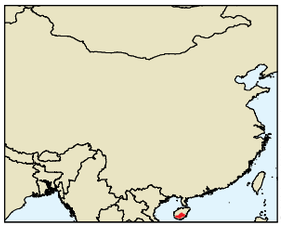
Geographic Range This species is restricted to western Greece (including the island of Kerkyra), and southern Albania. It seems likely that populations of this species are fragmented because there are extensive areas of unsuitable habitat within its range. It occurs from sea level to around 500m asl.
Population This species has been described as quite abundant throughout much of its range (Gasc *et al.* 1997), although some populations are believed to be in decline.
Habitat and Ecology This species is mostly aquatic and is commonly associated with still waters, slow-moving rivers, canals, and marshes, often with rich vegetation at their edges. Breeding and larval development takes place in these waterbodies. It is not known if the species can adapt to changes in habitat.
Major Threats The main threats to this species are general loss of wetland habitat (through drainage for urbanization, tourism and agricultural intensification), water pollution, and large-scale commercial collection for food (it is harvested in enormous numbers in Albania).
Conservation Measures It is not known if the species occurs in any protected areas, though it might occur in Amvrakikos Gulf. There is a need to ensure that the offtake of this species from the wild for human consumption is managed sustainably. This species is listed on Appendix III of the Berne Convention.
Notes on taxonomy: This species does not produce hybridogenetic hybrids (Guerrini *et al.* 1997).
Bibliography: Arnold, E.N. (2003), Dubois, A. (1992), Gasc, J.-P. *et al.* (eds.) (1997), Guerrini, F. *et al.* (1997), Plötner, J. (1998), Plötner, J. *et al.* (2001), Schneider, H. and Joermann, G. (1988), Schneider, H., Sofianidou, T.S. and Kyriakopoulou-Sklavounou, P. (1984), Sofiandou, T.S., Schneider, H. and Sinsch, U. (1994), Tsiora, A. and Kyriakopoulou-Sklavounou, P. (2001), Tsiora, A. and Kyriakopoulou-Sklavounou, P. (2002)
Data Providers: Thomas Uzzell, Petros Lymbakis, Idriz Haxhiu

VU *Rana hainanensis* (Fei, Ye and Li, 2001)

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing



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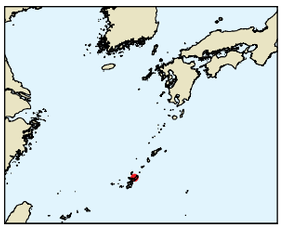
Geographic Range This species is endemic to southern and south-western Hainan, where it is known from Jiangfenglian, Diaoluoshan, Wuzhishan, Yinggeling and Wanning counties, China. It has been recorded from 200-900m asl. It is likely to be found in other locations.
Population It is a very rare species (Lu Sunqing pers. comm.).
Habitat and Ecology This frog inhabits large to medium streams and the surrounding forests. Breeding takes place in streams.
Major Threats The major threat is habitat destruction and degradation caused by shifting agriculture, past logging in the area, and the construction of hydroelectric power plants.
Conservation Measures Much of the range of this species is within protected areas.
Bibliography: Fei, L. *et al.* (1999), Fei, L., Ye, C.-Y. and Li, C. (2001)
Data Providers: Michael Wai Neng Lau, Shi Haitao

EN *Rana holsti* Boulenger, 1892

HOLST'S FROG

Endangered B1ab(iii,v)
Order, Family: Anura, Ranidae
Country Distribution: Japan
Current Population Trend: Decreasing

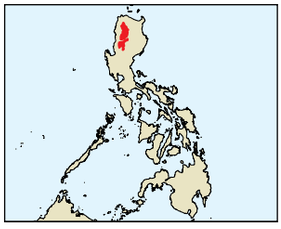


Geographic Range This species is found only on Okinawajima and Tokashikijima Islands in Japan.
Population Its population appears to be in rapid decline.
Habitat and Ecology It occurs in primary or well-recovered secondary broad-leaved evergreen forest, breeding on the wet, sandy mud substrates around the heads of mountain streams and in the surrounding still waters.
Major Threats Recent deforestation caused by road and dam construction in the northern part of Okinawajima and Tokashikijima have been damaging the habitat of this species, and will probably lead to further decline of the population on these islands.
Conservation Measures This species is designated as a natural monument by Okinawa Prefecture, but there remains a need for improved protection of forest habitat on both Okinawajima and Tokashikijima.

Bibliography: Maeda, N. and Matsui, M. (1999), Ota, H. (2000c), Sengoku, S. *et al.* (1996)
Data Providers: Yoshio Kaneko, Masafumi Matsui

VU *Rana igorota* Taylor, 1922

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing



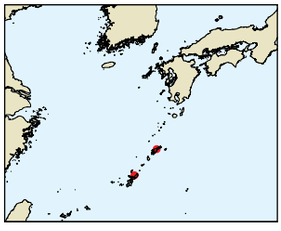
© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species occurs in the Central Cordilleras, on northern Luzon Island, in the Philippines. It has been recorded approximately between 850 and 950m asl (R. Brown pers. comm.).
Population It usually occurs in fairly good numbers in suitable habitat.
Habitat and Ecology It inhabits cool streams and rivers in montane rainforest, and is able to tolerate a small amount of disturbance. It presumably breeds in streams and lays its eggs in water.
Major Threats The most important threat to this species is the deforestation of lower montane and lowland forests in the Cordilleras. Montane forests are either being converted to vegetable farms or are being developed into real estate.
Conservation Measures There is a need for improved protection of the remaining forests in the Cordilleras on Luzon.
Notes on taxonomy: This species was removed from the synonymy of *Rana luzonensis* by Brown, McGuire and Diesmos (2000).
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Brown, R.M., McGuire, J.A. and Diesmos, A.C. (2000), Dubois, A. (1992), Frost, D.R. (1985)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Cynthia Dolino, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Liza Paguntalan, Marisol Pedregosa, Dondi Ubaldo, Baldwin Gutierrez

EN *Rana ishikawae* (Stejneger, 1901)

ISHIKAWA'S FROG

Endangered B1ab(ii,iii,v)
Order, Family: Anura, Ranidae
Country Distribution: Japan
Current Population Trend: Decreasing



© Timothy Johnson

Geographic Range This species is endemic to the Ryukyu Islands of Japan, and is found only on Amamioshima and Okinawajima Islands.
Population It is believed to be in serious decline.
Habitat and Ecology It is entirely restricted to the upstream regions of montane torrents, surrounded by primary broad-leaved evergreen forest.
Major Threats The major threat is deforestation, along with the development around stream areas (through road and dam construction), which has led to severe fragmentation of the species' habitat on each of the two islands. It is in the pet trade in Japan and the USA. In Japan, the population from Amami was being traded after the Okinawa population was protected, although now both populations are protected.
Conservation Measures The population of Okinawajima is designated as a natural monument by Okinawa and Kagoshima Prefectures, but there remains a need for improved protection of forest habitat on both Okinawajima and Amamioshima.
Notes on taxonomy: This form might be a complex of more than one species.
Bibliography: Maeda, N. and Matsui, M. (1999), Ota, H. and Toda, M. (2000b), Sengoku, S. *et al.* (1996)
Data Providers: Yoshio Kaneko, Masafumi Matsui

VU *Rana jingdongensis* (Fei, Ye and Li,, 2001)

Vulnerable A2acd
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing

Geographic Range This species is endemic to south-western Yunnan Province (Jingdong, Jinping, Luchun, Yongde, Cangyuan, and Menglian counties), in China. It has been recorded from 1,000-1,600m asl.
Population This was formerly a common species, but it is now considered to be rare.
Habitat and Ecology It inhabits montane streams in forested areas; breeding takes place in streams.
Major Threats The major threat is habitat destruction and degradation caused by small-scale subsistence logging and agriculture, as well as the establishment of power plants. They are also subject to over-collecting for food.
Conservation Measures A number of protected areas are present within the range of this species. There is a need to ensure that offtake from the wild for human consumption is managed sustainably.

Bibliography: Fei, L., Ye, C.-Y. and Li, C. (2001), MacKinnon, J. *et al.* (1996), Yang, D.-T. *et al.* (1983)
Data Providers: Lu Shunqing, Yang Datong

EN *Rana johni* Blair, 1965

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Mexico
Current Population Trend: Decreasing

Geographic Range This species is known only from south-eastern San Luis Potosí and eastern Hidalgo, Mexico, at low to moderate elevations.
Population It is a rare species.
Habitat and Ecology It is found in low and moderate elevation montane forest, and is usually found in or near river systems, and breeds in rivers.
Major Threats The major threat to this species is habitat loss and disturbance due to clear-cutting of the forest, which could in turn lead to the disappearance or drying out of permanent water bodies.
Conservation Measures It is not known from any protected areas, and there is a need for immediate protection of the montane forest habitat of this species. A survey of the San Luis Potosí localities is needed to establish the population status of the species in that region. This species is protected by Mexican law under the "Special Protection" category (Pr).

Bibliography: Webb, R.G. (1988)
Data Providers: Georgina Santos-Barrera, Oscar Flores-Villela

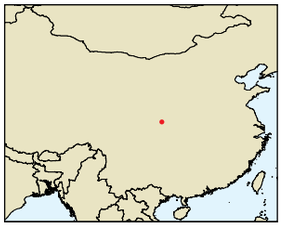
VU *Rana junlianensis* (Huang, Fei and Ye, 2001)

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing

Geographic Range This species is known from Junlian County in Sichuan Province and Bijie, Dafang, Hezhang, Nayong and Qianxi in Guizhou Province, China. It has an altitudinal range of 650-1,150m asl.
Population There is no information on the current population status of this species.
Habitat and Ecology It is associated with large streams in forested areas, and breeding takes place in streams. It is not known if this species is adaptable to habitat change.
Major Threats The main threat is forest loss due to logging and smallholder farming activities.
Conservation Measures It is not present in any protected areas. There is a need for improved protection of the remaining forested areas within the range of this species.
Bibliography: Fei, L. and Ye, C.Y. (2001)
Data Providers: Fei Liang, Ye Changyuan

EN *Rana kuangwuensis* Liu and Hu, 1966

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing



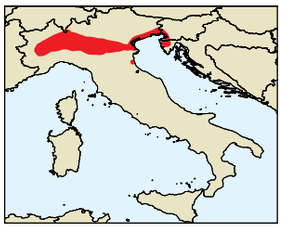
© Fei, L., Ye, C.-Y., Huang, Y.-Z. and Liu, M.-Y. 1999

Geographic Range This species is endemic to Nanjiang County in Sichuan Province, China, where it has been recorded around 1,650m asl.
Population It is only known from a single location and has only a small population.
Habitat and Ecology It inhabits large streams in hill forests, and presumably breeds in streams.
Major Threats The restricted range of this species makes it especially vulnerable to threatening processes, such as ongoing habitat loss.
Conservation Measures The range of this species includes Guangwushan Nature Reserve, a small nature reserve in Nanjiang County.
Bibliography: Fei, L. *et al.* (1999), Liu, C.-C. and Hu, S.-Q. (1966), MacKinnon, J. *et al.* (1996)
Data Providers: Wu Guanfu, Li Cheng

VU *Rana latastei* Boulenger, 1879

ITALIAN AGILE FROG

Vulnerable B2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Croatia, Italy, Slovenia, Switzerland
Current Population Trend: Decreasing

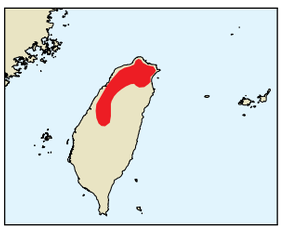


© Andreas & Christel Nöllert

Geographic Range This species occurs from the lowlands of the Padano Venetian plain of northern Italy and southern Switzerland (where it is restricted to a small area in Kanton Ticino), east to the Triestine and Istrian regions of north-eastern Italy, with a few sites in Slovenia and Croatia. It is present from sea level up to around 500m asl, but sites at higher elevations are unusual.
Population It is relatively abundant along some northern tributaries of the Po River, with a few sites existing along southern tributaries. It is occasional and localized in north-western Italy being more common in north-eastern areas. Some of the breeding sites in Switzerland can contain hundreds of individuals. Populations of the species are generally larger in the eastern parts of its range and population genetic diversity decreases sharply from east to west by a factor of three (populations located in the western part of the distribution have severely reduced genetic diversity as measured at microsatellite loci, while populations located in the east do not; T. Garner pers. comm.).
Habitat and Ecology The original habitat of this species is semi-hygrophilous forest; in secondary habitats it is associated with humid deciduous wooded areas, typically situated alongside small streams, rivers, or lakes, with rich vegetation. It is present in poplar plantations with thick understorey and occasionally meadows (Arnold 2002). It hibernates on land, where it may occur up to a kilometre from water (Arnold 2002). The species breeds in permanent and temporary water in wooded areas, sometimes including slow-moving rivers. It can occur in anthropogenic habitats such as agricultural irrigation ditches, but only if these are close to forest remnants for over wintering (Garner. pers. comm.).
Major Threats This species is threatened by the destruction of much of the original humid deciduous forests of the Padano Venetian plain and Istrian region by extensive agricultural development including drainage and deforestation (with population fragmentation). Additional threats to this species are the introduction of predatory fishes, lowering of the water table, and aquatic pollution. The reduced genetic diversity in western populations might be leading to greater vulnerability to emergent pathogens (T. Garner pers. comm.).
Conservation Measures It is present in several protected areas across its range. It is listed on Appendix II of the Berne Convention, and is listed on Annex II and IV of the EU Natural Habitats Directive. It is protected by national legislation in Italy, Switzerland and Slovenia and has been recorded in a number of national and Red Data books and lists.
Bibliography: Andreone, F. and Sindaco, R. (1999), Arnold, E.N. (2003), Garner, T. and Pearman, P. (2001), Garner, T.W.J and Tomio, G. (2001), Garner, T.W.J., Angelone, S. and Pearman, P. (2003), Gasc, J.-P. *et al.* (eds.) (1997), Grossenbacher, K. (1982), Grossenbacher, K. (1988), Grossenbacher, K. (1994), Grossenbacher, K. (1997), Hettyey, A. and Pearman, P.B. (2003), Ildos, A.S. and Ancona, N. (1994), Veith, M.,Kosuch, J. and Vences, M. (2003), Vogrin, N. (1996)
Data Providers: Franco Andreone, Trent Garner, Benedikt Schmidt, Claudia Corti, Milan Vogrin

VU *Rana longicrus* Stejneger, 1898

Vulnerable B1ab(iii,v)
Order, Family: Anura, Ranidae
Country Distribution: Taiwan, Province of China
Current Population Trend: Decreasing

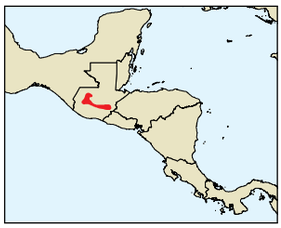


© Fei, L., Ye, C.-Y., Huang, Y.-Z. and Liu, M.-Y. 1999

Geographic Range This species is endemic to northern and central Taiwan, Province of China, where it has been recorded below 1,000m asl.
Population It is a rare species that appears to be in decline.
Habitat and Ecology It inhabits cultivated fields and broadleaf forests. It breeds in marshes, pools, and ponds.
Major Threats The major threat is extensive habitat destruction and degradation, in particular due to infrastructure development. Water pollution is also a threat.
Conservation Measures This species is protected within Yangming San National Park.
Bibliography: Fei, L. *et al.* (1999), Lue, K.-Y., Tu, M.-C. and Hsiang, G. (1999), MacKinnon, J. *et al.* (1996), Yang, Y.-J. (1998)
Data Providers: Lue Kuangyang, Chou Wenhao

VU *Rana macroglossa* Brocchi, 1877

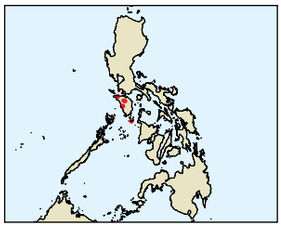
Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Guatemala
Current Population Trend: Decreasing



Geographic Range This species occurs only in the highlands of western and central Guatemala, from 1,500 up to at least 2,500m asl.
Population It is an uncommon species.
Habitat and Ecology It lives in cloud forest, including degraded forest, and grassland. It breeds in streams and small temporary ponds.
Major Threats There is ongoing degradation of its habitat due to agricultural encroachment, wood extraction, human settlement, and water pollution.
Conservation Measures It is not found in any protected areas. The taxonomic validity of this species requires further investigation.
Bibliography: Brocchi, M.P. (1877), Campbell, J.A. (2001), Smith, H.M., Lynch, J.D. and Reese, R.W. (1966)
Data Providers: Manuel Acevedo, Eric Smith

EN *Rana mangyanum* Brown and Guttman, 2002

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing



© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is known only from the islands of Mindoro and Sibay, from sea level to 600m asl, in the Philippines.
Population It is common in several localities on Mindoro.
Habitat and Ecology It inhabits undisturbed and disturbed streams and rivers in lower montane and lowland forests. Breeding takes place in streams in forested and disturbed areas, and the larvae develop in quiet side-pools in rivers.
Major Threats Important threats to this species are the loss of the lowland rainforest due in particular to agricultural activities (cultivation of crops and livestock farming) and logging, and the pollution of mountain streams and rivers, due mainly to agricultural effluents.
Conservation Measures Although recorded from protected areas on Mindoro, there is a need for additional protection of remaining forest habitats in the range of this species.
Bibliography: Brown, R.M. and Guttman, S.I. (Rev.), Brown, R.M., Diesmos, A.C. and Alcala, A.C. (2001)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Cynthia Dolino, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Liza Paguntalan, Marisol Pedregosa, Dondi Ubaldo, Baldwin Gutierrez

VU *Rana megapoda* Taylor, 1942

Vulnerable B2ab(i,ii,iii)
Order, Family: Anura, Ranidae
Country Distribution: Mexico
Current Population Trend: Decreasing

Geographic Range This species occurs from southern Nayarit and western Jalisco, east to northern Michoacán, and southern Guanajuato, Mexico. It occurs from 823-1,520m asl.
Population It was previously a common species, but there has been a recent decline particularly in the southern part of its distribution.
Habitat and Ecology This species is predominantly an aquatic species that inhabits and breeds in permanent lakes, rivers and pools in shrubland and pine-oak forest.
Major Threats Water pollution is a major threat to this predominantly aquatic species. It is also harvested for food in parts of its range, in particular in the south, a threat that is thought to be increasing. In addition, there is widespread habitat destruction and degradation through much of its range, primarily as a result of logging of its pine-oak forest habitat.
Conservation Measures The range of this species does not include any protected areas, and improved protection and maintenance of forest habitat in the species' range is required. It is also necessary to ensure that offtake of this species from the wild for human consumption is managed sustainably. This species is protected by Mexican law under the "Special Protection" category (Pr).
Bibliography: Hillis, D.M., Frost, J.S. and Wright, D.A. (1983)
Data Providers: Georgina Santos-Barrera, Oscar Flores-Villela

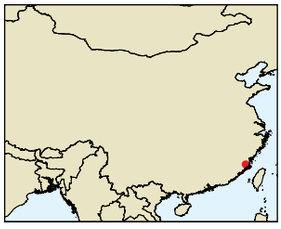
VU *Rana miadis* Barbour and Loveridge, 1929

Vulnerable D2
Order, Family: Anura, Ranidae
Country Distribution: Nicaragua
Current Population Trend: Stable

Geographic Range This species is restricted to Little Corn Island (3km²) off the Caribbean coast of Nicaragua.
Population There is no information on the current population status of this species.
Habitat and Ecology This species is an inhabitant of tropical moist lowland rainforest. Little Corn Island receives over 4,000mm of precipitation annually. It breeds in small permanent or temporary pools.
Major Threats The Corn Islands (Islas del Maiz) are becoming a popular holiday destination; the growing tourism industry will probably lead to an increase in infrastructure development on the islands resulting in unfortunate habitat loss and degradation.
Conservation Measures There are no protected areas on Little Corn Island. There is a need for regular survey work to closely monitor the poulation status of this species.
Bibliography: Köhler, G. (2001)
Data Providers: Gunther Köhler, Bruce Young

CR *Rana minima* Ting and Tsai, 1979

Critically Endangered B2ab(iii,iv,v)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing



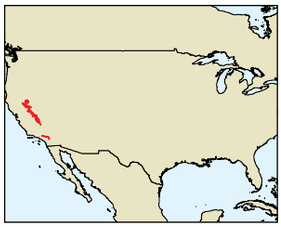
© Geng Baorong

Geographic Range This species is known only from eastern Fujian province (Fuzhou, Fuqing, Yongtai and Changle, Xianyou), China. It has been recorded from 110-550m asl.
Population This is an uncommon species that is in decline, and the Fuzhou population has entirely disappeared.
Habitat and Ecology It inhabits pools, marshes and grassy banks along small streams, but also occurs in the grassy edges of paddy fields. It breeds in still-water habitats.
Major Threats The decline of this species is probably related to habitat loss due to infrastructure development and intensification of agriculture, as well as water pollution.
Conservation Measures It is not known to be present in any protected areas, and habitat protection is urgently needed.
Bibliography: Fei, L. *et al.* (1999), MacKinnon, J. *et al.* (1996), Ting, H.B. and Cai, M.Z. (1979), Ye, C.-Y, Fei, L. and Hu, S.Q. (1993)
Data Providers: Michael Wai Neng Lau, Geng Baorong

CR *Rana muscosa* Camp, 1917

MOUNTAIN YELLOW-LEGGED FROG

Critically Endangered A2ace
Order, Family: Anura, Ranidae
Country Distribution: United States of America
Current Population Trend: Decreasing



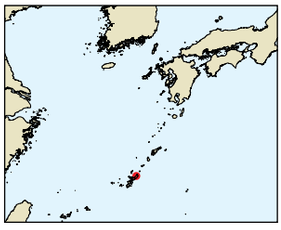
© Vance Vredenburg

Geographic Range This species is restricted to the Sierra Nevada, California, and extreme western Nevada (Mount Rose), USA. Isolated populations in southern California appear to be dying out (Stebbins 1985b). Panik (1995, unpubl. report, Nevada Division of Wildlife) reported that the species might be extirpated in Nevada, but J. Morefield (pers. comm., 2000) reported that one population is extant. It occurs at elevations of 1,800-3,600m asl in Sierra Nevada and 365-2,300m asl in southern California.
Population It is rare overall even in suitable habitat. Jennings and Hayes (1994) mapped about 50 locations with extant populations, but recent surveys indicate that some of these have declined greatly or are extirpated (see USFWS 2000). Vredenburg *et al.* (cited by Macey *et al.* 2001) stated that populations in the northern and central Sierra Nevada are close to extirpation and that there are only 3-4 healthy populations in the southern Sierra Nevada. The southern California distinct population segment exists in four small streams in the San Gabriel Mountains, four tributaries in the upper reaches of the San Jacinto River system in the San Jacinto Mountains, and a single locality on City Creek in the San Bernardino Mountains (USFWS 1999). Vredenburg *et al.* (cited by Macey *et al.* 2001) reported that only a single population still exists in each of the San Gabriel, San Jacinto, and San Bernardino mountains in southern California. There are still many (although fewer than 100) widely scattered or fragmented small populations (of less than 25 adults each) throughout much of the Sierran range. Two to four larger populations (100-2,000 adults) persist in the southern part of the range in Kings Canyon National Park (V. Vredenburg pers. comm.). In the southern California population segment, total abundance is unknown; each occupied site appears to be relatively isolated and represented by a small population, and recent surveys yielded fewer than 100 adults for all sites combined (USFWS 1999). Vredenburg *et al.* (cited by Macey *et al.* 2001) stated that there are fewer than 200 adults in the three extant occurrences combined. Jennings and Hayes (1994) mapped many more extirpated populations than extant populations. It has declined greatly in the Yosemite area of the Sierra Nevada, California (Drost and Fellers 1996). Recent surveys indicate that the range wide decline in distribution might be as much as 70-90 percent (USFWS 2000). It has probably been extirpated from more than 99% of the historical range in southern California (USFWS, Federal Register, 8 July 1997). A precipitous decline appears to have occurred over the past three to four decades (USFWS 1999e).
Habitat and Ecology The habitat of this species includes sunny riverbanks, meadow streams, isolated pools and lake borders in the Sierra Nevada, and rocky stream courses in southern California. It seems to prefer sloping banks with rocks or vegetation to the water's edge (Stebbins 1985b). It is seldom found away from water, but it can cross upland areas in moving between summer and winter habitats (Matthews and Pope 1999). Wintering sites include areas near shore under ledges and in deep underwater crevices (Matthews and Pope 1999). It probably does not tolerate timber extraction or cattle grazing, but these activities are rare within the range of this species.
Major Threats Extensive surveys in the Sierra Nevada clearly demonstrate the strong detrimental impact of introduced trout on populations of this species (Bradford 1989, Knapp and Matthews 2000). Removal of non-native fishes (relatively easy in some Sierra Nevada lakes) has been demonstrated to reverse the decline (Knapp and Matthews 2000, Vredenberg 2004). See Bradford (1991) for information on mass mortality and extinction of a population due at least in part to red-leg disease and predation on metamorphs by Brewer's Blackbird *Euphagus cyanocephalus*; re-establishment of the extirpated population probably will be prevented through predation by introduced fishes. *Rana muscosa* might be threatened by sub-lethal effects of low pH and elevated levels of dissolved aluminium (Bradford, Swanson and Gordon 1992). A petition to list this species as endangered cited the following threats: non-native fish introductions, contaminant introductions, livestock grazing, acidification from atmospheric deposition, nitrate deposition, ultraviolet radiation, drought, disease, and other factors (see USFWS 2000a). Chytrid fungal infections have also been reported in this species (Fellers, Green and Longcore 2001). The southern California population segment is threatened by predation by introduced trout, recreational suction dredging for gold, human activities at campgrounds and day-use areas, and the usual problems associated with small population size (USFWS 1999e).
Conservation Measures All known populations in southern California occur on lands managed by the U.S. Forest Service (USFWS 1999). The best protected areas in its range Yosemite, Sequoia and Kings Canyon National Parks in the Sierra Nevada. These areas, especially in Sequoia and Kings Canyon have few roads and contain the last of the large populations. However, occurrence in protected, pristine areas does not ensure population persistence, as introduced trout and diseases can still affect populations.
Notes on taxonomy: This species was originally described as two subspecies of *Rana boylii* (*Rana boylii muscosa* and *R.b. sierrae*) by Camp (1917). On the basis of the morphological data, the two subspecies were separated from *R. boylii* and raised to the species level as *R. muscosa* (Zweifel 1955).
Bibliography: Behler, J.L. and King, F.W. (1979), Blackburn, L., Nanjappa, P. and Lannoo, M.J. (2001), Bradford, D.F. (1989), Bradford, D.F. (1991), Bradford, D.F., Swanson, C. and Gordon, M.S. (1992), Camp, C.L. (1917), Drost, C.A. and Fellers, G.M. (1996), Fellers, G.M., Green, D.E. and Longcore, J.E. (2001), Frost, D.R. (1985), Green, D.M. (1986a), Green, D.M. (1986b), Jennings, M.R. and Hayes, M.P. (1994), Knapp, R.A. and Matthews, K.R. (2000), Knapp, R.A., Matthews, K.R. and Sarnelle, O. (2001), Macey, J.R. *et al.* (2001), Matthews, K.R. and Pope, K.L. (1999), Pope, K.L. and Matthews, K.R. (2001), Pope, K.L. and Matthews, K.R. (2002), Stebbins, R.C. (1985b), U.S. Fish and Wildlife Service (1999e), U.S. Fish and Wildlife Service (2000a), U.S. Fish and Wildlife Service (2002a), Vredenberg, V.T. (2004), Zweifel, R.G. (1955), Zweifel, R.G. (1968b)
Data Providers: Vance Vredenburg, Geoffrey Hammerson

EN *Rana narina* Stejneger, 1901

RYUKYU TIP-NOSED FROG

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Japan
Current Population Trend: Decreasing



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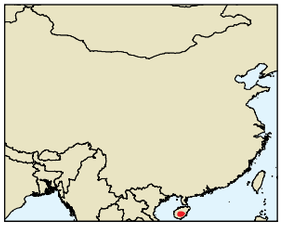
Geographic Range This species is found only on the northern part of Okinawajima Island, Japan.
Population There is no information on the current population status of this species.
Habitat and Ecology It inhabits and breeds in streams surrounded by primary or well-recovered secondary broad-leaved evergreen forest.
Major Threats The major threat is habitat loss and degradation as a result of deforestation and the alteration of rivers arising from the construction of roads and dams. Predation by introduced mongooses is also a threat.
Conservation Measures It is unclear whether it occurs in any protected areas, though there is clearly a need for improved protection of forest habitats and improved control of introduced predators on Okinawa.
Bibliography: Maeda, N. and Matsui, M. (1999), Ota, H. (2000e), Sengoku, S. *et al.* (1996)
Data Providers: Yoshio Kaneko, Masafumi Matsui

VU *Rana nasuta* (Fei, Ye and Li,, 2001)

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing



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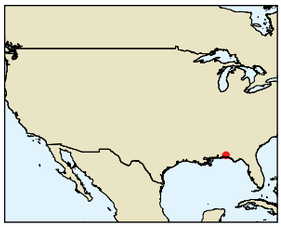
Geographic Range This species has been recorded from Qiongzhong, Lingshui, and Baisha in Hainan Province, China. It has an altitudinal range of 350-850m asl.
Population It is an uncommon species.
Habitat and Ecology This species is associated with streams in forested regions. Breeding takes place in streams.
Major Threats The main threat to this species is habitat loss, principally due to smallholder farming activities and clear-cutting of forests.
Conservation Measures It has been recorded in Wuzhishan and Bawangling Nature Reserves.
Bibliography: Fei, L., Ye, C. and Li, C. (2001)
Data Providers: Fei Liang, Li Cheng

VU *Rana okaloosae* Moler, 1985

FLORIDA BOG FROG

Vulnerable D2
Order, Family: Anura, Ranidae
Country Distribution: United States of America
Current Population Trend: Unknown



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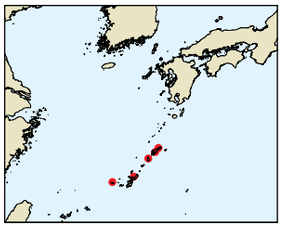
Geographic Range This species is endemic to Yellow and East Bay river drainages in Santa Rosa, Okaloosa, and Walton counties, Florida, USA (Moler 1993). Its area of occupancy might be less than 20km². It has an elevation of 3-55m asl.
Population It is known from approximately three-dozen localities along tributaries of the East Bay, Shoal and Yellow Rivers in Santa Rosa, Okaloosa, and Walton counties, Florida, USA. The number of adult individuals is unknown, but the species is probably uncommon in appropriate habitat. Calling males can make the species seem more abundant than it actually is.
Habitat and Ecology Breeding and non-breeding habitat includes: early successional shrub bog communities; in or near shallow, non-stagnant, acid (pH 4.1-5.5) seeps; and along shallow, boggy overflows of larger seepage streams that drain extensive sandy uplands, frequently in association with lush beds of sphagnum moss. It is often associated with black titi and Atlantic white cedar. Eggs are laid in thin films at the water surface of pools. Males typically call from shallow water surrounded by sphagnum (Moler 1993). It apparently tolerates disturbance because some populations occur in heavily silted streams and, in areas where streamside vegetation is more mature hardwood forest, it occurs typically only in disturbed sites (Moler 1992a).
Major Threats Improper watershed management is a potential threat; at some sites, excessive stream siltation stemming from poor placement of roads or poor forest management in surrounding uplands has degraded habitat, but frog populations often are not negatively affected by this (Moler 1992a). Major threats are stream impoundment and habitat succession (Moler 1992a).
Conservation Measures Although approximately 90% of the total range of the species is within Eglin Air Force Base, US national security has priority over wildlife. Fish and Wildlife Service, in concert with the Nature Conservancy and Eglin Air Force Base have recently drafted up a research and management plan for the species. It is protected as a Species of Special Concern by the Florida Fish and Wildlife Conservation Commission.
Bibliography: Bartlett, R.D. and Bartlett, P.P. (1999), Blackburn, L., Nanjappa, P. and Lannoo, M.J. (2001), Carmichael, P. and Williams, W. (1991), Collins, J.T. (1990), Conant, R. and Collins, J.T. (1991), Jackson, D.R. (2004), Moler, P.E. (1985), Moler, P.E. (1992a), Moler, P.E. (1993)
Data Providers: Geoffrey Hammerson, Dale Jackson, John Palis, Paul Moler

EN *Rana okinavana* Boettger, 1895

RYUKYU BROWN FROG

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Japan
Current Population Trend: Decreasing



Geographic Range This species occurs on the Japanese islands of Amamioshima, Tokunoshima, Okinawajima, Kakeromajima and Kumejima.
Population Its population is believed to be in decline.
Habitat and Ecology It occurs in forests, rivers and streams from lowland to montane areas, breeding in pools and swamps.
Major Threats The major threat is habitat loss as a result of human settlement.
Conservation Measures It is unclear whether it occurs in any protected areas, though there is clearly a need for improved protection of forest habitats on the islands.
Notes on taxonomy: This form might be a complex of more than one species.
Bibliography: Maeda, N. and Matsui, M. (1999), Sengoku, S. *et al.* (1996)
Data Providers: Yoshio Kaneko, Masafumi Matsui

CR *Rana omiltemana* Günther, 1900

GUERRERAN LEOPARD FROG

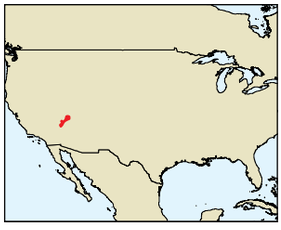
Critically Endangered B2ab(iii,v)
Order, Family: Anura, Ranidae
Country Distribution: Mexico
Current Population Trend: Decreasing

Geographic Range This species is known from only two locations in Mexico: Omiltemi State Park, in the Sierra Madre del Sur, in Guerrero; and Agua del Obispo, in north-western Guerrero. It is a montane species and the type locality is at about 2,400m asl.
Population This species has not been recorded since 1978, and it is feared that the species might now be extinct. It seems to be extirpated in the Omiltemi State Park, since a recent one-year survey of this site yielded no individuals; there is no recent information on its status at Agua del Obispo.
Habitat and Ecology It occurs in montane forest and requires the presence of slow or moderate streams for breeding.
Major Threats Although generally affected by habitat loss, the most likely cause of the extinction of the population in the Omiltemi State Park is the piping of water from streams within the species' range to provide the city of Chilpancingo with water. However, it might also have disappeared due to chytridiomycosis, since other montane stream-breeding amphibians have also disappeared from suitable habitats without any apparent reason.
Conservation Measures A survey of the Omiltemi State Park is recommended in order to confirm whether or not the species has indeed disappeared from this area. Another survey of Agua del Obispo is required to check the population status in this locality. If the species still persists in Agua del Obispo, a recovery programme might be needed and perhaps from here individuals could be taken and reintroduced to the Omiltemi area. Protection of the remaining habitat at Agua del Obispo is needed. This species is listed as "Endangered" by the Mexican government.
Bibliography: Hillis, D.M., Frost, J.S. and Wright, D.A. (1983), Lips, K.R. *et al.* (2004)
Data Providers: Georgina Santos-Barrera, Oscar Flores-Villela

EN *Rana onca* Cope, 1875

RELICT LEOPARD FROG

Endangered B2ab(v); C2a(i)
Order, Family: Anura, Ranidae
Country Distribution: United States of America
Current Population Trend: Decreasing

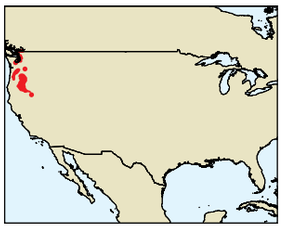


Geographic Range This species occurs on the border region of Arizona, Nevada, and Utah, USA, mostly below 1,000m asl. It was known from the Virgin and Muddy River drainages and along the Colorado River drainage downstream of its confluence with the Virgin River to Black Canyon below Lake Mead (Bradford, Jaeger and Jennings 2004, Bradford, Jennings and Jaeger 2005). In the late 1990s, the species could be found at seven sites in three general areas: a spring near Littlefield, Arizona, on the Virgin River; several springs along the Nevada side of the Overton Arm of Lake Mead; and within several springs in the Black Canyon along the Nevada side of the Colorado River (Jaeger *et al.* 2001, Bradford, Jaeger and Jennings 2004, Bradford, Jennings and Jaeger 2005). By 2001, two of these populations, including the one near Littlefield, had gone extinct (Bradford, Jaeger and Jennings 2004, Bradford, Jennings and Jaeger 2005).
Population As of 2001, there were five known sites in two general areas containing reproducing populations of leopard frogs (Jaeger *et al.* 2001, Bradford, Jaeger and Jennings 2004, Bradford, Jennings and Jaeger 2005). A rough estimate of the total population size (combining all sites) was approximately 1,100 adults (range 693-1,833), most of which were at a single spring (Bradford, Jaeger and Jennings 2004, Bradford, Jennings and Jaeger 2005).
Habitat and Ecology It occurs and reproduces in springs and outlet creeks, typically in or within a few meters of water, year round (Bradford, Jaeger and Jennings 2004, Bradford, Jennings and Jaeger 2005). It does not tolerate habitat disturbance.
Major Threats The causes of the decline of this species are not entirely clear, but the loss of habitat to agriculture and water development were likely causes, as was the introduction of American bullfrogs (*Rana catesbeiana*), crayfish, and exotic predatory fish (Jennings 1988). These factors remain active threats. Vegetation encroachment, of both exotic and native vegetation, has been suspected of causing recent declines (Bradford, Jaeger and Jennings 2004).
Conservation Measures Remaining populations occur within the Lake Mead National Recreation area. A range-wide conservation assessment and strategy is currently being developed by a working group consisting of representatives from federal, state, and local governmental agencies, as well as specialist representatives. Current conservation measures include the re-introduction of this frog to suitable, unoccupied locations, and in 2002 frogs were released at two unoccupied natural spring sites.
Notes on taxonomy: There has been historical confusion and controversy regarding the taxonomic status of various leopard frog populations in the region occupied by *Rana onca* (Jaeger *et al.* 2001). Some authors have identified extinct populations of leopard frogs in the Las Vegas Valley as *R. onca* while others consider these populations to have been a separate species, *R. fisheri*, the Vegas Valley leopard frog (see Jennings (1988)). The systematic relationship of the extinct Las Vegas populations remains unresolved (although see the unpublished report by Jennings, Riddle and Bradford (1995)). Some leopard frog populations along the Virgin River have been identified as *R. yavapaiensis* (see distributions in Stebbins 2003), but this perspective has been rejected (Jaeger *et al.* 2001).
Bibliography: Behler, J.L. and King, F.W. (1979), Blackburn, L., Nanjappa, P. and Lannoo, M.J. (2001), Bradford, D.F., Jaeger, J.R. and Jennings, R.D. (2004), Bradford, D.F., Jennings, R.D. and Jaeger, J.R. (2005), Jaeger, J.R. *et al.* (2001), Jennings, M.R. (1988), Jennings, R.D., Riddle, B.R. and Bradford, D. (1995), Stebbins, R.C. (1985b), Stebbins, R.C. (2003), Zippel, K. (2005)
Data Providers: Jef Jaeger, David Bradford, Geoffrey Hammerson

VU *Rana pretiosa* Baird and Girard, 1853

OREGON SPOTTED FROG

Vulnerable A2ace
Order, Family: Anura, Ranidae
Country Distribution: Canada, United States of America
Current Population Trend: Decreasing



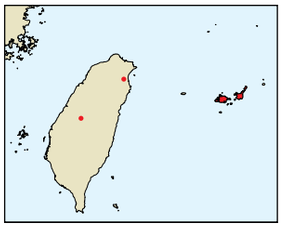

© Colin Fagan

Geographic Range This species can be found in south-western British Columbia, Canada, south through the Puget/Willamette Valley trough and the Columbia River gorge in south-central Washington to the Cascades range at least to the Klamath Valley in Oregon, USA. It has been extirpated from much of western Oregon and Washington. Some records are based on misidentified *Rana aurora* (Green *et al.* 1997). Historically, it has occurred in north-eastern California (Jennings and Hayes 1994, Hayes 1994). It occurs at an elevation of 20-1,570m asl.
Population It is now known from ca. 33 sites in the north-western United States and south-western British Columbia, Canada (Pearl and Hayes 2005). Most extant populations are small. The Conboy Lake NWR population produced a five-year maximum-estimated at 8,300 egg masses in one year in the late 1990s, but then plummeted to about 1,500 egg masses in 2003 (M. Hayes, unpubl.). Historically, it is recorded from eight localities in western Washington, 44 in Oregon, three in California, and one in British Columbia. A nearly complete survey of the range in the mid-1990s revealed extant populations only in three sites in Washington and 19 in Oregon. It is apparently extirpated in California (M. Hayes), but recently confirmed as extant in the Fraser Valley, British Columbia (D. Green pers. comm.).The species has probably vanished from about 70-90% of its former range.
Habitat and Ecology It is highly aquatic, and rarely found far from permanent quiet water; usually occurs at the grassy margins of streams, lakes, ponds, springs, and marshes (Licht 1971, 1986, Watson, McAllister and Pierce 2003). Animals may disperse into forest, grassland, and brush land during wet weather. It breeds usually in shallow water in ponds or other quiet waters. It does not appear to adapt well to habitat disturbance or alteration, although it does occur in some anthropogenic ponds in central Oregon (C. Pearl, unpubl.).
Major Threats It has declined in areas inhabited by the introduced bullfrog (Pearl *et al.* 2004). Introduced predatory fishes probably also are having a detrimental impact. The decline of this species is also probably related to loss and degradation of breeding habitat such as may result from dam construction, alteration of drainage patterns, dewatering due to urban and agricultural use of water, excessive livestock grazing, and other human activities that reduce or eliminate lentic shallow water. At the embryonic stage, UV-B radiation currently does not seem to be contributing to population declines (Blaustein *et al.* 1999).
Conservation Measures It is somewhat protected in several federal and state parks and refuges, though management usually ignores this species. Some zoos in North America have raised wild-caught larvae and then reintroduced them to the wild, although captive breeding of this species has not yet been successful.
Notes on taxonomy: *Rana luteiventris* was included in this species before it was elevated to species status by Green *et al.* (1996, 1997).
Bibliography: Behler, J.L. and King, F.W. (1979), Blackburn, L., Nanjappa, P. and Lannoo, M.J. (2001), Blaustein, A.R. *et al.* (1999), Briggs Sr, J.L. (1987), Corn, P.S. and Vertucci, F.A. (1992), Frost, D.R. (1985), Green, D.M. (1986a), Green, D.M. (1986b), Green, D.M. *et al.* (1996), Green, D.M. *et al.* (1997), Hayes, M.P. (1994), Jennings, M.R. and Hayes, M.P. (1994), Licht, L.E. (1971), Licht, L.E. (1986), Nussbaum, R.A., Brodie, Jr., E.D. and Storm, R.M. (1983), Pearl, C.A. *et al.* (2004), Pearl, C.A. and Hayes, M.P. (2005), Spahr, R. *et al.* (1991), Species at Risk Branch (2002), Turner, F.B. and Dumas, P.C. (1972), Washington Department of Wildlife (1991), Watson, J.W., McAllister, K.R. and Pierce, D.J. (2003)
Data Providers: Geoffrey Hammerson, Christopher Pearl

EN *Rana psaltes* Kuramoto, 1985

YAEYAMA HARPIST FROG

Endangered B1ab(iii,iv)+2ab(iii,iv)
Order, Family: Anura, Ranidae
Country Distribution: Japan, Taiwan, Province of China
Current Population Trend: Decreasing



Geographic Range This species is found in Nantou County and Yilan County in Taiwan, Province of China, and also on the Japanese islands of Ishigakijima and Iriomotejima.
Population It is a rare species throughout its range, and populations on Ishigakijima and Iriomotojima in Japan are in decline.
Habitat and Ecology It occurs in lowland and montane areas, inhabiting forests, marshes, pools and ditches with water plants. It breeds in nests in the mud banks surrounding ponds, pools and swamps. Egg masses are enclosed in a layer of jelly substance and are deposited in round holes constructed on wet muddy ground. Rains are vital because hatched larvae need to be flushed to the nearby waterbodies. The larvae use shallow puddles that receive continuing input from seepage or trickling water.
Major Threats The disturbance of natural forests resulting in the failure of nest construction on muddy ground is a major threat to this species. The development of low-lying wetlands is a threat in the Japanese part of the range. It may also be at risk from competition with the introduced *Bufo marinus* in Japan.
Conservation Measures The range of this species overlaps with a few protected areas. In Japan its range includes Iriomote Island which is now protected as a national park. In Taiwan, Province of China, it was discovered in Lienwachih Experimental Forestry Station, Nantou County. This area, having a small piece of undisturbed subtropical forest, is (or soon will be) protected by law.
Bibliography: Lue, K.-Y., Tu, M.-C. and Hsiang, G. (1999), MacKinnon, J. *et al.* (1996), Maeda, N. and Matsui, M. (1999), Sengoku, S. *et al.* (1996), Watanabe, S., Nakanishi, N. and Izawa, M. (2005), Yang, Y.-J. (1998)
Data Providers: Lue Kuangyang, Chou Wenhao, Yoshio Kaneko, Masafumi Matsui

CR *Rana pueblae* Zweifel, 1955

Critically Endangered B1ab(iii,v)+2ab(iii,v)
Order, Family: Anura, Ranidae
Country Distribution: Mexico
Current Population Trend: Decreasing

Geographic Range This Mexican endemic is known only from the northern state of Puebla, in the vicinity of Huauchinango city and adjacent Río Necaxa.
Population This species has not been seen since it was first collected almost 50 years ago. Several recent field surveys in the Huauchinango area reported no individuals of this frog, and it is probably extinct.
Habitat and Ecology The main habitat in Río Necaxa, and the surroundings of Huauchinango, is pine and pine-oak forest. This frog is highly associated with permanent river systems where it breeds.
Major Threats The disappearance of these permanent rivers has contributed to its decline, and perhaps extinction, and the damming of the Nexaca River for hydroelectric power, in particular, is believed to have affected this species.
Conservation Measures The species is not known to occur in any protected areas. An extensive search within the known range of this species is needed to determine whether or not it still survives. It is listed as "Endangered" by the Mexican Government.
Bibliography: Webb, R.G. (1988)
Data Providers: Georgina Santos-Barrera, Oscar Flores-Villela

EN *Rana pyrenaica* Serra-Cobo, 1993

PYRENEAN FROG

Endangered B1ab(ii,iii,iv)
Order, Family: Anura, Ranidae
Country Distribution: France, Spain
Current Population Trend: Decreasing


© Lars Bergendorf

Geographic Range This species is largely restricted to the southern slopes of the western central Pyrenees Mountains. In Spain, it occurs from the Roncal Valley (Navarra) eastwards to Parque Nacional de Ordesa (Huesca). It also occurs in the Iraty Forest in the western French Pyrenees. It has an altitudinal range of 800-2,100m asl.
Population Populations are common in the headwaters of valleys in Huesca Province, while in Navarra populations are scattered in the west.
Habitat and Ecology It lives in and close to rocky mountain streams and torrents in which the water is cold, clear and well oxygenated, and is also found in roadside and forest edge ditches, drinking troughs and rain pools. Breeding takes place in these waterbodies.
Major Threats Threats include stream eutrophication (through intensification of agricultural practices), drought, potential introduction of trout and other predatory fishes, and habitat loss due to the development of tourism and transport infrastructure.
Conservation Measures It is listed on Appendix III of the Berne Convention and is included in the regional catalogues of Navarra and Aragón. It is present in Ordesa and Monte Perdido National Park (Huesca) and Lizardoia Integral Reserve (Navarra).
Bibliography: Arnold, E.N. (2003), Gasc, J.-P. *et al.* (eds.) (1997), Llamas, A., Martinez-Gil, O. and Arribas, O. (1998), Pleguezuelos, J.M. (1997), Pleguezuelos, J.M., Márquez, R. and Lizana, M. (2002), Serra-Cobo, J. (1993), Serra-Cobo, J., Lacroix, G. and White, S. (1998), Serra-Cobo, J., Marques, T. and Martínez-Rica, J.P. (2000), Vences, M. *et al.* (1997), Vieites, D.R. and Vences, M. (2003)
Data Providers: Jaime Bosch, Miguel Tejedo, Claude Miaud, Iñigo Martínez-Solano, Alfredo Salvador, Mario García-París, Ernesto Recuero Gil, Rafael Marquez, Carmen Diaz Paniagua, Philippe Geniez

CR *Rana sevosa* Goin and Netting, 1940

DUSKY GOPHER FROG

Critically Endangered B1ab(iii,v)+2ab(iii,v); C2a(ii)
Order, Family: Anura, Ranidae
Country Distribution: United States of America
Current Population Trend: Decreasing

Geographic Range Historically, this species occurred on the coastal plain of the southern USA from eastern Louisiana and southern Mississippi to the Mobile River delta in Alabama, USA. By 2003 it was only known from Glen's Pond in Desoto National Forest in Harrison County, Mississippi (USFWS 2000h, Young and Crother 2001). However, very recently individuals have been seen at two other sites: one calling male was seen at McCoy's Pond 50 miles east of Glen's Pond, and 50 tadpoles were collected from Mike's Pond, 20 miles west of Glen's Pond (Zippel 2005). It is not known whether or not these are stable breeding populations. It occurs from near sea level to 65m asl.

Population Only one extant population was known as of 2000 (Richter *et al.* 2003). Historical records exist for three parishes in Louisiana, eight counties in Mississippi, and one county in Alabama. Recent surveys have been unable to document the continued existence of the species in Louisiana (Seigel and Doody 1992, Thomas 1996, J. Pechmann pers. comm. 2003) or Alabama (Bailey 1992b, 1994). The last observation of this gopher frog in Louisiana was made in 1967 (G. Lester, Louisiana Natural Heritage pers. comm., 1991) and in Alabama in 1922 (Löding 1922). In 1987 and 1988, surveys of ponds in six Mississippi counties verified the presence of the species at only four sites in Harrison County (Crawford 1988). At three of the four sites, only one individual was observed. Subsequent to this work, surveys have documented the continued existence of only one population, represented by Crawford's fourth site in Harrison County. Based on census data collected 1996-2001, the population was estimated at 60-100 individuals (Richter and Seigel 2002, Richter *et al.* 2003). The population appears to be declining because of two fungal diseases, one of them chytridiomycosis.

Habitat and Ecology Breeding and non-breeding habitat includes both upland sandy habitats historically forested with longleaf pine and isolated temporary wetland breeding sites imbedded within this forested landscape. This frog spends the majority of its life in or near underground refugia and historically used gopher tortoise burrows for this purpose (Allen 1932; Richter *et al.* 2001). The Glen's Pond population occurs in an area presently lacking gopher tortoises, although tortoises probably occurred historically in the area and do occur nearby. Refugia include abandoned mammal burrows and holes in and under old stumps (L.V. LaClaire pers. obs., 1996; Richter *et al.* 2001). This species does not adapt to human disturbance of its habitat.

Major Threats Major threats include population isolation (inbreeding and susceptibility to catastrophic events), urbanization, two diseases, and apparent lack of a nearby suitable habitat. The range has been significantly reduced as a result of habitat destruction, fragmentation, and modification. Pre-settlement longleaf pine forests were the dominant forest type of the south-eastern coastal plain. Today, less than two percent of the original longleaf pine forests remain (Ware, Frost and Doerr 1993). These areas are usually second-growth forests often degraded by turpentine, grazing, and disruption of the natural fire regime (Boyce and Martin 1993, Ware, Frost and Doerr 1993). Many areas have been converted from open longleaf pine sand hill communities to dense monocultures of sand, loblolly, or slash pine (Boyce and Martin 1993, Ware, Frost and Doerr 1993). Land management practices have altered the soil horizon, forest litter, herbaceous community, and the occurrence of fallen trees and stumps used as refugia. Isolated temporary wetlands are required for breeding. Factors affecting quality of breeding ponds include timber site preparation methods that alter existing hydrology, domestic animal grazing, clearing and draining for agricultural or urban uses, ditching, soil disturbance, and fire exclusion. The breeding habitat at Glen's Pond, and most of the surrounding adult habitat, are located in the DeSoto National Forest. Silviculture, including timber sales with associated clear-cutting, is the primary activity in this area. Less than 50 percent of the Forest is maintained as longleaf pine, with the remainder converted to slash pine or loblolly pine. The Mississippi Gulf Coast has experienced a recent upsurge in residential development, largely as a consequence of gambling casinos located in the Biloxi-Gulfport area. The land immediately north and west of the only known breeding site was owned by International Paper and managed for paper production until it was sold in 1999 to a land developer who intends to build a retirement community and golf course. This development will make conducting prescribed burns difficult and increase the chances of further modification to the breeding site and the associated upland habitat. The US Forest Service is negotiating the purchase of a small (30 ha) buffer to facilitate burning. Habitat alteration is likely the primary factor in the loss of gopher frog populations in Alabama, Louisiana, and Mississippi. At least 13 (72 percent) of the 18 historic gopher frog sites have been degraded due to intensive forestry practices. Forests around breeding ponds were clear-cut extensively in the mid-1950s and then again in the 1980s and 1990s. In most cases, these forests were replaced with dense pine plantations. Within these plantations and in the longleaf pine habitats, fire suppression has further has reduced the quality of the terrestrial and aquatic habitat for the Dusky Gopher Frog. Both the forests and the ponds have lost the open, grassy character that is necessary habitat for the species. Canopy closure from fire suppression also alters the forest floor vegetation. Without fire, encroachment of woody vegetation threatens the open, herbaceous character typical of most gopher frog breeding ponds. In addition, fire causes the release of nutrients bound in plant material. This release of nutrients results in a flush of primary productivity that is important to the herbivorous gopher frog tadpoles. Fire suppression has negatively impacted at least 13 (72 percent) of the 18 historical sites, but controlled burns conducted 1987-2003 have improved conditions at Glen's Pond. Expanding urbanization has been a factor in the degradation of at least three (17 percent) other sites. One of these historic breeding ponds is in a residential backyard and has been altered to hold water permanently (Thomas 1996). Forestry practices and expanding urbanization are also threats to the single remaining population. For example, a four-lane highway is being constructed that will further subdivide available habitat. Direct take for commercial, recreational, scientific, or educational purposes is not currently considered to be a threat. An unidentified fungal disease has caused >90% mortality of tadpoles. Chytridiomycosis has also been detected in other species of frog at the breeding site, but its effects on Dusky Gopher Frogs are currently unknown. Temporary of its habitat. Ponds altered to form more permanent bodies of water and stocked with fishes are no longer suitable breeding sites. The Dusky Gopher Frog is adapted to temporary wetlands and its larvae cannot survive the heavy predation of bass and sunfish commonly used to stock ponds. Introduction of predatory fishes into ponds for recreational use has caused declines in Gopher Frog (*Rana capito*) populations in Alabama (M. Bailey pers. comm., 1995). Construction of drainage ditches and firebreaks into ponds might also provide avenues for introduction of fish into breeding sites. High annual variation (5-37%) in intensity of egg mass mortality occurred during a three-year study (Richter *et al.* 2003). An additional undetermined amount of the egg mortality was due to predation by caddisfly larvae (Order Trichoptera, Family Phryganeidae) on the egg masses (Richter 2000). Gopher frog breeding sites have been degraded by roads that pass through or are adjacent to ponds. Erosion of unpaved roads adjacent to breeding sites may result in an influx of sedimentation from surrounding uplands during rainstorms. Off-road recreational vehicle (ORV) use can cause direct mortality of tadpoles and adults (J. Jensen, Georgia Department of Natural Resources pers. comm., 1996) and alter the quality of a breeding site. Vehicular traffic disrupts the contours of the pond floor, eliminates herbaceous vegetation, and can alter the hydrology of the site (L.V. LaClaire pers. obs., 1995). Loss of herbaceous vegetation from ORV usage could also discourage gopher frog reproduction, since egg masses are attached to stems of herbaceous vegetation (Bailey 1990, Palis 1995). ORV tracks have been documented within the Glen's Pond breeding site (G. Johnson, U.S. Forest Service pers. comm., 1994). Low reproductive potential might also represent a threat to this species' continued existence. Studies at the Mississippi breeding site suggest that females do not breed until two to three years of age and might breed only in alternate years and/or have only a single lifetime breeding event (Richter and Seigel 2002). Both larval and metamorph survival appears to be low (Richter *et al.* 2003). Variability in weather events can further reduce reproductive potential. Annual variability in rainfall, which influences how frequently and how long a pond is appropriate breeding habitat, can result in a number of years with complete reproductive failure (Richter *et al.* 2003). Studies of other species of ranid frogs (e.g., Berven and Grudzien 1990) suggest that many anuran populations show a strong meta-population structure. In meta-populations, adults are typically faithful to breeding sites but juveniles may disperse to new breeding areas before reaching maturity. As a result, reproductive failure at a single pond can be compensated for by recruitment at another site. Such a strategy also leads to a lower probability of genetic isolation and inbreeding (Stacey, Taper and Johnson 1997). Because there is only one known breeding site (until very recently), this population is highly susceptible to genetic isolation, inbreeding, and catastrophic events. Thus, the probability of extinction is higher than would otherwise be the case. Insecticides and herbicides might pose a threat. The aquatic larvae are likely most vulnerable to chemical changes in their environment. Adult gopher frogs are predaceous and could be affected by pesticides accumulated in their invertebrate prey. If a golf course is built in the drainage area of the breeding pond, as proposed, the chemicals used to maintain the golf course could pose a significant threat to the population.

Conservation Measures The last known population in the Desoto National Forest, Mississippi, is not entirely protected. In Mississippi, the gopher frog is classified as Endangered by the Mississippi Department of Wildlife, Fisheries, and Parks (R. L. Jones, MDWFP pers. comm., 1995). In December 2001, the species was listed as Endangered under the US Endangered Species Act, but no critical habitat was designated (USFWS 2001). A Gopher Frog Recovery Team has since overseen conservation strategies that include pond water supplementation in dry years, habitat management, assisting larval survivorship, captive rearing, construction of an alternative-breeding pond, and treating infected larvae. This programme needs to be continued and expanded. Surveys are needed to check the status of the recently discovered populations, and to determine whether or not the species survives elsewhere.

Notes on taxonomy: Genetic studies showed that this form is distinct from populations of *Rana capito* and *R. areolata*, and has therefore been established as a separate species (Young and Crother 1991).

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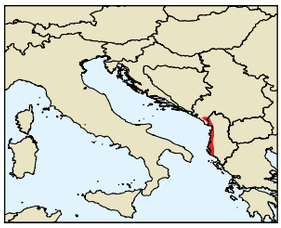
Data Providers: Geoffrey Hammerson, Stephen Richter, Richard Siegel, Linda LaClaire, Tom Mann

EN *Rana shqiperica* Hotz, Uzzell, Guenther, Tunner and Heppich, 1987

ALBANIAN WATER FROG

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Albania, Serbia and Montenegro
Current Population Trend: Decreasing



© Jan Van Der Voort

Geographic Range This lowland species is restricted to western Albania and southern Montenegro at elevations below 500m asl.

Population There is no information on the population status of this species.

Habitat and Ecology It has been reported from heavily vegetated aquatic habitats including ditches, swamps, marshes, the edges of slow-flowing rivers and the shoreline of Lake Skadar. Breeding, and larval development, takes place in these wetland habitats. It is not known if the species can successfully adapt to habitat modification.

Major Threats The major threat is drainage of wetland habitats and aquatic pollution of many waterways caused by agrochemical and industrial (including mining) contaminants. In the northern parts of its range (e.g. Lake Skadar) it is significantly threatened by over collection for commercial purposes. An additional threat is the accidental introduction of commercially transported non-native water frogs.

Conservation Measures It is listed on Appendix III of the Berne Convention. 'Green frogs', including *R. shqiperica*, are not protected by law in Yugoslavia (Kalezic and Dzukic 2001; Ljubisavljevic, Dzukic and Kalezic 2003). The species is present in the Lake Skadar protected area, on the border of Montenegro and Albania.

Notes on taxonomy: Although Schneider and Haxhiu (1994) had difficulty distinguishing the voice of *Rana shqiperica* from that of *R. lessonae*, morphology, allozymes, mtDNA sequences, and crossing experiments all indicate that *R. shqiperica* is very distinct from *R. lessonae*. Its relationships with other western Palearctic water frogs are less clear (T. Uzzell pers. comm.). This species does not make hybridogenetic hybrids (Guerrini *et al.* 1997).

Bibliography: Arnold, E.N. (2003), Dzukic, G. *et al.* (1996), Gasc, J.-P. *et al.* (eds.) (1997), Guerrini, F. *et al.* (1997), Hotz, H. *et al.* (1987), Hotz, H. and Uzzell, T. (1982), Kalezic, M. and Dzukic, G. (2001), Ljubisavljevic, K., Dzukic, G. and Kalezic, M. (2003), Plötner, J. (1998), Plötner, J. *et al.* (2001), Schneider, H. and Haxhiu, I. (1994), Sinsch, U. and Schneider, H. (1996)

Data Providers: Thomas Uzzell

VU *Rana sierramadrensis* Taylor, 1939

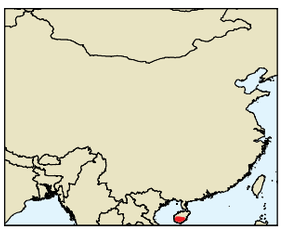
Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Mexico
Current Population Trend: Decreasing

© J.R. Mendelson

Geographic Range This species is widespread through the Sierra Madre del Sur of Guerrero and Oaxaca, Mexico.
Population There are many healthy populations of this species along its range although it is reportedly rare in some parts.
Habitat and Ecology This species inhabits conifer forests at intermediate elevations. It breeds in streams.
Major Threats Logging is probably a threat to this species. Tadpoles have been found in southern Mexico with loss of keratinized mouthparts, which suggests that chytridiomycosis might be a threat.
Conservation Measures The range of this species does not include any protected areas, and there is a need for improved protection and maintenance of forest habitats in the Sierra Madre del Sur. This species is protected by Mexican law under the "Special Protection" category (Pr).
Bibliography: Hillis, D.M. and de Sá, R. (1988), Lips, K.R. *et al.* (2004)
Data Providers: Oscar Flores-Villela, Luis Canseco-Márquez

VU *Rana spinulosa* Smith, 1923

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing



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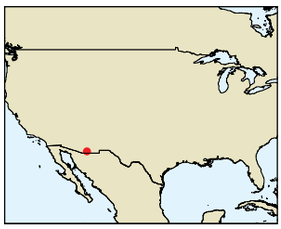
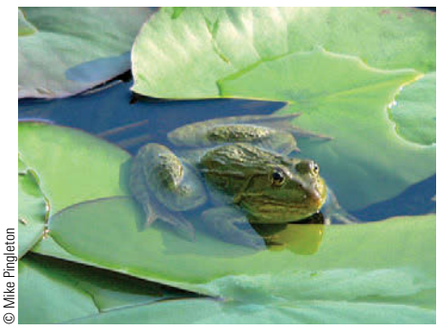
Geographic Range This species is endemic to southern and south-western Hainan, China. It has been recorded from 80-840m asl.
Population There is no information on the population status of this species.
Habitat and Ecology It inhabits tropical forests, and breeds in pools and slow-flowing streams.
Major Threats Habitat destruction and degradation caused by shifting agriculture, logging, and the construction of hydroelectric plants are major threats to this species.
Conservation Measures This species is present in a number of protected areas on the island, including Wuzhishan Nature Reserve.
Bibliography: Fei, L. *et al.* (1999), MacKinnon, J. *et al.* (1996)
Data Providers: Michael Wai Neng Lau, Shi Haitao

CR *Rana subaquavocalis* Platz, 1993

RAMSEY CANYON LEOPARD FROG

Critically Endangered B2ab(ii,iv,v)
Order, Family: Anura, Ranidae
Country Distribution: United States of America
Current Population Trend: Decreasing



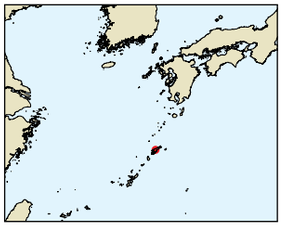


© Mike Pingleton

Geographic Range This species is known from Ramsey and Brown Canyons on the east side of the Huachuca Mountains, Cochise County, Arizona, southwestern United States (Platz 1993). The elevations of these localities range from 1,501-1,829m asl (Sredl *et al.* 1997). There is speculation that its historical range included the San Pedro River valley and parts of Chihuahua, Mexico (Platz 1997). Leopard frogs that might have been Ramsey Canyon Leopard Frogs have been noted from eleven canyons in the Huachuca Mountains (Sredl 2005), but there are no recent records from any of these sites, except where the species has been released recently.
Population It is still known to be extant at just five sites, including backyard ponds. Populations appear to be declining and recruitment is low at most historical localities. Translocation has been successful in one canyon. The animals released there in 1999 have produced over 400 egg masses through 2003 and the population of metamorphosed frogs is thought to be over 400 individuals. In 2004, an abundance of eggs were reported in the wild and there is some evidence that the population might be starting to rebound.
Habitat and Ecology This species is a habitat generalist known to inhabit and breed in aquatic systems in pine-oak and oak woodland and semi-desert grassland habitats in extreme south-eastern Arizona. The perennial or near-perennial habitats from which they are known or likely to have occurred include springs, cienegas, earthen cattle tanks, small creeks, and slack water of main-stem rivers. Most habitats are modified or artificial aquatic systems (Sredl and Saylor 1998, Sredl *et al.* 1997). Deep areas, root masses, and undercut banks are used when escaping capture. Habitat heterogeneity is likely important. The frogs will move into newly created suitable habitat rapidly, if near to occupied habitat (Sredl 2005). It is apparently adaptable to anthropogenic changes. Only one of the nine known sites inhabited by Ramsey Canyon Leopard Frogs is a natural aquatic system; the remainder are artificial or highly modified aquatic systems (Sredl *et al.* 1997).
Major Threats Chytrid fungus has been found in dead frogs at several sites that have declined and this pathogen might be responsible for these declines. The most important threats are disease (chytridiomycosis), non-native predators, and competitors (bullfrogs, sport fish, crayfish), the effects of small, isolated populations, and loss of aquatic habitat through drying or siltation. Other minor threats include floods that carry unnaturally high sediment loads due to road use, improper grazing practices, fire, and other sources.
Conservation Measures It is protected in The Nature Conservancy's Ramsey Canyon Preserve and the Coronado National Forest, which owns the Brown Canyon site. A voluntary conservation agreement among landowners and state and federal agencies was signed in 1996, and is currently being revised. Conservation activities focus on removing threats to populations and habitats and on improving the meta-population structure. Arizona Game and Fish Commission Order 41 prohibits the collection of this species from the wild in Arizona. Phoenix Zoo has successfully bred tadpoles from egg masses that have then been reintroduced to protected areas.
Notes on taxonomy: Some systematists doubt that *Rana subaquavocalis* is distinct from *Rana chiricahuensis*.
Bibliography: Blackburn, L., Nanjappa, P. and Lannoo, M.J. (2001), Field, K.J., Beatty, Sr, T.L. and Beatty, Jr, T.L. (2003), Goldberg, C.S., Field, K.J. and Sredl, M.J. (2003), Platz, J.E. (1993), Platz, J.E. *et al.* (1997), Platz, J.E. and Grudzien, T. (1993), Sredl, M.J. (2005), Sredl, M.J. *et al.* (1997), Sredl, M.J. and Saylor, L.S. (1998), Sredl, M.J., Field, K.J. and Peterson, A.M. (2002), Zippel, K. (2005)
Data Providers: Geoffrey Hammerson, Michael Sredl

EN *Rana subaspera* Barbour, 1908

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Japan
Current Population Trend: Decreasing

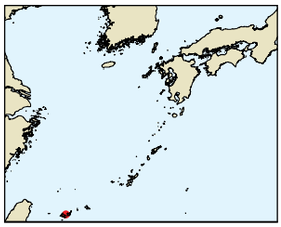


© Timothy Johnson

Geographic Range This species is endemic to the Amamioshima and Kakeromajima Islands of the central Ryukyus in Japan.
Population There is no information on the population status of this species.
Habitat and Ecology It inhabits primary, or well-recovered secondary, broad-leaved evergreen forest, breeding by larval development in small pools on forest trails and muddy riverbeds.
Major Threats Recent deforestation on Amamioshima, along with road construction in mountainous areas, has been severely impacting the quality of the habitat of the species. Other threats include predation by introduced mongoose and development of rivers.
Conservation Measures It is unclear whether it occurs in any protected areas, though there is clearly a need for improved protection of forest habitats in the Ryukyus.
Bibliography: Maeda, N. and Matsui, M. (1999), Ota, H. and Toda, M. (2000c), Sengoku, S. *et al.* (1996)
Data Providers: Yoshio Kaneko, Masafumi Matsui

EN *Rana supranarina* Matsui, 1994

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Japan
Current Population Trend: Decreasing



Geographic Range This species is endemic to the Japanese islands of Ishigakijima and Iriomotejima.
Population There is no information on the population status of this species.
Habitat and Ecology It occurs in broad-leaved evergreen forest and streams in mountains, and is also found in coastal areas.
Major Threats The major threat is habitat loss and degradation, due to logging and human settlement, particularly on Ishigakijima.
Conservation Measures In Japan its range includes Iriomote Island which is now protected as a national park, although there is clearly a need for improved protection of forest habitats in these islands.
Bibliography: Maeda, N. and Matsui, M. (1999), Ota, H. (2000b), Sengoku, S. *et al.* (1996)
Data Providers: Yoshio Kaneko, Masafumi Matsui

VU *Rana tarahumarae* Boulenger, 1917

TARAHUMARA FROG

Vulnerable A3e
Order, Family: Anura, Ranidae
Country Distribution: Mexico, United States of America (Extinct)
Current Population Trend: Decreasing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Geographic Range This species' historical range included extreme south-central Arizona, USA, (known from Tinaja, Sycamore, and Pena Blanca/Alamo canyons in the Atascosa-Pajarito-Tumacacori Mountains complex; and Gardner, Big Casa Blanca, and Adobe canyons in the Santa Rita Mountains; Rio Altar and Santa Cruz River drainages), south in the Sierra Madre Occidental and adjacent sky island mountain ranges in Sonora and Chihuahua to northern Sinaloa, Mexico, at elevations from 460-2,070m asl (Zweifel 1968c, Hale and May 1983, Hale 2001). Most localities are in the mountains of eastern Sonora. The Tarahumara Frog has been extirpated from the USA since 1983, and more recently, from several sites in northern Sonora (Hale and May 1983, Hale *et al.* 1995, Hale 2001).
Population Tarahumara Frogs are known from 63 localities (Rorabaugh and Hale 2005). The status of the species has been closely tracked in Arizona and at selected localities in Sonora. Extirpations from Arizona localities occurred from 1948-1983. The last wild Tarahumara Frog observed in the USA was found dead in Big Casa Blanca Canyon in May 1983. Two northern Mexican populations were recorded as having declined in the early 1980s (Hale and May 1983). Surveys from May 1998 to May 2000 in Sonora yielded Tarahumara Frogs at 6 of 11 historical localities and three new localities (Hale *et al.* 1998, Hale 2001). The status of the species in Chihuahua and Sinaloa is unknown. Generally, where the species is currently extant, no long-term declines are apparent (Rorabaugh and Hale 2005). However, since chytridiomycosis is confirmed in this species, and populations have been lost, future declines can be expected.
Habitat and Ecology This species inhabits streams and plunge pools in canyons located within oak and pine-oak woodland, and the Pacific coast tropical area (foothill thorn scrub and tropical deciduous forest; Hale and May 1983, McCranie and Wilson 1987). Plunge pools in canyons with low mean flows (<0.2 cubic feet per second) and relatively steep gradients (>60m per km of stream) provide the best breeding sites (Hale and May 1983, Hale 2001). Permanent water is necessary for metamorphosis. At Pena Blanca Spring and Tinaja Canyon, Arizona, and Arroyo El Salto, north-eastern Sonora, Tarahumara Frogs inhabited artificial impoundments (Hale and May 1983, Hale 2001, Rorabaugh and Hale 2005).
Major Threats Hale and Jarchow (1988) listed the following possible causal mechanisms in the extirpation of Tarahumara Frog populations: 1) winter cold; 2) flooding or severe drought; 3) competition; 4) predation; 5) disease; and 6) heavy metal poisoning. Airborne pollutants from copper smelters might have been responsible for toxic levels of cadmium in streams inhabited by Tarahumara Frogs (Hale and Jarchow 1988); however, frogs found during die-offs exhibited symptoms that are now associated with chytridiomycosis, a fungal disease known to affect amphibians globally. Histology of frogs collected during die-offs in Arizona and Sonora from 1974-1999 revealed the presence of chytrids (Hale 2001, Rorabaugh and Hale 2005, T.R. Jones and P.J. Fernandez pers. comm.). Cold weather can be a contributing factor in mortality (Hale and Jarchow 1988) and might be associated with chytridiomycosis-related mortality (Hale 2001). Other threats include introduced predatory fishes (e.g. green sunfish and bluegill) and bullfrogs (Hale and Jarchow 1988). The Tarahumara Frog is now apparently replaced by the bullfrog in the Pena Blanca area in Arizona (Clarkson and Rorabaugh 1989). Poor agricultural practices at Arroyo El Cobre in southern Sonora resulted in erosion from slopes and sedimentation of pools inhabited by the Tarahumara Frog. The Tarahumara Frog has apparently been replaced at this site by *Rana pustulosa* and *R. magnaocularis* (Hale 2001).
Conservation Measures A team of U.S. and Mexican partners are working to re-establish the Tarahumara Frog back into Big Casa Blanca and Sycamore canyons, Arizona (Rorabaugh and Humphrey 2002, Rorabaugh and Hale 2005). The range of the species includes the Mount Wrightson and Pajarita wilderness areas in Arizona, and La Reserva Para Protecíon de Flora y Fauna Sierra de Alamos-Río Cuchujaqui, Sonora.
Bibliography: Arizona Game and Fish Department (1996), Blackburn, L., Nanjappa, P. and Lannoo, M.J. (2001), Bradley, G.A. *et al.* (2002), Bury, R.B., Dodd, Jr., C.K. and Fellers, G.M. (1980), Clarkson, W.R. and Rorabaugh, J.C. (1989), Hale, S.F (2001), Hale, S.F. *et al.* (1995), Hale, S.F. *et al.* (1998), Hale, S.F. and Jarchow, R.J.D. (1988), Hale, S.F. and May, C.J. (1983), Hale, S.F., Retes, F. and Van Devender, T.R. (1977), Hillis, D.M., Frost, J.S. and Wright, D.A. (1983), McCranie, J.R. and Wilson, L.D. (1987), Rorabaugh, J. and Humphrey, J. (2002), Rorabaugh, J.C. and Hale, S.F. (2005), Schwalbe, C.R. (1993), Smith, H.M. and Chiszar, D. (2003), Stebbins, R.C. (1985a), Webb, R.G. (2001), Zippel, K. (2005), Zweifel, R.G. (1955), Zweifel, R.G. (1968c)
Data Providers: James Rorabaugh, Georgina Santos-Barrera, Geoffrey Hammerson

EN *Rana tenggerensis* Zhao, Macey and Papenfuss, 1988

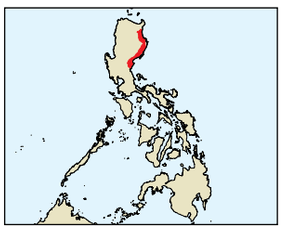
Endangered B1ab(iii,v)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing

Geographic Range This species is only known from Shapotou and Shenjiatan, in Yinnan County, Ningxia Hui Autonomous Region, along the shores of Huang He (Yellow River) at the edge of the Tengger Desert, China.
Population It is a common species, but is probably in decline.
Habitat and Ecology It inhabits pools along the banks of the Yellow River at the edge of desert.
Major Threats The major threat is over-collecting for food; other threats include drought and water pollution.
Conservation Measures The Shapotou location is within a national nature reserve. There is a need to manage the offtake of this species for human consumption in a sustainable manner.

Notes on taxonomy: This species was synonymized with *Rana nigromaculata* by Fei, Ye and Huang (1991), and this synonymy was accepted by Dubois (1992) and Dubois and Ohler (1996). However, Zhao and Adler (1993) still consider this to be a valid species and hence it is included here pending a definitive decision on its taxonomic status.
Bibliography: Fei, L., Ye, C.Y. and Huang Y. Z. (1990), MacKinnon, J. *et al.* (1996), Zhao, E., Macey, R. and Papenfuss, T. (1988)
Data Providers: Wang Yuezhao, Zhao Ermi

VU *Rana tipanan* Brown, McGuire and Diesmos, 2000

Vulnerable B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Philippines
Current Population Trend: Decreasing




© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is found in the Sierra Madres, on north-eastern Luzon Island, in the Philippines.
Population It is common in Aurora Memorial National Park in one river drainage, but is known only from two other localities.
Habitat and Ecology It inhabits cool streams and rivers in lower montane and lowland forests. It breeds and lays its eggs in water, and it is presumed that tadpoles develop in water.
Major Threats The most important threats to this species include logging, conversion of habitat to agriculture, and the pollution of streams and rivers due to agricultural run-off.
Conservation Measures Its range includes Aurora Memorial National Park. The most important conservation measure required is the protection of the remaining tracts of intact lowland rainforest in the Sierra Madres of Luzon.
Bibliography: Brown, R.M., Diesmos, A.C. and Alcala, A.C. (2001), Brown, R.M., McGuire, J.A. and Diesmos, A.C. (2000)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

CR *Rana tlaloci* Hillis and Frost, 1985

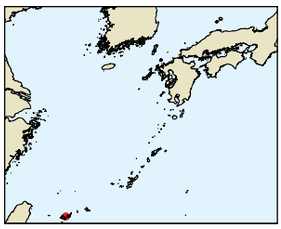
TLALOC'S LEOPARD FROG

Critically Endangered B1ab(iii,v)+2ab(iii,v)
Order, Family: Anura, Ranidae
Country Distribution: Mexico
Current Population Trend: Decreasing

Geographic Range This historical range of this species was the Valley of Mexico at Xochimilco, and probably Chalco, and maybe in the eastern state of Mexico, central Mexico.
Population This species is most likely extinct, and has not been seen since it was first described in 1985.
Habitat and Ecology It inhabited wetland areas in the surroundings of southern Mexico City.
Major Threats The rapid and intense growth of Mexico City with its high rate of urbanization has caused the disappearance of the only known suitable habitats for this species.
Conservation Measures It seems that no individuals of this species survive in the wild, but an intensive survey is needed to check all the possible localities where this species could occur. The Mexican government has placed this species in the "Endangered" category.
Bibliography: Hillis, D.M. and Frost, J.S. (1985)
Data Providers: Georgina Santos-Barrera, Oscar Flores-Villela

EN *Rana utsunomiyaorum* Matsui, 1994

Endangered B1ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Japan
Current Population Trend: Decreasing

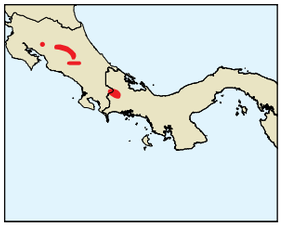


Geographic Range This species is endemic to the Japanese islands of Ishigakijima and Iriomotejima.
Population There is no information on the population status of this species, although the populations on Ishigakijima have undergone substantial declines.
Habitat and Ecology It inhabits upstream areas surrounded by primary broad-leaved evergreen forest, and breeds in streams.
Major Threats The major threats are deforestation and competition with increasing populations of the exotic *Bufo marinus*, particularly on Ishigakijima.
Conservation Measures In Japan its range includes Iriomote Island which is now protected as a national park, although there is clearly a need for improved protection of forest habitats in these islands. There is also a need to control invasive toads, especially within protected areas.

Bibliography: Maeda, N. and Matsui, M. (1999), Ota, H. (2000g), Sengoku, S. *et al.* (1996)
Data Providers: Yoshio Kaneko, Masafumi Matsui

CR *Rana vibicaria* (Cope, 1894)

Critically Endangered A2ace
Order, Family: Anura, Ranidae
Country Distribution: Costa Rica, Panama
Current Population Trend: Decreasing



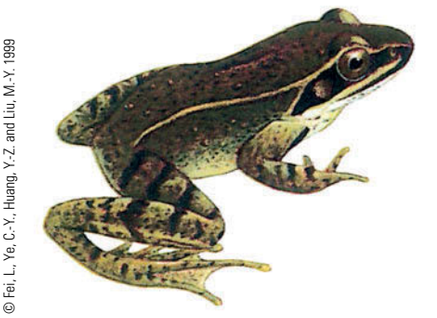
© Robert Puschendorf

Geographic Range This species can be found in the Cordillera de Tilarán, Cordillera Central, and Cordillera de Talamanca of Costa Rica and western Panama, at elevations of 1,500-2,700m asl (Savage 2002).

Population It was once very common in Costa Rica but had apparently disappeared from the country by 1990. However, a single individual was reported in 2002 from near Monteverde, and larvae were found and reared in 2003. One small breeding pool is now known near Monteverde. The status of the population in Panama is unclear, but it has presumably also declined, and possibly disappeared, from this country.
Habitat and Ecology It is a semi-aquatic frog occurring in lower montane and lower portions of montane rainforest. The species prefers dense woods, but may also be found near bodies of water in clearings or pastures. Calling and mating take place at night, with males generally calling from vegetation in water. Breeding sites include shallow ponds, puddles or slow-moving waters. Eggs are attached to vegetation (Savage 2002).
Major Threats Chytridiomycosis appears to be the main cause of the decline of this species. It has disappeared from pristine habitat in Costa Rica, and probably also in Panama. Museum specimens of this species have been found to have chytrid fungi, and individuals have been found with severe chytridiomycosis (R. Puschendorf unpubl.). Habitat loss, due to agriculture, logging, and human settlement, has presumably also affected this species.
Conservation Measures The species has been recorded from a number of protected areas. The current status of the surviving populations requires further investigation; given the threat of chytridiomycosis, recommended conservation measures should consider the establishment of a captive-breeding programme.
Bibliography: Ibáñez, R. *et al.* (2000), Lips, K.R. (1998), Pounds, J.A. *et al.* (1997), Savage, J.M. (2002), Young, B. *et al.* (1999), Zweifel, R.G. (1964)
Data Providers: Robert Puschendorf, Frank Solís, Roberto Ibáñez, Jay Savage, César Jaramillo, Querube Fuenmayor, Alan Pounds, Federico Bolaños, Gerardo Chaves

VU *Rana weiningensis* Liu, Hu and Yang, 1962

Vulnerable B2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing

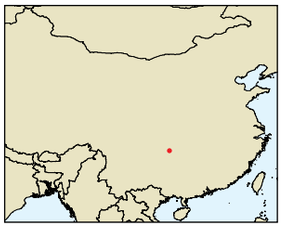


© Fei, L., Ye, C.-Y., Huang, Y.-Z. and Liu, M.-Y. 1999

Geographic Range This species is known from south-western Sichuan, north-eastern Yunnan and western Guizhou provinces in south-western China. It occurs from 1,700-2,950m asl.
Population It is an uncommon species.
Habitat and Ecology It inhabits hill streams and the surrounding riparian habitats. Breeding takes place in small streams.
Major Threats Agricultural development and water pollution are the major threats to this species.
Conservation Measures Its range includes two small provincial protected areas, Fangshan and Luojishan, and Panzhihuasutie National Nature Reserves.
Bibliography: Fei, L. *et al.* (1999), Liu, C.-C., Hu, S.-Q. and Yang, F.H. (1962), MacKinnon, J. *et al.* (1996), Wu, L., Dong, Q. and Xu, R.-H. (1987), Ye, C.-Y, Fei, L. and Hu, S.Q. (1993)
Data Providers: Yang Datong, Lu Shunqing

CR *Rana wuchuanensis* Xu, 1983

Critically Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: China
Current Population Trend: Decreasing



© Fei, L., Ye, C.-Y., Huang, Y.-Z. and Liu, M.-Y. 1999

Geographic Range This species is found in only one cave in Baicun, Wuchuan County, in Guizhou province, China, at about 700m asl. Attempts to locate the species at other localities have been unsuccessful.
Population The population is known to be very small.
Habitat and Ecology Frogs at the type locality were found in a stream some 30m inside a limestone cave. Breeding and larval development take place in streams.
Major Threats This species has a very restricted range and specific habitat requirements, which make it particularly vulnerable to disturbance, particularly since touristic activities in the area are becoming an increasing problem.
Conservation Measures The one known location of this species is not within any protected area, and the establishment of a well-managed protected area for this species is urgent. Given the small population size, this species requires close monitoring.
Bibliography: MacKinnon, J. *et al.* (1996), Wu, L. *et al.* (1983), Wu, L., Dong, Q. and Xu, R.-H. (1987)
Data Providers: Fei Liang, Li Cheng

VU *Strongylopus kitumbeine* Channing and Davenport, 2002

Vulnerable D2
Order, Family: Anura, Ranidae
Country Distribution: Tanzania
Current Population Trend: Stable

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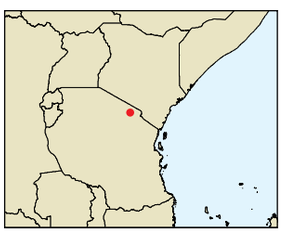
Geographic Range This recently discovered species is known only from Mount Kitumbeine, an extinct volcano in northern Tanzania, from 2,180-2,800m asl. Its range is likely to be very restricted, since most other sites where it could occur have already been surveyed without success. However, it is possible that it might be found on the poorly surveyed peaks of Monduli, and Gelai.
Population It is apparently common in its small range.
Habitat and Ecology It has been found along semi-permanent and seasonal streams, and around temporary pools in montane *Juniperus* forest, and tussock montane grassland. It is able to survive in heavily disturbed forest. It presumably breeds in pools or streams by larval development, but this is not confirmed. Males have been heard calling in April.
Major Threats The habitats on Mount Kitumbeine are threatened by livestock grazing, human settlement, and fire.
Conservation Measures It occurs in the Kitumbeine Forest Reserve.
Bibliography: Channing, A. and Davenport, T.R.B. (2002)
Data Providers: Tim Davenport, Alan Channing

VU *Strongylopus merumontanus* (Lönnberg, 1910)

Vulnerable D2
Order, Family: Anura, Ranidae
Country Distribution: Tanzania
Current Population Trend: Stable



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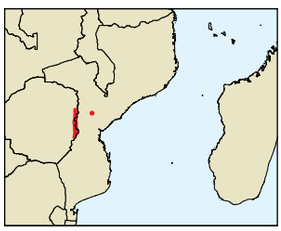
Geographic Range This species is known only from the high elevations of Mount Meru in northern Tanzania at around 3,000m asl (although it apparently also occurs at somewhat lower elevations than this).
Population There is little direct information on the population status of this species, although there are recent records.
Habitat and Ecology It is presumably associated with streams both in upper montane forest and in afro-alpine heath land. Breeding takes place in streams at the beginning of the year, with juveniles present by April.
Major Threats There are no known threats to this species.
Conservation Measures Its entire known range is within the Arusha National Park. There is a need for close monitoring of the population status of this species.
Notes on taxonomy: Channing and Davenport (2002) synonymized *Strongylopus fuelleborni* with this species. However, Poynton (2004) considers *S. merumontanus* a separate species known only from higher elevations on Mount Meru in northern Tanzania.
Bibliography: Channing, A. and Davenport, T.R.B. (2002), Poynton, J.C. (2004), Razzetti, E. and Msuya, C.A. (2002)
Data Providers: John Poynton, Kim Howell

VU *Strongylopus rhodesianus* (Hewitt, 1933)

CHIMANIMANI STREAM FROG

Vulnerable B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: Mozambique, Zimbabwe
Current Population Trend: Decreasing



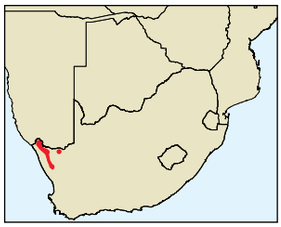
© Richard Boycott

Geographic Range This species occurs widely in the Eastern Highlands of Zimbabwe and on Mount Gorongoza in Mozambique. It is a montane species, probably occurring well above 1,000m asl.
Population It is common within its restricted range.
Habitat and Ecology It lives in montane grassland and forest, and also in bracken heath land. It is associated with streams and small rivers in which it presumably breeds.
Major Threats Its high-altitude habitat has been relatively intact up until now, but it might be at risk from wood plantations, overgrazing by livestock, and human settlement.
Conservation Measures It occurs in the Nyanga National Park, the Chimanimani National Park, and the Gungunyana Nature Reserve (all in Zimbabwe).
Bibliography: Channing, A. (1981), Channing, A. (2001), Lambiris, A.J.L. (1985a), Lambiris, A.J.L. (1989b), Poynton, J.C. (1964b), Poynton, J.C. and Broadley, D.G. (1985b)
Data Providers: John Poynton, Alan Channing

VU *Strongylopus springbokensis* Channing, 1986

NAMAQUA STREAM FROG

Vulnerable B1ab(iii)+2ab(iii)
Order, Family: Anura, Ranidae
Country Distribution: South Africa
Current Population Trend: Decreasing



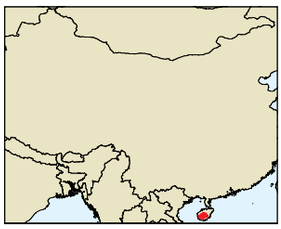
© Atherton de Villiers

Geographic Range This species lives in mountainous areas of Namaqualand, north of the Knersvlakte and south of the Orange River, in the Northern Cape Province of South Africa. It has not so far been recorded from Namibia, although it is likely to occur there. It is found at 200-1,600m asl.
Population It is an uncommon species.
Habitat and Ecology It lives in springs and streams in rocky hills and mountains in the Succulent Karoo and Fynbos (heath land) biomes. It breeds in springs and streams, small permanent and temporary ponds, as well as small artificial dams. It lays its eggs out of water under rocks or in rock crevices, tunnels in vegetation, or rodent burrows. Development is arrested after the tadpole's eyes and tail are formed, and awaits the rains that hatch the eggs and sweep the tadpoles into water.
Major Threats It is threatened by habitat loss due to grazing pressure (including trampling at watering points), and siltation and pollution of the streams. The type locality, an old reservoir in the town of Springbok (for which the species is named), has been turned it into a duck pond.
Conservation Measures It occurs in the Richtersveld National Park.
Bibliography: Channing, A. (1981), Channing, A. (1986), Channing, A. (2001), Minter, L.R. *et al.* (2004), Passmore, N.I. and Carruthers, V.C. (1995)
Data Providers: Leslie Minter, Alan Channing, James Harrison

RHACOPHORIDAE

VU *Buergeria oxycephalus* (Boulenger, 1900)

Vulnerable B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: China
Current Population Trend: Decreasing

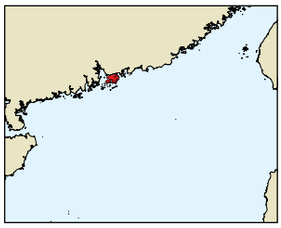


© Fei, L., Ye, C.-Y., Huang, Y.-Z. and Liu, M.-Y. 1999

Geographic Range This species is endemic to the hilly areas (80-800m asl) in central and south-western Hainan, China.
Population It is a very common species.
Habitat and Ecology It inhabits and breeds in medium and large streams, usually in forested regions, including in heavily disturbed forest.
Major Threats Habitat destruction and degradation, due to smallholder farming activities and dam construction, is a localized threat. Over-exploitation for human consumption might also be a threat.
Conservation Measures It is present in several protected areas on the island.
Notes on taxonomy: Jiang, Hu and Zhao (1987) considered this species to belong to the genus *Buergeria*, rather than *Rhacophorus*, and this is now widely accepted.
Bibliography: Fei, L. *et al.* (1999), Jiang, S.-P., Hu, S.-Q. and Zhao, E.-M. (1987), MacKinnon, J. *et al.* (1996), Pope, C.H. (1931)
Data Providers: Michael Wai Neng Lau, Bosco Chan, Shi Haitao

EN *Chirixalus romeri* (Smith, 1953)

Endangered B1ab(iii,iv)+2ab(iii,iv)
Order, Family: Anura, Rhacophoridae
Country Distribution: China (Native and Introduced)
Current Population Trend: Decreasing



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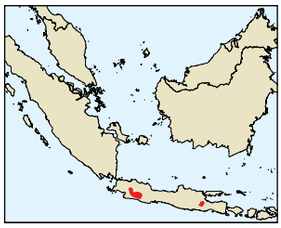
Geographic Range This species is found on four islands (Lantau, Lamma, Chek Lap Kok and Po Toi) in Hong Kong. As mitigation of the effects of airport construction on Chek Lap Kok, the Chek Lap Kok population was translocated to suitable sites on Hong Kong Island and the New Territories. It occurs from sea level to 650m asl.
Population Of the eight new sites to which populations were translocated, only seven still hold breeding populations.
Habitat and Ecology It inhabits forests, old plantations and nearby streams and marshes, but does not occur in open areas. Breeding takes place in shaded temporary pools, marshes, seepages, slow-flowing stream pools, ponds and water-filled small containers.
Major Threats Infrastructure development for human settlement and the construction of an airport are the major threats to the species' habitat.
Conservation Measures Some major strongholds for this species are listed as Sites of Special Scientific Interest, and all translocated populations have been released into protected areas. This species is also protected in Hong Kong. There was a successful collaborative breeding and release programme involving Melbourne Zoo, WWF Hong Kong, the University of Hong Kong and the Kadoorie Farm and Botanic Gardens. Monitoring of wild populations is ongoing.
Notes on taxonomy: We follow Bossuyt and Dubois (2001) in considering this species to belong to the genus *Chirixalus*, rather than *Philautus*.
Bibliography: Lau, M.W.N. (1998), Smith, M.A. (1953)
Data Providers: Michael Wai Neng Lau, Zhao Ermi

VU *Nyctixalus margaritifer* Boulenger, 1882

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Indonesia
Current Population Trend: Decreasing

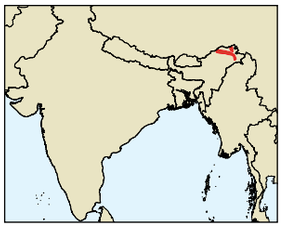


© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species occurs in at least three areas of the island of Java, Indonesia, above 700m asl. It was rediscovered in 1997 after a long absence of records.
Population It is a rare species, and fewer than ten specimens are known.
Habitat and Ecology It lives in undisturbed highland forest. It presumably breeds in tree holes by larval development, but its breeding habits have not been recorded.
Major Threats The major threat to this species is the loss of its forest habitat due to smallholder farming and subsistence wood collection.
Conservation Measures It occurs in Halimun and Gunung Gede Pangrango National Parks.
Bibliography: Iskandar, D.T. (1998)
Data Providers: Djoko Iskandar, Mumpuni

VU *Nyctixalus moloch* (Annandale, 1912)

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

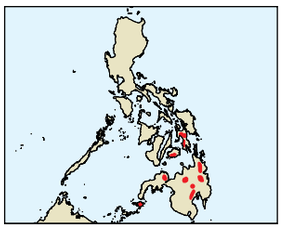


Geographic Range This species has a fragmented range in Arunachal Pradesh and Assam, India. It probably occurs somewhat more widely, and might be present in Bhutan, although this requires confirmation. It has been recorded at elevations of 300-1,500m asl.
Population It is a rare species.
Habitat and Ecology It is an arboreal species associated with tropical forest and shrubland. Breeding is believed to take place in ponds surrounded by shrubs.
Major Threats Subsistence wood collection is a threat to the species' habitat.
Conservation Measures The species has been recorded from Dibang Wildlife Sanctuary and Mouling National Park in Assam, and Nameri National Park in Arunachal Pradesh.

Bibliography: Bordoloi, S. *et al.* (2000), Chanda, S.K. (2002), Dutta, S.K. (1997), Liem, S.S. (1970), Molur, S. and Walker, S. (1998), Pawar, S.S. and Birand, A. (2001)
Data Providers: Sushil Dutta, Sabitry Bordoloi, Mohini Mohan Borah

VU *Nyctixalus spinosus* (Taylor, 1920)

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Philippines
Current Population Trend: Decreasing

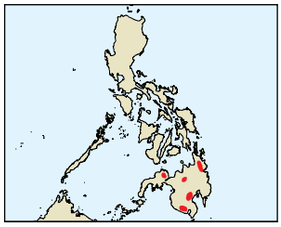



© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is known from Mindanao, Leyte, Bohol and Basilan Islands in the Philippines. It probably occurs more widely than current records suggest, especially in areas between known sites.
Population It is common in forest and disturbed areas adjacent to forest.
Habitat and Ecology It inhabits the forest floor litter of montane and lowland rainforests. It breeds and lays its eggs in tree holes.
Major Threats A major threat is the loss of the species' major habitat, the lower montane and lowland rainforest, due to agriculture and human settlement.
Conservation Measures Some populations of this species are protected in national parks, although there remains a need for improved protection of remaining forested habitats on Mindanao and Bohol.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Frost, D.R. (1985), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Cynthia Dolino, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Liza Paguntalan, Marisol Pedregosa, Dondi Ubaldo, Baldwin Gutierrez

VU *Philautus acutirostris* (Peters, 1867)

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Philippines
Current Population Trend: Decreasing

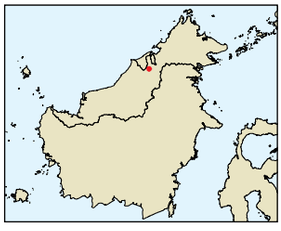



© Arvin C. Diesmos

Geographic Range This species is found in Jolo, Basilan, and in many parts of Mindanao, in the Philippines.
Population It is a common species.
Habitat and Ecology It inhabits arboreal and occasionally terrestrial microhabitats in mossy and montane rainforests and disturbed areas adjacent to forests. It breeds by direct development.
Major Threats The major threat is the continued loss of the lower montane and lowland rainforest due to agriculture (crops and plantations), logging, and human settlement.
Conservation Measures Some populations of this species are protected in national parks, although there remains a need for improved protection of remaining forested habitats on Mindanao.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Frost, D.R. (1985), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

VU *Philautus acutus* Dring, 1987

Vulnerable D2
Order, Family: Anura, Rhacophoridae
Country Distribution: Malaysia
Current Population Trend: Unknown

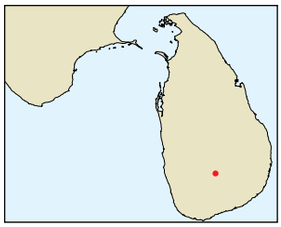


Geographic Range This species is known only from Gunung Mulu National Park, in Sarawak, Borneo, Malaysia. It is present at elevations of around 1,300m asl.
Population The current population status of this species is unknown.
Habitat and Ecology It lives in the shrub stratum of submontane and montane forests. Males call in groups, and breeding takes place by direct development.
Major Threats There are no major threats to the species at present; however, its restricted range makes it especially vulnerable to stochastic threatening processes.
Conservation Measures The only known population is within Gunung Mulu National Park, which is also a World Heritage Site. There is a need for targeted surveys to determine and monitor the population status of this species.

Bibliography: Dring, J.C.M. (1987)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

EN *Philautus alto* Manamendra-Arachchi and Pethiyagoda, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

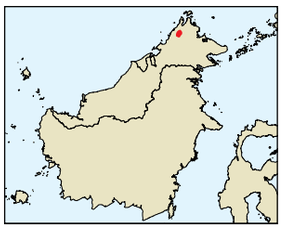


© Peter Janzen

Geographic Range This species is endemic to the Horton Plains and Pattipola, in the Central Hill Country, in Sri Lanka, and occurs from 1,890-2,135m asl (Manamendra-Arachchi and Pethiyagoda 2005).
Population It is common in suitable habitat.
Habitat and Ecology It hs been found mostly on shrubs (usually less than 0.3-2m above ground) in montane tropical forest, forest edge (bordering tea plantations) and anthropogenic habitats. It is active by day and night, and at night adult males perch on branches and leaves and vocalize (Manamendra-Arachchi and Pethiyagoda 2005). It breeds by direct development, and is not dependent upon water. Thefemale excavates a deep hole in the forest floor where the eggs are then deposited.
Major Threats The Pattipola population is threatened by timber harvesting of a plantation near the Horton Plains National Park.
Conservation Measures It is found in Horton Plains National Park, but there is need for strengthened protection of habitat in the Central Hills of Sri Lanka.
Bibliography: Bahir, M.M. *et al.* (2005), Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

VU *Philautus amoenus* Smith, 1931

Vulnerable D2
Order, Family: Anura, Rhacophoridae
Country Distribution: Malaysia
Current Population Trend: Stable

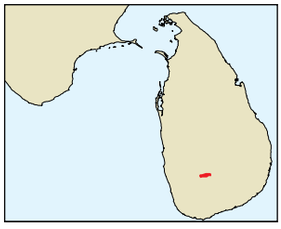


© Andreas & Christel Nöllert

Geographic Range This species is known only from Gunung Kinabalu in northern Borneo, Malaysia. It is present at elevations of 900-3,000m asl.
Population There is no information on the population status of this species.
Habitat and Ecology It is confined to submontane and montane forests and breeds by direct development. Its adaptability to secondary habitats is not known.
Major Threats There are no major threats to the species at present; however, its restricted range makes it especially vulnerable to stochastic threatening processes.
Conservation Measures The only known site for this species is within Gunung Kinabalu National Park, which is also a World Heritage Site. There is a need for targeted surveys to determine and monitor the population status of this species.
Bibliography: Dring, J.C.M. (1987), Malkmus, R. *et al.* (2002)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

EN *Philautus asankai* Manamendra-Arachchi and Pethiyagoda, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

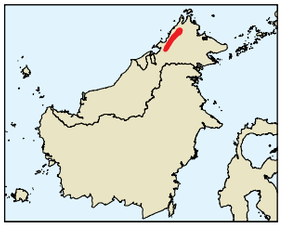


© Wildlife Heritage Trust

Geographic Range This species is endemic to the Central Hill Country of Sri Lanka, and has been recorded from 810-1,830m asl. There are records from Moray, Agra Bopath and Dayagama (Manamendra-Arachchi and Pethiyagoda 2005).
Population It is a rare species.
Habitat and Ecology It occurs in the open canopy of montane forest and anthropgenic habitats. It is a cryptic species; calling adult males are most often seen at night perched high on shrubs, 1.5-3m above the ground (Manamendra-Arachchi and Pethiyagoda 2005). Breeding is by direct development, and is not dependent upon water. The female excavates a deep hole in the forest floor where the eggs are then deposited.
Major Threats The major threat is habitat loss due to wood extraction, the expansion of tea cultivation, and human settlement; agro-chemical pollution represents an additional threat.
Conservation Measures It is found in the Peak Wilderness Sanctuary.
Bibliography: Bahir, M.M. *et al.* (2005), Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

EN *Philautus aurantium* Inger, 1989

Endangered B2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Malaysia
Current Population Trend: Decreasing

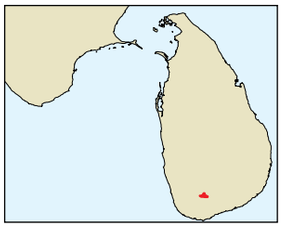


© Alexander Haas

Geographic Range This endemic is known only from western Sabah, in Borneo, Malaysia, at elevations of 750-1,800m asl.
Population It is locally abundant in suitable habitat.
Habitat and Ecology It has been found in primary and selectively logged forests, where it calls from shrubs and small trees 2-4m above the ground. Breeding takes place by direct development.
Major Threats The major threat is habitat loss in lowland areas due to clear-cutting, and the forests at one locality, Mount Trus Madi, have already been severely damaged.
Conservation Measures It is present in Gunung Kinabalu National Park and the Crocker Range. Strengthened and expanded protection of submontane and montane forests is essential for the long-term survival of this species.
Bibliography: Inger, R.F. (1989), Malkmus, R. *et al.* (2002)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

EN *Philautus auratus* Manamendra-Arachchi and Pethiyagoda, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

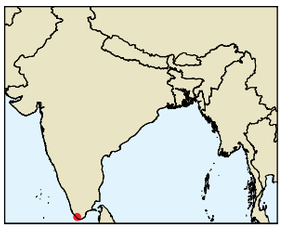


© Madhava Meegas Kumbura

Geographic Range This species is endemic to the general region of the Sinharaja World Heritage site of south-western Sri Lanka, and has been recorded from 513-1,270m asl. There are records from Morningside Forest Reserve, the nearby Handapan Ella Plains and western Sinharaja near Kudawa (Manamendra-Arachchi and Pethiyagoda 2005).
Population It is a very rare species.
Habitat and Ecology It is found only in closed-canopy rainforest and cloud forests and cardamom plantations within cloud forests, close to streams and marshy areas. Adult males are usually perched about 1m above ground, on understorey shrubs (Manamendra-Arachchi and Pethiyagoda 2005). Breeding takes place by direct development, and it is not dependent upon water.
Major Threats It is threatened by habitat loss due to agricultural encroachment (especially for tea), human settlement and illegal logging. It is also at risk from agro-chemical pollution.
Conservation Measures It is found in the Sinharaja World Heritage Site (the largest remnant of Sri Lanka's forests), and forest reserves bordering the eastern margin of the World Heritage Site. There is a need for continued population monitoring of this species.
Bibliography: Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

VU *Philautus bobingeri* Biju and Bossuyt, 2005

Vulnerable D2
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Stable

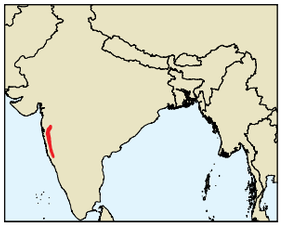


© S.D. Biju

Geographic Range This species is restricted to the area of Ponmudi Hill in the northern part of the Agasthyamala Hill range (formerly Ashambu Hills), Kerala, in the southern Western Ghats of India. It has been recorded from an elevation of 1,030m asl.
Population It is a common species at its known locality.
Habitat and Ecology It is an arboreal species, recorded from both primary and old secondary tropical moist deciduous forest. It breeds by direct development.
Major Threats It occurs in an area of forest that is currently protected. Restricted logging and tourism are minor threats. However, the expansion of the surrounding tea plantations might be considered a threat for the future.
Conservation Measures It occurs within an area protected by the State Forest Department. There is a need for close monitoring of the population status of this species.
Notes on taxonomy: This species was first reported by Inger *et al.* (1984) from Ponmudi as *Philautus femoralis*.
Bibliography: Biju, S.D. and Bossuyt, F. (2005c), Inger, R.F. (1999), Inger, R.F. *et al.* (1984)
Data Providers: S.D. Biju

VU *Philautus bombayensis* (Annandale, 1919)

Vulnerable B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

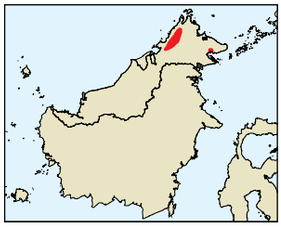


© K. Jayaram

Geographic Range This species is endemic to the Western Ghats of India in the states of Maharashtra and Karnataka. It was recently reported from Chicamangalore in Karnataka (Bossuyt *et al.* 2001). It has been recorded from elevations of between 400 and 1,300m asl.
Population It can be a common species, but is reported to have declined in the vicinity of Pune town.
Habitat and Ecology It is an arboreal species associated with the understorey of tropical moist evergreen forest and shrubland. It is also present in secondary forest disturbed habitats. It breeds by direct development.
Major Threats Habitat loss as a result of logging, infrastructure development, and disturbance due to touristic activities, is believed to be the main threat to this species.
Conservation Measures It has been recorded in the Dajipur Wildlife Sanctuary, Radhanagari Wildlife Sanctuary, Bhimasankar Wildlife Sanctuary, and Mahabaleshwar Reserve Forest, all in Maharashtra State. A taxonomic revision of this species is urgently required (S.D. Biju pers. comm.).
Bibliography: Biju, S.D. (2001), Bossuyt, F. *et al.* (2001), Bossuyt, F. and Dubois, A. (2001), Dutta, S.K. (1997), Padhye, A.D., Mahabaleshwarkar, M. and Ghate, H.V. (2002), Paranjape, S.Y. and Muherkar, L. (1979)
Data Providers: S.D. Biju, Kartik Shanker, S.P. Vijayakumar, Chelmala Srinivasulu, S. Bhupathy, Anand Padhye

VU *Philautus bunitus* Inger, Stuebing and Tan, 1995

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Malaysia
Current Population Trend: Decreasing



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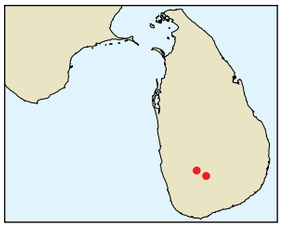
Geographic Range This species has been reported only from the mountains of western Sabah and from a hill in eastern Sabah in Borneo, Malaysia. It is present at elevations between 640 and 1,800m asl.
Population It is often locally abundant.
Habitat and Ecology It has been seen in lowland, submontane and montane forests, and can occur in slightly disturbed forest. It perches in tall shrubs and small trees 2-5m above the ground. It breeds by direct development.
Major Threats Clear cutting of forests is a major threat to this species.
Conservation Measures It is present in Gunung Kinabalu National Park and the Crocker Range.
Bibliography: Inger, R.F. and Stuebing, R.B. (1997), Inger, R.F., Stuebing, R.B. and Tan, F.-L. (1995), Malkmus, R. *et al.* (2002)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

EN *Philautus caeruleus* Manamendra-Arachchi and Pethiyagoda, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

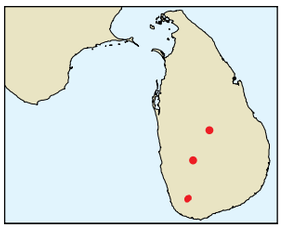


© Wildlife Heritage Trust

Geographic Range This species is endemic to the Peak Wilderness and the Central Hill Country of south-western Sri Lanka, and has been recorded from 810-1,370m asl. It is currently known from only two sites, but is likely to occur more widely than current records suggest (Manamendra-Arachchi and Pethiyagoda 2005).
Population It is a rare species.
Habitat and Ecology It is terrestrial, and has been observed in closed-canopy habitats, both in disturbed and undisturbed forests. Adults are strictly nocturnal; males have been observed perching on branches of low shrubs 20-50cm above ground (Manamendra-Arachchi and Pethiyagoda 2005). It breeds by direct development, and is not dependent on water. The female excavates a deep hole in the forest floor where the eggs are then deposited.
Major Threats There is some encroachment of the forest habitat of this species, mainly for tea cultivation and firewood collection, and it is potentially at risk from agro-chemicals. The area is also subject to disturbance by visiting pilgrims.
Conservation Measures It is found in the Peak Wilderness Sanctuary.
Bibliography: Bahir, M.M. *et al.* (2005), Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

EN *Philautus cavirostris* (Günther, 1869)

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

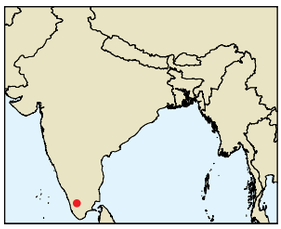


© Madhava Meegaskumbura

Geographic Range This species is known from isolated populations in the south-western region of Sri Lanka, and has been recorded at elevations of 200-1,100m asl. Specific records come from Haycock, Weddagala, Kitugala, Kosmulla, Pathanegala, Kadugannawa and Pussellawa.
Population It is locally abundant.
Habitat and Ecology It is a canopy species of lowland and montane tropical moist forest. Adults have been observed perched 0.3-2m above the ground on branches, mossy logs and sometimes on mossy rock surfaces (Manamendra-Arachchi and Pethiyagoda 2005). Breeding is by direct development.
Major Threats The major threat is habitat loss as a result of the conversion of forest habitat to cultivation (tea, cardamom and shifting cultivation) and urban areas, and the extraction of timber; agrochemical pollution is also a threat to this species.
Conservation Measures It has been recorded in Kanneliya Forest Reserve, Haycock Forest Reserve, Gilimale-Eratne Forest Reserve and Knuckles Forest Reserve.
Notes on taxonomy: We follow Bossuyt and Dubois (2001) in considering this species to be separate from *Philautus microtympanum*, and belonging to the genus *Philautus*, rather than *Polypedates*.
Bibliography: Dutta, S.K. (1997), Dutta, S.K. and Manamendra-Arachchi, K. (1996), Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Anslem de Silva

CR *Philautus chalazodes* (Günther, 1876)

Critically Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

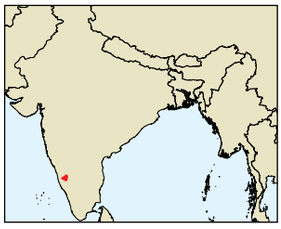


© S.U. Saravanakumar

Geographic Range This species is known only from Munnar, Kerala, on the south-western slopes of the Cardamom Hills, Kerala (S.D. Biju pers. comm.), in India. The exact location of the type locality of Travancore is non-specific. It was collected at an altitude of 1,400m asl. Because of difficulties with identification, there is a need to reconfirm records of this species from outside the Cardomom Hills area. This includes records from the Parambikulum Wildlife Sanctuary in Kerala, and from the Anaimalai Hills in Tamil Nadu, all of which appear to be doubtful (S.D. Biju pers. comm.).
Population This species was rediscovered after 125 years (Biju and Bossuyt 2003), and is considered to be locally common at its only known locality.
Habitat and Ecology It is a nocturnal, arboreal species associated with the understorey of tropical moist evergreen forest; it can also occur in secondary or disturbed habitat. It is believed to breed by direct development.
Major Threats This species is threatened by the conversion of natural forest to intensively cultivated areas (including non-timber plantations).
Conservation Measures It is not known with certainty from any protected areas, and improved protection of remaining habitat in the range of this species is recommended. Field studies including this species are ongoing (Biju 2001 and onwards).
Notes on taxonomy: Bossuyt and Dubois (2001) suggested that this species could be a synonym of *Ixalus beddomii* Günther, 1876. However, recent studies indicate that both species are distinct (S.D. Biju pers. comm.).
Bibliography: Biju, S.D. (2001), Bossuyt, F. and Dubois, A. (2001), Dutta, S.K. (1997), Günther, A. (1876), Radhakrishnan, C. (1996)
Data Providers: S.D. Biju, Sushil Dutta, Karthikeyan Vasudevan, S.P. Vijayakumar, Chelmala Srinivasulu

EN *Philautus charius* Rao, 1937

Endangered B2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

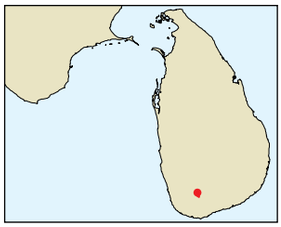


© K. Jayaram

Geographic Range This species is restricted to Chikmalagur (where it is known from three localities), in Karnataka State, in the southern Western Ghats of India. The altitudinal range is between 800 and 1,200m asl.
Population It is a rare species.
Habitat and Ecology It is arboreal, occurring in tropical moist evergreen forest, though it may also be found in secondary forest close to primary forest edge. It is believed to breed by direct development.
Major Threats The major threat is habitat loss due to the conversion of native forest to intensively cultivated areas.
Conservation Measures It is not known if the species occurs in any protected areas, though it may occur in Kudremukh National Park. It is part of ongoing regional field studies by S.D. Biju.
Notes on taxonomy: Specimens of *Philautus charius* recorded from Ponmudi Hills and surroundings and Wayanad are in the process of being published as the new species Philautus "Kalpatta" (S.D. Biju pers. comm.).
Bibliography: Biju, S.D. (2001), Bossuyt, F. and Dubois, A. (2001), Dutta, S.K. (1997), Inger, R.F. (1999), Inger, R.F. *et al.* (1984), Krishnamurthy, S.V. (1992)
Data Providers: S.D. Biju, Sushil Dutta, Karthikeyan Vasudevan, S.P. Vijayakumar, Chelmala Srinivasulu

EN *Philautus cuspis* Manamendra-Arachchi and Pethiyagoda, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

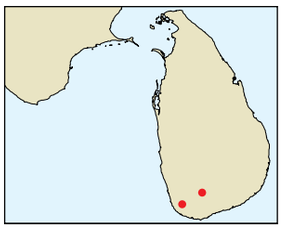


© Peter Janzen

Geographic Range This species is found only in the general Sinharaja region of south-western Sri Lanka from 150-660m asl. There are records from Sinharaja, Morawaka and Deniyaya (Manamendra-Arachchi and Pethiyagoda 2005).
Population It is a common species.
Habitat and Ecology It lives on the ground in leaf-litter, in damp shaded closed-canopy rainforest habitats. At night, males perch and vocalize from branches and leaves around 0.3m above ground (Manamendra-Arachchi and Pethiyagoda 2005). It is a direct developer and is not dependent on water.
Major Threats It is largely restricted to protected forests, and hence its habitat is generally well protected at present. However, it is probably impacted by firewood collecting and illegal gemstone mining.
Conservation Measures It is found in the Sinharaja World Heritage Site, the largest remnant of Sri Lanka's forests, which was inscribed in 1988.
Bibliography: Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

EN *Philautus decoris* Manamendra-Arachchi and Pethiyagoda, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

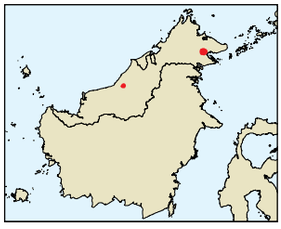


© Madhava Meegaskumbura

Geographic Range This species is known from just two locations in south-western Sri Lanka: Morningside (at 1,060m asl), near Rakwana in the Sinharaja area; and Pituwala (at 60m asl) (Manamendra-Arachchi and Pethiyagoda 2005).
Population It is a rare species.
Habitat and Ecology It inhabits closed-canopy forests and cardamom plantations within forests, usually close to water. Adult males have been observed at night, vocalizing while perched on low shrubs, 0.3-2m above ground (Manamendra-Arachchi and Pethiyagoda 2005). It breeds by direct development, and is not dependent upon water. The female excavates a deep hole in the forest floor where the eggs are then deposited.
Major Threats The major threat is the loss of habitat due to firewood collection, the encroachment of tea cultivation, and expanding human settlements; agro-chemical pollution is an additional threat.
Conservation Measures Specimens have been collected from the Sinharaja World Heritage Site (the largest remnant of Sri Lanka's forests), and forest reserves bordering the eastern margin of the World Heritage Site.
Bibliography: Bahir, M.M. *et al.* (2005), Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

EN *Philautus disgregus* Inger, 1989

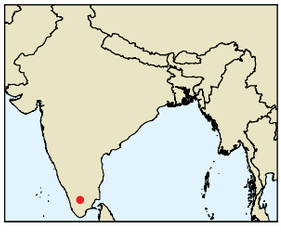
Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Malaysia
Current Population Trend: Decreasing



Geographic Range This species is known only from two sites, one in Sabah (Danum Valley) and one in Sarawak (Sungei Pesu), in Borneo, Malaysia. It has been recorded at elevations up to 300m asl.
Population The population status of this species is unknown.
Habitat and Ecology It has been recorded only in primary, lowland rainforest. Breeding is by direct development.
Major Threats The clear-cutting of lowland forest is the most serious threat to this species at present.
Conservation Measures Although it has been recorded in Danum Valley National Park, more effective protection of remaining lowland forests in Borneo is essential.
Bibliography: Inger, R.F. (1989)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

VU *Philautus dubois* Biju and Bossuyt, 2006

Vulnerable D2
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Stable

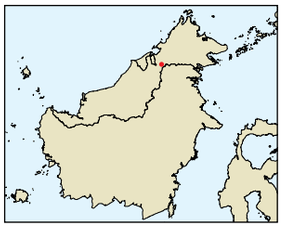


Geographic Range This species is known from Kodaikanal in Dindigal Anna District, Tamil Nadu State, in the southern Western Ghats of India, at elevations of 1,900-2,300m asl.
Population It is a very common to abundant species.
Habitat and Ecology It inhabits grassland, and associated fringes of shola forest. The original series was collected during a rainy night from leaves, about 1m above ground in shrubs near the roadside. It breeds by direct development.
Major Threats There are no threats to this species at present, given its apparent adaptability to significantly altered habitats. However, its very limited range could render it susceptible to stochastic threatening processes.
Conservation Measures It is not known from any protected areas. There is a need for close montoring of the population status of this species.

Bibliography: Biju, S.D. and Bossuyt, F. (2006)
Data Providers: S.D. Biju

VU *Philautus erythrophthalmus* Stuebing and Wong, 2000

Vulnerable D2
Order, Family: Anura, Rhacophoridae
Country Distribution: Malaysia
Current Population Trend: Stable

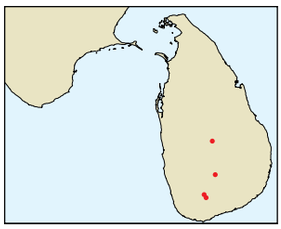


© Rob Stuebing

Geographic Range This species is known only from a single mountain (Muruk Miau) in south-western Sabah, Borneo, Malaysia. The single specimen was collected at 1,550m asl. It is thought likely to have a very limited distribution.
Population Although it is presently known from only a single specimen, it might not be a rare species.
Habitat and Ecology The specimen was found in recently logged oak forest, although it is probable that the usual habitat is primary montane forest. It presumably breeds by direct development.
Major Threats The species' habitat is potentially threatened in future by logging, although there is less logging at higher elevations, where the timber is less valuable.
Conservation Measures The species has not been recorded from any protected areas, although the area where it was collected is within a proposed transboundary nature reserve. The establishment of effectively protected areas in the mountains around the type locality is essential. Directed surveys are recommended to establish the current population status of this species.
Bibliography: Stuebing, R.B. and Wong, A. (2000)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

EN *Philautus femoralis* (Günther, 1864)

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

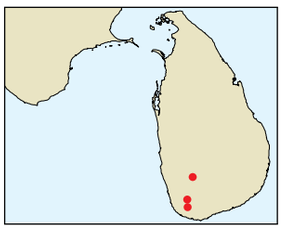


© Peter Janzen

Geographic Range This species is restricted to tropical montane forests in central and southern Sri Lanka between 1,060 and 2,135m asl. There are records from Horton Plains, Agra Bopath, Corbett's Gap (southern Knuckles Range), Handapan Ella Plains and Morningside (see Manamendra-Arachchi and Pethiyagoda 2005; Meegaskumbura and Manamendra-Arachchi 2005). It is likely to occur more widely, especially in intervening areas between known sites.
Population It is a rare species.
Habitat and Ecology It is arboreal, and associated with the understorey of tropical moist montane evergreen forest. Individuals are found on, or under, leaves. It is very sensitive to any disturbance of its habitat. Breeding takes place via direct development, with the eggs attached to the underside of leaves.
Major Threats The major threat is the conversion of native forest to cultivated areas (including tea and cardamom estates), dieback of mature trees, fires, and droughts (especially in Horton Plains); land pollution from agrochemicals is an additional threat.
Conservation Measures It is present in the Knuckles Forest Reserve, Horton Plain National Park and the Sinharaja World Heritage Site.
Notes on taxonomy: Specimens refered to this species from Ponmudi and surroundings in India, are now included in the newly described species, *Philautus* sp. nov. 'Ponmudi Hills' (S.D. Biju pers. comm.).
Bibliography: Bahir, M.M. *et al.* (2005), Biju, S.D. (2001), Bossuyt, F. and Dubois, A. (2001), Inger, R.F. *et al.* (1984), Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda, S.D. Biju

EN *Philautus folicola* Manamendra-Arachchi and Pethiyagoda, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

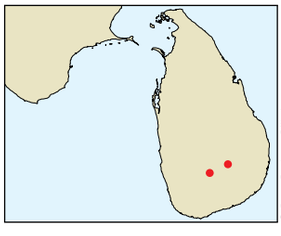


© Madhava Meegaskumbura

Geographic Range This species is endemic to the south-western lowlands of Sri Lanka, and is found from 60-660m asl. It has been recorded from Kottawa, Haycock, Gilimale and Induruwa (Manamendra-Arachchi and Pethiyagoda 2005).
Population It is common.
Habitat and Ecology It occurs in shaded places including rainforests and anthropogenic habitats, and is usually observed 0.3-2m above ground, perched on branches or leaves. Calling males are sometimes found concealed in dried, curled leaves, although in Gilimale males were always observed vocalizing while on leaves (Manamendra-Arachchi and Pethiyagoda 2005). Breeding is by direct development.
Major Threats The major threat is habitat loss due to logging and the expansion of tea cultivation. It might be adversely affected by agricultural chemicals that are used heavily in its range.
Conservation Measures It occurs in Gilimale Nature Reserve, Kanneliya Forest Reserve, Kottawa Forest Reserve and Haycock Hill Forest Reserve.
Bibliography: Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

EN *Philautus frankenbergi* Meegaskumbura and Manamendra-Arachchi, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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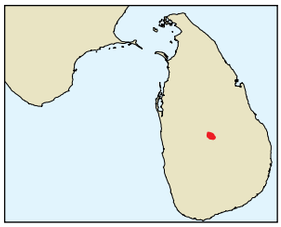
Geographic Range This Sri Lankan endemic is restricted to the highest elevations of the Central Hills and is currently known only from Horton Plains National Park at 2,135m asl, and Namunukula Peak at 1,850-1,980m asl. It is separated from its sister species, *Philautus auratus*, by a 1,450m deep valley (Meegaskumbura and Manamendra-Arachchi 2005).
Population The current population status is not known.
Habitat and Ecology It lives in the sub-canopy of closed-canopy montane forests and cardamom plantations within the forest. Males call from their perches on leaves 1-3m above the ground (Meegaskumbura and Manamendra-Arachchi 2005). Breeding is by direct development, and the species is not dependent upon water. The female excavates a deep hole in the forest floor where the eggs are then deposited. It is dependent on relatively undisturbed closed-canopy cloud forest.
Major Threats The major threat is clearing of the species' forest habitat, due to subsistence agriculture and logging. Drought is also an important threat.
Conservation Measures Its range includes Horton Plains National Park. There is a need for further survey work to determine the current population status of this species.
Bibliography: Bahir, M.M. *et al.* (2005), Meegaskumbura, M. and Manamendra-Arachchi, K. (2005)
Data Providers: Madhava Meegaskumbura, Kelum Manamendra-Arachchi

EN *Philautus fulvus* Manamendra-Arachchi and Pethiyagoda, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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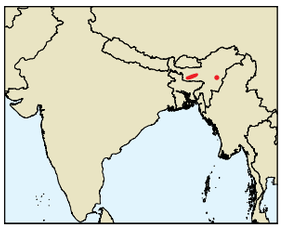
Geographic Range This species is endemic to the northern Knuckles Range in central Sri Lanka, and has been recorded from 450-1,220m asl (Manamendra-Arachchi and Pethiyagoda 2005).
Population It is a common species.
Habitat and Ecology It is found mainly in closed-canopy habitats that include natural forest, anthropogenic habitats, secondary forests, and cardamom plantations. Adults have been observed at night perched 2-4m above ground on branches, tree trunks, and moss-covered rocks (Manamendra-Arachchi and Pethiyagoda 2005). It is a direct developer, and is not dependent on water.
Major Threats The major threats are habitat destruction (including the extraction of wood for subsistence use, and infrastructure development for human settlement) and agro-chemical pollution.
Conservation Measures It is found in the Knuckles Forest Reserve.
Bibliography: Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

VU *Philautus garo* (Boulenger, 1919)

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

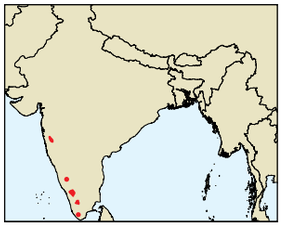


Geographic Range This species has been recorded from the Garo Hills in Assam and Meghalaya, and from Dzulake in Nagaland, India. It is a lowland species found at elevations of 90-500m asl. It probably occurs more widely, in particular in areas between known sites.
Population It is considered to be rare within its restricted range.
Habitat and Ecology It is associated with bushy areas close to perennial streams, in moist tropical forest. Breeding presumably takes place by direct development, although this requires confirmation.
Major Threats The major threat to this species is habitat loss due to commercial logging (clear-cutting).
Conservation Measures It is not known whether or not it occurs in any protected areas, but it might occur in Puliebadze Wildlife Sanctuary. Improved habitat protection at sites at which this species is known to occur is needed.

Bibliography: Ao, J.M., Bordoloi, S. and Ohler, A. (2003), Bossuyt, F. and Dubois, A. (2001), Boulenger, G.A. (1919), Chanda, S.K. (2002), Dutta, S.K. (1997)
Data Providers: Annemarie Ohler, Saibul Sengupta, Debjani Roy

VU *Philautus glandulosus* (Jerdon, 1853)

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

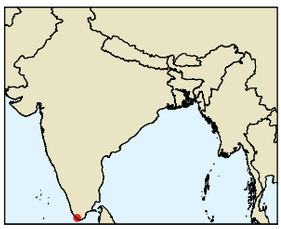


© S.D. Biju

Geographic Range This Indian species has been recorded from the Nilgiris, Anamalai Hills, and Agasthyamala Hill ranges, Kudremukh National Park, and from several localities in Maharashtra State. Records from Maharashtra require further investigation to confirm that they belong to this species. It has an altitudinal range of between 400 and 2,000m asl.
Population It is relatively common where it occurs.
Habitat and Ecology It is a nocturnal, arboreal species associated with the understorey of tropical moist forest. It can also occur in modified habitats such as coffee, tea and *Acacia* plantations. It is a direct developer, and deposits its eggs (20-45 eggs) on leaves (Biju 2003).
Major Threats It is threatened by the conversion of native forest to intensively cultivated areas (including tea and coffee plantations) and timber plantations.
Conservation Measures It has been recorded in many protected areas including the Nilgiri Biosphere Reserve (which includes Silent Valley National Park and Wayanad Wildlife Sanctuary), Parambikulum Wildlife Sanctuary, Ponmudi Wildlife Sanctuary, and Periyar Wildlife Sanctuary in Kerala, Kudremukh National Park in Karnataka, and Indira Gandhi National Park and Kalakad Wildlife Sanctuary, both in Tamil Nadu.
Notes on taxonomy: This species assessment is based on the recent taxonomic revision by Bossuyt and Dubois (2001).
Bibliography: Biju, S.D. (2001), Biju, S.D. (2003), Bossuyt, F. and Dubois, A. (2001), Dutta, S.K. (1997), Ravichandran, M.S. (1996a), Vasudevan, K., Kumar, A. and Chellam, R. (2001)
Data Providers: S.D. Biju, S. Bhupathy, Gajanan Dasaramji Bhuddhe, Bexel Ayyasamy Daniel, Sushil Dutta, S.P. Vijayakumar, Karthikeyan Vasudevan

VU *Philautus graminirupes* Biju and Bossuyt, 2005

Vulnerable D2
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Stable

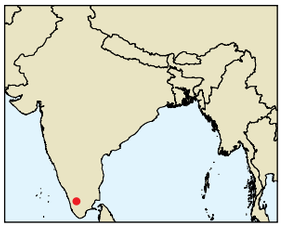


© S.D. Biju

Geographic Range This species is restricted to the area of Ponmudi Hill in the northern part of the Agasthyamala Hill range (formerly Ashambu Hills), Kerala, in the southern Western Ghats of India. It has been recorded from an elevation of 1,030m asl.
Population It appears to be a common species.
Habitat and Ecology It is primarily an open grassland species, but it is also associated with grassland shrubs. It breeds by direct development and eggs are deposited at the base of grass clumps or in rock crevices.
Major Threats It occurs in an area of grassland and forest that is generally reasonably well protected. However, the expansion of the surrounding tea plantations might be considered a threat in the future.
Conservation Measures It occurs within an area protected by the State Forest Department. There is a need for close monitoring of the population status of this species.
Bibliography: Biju, S.D. and Bossuyt, F. (2005c)
Data Providers: S.D. Biju

CR *Philautus griet* Bossuyt, 2003

Critically Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

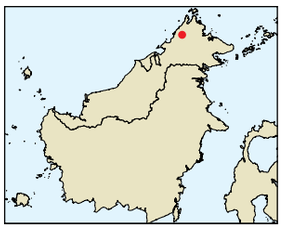


© K. Jayaram

Geographic Range This species appears to be restricted to one locality: Munar, in the southern Western Ghats of India, where it has been recorded from 1,500m asl.
Population It is locally abundant.
Habitat and Ecology It is an arboreal species, found commonly in montane forest, and in secondary growth close to shola forest, but can also be found in tea plantations (although it is doubtful that populations can persist in these areas). It breeds by direct development.
Major Threats The major threat to this species is habitat fragmentation due to tea and eucalyptus plantations, and it is unlikely to be able to survive in the face of extensive habitat loss.
Conservation Measures It is not known from any protected areas, and habitat protection is urgently required.
Bibliography: Bossuyt, F. (2003)
Data Providers: S.D. Biju

VU *Philautus gunungensis* Malkmus and Reide, 1996

Vulnerable D2
Order, Family: Anura, Rhacophoridae
Country Distribution: Malaysia
Current Population Trend: Unknown

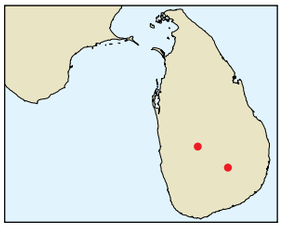


Geographic Range This species is known only from the area of Sg. Silau-Silau and Sg. Liwago on Gunung Kinabalu in the Province of Sabah, Borneo, Malaysia. It has been recorded at 1,400-1,500m asl.
Population There is no information on the current population status of this species.
Habitat and Ecology It is a montane forest species. Males call from perches on the leaves of shrubs and bushes above the ground. It is presumed to breed by direct development.
Major Threats There are no major threats to the species at present, especially since its range is within a protected area; however, its restricted range renders it susceptible to stochastic threatening processes, and if it ranges outside the protected area then it might be susceptible to ongoing habitat loss.
Conservation Measures The known populations of this species are all within Gunung Kinabalu National Park, which is also a World Heritage Site. There is a need for further survey work to determine and monitor the population status of this species.

Notes on taxonomy: We follow Bossuyt and Dubois (2001) in considering *Philautus gunungensis* to be separate from *P. aurantium.*
Bibliography: Bossuyt, F. and Dubois, A. (2001), Malkmus, R. *et al.* (2002), Malkmus, R. and Riede, K. (1996)
Data Providers: Robert Inger

VU *Philautus hallidayi* Meegaskumbura and Manamendra-Arachchi, 2005

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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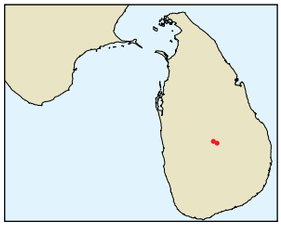
Geographic Range This Sri Lankan endemic is known from only from two localities: Hanthana range, Kandy (from 510-800m asl), and Tonacombe Estate, Namunukula (around 1,320m asl) (Meegaskumbura and Manamendra-Arachchi 2005).
Population It can be common in suitable habitat.
Habitat and Ecology An inhabitant of closed-canopy forest, where it is usually found on large boulders close to streams. It is unlikely to be tolerant of habitat degradation. It breeds by direct development, and is not dependent upon water. The female excavates a deep hole in the forest floor where the eggs are then deposited.
Major Threats The main threat is likely to be water pollution due to agrochemicals.
Conservation Measures This species has been recorded from Hantane Forest Reserve and the Gannoruwa Forest Reserve near Kandy.
Bibliography: Bahir, M.M. *et al.* (2005), Meegaskumbura, M. and Manamendra-Arachchi, K. (2005)
Data Providers: Madhava Meegaskumbura, Kelum Manamendra-Arachchi

EN *Philautus hoffmanni* Meegaskumbura and Manamendra-Arachchi, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

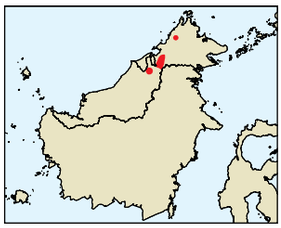


© Madhava Meegaskumbura

Geographic Range This species is known only from the type locality in the Corbett's Gap region, in the Knuckles range of central Sri Lanka, at an altitude of 1,245m asl (Meegaskumbura and Manamendra-Arachchi 2005). There is also a recent record from the nearby Bambarella Peak (M. Meegaskumbura pers. comm.). It may occur in other cloud forests of the Knuckles Hills, but further survey work is needed to confirm this.
Population It is found in low abundance.
Habitat and Ecology It is found in shrubs in gaps within closed-canopy montane cloud forests, as well as cardamom plantations within the forest. However, it has only been observed in or very close to relatively undisturbed forest, though it seems to do well in forest gap areas such as those created by selective logging. Males usually call from vegetation 0.3-1m above the ground. The diurnal resting habitat of these frogs is under a leaf, or on a leaf axil, often in well-illuminated habitats (Meegaskumbura and Manamendra-Arachchi 2005). It is presumably a direct developer like other species in the genus.
Major Threats The major threat is clearing of the species' forest habitat, due to subsistence agriculture and logging. Drought is also an important threat.
Conservation Measures Bambarella Peak is part of the Knuckles Forest Reserve, but Corbett's Gap is not currently known to fall in any protected area, and is in need of urgent habitat protection. Further survey work is needed to better determine the distribution range of this species, and its current population status.
Bibliography: Meegaskumbura, M. and Manamendra-Arachchi, K. (2005)
Data Providers: Madhava Meegaskumbura, Kelum Manamendra-Arachchi

VU *Philautus ingeri* Dring, 1987

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Brunei Darussalam, Malaysia
Current Population Trend: Decreasing



© Indraneil Das

Geographic Range This species is known from three areas within submontane or montane sites in north-western Borneo (in Sabah and Sarawak (Malaysia) and in Brunei). It is present at elevations of 1,300-1,600m asl. It probably occurs a little more widely.
Population The population status of this species is unknown.
Habitat and Ecology All three localities are within mossy montane forest. It is active at night, when temperatures are below 20°C, and males call from shrubs 1-4m above the ground. It is presumed to breed by direct development.
Major Threats The known habitat of the species is fragmented and clear-cutting of the forest is a major threat.
Conservation Measures It is known from a number of protected areas including Gunung Mulu National Park and Gunung Kinabalu National Park, both of which are World Heritage Sites. Continued effective protection of forests above 1,000m asl is essential for the conservation of this species.
Bibliography: Dring, J.C.M. (1987), Malkmus, R. *et al.* (2002)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

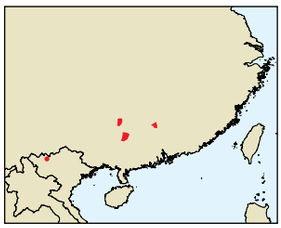
CR *Philautus jacobsoni* (van Kampen, 1912)

Critically Endangered B2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Indonesia
Current Population Trend: Decreasing

Geographic Range This species is known only from Mount Ungaran, Central Java, Indonesia.
Population It is known only from the holotype, and has not been recorded for over 90 years, so it might already be extinct (particularly if genuinely confined to the type locality).
Habitat and Ecology It presumably inhabits montane forest, and is believed to be a direct-developer, not dependent upon water.
Major Threats Forest loss at the type locality has been so severe that almost no habitat remains.
Conservation Measures It has not been recorded from any protected areas. Surveys are needed to determine whether or not this species still survives in the wild.
Bibliography: Iskandar, D.T. (1998)
Data Providers: Djoko Iskandar, Mumpuni

VU *Philautus jinxiuensis* Hu, 1978

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: China, Viet Nam
Current Population Trend: Decreasing



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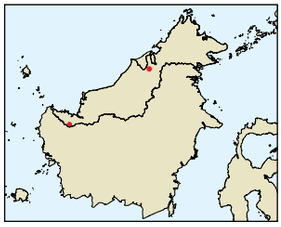
Geographic Range This species is known from northern Guangxi (Dayaoshan in Jinxiu County and Huaping in Longsheng County) and southern Hunan (Yizhang County) provinces in China, and from one location, Fan Si Pan Mountain, in northern Viet Nam. In China it has been recorded around 1,080m asl, and in Viet Nam it has been recorded from 1,850-2,050m asl.
Population This species is known from only three locations in China. Only three specimens were collected in Viet Nam.
Habitat and Ecology In China this species is known from forests, and in Viet Nam it was reported from upper montane forest, secondary growth, and forest edge. Breeding was observed in July and August in a pool, with larval development.
Major Threats Habitat loss and degradation due to agriculture and fires is a major threat to this species.
Conservation Measures The species' range in China includes a few protected areas, including the Dayaoshan Nature Reserve, and in Viet Nam it occurs in Hoang Lien Son National Park.
Bibliography: Fei, L. *et al.* (1999), Hu, S.-Q., Fei, L. and Ye, C.-Y. (1978), MacKinnon, J. *et al.* (1996)
Data Providers: Michael Wai Neng Lau, Chou Wenhao, Annemarie Ohler, Steven Swan

EN *Philautus kerangae* Dring, 1987

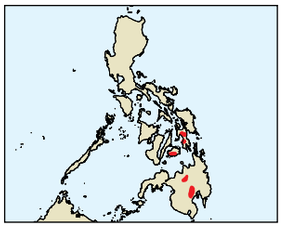
Endangered B2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Malaysia
Current Population Trend: Decreasing



Geographic Range This species is known from two widely separated areas in Sarawak, Borneo (Malaysia), where it has been collected at 200m asl.
Population The current population status of this species is unknown.
Habitat and Ecology The only known specimens were found in heath forest. It is closely associated with *Nepenthes* plants. and eggs are deposited in their pitchers. Breeding is by direct development.
Major Threats Loss of habitat due to the deforestation and fragmentation of peat swamps is the major threat to this species.
Conservation Measures It has been recorded from Gunung Mulu National Park, but there is a need for more effective protection of peat swamp forest habitats in Sarawak.
Bibliography: Dring, J.C.M. (1987)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

VU *Philautus leitensis* (Boulenger, 1897)

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Philippines
Current Population Trend: Decreasing

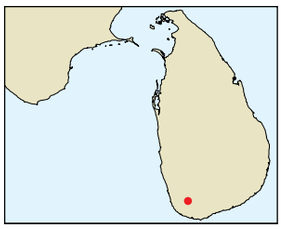


© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is found in Bohol, Leyte, and Mindanao, in the eastern Philippines.
Population It is common in forest, and disturbed areas adjacent to forest.
Habitat and Ecology It inhabits arboreal microhabitats in lower montane and lowland forests, and can also be found in disturbed areas adjacent to forest. It breeds by direct development.
Major Threats The major threat is the continued loss of the lower montane and lowland rainforest, due to agriculture (crops and livestock), logging, and human settlement.
Conservation Measures Its range includes several protected areas, but there remains a need for improved protection of the remaining rainforests on the islands of Bohol, Leyte, and Mindanao.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Frost, D.R. (1985), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

CR *Philautus limbus* Manamendra-Arachchi and Pethiyagoda, 2005

Critically Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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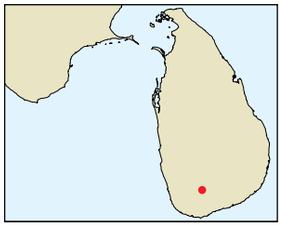
Geographic Range This species is known from a single specimen from Haycock Hill (Hiniduma) Forest Reserve (06° 20'N; 80° 18'E), at 560m asl, in south-western Sri Lanka (Manamendra-Arachchi and Pethiyagoda 2005). It seems to be restricted to the type locality.
Population This species is known only from the holotype, and is presumed to be very rare.
Habitat and Ecology The type specimen was collected from a low (50cm above the ground) branch on the border of forest, beside a tea garden. It presumably breeds by direct development and it is not dependent upon water.
Major Threats The major threat to this species is habitat loss and degradation due to the expansion of smallholder farming, in particular tea plantations. It is also potentially affected by pollution from agricultural chemicals and run-off.
Conservation Measures It occurs in Haycock Hill (Hiniduma) Forest Reserve; however, this reserve requires better management to ensure the persistence of this species. Further survey work is needed to determine the precise population status of this species.
Bibliography: Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

CR *Philautus lunatus* Manamendra-Arachchi and Pethiyagoda, 2005

Critically Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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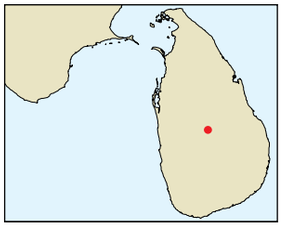
Geographic Range This species is known only from the Handapan Ella Plains, near Suriyakanda, at 1,270m asl, in the eastern part of the Sinharaja World Heritage Site in south-western Sri Lanka (Manamendra-Arachchi and Pethiyagoda 2005). It is probably restricted to this area.
Population It is known only from the holotype, and is thought to be a very rare species.
Habitat and Ecology The holotype was collected perched on the leaf of a cardamom plant, about one metre above ground, in the early evening. It presumably breeds by direct development and is not dependent on water.
Major Threats The main threat to this species is habitat loss and degradation, particularly the loss of canopy trees in part due to illegal gemstone mining. It is probably also adversely affected by agro-chemical run-off.
Conservation Measures It occurs in the eastern part of the Sinharaja World Heritage Site, the largest remnant of Sri Lanka's forests, and inscribed in 1988.
Bibliography: Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

CR *Philautus macropus* (Günther, 1868)

Critically Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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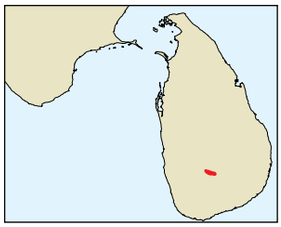
Geographic Range This species was previously reported from several locations in Sri Lanka (Dutta and Manamendra-Arachchi 1996). However, recent information indicates that it is limited to a small area of the Knuckles Range of central Sri Lanka (Manamendra-Arachchi and Pethiyagoda 2005), where it has been recorded at elevations of 603-760m asl.
Population It is a rare species.
Habitat and Ecology It is associated with submontane tropical moist forest, but is also found in cardamom plantations (provided there is no agrochemical use). Animals are usually found on wet rock surfaces, crevices and boulders that are very close to or actually in streams, and in moist leaf-litter. It breeds by direct development, with eggs laid in the riparian zone close to streams.
Major Threats The main threats to this restricted-range species are conversion of forest habitat to cultivated land (cardamom), firewood collection, and agrochemical pollution of land and water (specifically by insecticides).
Conservation Measures It has been recorded from the Knuckles Forest Reserve, which has been declared as a National Man and Biosphere Reserve and has also been nominated for declaration as an International Man and Biosphere Reserve and a natural World Heritage Site.
Notes on taxonomy: This species is considered distinct from *Philautus nanus* following Manamendra-Arachchi and Pethiyagoda (2005). Further taxonomic studies on this species are required.
Bibliography: Dutta, S.K. (1997), Dutta, S.K. and Manamendra-Arachchi, K. (1996), Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Anslem de Silva

EN *Philautus microtympanum* (Günther, 1858)

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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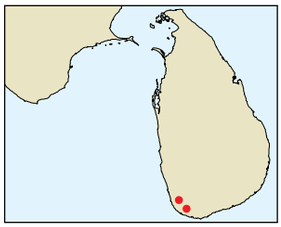
Geographic Range This species is endemic to the Central Hills of Sri Lanka at elevations of 1,555-2,135m asl. There are records from Agra Bopath and Horton Plains (Manamendra-Arachchi and Pethiyagoda 2005).
Population Anslem de Silva (pers. comm.) reports that the population in the Horton Plains National Park may occur at a density of around 62,000 individuals per km², which suggests that the species is abundant where it occurs.
Habitat and Ecology It inhabits both closed and open canopy habitats, including grasslands. Most sub-adults and juveniles were found in grassland and disturbed habitats, while mature males and larger females were usually found in closed-canopy habitats. Adults have been observed perched on branches 0.5-3.5m above ground (Manamendra-Arachchi and Pethiyagoda 2005). It breeds by direct development, and the eggs are deposited in humus.
Major Threats The major threats are habitat loss, through the commercial harvesting of timber (clear-cutting) and firewood collection, agrochemical pollution, and the desiccation of habitat through periods of drought. In Horton Plains National Park, forest fires and dieback of mature trees are also threats.
Conservation Measures It has been recorded from Horton Plains National Park, Agra Bopath Forest Reserve and Hakgala Strict Nature Reserve.
Notes on taxonomy: This species is sometimes placed in the genus *Rhacophorus*.
Bibliography: Bahir, M.M. *et al.* (2005), Bossuyt, F. and Dubois, A. (2001), de Silva, A. (2001), Dutta, S.K. (1997), Manamendra-Arachchi, K. and Pethiyagoda, R. (2005), Nayana Pradeep, D.M. (2001)
Data Providers: Kelum Manamendra-Arachchi, Anslem de Silva, Deepthi Wickramasinghe

EN *Philautus mittermeieri* Meegaskumbura and Manamendra-Arachchi, 2005

Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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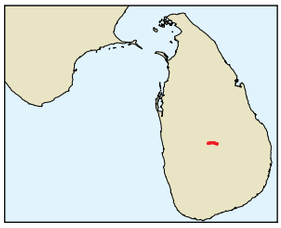
Geographic Range This lowland Sri Lankan endemic is only known from two localities: the type locality of Kottawa at 60m asl, and from Beraliya Forest, Elpitiya, at 150m asl, both in the south of the country (Meegaskumbura and Manamendra-Arachchi 2005).
Population The current population status is not known.
Habitat and Ecology It inhabits the shrub understorey of closed-canopy lowland rainforest. It is not believed to be tolerant of habitat degradation. Males are seen calling at night in chorus from leaves up to 1m above the ground (Meegaskumbura and Manamendra-Arachchi 2005). It presumably breeds by direct development like other species of the genus.
Major Threats Some parts of its range are impacted by intensive land-use change, due to smallholder farming activities and logging. Drought is also a threat.
Conservation Measures It occurs in the Kottawa Forest Reserve and the Beraliya Forest Reserve. Further survey work is needed to determine the population status of this species.
Bibliography: Meegaskumbura, M. and Manamendra-Arachchi, K. (2005)
Data Providers: Madhava Meegaskumbura, Kelum Manamendra-Arachchi

EN *Philautus mooreorum* Meegaskumbura and Manamendra-Arachchi, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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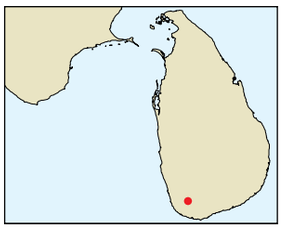
Geographic Range This species is currently known from two localities, Corbett's Gap, and from Hunnasgiriya, in the Knuckles Hills of central Sri Lanka. It has been recorded between 1,100 and 1,245m asl (Meegaskumbura and Manamendra-Arachchi 2005). There is also a recent record from the nearby Bambarella Peak (M. Meegaskumbura pers. comm.).
Population It occurs in relatively low abundance.
Habitat and Ecology It is an arboreal species found in the understorey and forest sub-canopy of closed-canopy cloud forest, but can also be found in areas with cardamom as the understorey. Males are usually seen calling from their perches on leaves around 1-3m above the ground. They are dependent on environments with high relative humidity for reproduction, and are seen in higher densities in marshy habitats (Meegaskumbura and Manamendra-Arachchi 2005). It is presumed to be a direct developer like other species of the genus. Its dependence on high humidity makes it particularly vulnerable to any modification of the habitat resulting in the opening up of the forest canopy.
Major Threats The major threat is clearance of the species' forest habitat due to logging and subsistence agriculture; drought, and the use of agrochemicals in cardamom cultivation, are additional threats.
Conservation Measures Bambarella Peak is part of the Knuckles Forest Reserve, but the other localities from which it is known remain unprotected.
Bibliography: Meegaskumbura, M. and Manamendra-Arachchi, K. (2005)
Data Providers: Madhava Meegaskumbura, Kelum Manamendra-Arachchi

CR *Philautus nemus* Manamendra-Arachchi and Pethiyagoda, 2005

Critically Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

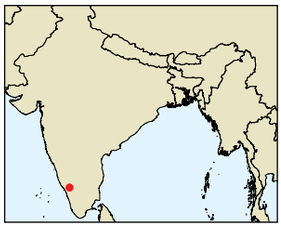


© Wildlife Heritage Trust

Geographic Range This species is only known from Haycock Hill (Hiniduma) Forest Reserve (06° 20'N; 80° 18'E) in south-western Sri Lanka, at 660m asl (Manamendra-Arachchi and Pethiyagoda 2005). It seems to be restricted to the type locality.
Population It is known only from the type specimen and is believed to be a very rare species.
Habitat and Ecology The type specimen was found in closed-canopy forest on a wet rock. It presumably breeds by direct development and is not dependent on water.
Major Threats The major threat to this species is habitat loss due to the encroachment of tea plantations. It is probably also affected by agro-chemicals.
Conservation Measures It occurs in Haycock Hill-Hiniduma Forest Reserve; however, this reserve is in need of better management to ensure the persistence of this species.
Bibliography: Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

EN *Philautus nerostagona* Biju and Bossuyt, 2005

Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

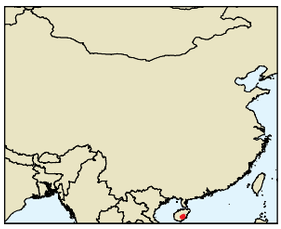


© Anil

Geographic Range This species is known from the region between Sultanbathery, Kalpatta, and Mananthavady at an altitude of around 1,000m asl, Wayanad District, Kerala State, in the Western Ghats of India.
Population It appears to be common within its limited range.
Habitat and Ecology It occurs in the highest canopy layer (at around 10-20m above the ground) of tropical evergreen forest. Some specimens were collected from trees on the forest fringe and near a coffee plantation, so this species may be tolerant of a degree of habitat degradation. However, populations appear to be declining in altered habitats.
Major Threats The major threat is habitat loss due to conversion to cultivated lands, plantations (*Eucalyptus*, coffee, tea), and hydroelectric reservoirs.
Conservation Measures At least part of the range of this species seems to fall inside the Wayanad Sanctuary, but there remains a need for improved protection of remaining tropical forest habitat.
Bibliography: Biju, S.D. and Bossuyt, F. (2005a)
Data Providers: Sathyabhama Biju, Franky Bossuyt

EN *Philautus ocellatus* Liu and Hu, 1973

Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: China
Current Population Trend: Decreasing

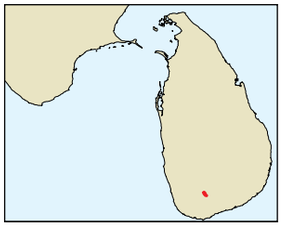


© Michael Wai Neng Lau / Kadoorie Farm & Botanic Garden

Geographic Range This species is endemic to the hilly areas in southern Hainan Province, China, where it has been recorded from 320-1,080m asl.
Population It is known from less than 10 locations.
Habitat and Ecology It inhabits rainforests and bamboo forests, and breeds in rain-filled bamboo stems by larval development. It has not been recorded outside forest.
Major Threats The major threat is habitat loss due to infrastructure development for tourism and logging.
Conservation Measures It is known to be present in several protected areas across the region.
Bibliography: Fei, L. *et al.* (1999), Hu, S.-Q., Zhao, E.M. and Liu, C.C (1973), MacKinnon, J. *et al.* (1996)
Data Providers: Michael Wai Neng Lau, Shi Haitao

EN *Philautus ocularis* Manamendra-Arachchi and Pethiyagoda, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



© Don Church

Geographic Range This species is recorded only from Morningside and Handapan Ella Plains, on the eastern side of the Sinharaja World Heritage Site in south-western Sri Lanka, from 1,060-1,270m asl (Manamendra-Arachchi and Pethiyagoda 2005).
Population It is a rare species.
Habitat and Ecology It is found only in closed-canopy forests and cardamom plantations within cloud forests. All specimens were collected from a cardamom plantation, from 1-2m above the ground, while perched on shade trees (Manamendra-Arachchi and Pethiyagoda 2005). It breeds by direct development and is not dependent upon water.
Major Threats It is threatened by the loss of the forest canopy for firewood, expansion of cardamom plantations (at the expense of cloud forest habitat), clearing of undergrowth, and human settlement. Changing agricultural practices within cardamom plantations could also negatively affect this species, particularly the increased use of agro-chemicals.
Conservation Measures It is found in the Sinharaja World Heritage Site (the largest remnant of Sri Lanka's forests, and which was inscribed in 1988) and forest reserves bordering the eastern margin of the World Heritage Site.
Bibliography: Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

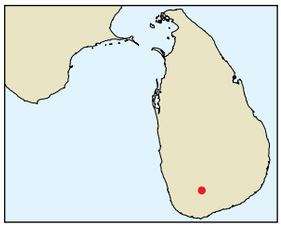
VU *Philautus pallidipes* (Barbour, 1908)

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Indonesia
Current Population Trend: Decreasing

Geographic Range This species is known only from three specimens from West Java, Indonesia. The type locality is Gunung Pangrango, from where there have been no recent records. It was rediscovered in Gunung Halimun National Park in 1998. It lives above 1,000m asl.
Population It is very rare, and only three specimens are known.
Habitat and Ecology It lives in pristine montane forest, and has not been found outside forest. It presumably breeds by direct development and is not dependent upon water.
Major Threats Its habitat is threatened by subsistence wood collection.
Conservation Measures It occurs in Gunung Haliman National Park and Gunung Gede Pangrango National Park.
Bibliography: Iskandar, D.T. (1998)
Data Providers: Djoko Iskandar, Mumpuni

CR *Philautus papillosus* Manamendra-Arachchi and Pethiyagoda, 2005

Critically Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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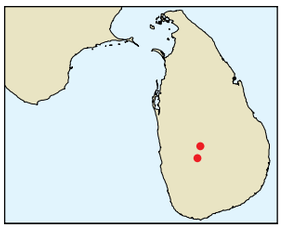
Geographic Range This species is known only from the Handapan Ella Plains, near Suriyakanda, at 1,270m asl, in south-western Sri Lanka (Manamendra-Arachchi and Pethiyagoda 2005). It is probably restricted to this area.
Population It is known only from the holotype and it is believed to be a very rare species.
Habitat and Ecology The type specimen was collected from a branch about two metres aboveground in a cardamom plantation. It breeds by direct development and is not dependent on water.
Major Threats The quality of the habitat is deteriorating due to the loss of canopy trees, in part due to illegal gemstone mining. It is probably also adversely affected by agro-chemicals.
Conservation Measures The species occurs in the eastern part of the Sinharaja World Heritage Site, the largest remnant of Sri Lanka's forests, and inscribed in 1988.
Bibliography: Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

EN *Philautus pleurotaenia* (Boulenger, 1904)

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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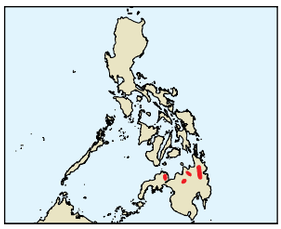
Geographic Range This species was until recently known only from the lost type specimen that was collected from Kandy in central Sri Lanka. However, there are doubts as to whether or not this is the correct collection site. In recent years, additional specimens have been collected that appear to be this species in the Kandy area, from Nawalapitiya and Gannoruwa at around 684m asl.
Population It appears to be an uncommon species.
Habitat and Ecology Its habitat requirements are poorly known, but it has been collected perched on a *Syzygium* bush about 2m above ground, at the edge of moist evergreen forest. Its adaptability to secondary habitats is not known, though it is unlikely to occur in severely disturbed habitats. It presumably breeds by direct development.
Major Threats It is probably affected by habitat loss due to farming, collection of firewood, timber extraction, and expanding human settlements, as well as pollution by agro-chemicals.
Conservation Measures It occurs in the Gannoruwa Forest Reserve.
Notes on taxonomy: This species is known only from the holotype which has been misplaced. The type description is not detailed enough to determine whether this species is still extant.
Bibliography: Dutta, S.K. (1997), Dutta, S.K. and Manamendra-Arachchi, K. (1996), Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Sushil Dutta, Anslem de Silva

VU *Philautus poecilius* Brown and Alcala, 1994

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Philippines
Current Population Trend: Decreasing

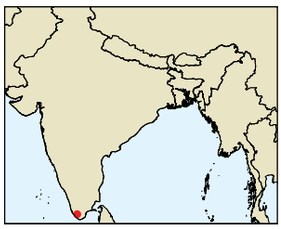


© PEF/Elsa M. Delima

Geographic Range This species is known from the mountains of north-western and central Mindanao Island, in the Philippines. It probably occurs more widely than current records suggest, especially in areas between known sites.
Population It is known from only a few specimens, and is considered to be rare, although it is poorly known.
Habitat and Ecology It inhabits arboreal microhabitats in mossy and montane rainforests, and has not been found outside forests. It breeds by direct development.
Major Threats It inhabits high-elevation forests, which are generally less threatened by habitat conversion and agriculture and human encroachment. However, some populations of this species are subject to these threats.
Conservation Measures Its range includes several protected areas, including Mount Malindang National Park. Improved protection of the remaining montane rainforest of Mindanao is needed.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Brown, R.M., Diesmos, A.C. and Alcala, A.C. (2001), Frost, D.R. (1985), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

CR *Philautus ponmudi* Biju and Bossuyt, 2005

Critically Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

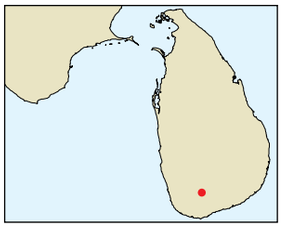


© S.D. Biju

Geographic Range This species is known only from the type locality at 1,000 m asl on Ponmudi Hill, part of the Agasthyamala Hill range (=Ashambu Hills) in the Western Ghats of India. It might possibly occur more widely in Wynaad District.
Population The population status of this species is not known, but it could be common within its very limited range.
Habitat and Ecology This species is known from a patch of evergreen forest surrounded by grassland. Individuals were found calling in the late evening at 8-15m above the ground in the forest canopy. It breeds by direct development.
Major Threats The habitat of this species is known to be declining, and the expansion of surrounding tea plantations is likely to exacerbate the rate of forest loss.
Conservation Measures It might be present in Shenduruny Sanctuary and Wynaad Wildlife Sanctuary. Strengthening the existing protected areas network and maintenance of remaining habitat in the range of the species are recommended conservation actions. Further survey work is necessary to determine the current population status of this species.
Bibliography: Biju, S.D. and Bossuyt, F. (2005b)
Data Providers: S.D. Biju

EN *Philautus poppiae* Meegaskumbura and Manamendra-Arachchi, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

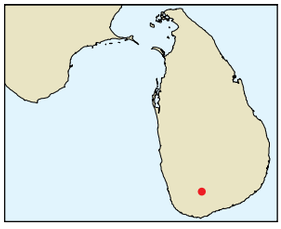


© Madhava Meegaskumbura

Geographic Range This species is known from only two localities in Sri Lanka: the type locality, Handapan Ella Plains (near Suriyakanda) at 1,270m asl; and Morningside Forest, near Rakwana at 1,060m asl, 10km from the type locality (Meegaskumbura and Manamendra-Arachchi 2005).
Population It occurs in relatively low abundance.
Habitat and Ecology This is an arboreal species found only in closed-canopy cloud forest of the Rakwana Mountains in sub-canopy forest and shrubs. It can also be found in areas with cardamom as the understorey. Males are usually seen calling from their perches on leaves around 1-3m above the ground. They are dependent on environments with high relative humidity for reproduction, and are seen in higher densities in marshy habitats. It is presumed to be a direct developer like other species of the genus. Its dependence on high humidity makes it particularly vulnerable to any modification of the habitat resulting in the opening up of the forest canopy.
Major Threats The major threat is the clearance of the species' forest habitat due to smallholder farming activities and logging; drought, and the use of agrochemicals in cardamom cultivation, are additional threats.
Conservation Measures Neither Morningside Forest nor Handapan Ella Plains is legally protected, although since 1989 they have enjoyed "administrative protection" as a result of government policy. However, more formal protection of these sites is an urgent priority. Periodic monitoring of this species is recommended.
Bibliography: Meegaskumbura, M. and Manamendra-Arachchi, K. (2005)
Data Providers: Madhava Meegaskumbura, Kelum Manamendra-Arachchi

CR *Philautus procax* Manamendra-Arachchi and Pethiyagoda, 2005

Critically Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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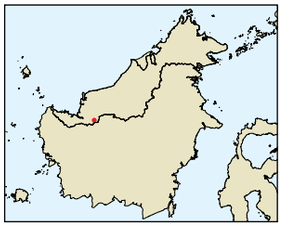
Geographic Range This species appears to be restricted to Morningside Forest Reserve in the Rakwana Hills, in the Sinharaja area of south-western Sri Lanka, at 1,060m asl (Manamendra-Arachchi and Pethiyagoda 2005).
Population It is common in suitable habitat.
Habitat and Ecology It is a habitat specialist, found near streams and marshy areas in closed-canopy cloud forest, including forests disturbed by cardamom plantations. At night, males perch up to about two metres above ground, on leaves, from which they vocalize (Manamendra-Arachchi and Pethiyagoda 2005). It breeds by direct development and is not dependent on water.
Major Threats The habitat of this species is threatened by the expansion of tea and cardamom plantations, the collection of wood, expanding human settlements, and agro-chemical pollution.
Conservation Measures It is found only in Morningside Forest Reserve; however, while Morningside itself belongs to the Forest Department, it has not yet been assured a permanent conservation status.
Bibliography: Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

VU *Philautus refugii* Inger and Stuebing, 1996

Vulnerable D2
Order, Family: Anura, Rhacophoridae
Country Distribution: Malaysia
Current Population Trend: Unknown

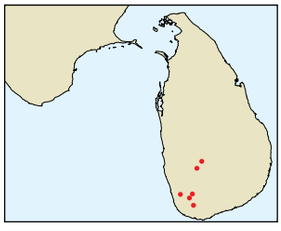


Geographic Range This species is known from only a single locality in Sarawak, Borneo, Malaysia, at 850m asl.
Population More than 20 individuals were seen in two nights at the type locality indicating that the species was locally abundant.
Habitat and Ecology It was collected in submontane mossy forest, and has so far not been found outside forest. Frogs were found perched on the leaves of shrubs at night. It breeds by direct development.
Major Threats Although present within a formally gazetted protected area, its restricted range makes it particularly vulnerable to stochastic threatening processes.
Conservation Measures The type locality is within the Lanjak Entimau Wildlife Sanctuary, but the effectiveness of this protection is unclear. There is a need to closely monitor the population status of this species.

Bibliography: Inger, R.F. and Stuebing, R.B. (1996)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

EN *Philautus reticulatus* (Günther, 1869)

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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Geographic Range This species is endemic to central and south-western parts of Sri Lanka at elevations of 30-900m asl. There are records from Kosmulla, Dediyagala, Yagirala, Induruwa, Norton Bridge and Haycock (Manamendra-Arachchi and Pethiyagoda 2005).
Population It is an uncommon species.
Habitat and Ecology It is largely arboreal, and is associated with the upper storey of closed-canopy forest habitats, but has also been observed perched on tall shrubs and occasionally on the forest floor, where it is assumed to have descended to breed. It calls from the forest canopy (10-20m above the ground), even during the daytime (Manamendra-Arachchi and Pethiyagoda 2005). Breeding presumably takes place by direct development.
Major Threats The main threat is habitat loss as a result of commercial extraction of timber (selective logging) and clearance of habitat for tea plantations; agrochemical pollution from tea estates is an additional threat.
Conservation Measures It is present in Dediyagala Forest Reserve, Yagirala Forest Reserve, Haycock Forest Reserve and Gilimale-Eratne Forest Reserve.
Notes on taxonomy: This species was resurrected from the synonymy of *Philautus microtympanum* by Dutta and Manamendra-Arachchi (1996).
Bibliography: Dutta, S.K. (1997), Dutta, S.K. and Manamendra-Arachchi, K. (1996), Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Anslem de Silva, Deepthi Wickramasinghe

CR *Philautus sanctisilvaticus* Das and Chanda, 1997

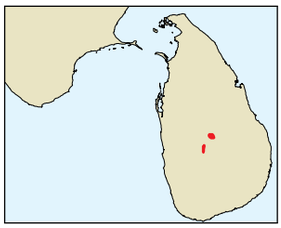
Critically Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

Geographic Range This species is known only from the type locality: "Kapildhara Falls, Amarkantak (23° 10'N; 81° 70'E), ca. 190km southeast of Jabalpur City, Shahdol, Jabalpur District, Madhya Pradesh, central India".
Population There are no details about the population status of this species.
Habitat and Ecology It is nocturnal, associated with old growth, tropical, moist, semi-evergreen and mesic forest, and does not occur outside forest. It presumably breeds by direct development, like other species in the genus.
Major Threats The main threat is believed to be the loss of suitable habitat due to harvesting of wood for subsistence purposes, infrastructure development for tourism, and fires.
Conservation Measures The type locality is a sacred grove, which is relatively small and does not guarantee protection. Improved protection and maintenance of the remaining habitat is needed, in addition to survey work to determine the species' current population status.

Notes on taxonomy: *Philautus sanctipalustris* is an incorrect subsequent spelling of *Philautus sanctisilvaticus* according to Bossuyt and Dubois (2001).
Bibliography: Bossuyt, F. and Dubois, A. (2001), Das, I. and Chanda, S.K. (1997)
Data Providers: Indraneil Das, Sushil Dutta, Karthikeyan Vasudevan, S.P. Vijayakumar

EN *Philautus sarasinorum* (Muller, 1887)

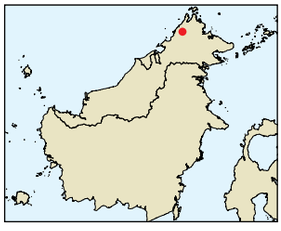
Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



Geographic Range This species is endemic to central Sri Lanka, and occurs in two disjunctive populations, one in the Central Hill Country, and the other in the Knuckles Range. It has been recorded at 1,250-1,300m asl. There are records from Perediniya, Agra-Bopath, Bogowantalawa, and the Knuckles Range (Manamendra-Arachchi and Pethiyagoda 2005).
Population It appears to be an uncommon species.
Habitat and Ecology It lives in both closed and open canopy rainforest, where it has been found at night on boulders and branches near streams. During the day, it hides in rock crevices on the margins of streams. It has not been found away from forest (Manamendra-Arachchi and Pethiyagoda 2005). Breeding presumably is by direct development. The female excavates a deep hole in the forest floor where the eggs are then deposited.
Major Threats It is probably affected by habitat loss due to farming (cultivation of cardamom and tea), collection of firewood, timber extraction and plantations (pine), and expanding human settlements, as well as pollution by agro-chemicals (resulting in deterioration of water quality).
Conservation Measures It occurs in the Knuckles Forest Reserve and the Peak Wilderness Sanctuary.
Notes on taxonomy: We consider this species to be distinct from *Philautus nanus* (Günther, 1858) following Manamendra-Arachchi and Pethiyagoda (2005).
Bibliography: Bahir, M.M. *et al.* (2005), Dutta, S.K. (1997), Dutta, S.K. and Manamendra-Arachchi, K. (1996), Manamendra-Arachchi, K. and Pethiyagoda, R. (2005), Müller, F. (1887)
Data Providers: Kelum Manamendra-Arachchi, Sushil Dutta, Anslem de Silva

VU *Philautus saueri* Malkmus and Riede, 1996

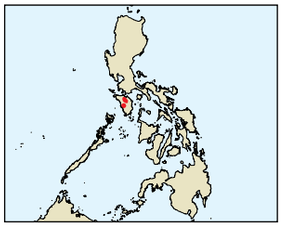
Vulnerable D2
Order, Family: Anura, Rhacophoridae
Country Distribution: Malaysia
Current Population Trend: Stable



Geographic Range This species is known only from the montane forest between Layang Layang and Pakka Cave on the south-western slopes of Gunung Kinabalu, Sabah, Borneo, Malaysia. It has been recorded at elevations of 2,200-3,050m asl. It is likely to be very restricted in its distribution.
Population There is no information on the current population status of this species.
Habitat and Ecology This is a montane forest species occurring in mossy forest at the lower elevation parts of its range (below 2,600m asl). The eggs and larvae of this species have been found in pitcher plants (*Nephenthes* sp.). This species breeds by direct development.
Major Threats There are no known threats to this species, since its habitat is well protected. However, its restricted range renders it vulnerable to stochastic threatening processes.
Conservation Measures This species is known only from Gunung Kinabalu National Park. The population status of this species requires close monitoring given its very limited range.
Bibliography: Bossuyt, F. and Dubois, A. (2001), Malkmus, R. *et al.* (2002), Malkmus, R. and Klaus, R. (1996)
Data Providers: Robert Inger

EN *Philautus schmackeri* (Boettger, 1892)

Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Philippines
Current Population Trend: Decreasing

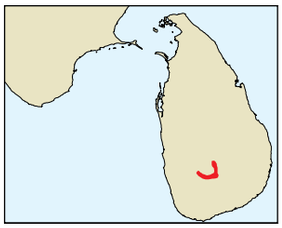


Geographic Range This species is known only from Mindoro Island, in the Philippines, at elevations of 100-1,650m asl.
Population It is common in suitable forest habitat, and also survives in small numbers in adjacent disturbed forested areas.
Habitat and Ecology It inhabits arboreal microhabitats in lower montane and lowland forests. It deposits its eggs in humus in tree ferns and pandan axils, and breeds by direct development.
Major Threats The major threat is habitat loss due to shifting agriculture and deforestation of the lower montane and lowland rainforest.
Conservation Measures It is unclear whether it occurs in any protected areas, but there is clearly a need for improved protection of forest habitat on Mindoro.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Brown, W.C. and Alcala, A.C. (1955), Crombie, R.A. (n.d.), Frost, D.R. (1985), Inger, R.F. (1999)

Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Marisol Pedregosa, Dondi Ubaldo, Baldwin Gutierrez

EN *Philautus schmarda* (Kelaart, 1854)

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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Geographic Range This species is endemic to the Central Hill Country of Sri Lanka at 810-2,300m asl. There are records from the Peak Wilderness Sanctuary, Agra Bopath, Horton Plains and Pedro (Manamendra-Arachchi and Pethiyagoda 2005).
Population It is a common species.
Habitat and Ecology It appears to be largely restricted to closed-canopy cloud forests, though it has also been found in the understorey of a pine plantation and more rarely in abandoned tea plantations. At night, adults have been observed perched on leaves 1-2m above ground. During the day, juveniles have been observed on the forest floor, on wet, marshy ground, and adults on lichen and moss-covered branches and tree trunks. Adult males are group callers (Manamendra-Arachchi and Pethiyagoda 2005). This species breeds by direct development. The female excavates a deep hole in the forest floor where the eggs are then deposited.
Major Threats Although much of its range is in protected areas, the quality of much of its habitat is being threatened by illegal firewood collection, clear-cutting for timber, and conversion to agricultural land (tea estates). Forest fires and dieback of mature trees in Horton Plains National Park are also threats, and pollution by agro-chemicals might also be a problem.
Conservation Measures It occurs in several protected areas, including the Peak Wilderness Sanctuary and the Horton Plains National Park.
Notes on taxonomy: This species was moved to the genus *Philautus* from *Theloderma* by Manamendra-Arachchi and Pethiyagoda (2005).
Bibliography: Bahir, M.M. *et al.* (2005), Dutta, S.K. (1997), Dutta, S.K. and Manamendra-Arachchi, K. (1996), Manamendra-Arachchi, K. and Pethiyagoda, R. (2005), Rathnayake, N.D. (2001), Rathnayake, N.D. and Weerasinghe, N. (2000)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda, Anslem de Silva, Deepthi Wickramasinghe

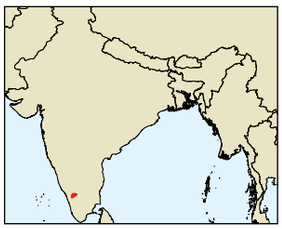
CR *Philautus shillongensis* Pillai and Chanda, 1973

Critically Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

Geographic Range This species is restricted to a small area of forest, in and around Shilong, Meghalaya, in north-eastern India. It has been recorded from elevations below 1,400m asl.
Population The population is believed to have declined significantly. While it was considered to be abundant in the 1970s, it is now difficult to find specimens of this frog. Recent ongoing (post 1993) vocalization surveys in and around Malki Forest (the type locality) have failed to record this species (D. Roy pers. comm.).
Habitat and Ecology It is associated with tropical moist forest, and probably breeds by direct development, like other species in the genus.
Major Threats Selective logging, the collection of wood for subsistence use, and urbanization, are all major threats to the species' habitat.
Conservation Measures It is not known whether or not this species occurs in any protected areas, but habitat protection and maintenance are urgent priorities for this species, and additional survey work is necessary to assess its current population status.
Bibliography: Bossuyt, F. and Dubois, A. (2001), Chanda, S.K. (1994), Chanda, S.K. (2002), Dutta, S.K. (1997), Pillai, R.S. and Chanda, S.K. (1973)
Data Providers: Sushil Dutta, Annemarie Ohler, Debjani Roy

EN *Philautus signatus* (Boulenger, 1882)

Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

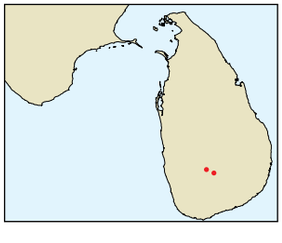


© S.D. Biju

Geographic Range This species is known with certainty only from the Nilgiri Hills of the southern Western Ghats of India. It is a highland species occurring up to 2,000m asl.
Population It is commonly seen in the Nilgiri Hills (Bossuyt and Dubois 2001), but is believed to be declining.
Habitat and Ecology It is an arboreal species associated with tropical moist evergreen forest, although it can occur in modified areas. Breeding is by direct development.
Major Threats The major threat is the conversion of native forest to intensively cultivated areas (including timber and non-timber plantations).
Conservation Measures It has been recorded from the Nilgiri Biosphere Reserve. The species was recently included in field studies by Biju (1998-2001).
Notes on taxonomy: Specimens recorded from Ponmudi Hills (and possibly Wayanad) as *Philautus signatus* are in the process of being described as the new species *Philautus* sp. nov. 'Ponmudi_3' (S.D. Biju pers. comm.).
Bibliography: Biju, S.D. (2001), Bossuyt, F. and Dubois, A. (2001), Dutta, S.K. (1997), Inger, R.F. *et al.* (1984)
Data Providers: S.D. Biju, Gajanan Dasaramji Bhuddhe, Bexel Ayyasamy Daniel, Sushil Dutta, Karthikeyan Vasudevan

EN *Philautus silus* Manamendra-Arachchi and Pethiyagoda, 2005

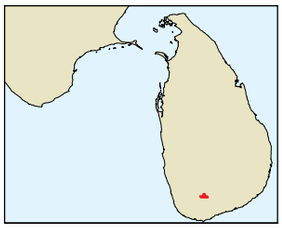
Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



Geographic Range This species is known only from two locations in the lower Central Hill Country of Sri Lanka, at 1,550-1,600m asl, on either side of the Horton Plains Plateau, near Agarapatana and Haputale. Specific records come from Agra Bopath and the Tangamalai Sanctuary (Manamendra-Arachchi and Pethiyagoda 2005).
Population It is uncommon.
Habitat and Ecology It occurs in both closed-canopy forests and open, anthropogenic habitats. Adults have been observed at night on stream banks and perched on branches 1-4m above ground (Manamendra-Arachchi and Pethiyagoda 2005). Breeding is by direct development and the species is not dependent on water. The female excavates a deep hole in the forest floor where the eggs are then deposited.
Major Threats It is threatened by the encroachment of tea cultivation, the removal of firewood, expanding human settlements, and agro-chemical pollution.
Conservation Measures It is found in the Tangamalai Sanctuary and Agra Bopath Forest Reserve.
Bibliography: Bahir, M.M. *et al.* (2005), Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

EN *Philautus silvaticus* Manamendra-Arachchi and Pethiyagoda, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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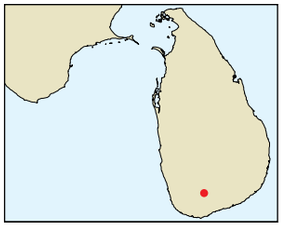
Geographic Range This species is endemic to the general Sinharaja region of south-western Sri Lanka, and has been recorded from 510-1,270m asl. There are records from Morningside, Handapan Ella Plains and Sinharaja (Manamendra-Arachchi and Pethiyagoda 2005).
Population It is a common species in suitable habitat.
Habitat and Ecology It inhabits closed-canopy rainforest habitats and cardamom plantations within the forest. Adult males have been observed calling at night while perched on ferns, 0.3-1m above ground (Manamendra-Arachchi and Pethiyagoda 2005). It breeds by direct development and is not dependent on water.
Major Threats It is threatened by habitat loss, due to habitat encroachment for tea and cardamom plantations, and human settlement; agro-chemical pollution is an additional threat.
Conservation Measures It is found in the Sinharaja World Heritage Site (the largest remnant of Sri Lanka's forests), and forest reserves bordering the eastern margin of the World Heritage Site.
Bibliography: Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

CR *Philautus simba* Manamendra-Arachchi and Pethiyagoda, 2005

Critically Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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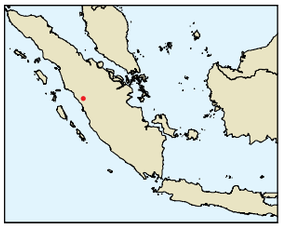
Geographic Range This species is endemic to the Sinharaja area of south-western Sri Lanka, where it appears to be restricted to the Morningside Forest Reserve, near Rakwana, on the eastern side of the Sinharaja World Heritage Site, at an elevation of 1,060m asl (Manamendra-Arachchi and Pethiyagoda 2005).
Population It is a very rare species.
Habitat and Ecology It is essentially a ground-dwelling, leaf-litter species, found in closed-canopy montane forest, and forest fragments within cardamom plantations. It breeds by direct development and is not dependent on water.
Major Threats The major threat to this species is habitat loss and degradation due to the encroachment of cardamom plantations, removal of wood for subsistence use, and illegal gem mining. It is probably also adversely affected by agro-chemical pollution.
Conservation Measures The species is found in the Morningside Forest Reserve; however, while Morningside itself belongs to the Forest Department, it has not yet been assured a permanent conservation status.
Bibliography: Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

EN *Philautus similis* van Kampen, 1923

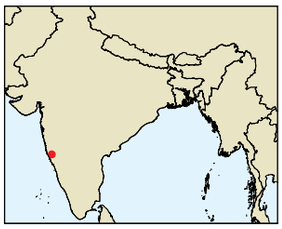
Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Indonesia
Current Population Trend: Decreasing



Geographic Range This species is known only from the type locality, Mount Talakmau, in West Sumatra, Indonesia, at 1,200m asl.
Population The population status of this species is unknown; it is known only from the holotype.
Habitat and Ecology It presumably occurs in montane forest, and, like other species of the genus, breeds by direct development.
Major Threats The type locality has already been completely cleared of forest for smallholder farming, and there is also the risk of volcanic eruption.
Conservation Measures It does not occur in any protected areas. Surveys are urgently needed to establish whether or not this species still survives, particularly at the type locality, but also on the nearby Mount Marapi.
Bibliography: Iskandar, D.T. and Colijn, E. (2000)
Data Providers: Djoko Iskandar, Mumpuni

CR *Philautus sp. nov. 'Amboli Forest'* Biju and Bossuyt, in press

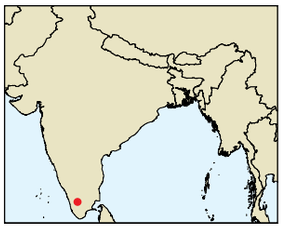
Critically Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing



Geographic Range This species is known only from a few localities in the vicinity of the Amboli forest in Sawantwadi District, Maharashtra, in the northern Western Ghats of India. It has been recorded at an elevation of approximately 750m asl.
Population It is very rare in its known localities.
Habitat and Ecology It was collected in extremely disturbed areas close to evergreen forest patches, although it is not known whether or not it occurs in primary evergreen forest. It breeds by direct development.
Major Threats The major threat to the species is habitat loss and fragmentation due to urbanization and tourism development.
Conservation Measures It is not known to occur in any protected areas, making habitat protection an urgent priority.
Data Providers: S.D. Biju

CR *Philautus sp. nov. 'Munnar'* Biju and Bossuyt, in press

Critically Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

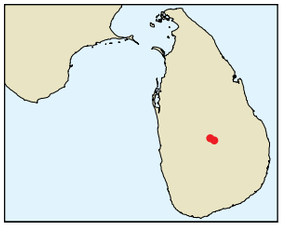


© S.D. Biju

Geographic Range This species is known only from a single locality close to Munnar, Kerala, along the Ghat road to Devikulam, in the southern Western Ghats of India, where it was collected at 1,500m asl.
Population It is a rare species.
Habitat and Ecology It is known only from a small area (less than 20km²) of secondary vegetation, adjoining the forest along the Ghat road. Specimens were found close to a tea plantation, but not inside the plantation. It breeds by direct development.
Major Threats The major threat to this species is habitat clearance for tea and eucalyptus plantations, all the more concerning since there are no other areas of suitable habitat known in the surrounding region.
Conservation Measures The range of the species is not within any protected area, and protection of the remaining habitat at the species' only known locality is an urgent priority.
Data Providers: S.D. Biju

EN *Philautus steineri* Meegaskumbura and Manamendra-Arachchi, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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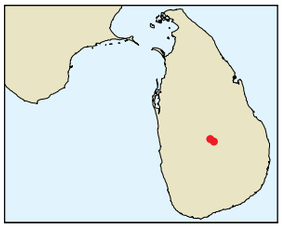
Geographic Range This species is known only from the type locality in the Corbett's Gap region, in the Knuckles Range of central Sri Lanka at 1,245m asl. It is separated from *Philautus microtympanum* by the Mahaweli River valley, which descends to about 500m at Kandy (Meegaskumbura and Manamendra-Arachchi 2005). There is also a recent record from the nearby Bambarella Peak, although this record may represent a distinct species (M. Meegaskumbura pers. comm.).
Population It occurs at low abundance.
Habitat and Ecology It is restricted to the highest elevations of the Knuckles Range, and is found in both open and closed-canopy habitats, in the leaf-litter, shrubs and trees in the sub-canopy. Males are seen calling from branches 0.3-3m above the ground (Meegaskumbura and Manamendra-Arachchi 2005). Breeding is presumed to take place by direct development.
Major Threats The major threat is forest clearance due to smallholder agricultural activities and logging.
Conservation Measures Bambarella Peak is part of the Knuckles Forest Reserve, but there is still an urgent need for the protection of forest habitat in the Corbett's Gap region. Monitoring of the species' population is recommended.
Bibliography: Meegaskumbura, M. and Manamendra-Arachchi, K. (2005)
Data Providers: Madhava Meegaskumbura, Kelum Manamendra-Arachchi

EN *Philautus stuarti* Meegaskumbura and Manamendra-Arachchi, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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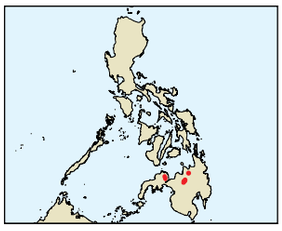
Geographic Range This species is known only from the type locality in the Corbett's Gap region in the southern Knuckles Range of central Sri Lanka at 1,245m asl (Meegaskumbura and Manamendra-Arachchi 2005). There is also a recent record from the nearby Bambarella Peak (M. Meegaskumbura pers. comm.).
Population It occurs in low abundance.
Habitat and Ecology It inhabits the understorey of closed-canopy montane forests and cardamom plantations within the forest. Males are usually seen calling from leaves 2-3m above the ground. Breeding presumably takes place by direct development, as with other species of the genus.
Major Threats The major threat is forest clearance due to smallholder farming activities and logging; drought, and the use of agrochemicals in cardamom cultivation, are additional threats.
Conservation Measures Bambarella Peak is part of the Knuckles Forest Reserve, but there is an urgent need for the protection of forest habitat in the Corbett's Gap region. Monitoring of the species' population is recommended.
Bibliography: Meegaskumbura, M. and Manamendra-Arachchi, K. (2005)
Data Providers: Madhava Meegaskumbura, Kelum Manamendra-Arachchi

EN *Philautus surrufus* Brown and Alcala, 1994

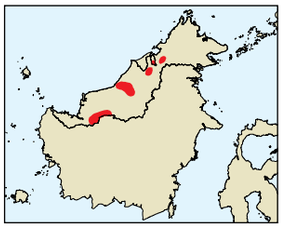
Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Philippines
Current Population Trend: Decreasing



Geographic Range This species is currently known from a few mountains on north-western Mindanao Island, in the Philippines.
Population It was uncommon on Mount Malindang, the type locality, at the time of the original collection and no recent field studies of this area have been conducted. Specimens from two mountains east of Mount Malindang (Mount Kitanglad and Mount Lumot) may refer to this species.
Habitat and Ecology It inhabits arboreal microhabitats in mossy and montane rainforests, and has not been found outside forest. It breeds by direct development.
Major Threats It inhabits high-elevation forests, which are generally less threatened by habitat conversion, agriculture, and human encroachment. Nonetheless, these threats remain an issue for some populations of this species.
Conservation Measures It occurs in Mount Malindang National Park, but there is a need for improved protection of the remaining montane rainforest of Mindanao. This species may potentially be declining significantly at the type locality and so immediate surveys are needed to assess its population status.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Brown, R.M., Diesmos, A.C. and Alcala, A.C. (2001), Frost, D.R. (1985), Inger, R.F. (1999)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Dondi Ubaldo, Baldwin Gutierrez

VU *Philautus tectus* Dring, 1987

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Brunei Darussalam, Malaysia
Current Population Trend: Decreasing



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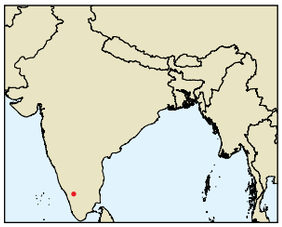
Geographic Range This species is known only from scattered localities in north-western and western Borneo (Malaysia and Brunei Darussalam). It is present at elevations below 700m asl.
Population In general, only a few individuals have been seen at any one locality. It is considered common in Ulu Temburong National Park, Brunei.
Habitat and Ecology It has been found in a variety of lowland rainforest environments. Most individuals have been seen on low shrubs. Breeding takes place by direct development.
Major Threats The major threat is logging of the lowland forest habitat, and much of its habitat has already been lost.
Conservation Measures It is known from Gunung Mulu National Park, Lanjak Entimau Wildlife Sanctuary (in Malaysia), and Ulu Temburong National Park (in Brunei). Continued effective protection of areas of lowland rainforest is essential for the species' conservation.
Bibliography: Dring, J.C.M. (1987)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

EN *Philautus tinniens* (Jerdon, 1853)

Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

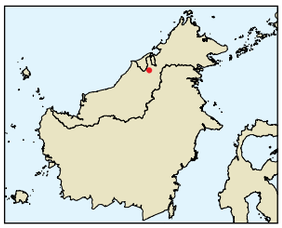


© K. Jayaram

Geographic Range This species is known only from Ooty and its surroundings in the Nilgiri Hills in the Western Ghats of Tamil Nadu, India, where it has been recorded at an elevation of between 1,700 and 2,000m asl.
Population The range is continuous and it is one of the most common species in the Nilgiri hills (Biju 2001). However, the population is generally believed to be declining.
Habitat and Ecology It is a terrestrial species associated with montane tropical moist evergreen forest, but it can also be found in grasslands and modified areas close to the forest; however, it is not clear whether populations can persist in these areas. In forests it is found in leaf-litter and under ground cover. It reproduces through direct development, and the eggs are deposited under stones (Dubois 1986; Bossuyt and Dubois 2001).
Major Threats The main threat to this species is habitat loss through the conversion of forest to plantations and the development of regional infrastructure.
Conservation Measures It has been recorded from a number of protected areas in the Nilgiri Hills, including Mukkurthi National Park.
Notes on taxonomy: This species was recently elevated to species status by Bossuyt and Dubois (2001). *Philautus punctatus* and *P. melanensis* (collected by Rao in Karnataka) are considered to be synonyms of this species (Bossuyt and Dubois 2001), but further studies are required to confirm this relationship (S.D. Biju pers. comm.).
Bibliography: Biju, S.D. (2001), Bossuyt, F. and Dubois, A. (2001), Dubois, A. (1986), Dutta, S.K. (1997), Jerdon, T.C. (1853)
Data Providers: S.D. Biju, Gajanan Dasaramji Bhuddhe, Sushil Dutta, Karthikeyan Vasudevan, Chelmala Srinivasulu, S.P. Vijayakumar

VU *Philautus umbra* Dring, 1987

Vulnerable D2
Order, Family: Anura, Rhacophoridae
Country Distribution: Malaysia
Current Population Trend: Stable

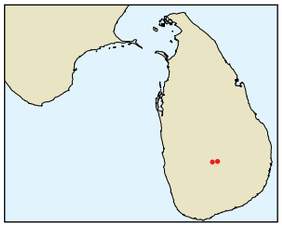


Geographic Range This species is known only from Gunung Mulu National Park in northern Sarawak, Borneo, Malaysia, at elevations of 900-1,300m asl.
Population There is no information on the population status of this species.
Habitat and Ecology The original series was found in submontane forest. Males were calling from near ground level up to 2m above the ground. It breeds by direct development.
Major Threats There are currently no major threats to the species since its habitat is relatively well protected. However, its restricted range makes it particularly vulnerable to stochastic threatening processes.
Conservation Measures Its known range is wholly within Gunung Mulu National Park, which is also a World Heritage Site. Directed surveys are needed to determine and monitor the population status of this species.

Bibliography: Dring, J.C.M. (1987)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

EN *Philautus viridis* Manamendra-Arachchi and Pethiyagoda, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing



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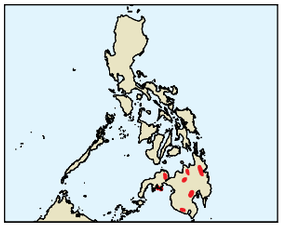
Geographic Range This species is endemic to a small part of the Central Hill Country of Sri Lanka, and has been recorded from Agra Bopath (at 1,555m asl) and Ambewela (at 1,830m asl) (Manamendra-Arachchi and Pethiyagoda 2005). It might occur more widely than current records suggest.
Population It is an uncommon species.
Habitat and Ecology It occurs in both open and closed-canopy vegetation, including cloud forests and adjacent anthropogenic habitats. They have been observed 1-5m above ground, perched on leaves and twigs on shrubs, in the forest understorey. In closed-canopy habitats, it inhabits the top stratum (Manamendra-Arachchi and Pethiyagoda 2005). It breeds by direct development and is not dependent on water. The female excavates a deep hole in the forest floor where the eggs are then deposited.
Major Threats The habitat of this species is gradually declining due to encroachment by tea cultivation and human settlements, and it is particularly sensitive to the removal of the humus layer where it lays its eggs. It is probably also threatened by agro-chemicals.
Conservation Measures It is not found in any protected areas, making the protection of its forest habitat an urgent priority.
Bibliography: Bahir, M.M. *et al.* (2005), Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

VU *Philautus worcesteri* (Stejneger, 1905)

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Philippines
Current Population Trend: Decreasing



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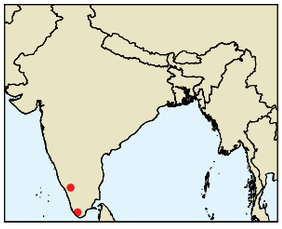
Geographic Range This species is found in various montane regions of Mindanao, in the Philippines.
Population It is common in forested habitats and disturbed habitats adjacent to forest.
Habitat and Ecology It inhabits arboreal microhabitats in lower montane and lowland forests, and has also been found in slightly disturbed habitats (but only at the forest edge). It breeds by direct development.
Major Threats The major threat is the continued loss of the lower montane and lowland rainforest, due to logging, agriculture, and infrastructure development.
Conservation Measures Its range includes several protected areas, including Mount Malindang National Park. Improved protection of the remaining rainforests on the island of Mindanao is necessary.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Brown, W.C., Alcala, A.C. and Brown, R.M. (1998)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee, Katie Hampson, Mae Leonida Diesmos, Aldrin Mallari, Perry Ong, Marisol Pedregosa, Dondi Ubaldo, Baldwin Gutierrez

EN *Philautus wynaadensis* (Jerdon, 1853)

Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

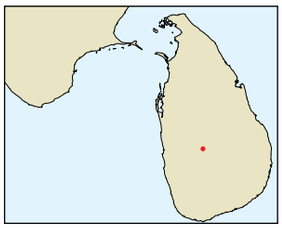


© S.D. Biju

Geographic Range This species is restricted to tropical forests in the vicinity of Coorg in Karnataka, and Wayanad and the Ponmudi Hills in Kerala, in the southern Western Ghats of India. It has been recorded at elevations between 900 and 1,200m asl.
Population The current population status is unknown, but the species is known from very few localities.
Habitat and Ecology It is nocturnal and arboreal, and associated with the understorey of tropical moist evergreen forest and shrubland. It is present in secondary forest and cultivated land (including tea and coffee plantations), provided that these are not managed too intensively. Breeding is believed to take place by direct development.
Major Threats The major threat is conversion of native forest to intensively cultivated areas (including tea, coffee and other non-timber plantations).
Conservation Measures It has been recorded in the Wayanad Wildlife Sanctuary in Kerala. Further survey work is needed to determine the current population status of this species, given that there have been no recent field studies.
Notes on taxonomy: This species was recently revalidated (Bossuyt and Dubois 2001). It was previously considered to be a synonym of *Philautus variabilis*. Specimens recorded as *P. temporalis* and *P. leucorhinus* from the Western Ghats of India are now correctly assigned to this species (Bossuyt and Dubious 2001).
Bibliography: Biju, S.D. (2001), Bossuyt, F. and Dubois, A. (2001), Inger, R.F. *et al.* (1984), Jerdon, T.C. (1853)
Data Providers: S.D. Biju, Gajanan Dasaramji Bhuddhe, Sushil Dutta, Karthikeyan Vasudevan, Chelmala Srinivasulu, S.P. Vijayakumar

EN *Philautus zorro* Manamendra-Arachchi and Pethiyagoda, 2005

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

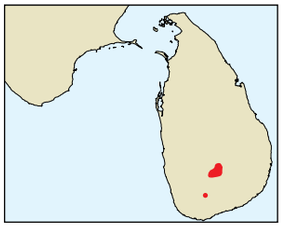


© Madhava Meegaskumbura

Geographic Range This species is known only from central Sri Lanka at 500-800m asl, where it has been recorded from Gannoruwa Forest and gardens around Tiverton Estate, and it has also been observed at Hantana and Udawattakelle Forest Reserves near Kandy (Manamendra-Arachchi and Pethiyagoda 2005).
Population It is a rare species.
Habitat and Ecology It inhabits closed-canopy rainforest habitats with little understorey, and also occurs in residential gardens with plenty of leaf-litter. It is active by both day and night. Specimens collected during the day were on the ground in leaf-litter. At night males have been recorded calling from branches and leaves 0.3-1.5m above the ground (Manamendra-Arachchi and Pethiyagoda 2005). This species breeds by direct development. The female excavates a deep hole in the forest floor where the eggs are then deposited.
Major Threats It is losing its forest habitat to expanding human settlements, and small-scale wood extraction. Agrochemical pollution from areas surrounding the forest is also a threat.
Conservation Measures It is present in the Gannoruwa Forest Reserve.
Bibliography: Bahir, M.M. *et al.* (2005), Manamendra-Arachchi, K. and Pethiyagoda, R. (2005)
Data Providers: Kelum Manamendra-Arachchi, Rohan Pethiyagoda

EN *Polypedates eques* Günther, 1858

Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

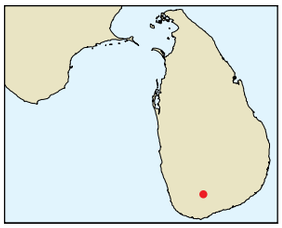


© Peter Janzen

Geographic Range This species is found in the Central Hill Country of Sri Lanka at elevations of 1,200-2,135m asl.
Population It is a common species.
Habitat and Ecology It is arboreal and terrestrial; adults are found in the canopy and on tree trunks of montane tropical moist forest, and also in grasses at the edge of ponds. Larvae are found in both permanent and seasonal ponds in grasslands. It is not present in modified habitats.
Major Threats The major threat is habitat loss due to the conversion of forest to cultivated land (tea and vegetables), commercial harvesting of timber (clear cutting), fire (in the Horton Plains), and the development of infrastructure for tourism. Agrochemical pollution, drought, and die-back of mature trees are additional threats.
Conservation Measures It has been recorded from the Horton Plains National Park, Hakgala Strict Nature Reserve and the Peak Wilderness Sanctuary.
Notes on taxonomy: This species has sometimes been placed in the genus *Rhacophorus*.
Bibliography: de Silva, A., Rajapaksa, R.P.K.J. and Karunaratne, S. (2001), Dutta, S.K. (1997), Dutta, S.K. and Manamendra-Arachchi, K. (1996), Rajapaksa, R.P.K.J. and de Silva, A. (2001), Rathnayake, N.D. (2001), Rathnayake, N.D. and Weerasinghe, N. (2000)
Data Providers: Kelum Manamendra-Arachchi, Anslem de Silva, Deepthi Wickramasinghe

CR *Polypedates fastigo* Manamendra-Arachchi and Pethiyagoda, 2001

Critically Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

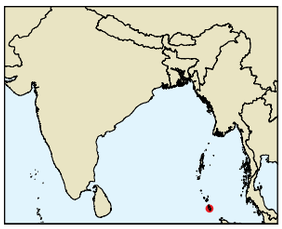


© Don Church

Geographic Range This species is known from only a single locality in the Morningside Estate in south-western Sri Lanka, and was collected at an elevation of 1,060m asl (Manamendra-Arachchi and Pethiyagoda 2001).
Population It is generally a rare species.
Habitat and Ecology It is arboreal known only from montane tropical moist forest. Adults are generally found up to two metres above the ground, on twigs and leaves in bushes close to stagnant pools. Breeding occurs in these pools.
Major Threats The main threat to the species is habitat loss and degradation due to canopy removal and the clearance of undergrowth, expanding timber plantations, subsistence collection of wood, encroaching tea and cardamom plantations, and urbanization. It might also be impacted by the adverse effects of agro-chemical pollution.
Conservation Measures It is present in Morningside Forest Reserve; however, while Morningside itself belongs to the Forest Department, it has not yet been assured a permanent conservation status.
Bibliography: Manamendra-Arachchi, K. and Pethiyagoda, R. (2001a)
Data Providers: Kelum Manamendra-Arachchi, Anslem de Silva

EN *Polypedates insularis* Das, 1995

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Unknown

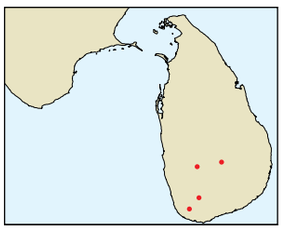


Geographic Range This species is endemic to Great Nicobar Island (of the southern portion of the Andaman and Nicobar Islands), India, where it has been recorded from at least three separate localities at elevations up to 500m asl.
Population Reports from 1994-1997 indicate that the species appears to be reasonably abundant on the island (R. Daniels pers. comm.), although there are no quantitative data to support this.
Habitat and Ecology It is an arboreal species of tropical moist forest. Specimens have been collected in low shrubs and in puddles away from riparian vegetation. It is presumed to breed in temporary pools.
Major Threats The major threat is habitat loss due to intensive crop production and human settlement.
Conservation Measures It occurs in the Galathea Biosphere Reserve on Great Nicobar Island. Survey work is needed to obtain a better understanding of the current population status of this species.

Bibliography: Das, I. (1995a), Dutta, S.K. (1997), Ranjit Daniels, R.J. (1997), Ranjit Daniels, R.J. and David, P.V. (1996)
Data Providers: Indraneil Das, Sushil Dutta, S.P. Vijayakumar, Ranjit Daniels

EN *Polypedates longinasus* (Ahl, 1927)

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Sri Lanka
Current Population Trend: Decreasing

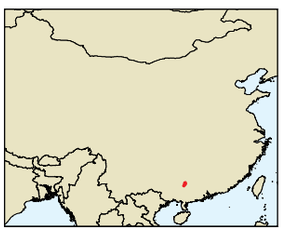


© Peter Janzen

Geographic Range This species is endemic to central and south-western Sri Lanka, where it has been recorded at elevations of between 150 and 1,300m asl.
Population It is rare.
Habitat and Ecology It is an arboreal species found in lowland, submontane and montane tropical moist forests. Adults can be found on moss, bushes and tree trunks up to 2m above the ground. It is rarely found outside primary habitat. It can be found close to stagnant water, and breeding takes place in rocky pools in streams.
Major Threats The major threat is habitat loss and degradation due to subsistence wood extraction, and conversion to tea and cardamom plantations; agrochemical pollution (of both land and water) is an additional threat.
Conservation Measures It has been recorded from the Sinharaja World Heritage Site, the largest remnant of Sri Lanka's forests, which was inscribed in 1988.
Bibliography: Dutta, S.K. (1997), Dutta, S.K. and Manamendra-Arachchi, K. (1996), Fernando, P. and Dayawansa, N. (1995)
Data Providers: Kelum Manamendra-Arachchi, Anslem de Silva

EN *Polypedates yaoshanensis* (Liu and Hu, 1962)

Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: China
Current Population Trend: Decreasing

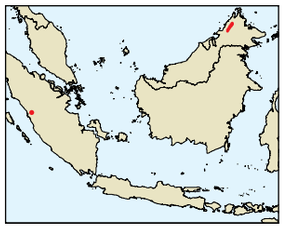


© Fei, L., Ye, C.-Y., Huang, Y.-Z. and Liu, M.-Y. 1999

Geographic Range This species is restricted to Dayaoshan, Jinxiu County, in Guangxi Province, China. It has been recorded from 800-1,500m asl.
Population There is no information on the current population status of this species.
Habitat and Ecology It is an inhabitant of forest habitats. Its breeding habits are unknown, though it presumably breeds in water by larval development.
Major Threats The major threat is habitat loss, especially for wood extraction and farming.
Conservation Measures The only known location is within Dayaoshan Nature Reserve. Survey work is needed to determine the current population status of this species.
Notes on taxonomy: This species is sometimes placed in the genus *Rhacophorus*.
Bibliography: Liu, C.-C. and Hu, S.-Q. (1962), MacKinnon, J. *et al.* (1996), Zhang, Y. and Wen, Y. (2000)
Data Providers: Michael Wai Neng Lau, Chou Wenhao

EN *Rhacophorus angulirostris* Ahl, 1927

Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Indonesia, Malaysia
Current Population Trend: Decreasing

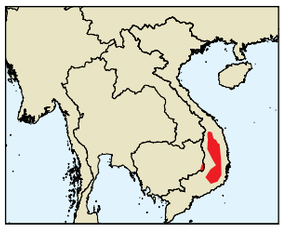


© Alexander Haas

Geographic Range This species is known from northern Borneo (Malaysia) and from one locality in Sumatra, Indonesia. It has an altitudinal range of 700-1,800m asl.
Population It appears to be abundant in Gunung Kinabalu National Park in Borneo.
Habitat and Ecology It has been found only in primary submontane and montane forests. Males call from trees overhanging small, clear, rocky streams where the larvae develop.
Major Threats Habitat loss as a result of clear-cutting is the major threat to this species, and logging has already severely damaged the habitat at one known locality, Mount Trus Madi, in Borneo.
Conservation Measures Besides Gunung Kinabalu National Park, it is also present in the Crocker Range, in Malaysian Borneo; however, the Sumatran locality lies outside any protected areas.
Notes on taxonomy: The taxonomic status of the Sumatran population requires further investigation.
Bibliography: Inger, R.F. and Stuebing, R.B. (1997), Malkmus, R. *et al.* (2002)
Data Providers: Robert Inger, Robert Stuebing, Djoko Iskandar, Mumpuni

VU *Rhacophorus annamensis* Smith, 1924

Vulnerable B2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Cambodia, Viet Nam
Current Population Trend: Decreasing



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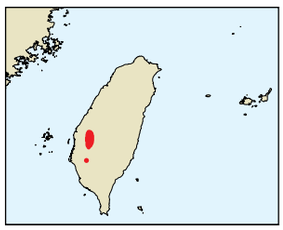
Geographic Range This species is known from the Kon Tum-Da Lat Plateau, of the southern Annamite Mountains, in Viet Nam and the extreme east of Cambodia. It was originally known from a single specimen collected at 200m asl (Smith 1924), but has subsequently been collected from 700-1,200m asl (Inger, Orlov and Darevsky 1999).
Population In Viet Nam it was the most locally common treefrog (Inger, Orlov and Darevsky 1999).
Habitat and Ecology It is found in substantial numbers in rainforest. It makes foam nests in trees above quiet parts of streams and swampy floodplain (Inger, Orlov and Darevsky 1999).
Major Threats Deforestation of the Kon Tum-Da Lat Plateau (Darevsky and Orlov 1997; Inger, Orlov and Darevsky 1999) and other systemic impacts are prime concerns for this species. The amount of available habitat within its range is very limited.
Conservation Measures The only known location in Cambodia is within Phnom Nam Lyr Wildlife Sanctuary. Herpetological surveys of existing protected areas on the Kon Tum Plateau are needed to determine the presence of this species in existing protected areas. Protected areas in the Buen Luoi-Tram Lap-Kon Cha Ran area are in need of improved management.
Bibliography: Darevsky, I.S. and Orlov, N.L. (1997), Inger, R.F., Orlov, N. and Darevsky, I.S. (1999), Smith, M.A. (1924)
Data Providers: Peter Paul van Dijk, Bryan Stuart, Raoul Bain

EN *Rhacophorus arvalis* Lue, Lai and Chen, 1995

Endangered B1ab(iii)+2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Taiwan, Province of China
Current Population Trend: Decreasing

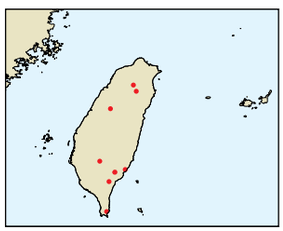


Geographic Range This species is known from agricultural areas in Chiayi, Yunlin and Tainan Counties, in south-western Taiwan, Province of China. It occurs up to 1,000m asl.
Population There is no information on the current population status of this species.
Habitat and Ecology It is associated with disturbed areas with traditional farming practices, and inhabits bamboo forests, orchards, sugar-cane fields, scrubland and cultivated fields in the lowlands. It breeds in temporary rain water pools in orchards.
Major Threats Infrastructure development for industry and human settlement, and agricultural pollution, are its major threats.
Conservation Measures It is only found in disturbed farmland areas. Presently there are about 20 landowners who have agreed to maintain the traditional farming practices for the forseeable future in the Yulin area in the central part of Taiwan, Province of China.

Bibliography: Lue, G.Y., Lai, J.S. and Chen, S.H. (1995), Lue, K.-Y., Tu, M.-C. and Hsiang, G. (1999), MacKinnon, J. *et al.* (1996), Yang, Y.-J. (1998)
Data Providers: Lue Kuangyang, Chou Wenhao

EN *Rhacophorus aurantiventris* Lue, Lai and Chen, 1994

Endangered B1ab(v)+2ab(v); C2a(i)
Order, Family: Anura, Rhacophoridae
Country Distribution: Taiwan, Province of China
Current Population Trend: Decreasing



© Fei, L., Ye, C.-Y., Huang, Y.-Z. and Liu, M.-Y. 1999

Geographic Range This species is known from scattered localities in Ilan, Taitung, Taichung, Hualien, Kaohsiung and Kenting in Taiwan, Province of China. It has been recorded from low to mid altitudes.
Population It is a rare species that is believed to be in decline.
Habitat and Ecology It inhabits primary broadleaf forests, and breeds in tree holes and buckets placed in forests.
Major Threats The cause of the decline in this species is not clear, since its habitat is not believed to be currently threatened.
Conservation Measures It is protected within Fu-shan Nature Reserve and Li-chia Wildlife Refuge. Further research is needed to investigate the reasons for the decline in this species, and close population monitoring is required.
Bibliography: Chou, W.-H. and Lin, J.-Y. (1997b), Lue, K.-Y., Tu, M.-C. and Hsiang, G. (1999), MacKinnon, J. *et al.* (1996), Yang, Y.-J. (1998)
Data Providers: Lue Kuangyang, Chou Wenhao

VU *Rhacophorus baliogaster* Inger, Orlov and Darevsky, 1999

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Lao P.D.R., Viet Nam
Current Population Trend: Decreasing

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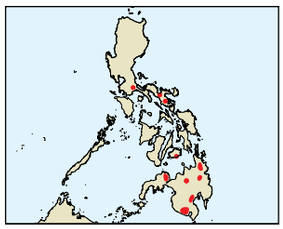
Geographic Range This species is known from the An Khe District, in Gia lai Province, Viet Nam (Inger, Orlov and Darevsky 1999) and from the southern Annamite mountains of Lao People's Democratic Republic (Stuart 1999). The type locality is at 700-750m asl, but it has also been recorded around 1,000m asl.
Population It was reportedly common at the one known location in Lao People's Democratic Republic (T. Chan-ard pers. comm.).
Habitat and Ecology It is known from wet evergreen forest. Animals have been found on the banks of forest streams, perched on grassy vegetation 20-50cm above the surface and about 3m from the water. Tadpoles were found in a swampy forest pond (Inger, Orlov and Darevsky 1999).
Major Threats No specific threats have been indicated for the species, but the An Khe District site is known to be impacted by forest clearance for agriculture (Darevsky and Orlov 1997).
Conservation Measures The population in Lao People's Democratic Republic is within Xe Sap National Biodiversity Conservation Area. There is a need for improved protection of forest habitats in Viet Nam.
Bibliography: Darevsky, I.S. and Orlov, N.L. (1997), Inger, R.F., Orlov, N. and Darevsky, I.S. (1999), Stuart, B.L. (1999)
Data Providers: Peter Paul van Dijk, Tanya Chan-ard

VU *Rhacophorus bimaculatus* Peters, 1867

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Philippines
Current Population Trend: Decreasing

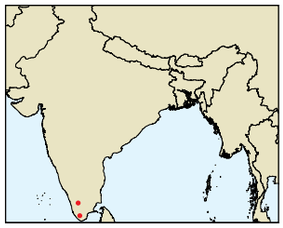


© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species has been recorded from southern Luzon, Bohol, and Mindanao in the Philippines. It probably occurs more widely than current records suggest, especially in areas between known sites.
Population It is locally common, but patchily distributed.
Habitat and Ecology It inhabits arboreal microhabitats, usually beside water (streams, ponds, rivers) in undisturbed lower montane and lowland forests.
Major Threats Important threats are the loss of the lowland rainforest due to agriculture and logging, and the pollution of mountain streams and rivers especially due to agricultural effluents.
Conservation Measures Its range includes a few protected areas, including Mount Malindang National Park and Mount Apo Natural Park. There is a need for improved protection of remaining tracts of intact lowland and montane rainforest in the islands where this species occurs.
Bibliography: Alcala, A.C. and Brown, W.C. (1985), Brown, W.C. and Alcala, A.C. (1994), Frost, D.R. (1985), Inger, R.F. (1999), Inger, R.F. and Stuebing, R.B. (1997)
Data Providers: Arvin Diesmos, Angel Alcala, Rafe Brown, Leticia Afuang, Genevieve Gee

EN *Rhacophorus calcadensis* Ahl, 1927

Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing



© S.D. Biju

Geographic Range This species is restricted to the southern Western Ghats of India in Kerala (Agasthyamala Hills of the Neyar Wildlife Sanctuary and Munnar) and Tamil Nadu (Kalakad-Mundanthurai Tiger Reserve and Indira Gandhi National Park). It is reported from elevations of 900-1,400m asl.
Population It is a rare species and is difficult to locate.
Habitat and Ecology It is generally found along streams in montane tropical moist forest, and is not present in degraded habitats. An arboreal species, it may be found in both the canopy and understorey levels of the forest (3-5m above the ground). It breeds on vegetation overhanging streams, and the larvae develop in the streams.
Major Threats The major threat is habitat loss following the conversion of forest to agricultural land (including tea plantations).
Conservation Measures It has been recorded from Kalakad-Mundanthurai Tiger Reserve and Indira Gandhi National Park, both in Tamil Nadu, and Neyar Wildlife Sanctuary in Kerala. Recent investigations into the ecology and breeding biology of this species have been undertaken by S.D. Biju (1999-2001).
Bibliography: Ahl, E. (1927), Biju, S.D. (2000), Biju, S.D. (2001), Dutta, S.K. (1997), Vasudevan, K., Kumar, A. and Chellam, R. (2001)
Data Providers: S.D. Biju, Gajanan Dasaramji Bhuddhe, Sushil Dutta, Karthikeyan Vasudevan, Chelmala Srinivasulu, S.P. Vijayakumar

VU *Rhacophorus exechopygus* Inger, Orlov and Darevsky, 1999

Vulnerable B2ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Lao P.D.R., Viet Nam
Current Population Trend: Decreasing

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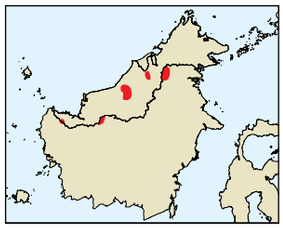
Geographic Range This species is known from Tram Lap, An Khe district, in Gia Lai Province and Ngoc Linh mountain, in Quang Nam Province, both on the Kon Tum Plateau of southern Viet Nam (Inger, Orlov and Darevsky 1999), and from the Annamite mountains of southern Lao People's Democratic Republic (Stuart 1999). It has been recorded between 800 and 1,400m asl. It has only a small area of occupancy within its overall range due to limited suitable habitat.
Population It was observed to be common during the breeding season (T. Nguyen pers. comm.).
Habitat and Ecology It is found on vegetation on swampy banks of forest streams in undisturbed, wet evergreen rainforest. It is a stream-breeding amphibian.
Major Threats Forest degradation is an issue at the type locality (Inger, Orlov and Darevsky 1999) and generally throughout the Kon Tum Plateau, mainly due to agriculture, logging, and human settlement.
Conservation Measures In Lao People's Democratic Republic this species is known from Xe Sap National Biodiversity Conservation Area. There is a need for improved protection of forest habitat on the Kon Tum plateau.
Bibliography: Inger, R.F., Orlov, N. and Darevsky, I.S. (1999), Stuart, B.L. (1999)
Data Providers: Peter Paul van Dijk, Nguyen Quang Truong, Tanya Chan-ard

VU *Rhacophorus fasciatus* Boulenger, 1895

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Indonesia, Malaysia
Current Population Trend: Decreasing



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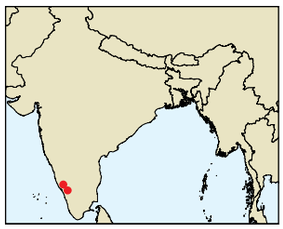
Geographic Range This species is known from northern Borneo, in Sarawak (Malaysia) and Kalimantan (Indonesia). It probably occurs more widely than current records suggest, especially in areas between known sites. It is present below 200m asl.
Population There is no information on the current population status of this species.
Habitat and Ecology It has been recorded only in primary lowland rainforest. It is presumed to breed in temporary water pools, like most other species of the genus.
Major Threats The rapid pace of logging of lowland rainforests is a major threat to the species' habitat.
Conservation Measures It is known from at least three protected areas in Borneo (including Gunung Mulu and Kayan Mentarang National Parks). Improved protection of lowland forest is the main conservation measure required for this species.
Bibliography: Inger, R.F. (1966)
Data Providers: Robert Inger, Djoko Iskandar, Indraneil Das, Robert Stuebing, Maklarin Lakim, Paul Yambun, Mumpuni

EN *Rhacophorus lateralis* Boulenger, 1883

Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

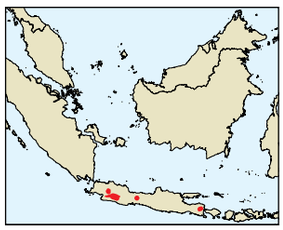


© K. Jayaram

Geographic Range This species is restricted to two small areas of the southern Western Ghats of India in Kerala (Wayanad Wildlife Sanctuary and its surroundings) and Karnataka (Coorg and its surroundings) at an elevation of approximately 800m asl. It might occur a little more widely than current records suggest.
Population It is locally common.
Habitat and Ecology It inhabits tropical moist evergreen forest and deciduous forest, and has been recorded from secondary (disturbed) forest and coffee plantations (though this is not suitable habitat). An arboreal species, it is believed to occur in the lower canopy and understorey levels of the forest. Breeding takes place on vegetation overhanging small pools, and the larvae develop in these pools.
Major Threats It is threatened by the conversion of forest areas to cultivated land (including timber and non-timber plantations).
Conservation Measures It has been recorded from the Wayanad Wildlife Sanctuary in Kerala, but remains unprotected in the remainder of its range. Further surveys to determine the full range of this recently rediscovered treefrog are urgently required.
Bibliography: Biju, S.D. (2000), Biju, S.D. (2001), Boulenger, G.A. (1882a), Das, I. (2000), Dutta, S.K. (1997)
Data Providers: S.D. Biju, Sushil Dutta, Karthikeyan Vasudevan, Chelmala Srinivasulu, S.P. Vijayakumar

VU *Rhacophorus margaritifer* (Schlegel, 1837)

Vulnerable B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Indonesia
Current Population Trend: Decreasing

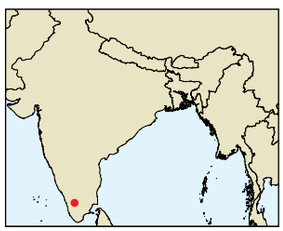


© Rafe Brown, 2006. Courtesy of HerpWatch Philippines

Geographic Range This species is known only from two areas in Jawa Barat, one area in Jawa Tengah, and one area in Jawa Timur, Java, Indonesia. It occurs above 1,000m asl, but might be found more widely at high altitudes in Java.
Population It is a common species in suitable habitat.
Habitat and Ecology It lives in montane forest, including in disturbed forest. It breeds in streams.
Major Threats The major threat is the loss of forest habitat due to smallholder farming and subsistence wood collecting.
Conservation Measures It occurs in Gunung Halimun and Gunung Gede Pangrango National Parks, as well as in the Taman Safari Park.
Bibliography: Harvey, M.B., Pemberton, A.J. and Smith, E.N. (2002), Iskandar, D.T. (1998)
Data Providers: Djoko Iskandar, Mumpuni

CR *Rhacophorus pseudomalabaricus* Vasudevan and Dutta, 2000

Critically Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: India
Current Population Trend: Decreasing

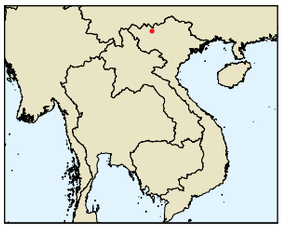


© K. Jayaram

Geographic Range This species is restricted to the Indira Gandhi National Park and surroundings in Tamil Nadu, in the southern Western Ghats of India. It has an altitudinal range of 1,000-1,300m asl.
Population The species is locally common where it occurs.
Habitat and Ecology It is arboreal, occurring in the lower canopy and understorey levels of tropical moist evergreen forest. It is not present in degraded habitats. Breeding takes place on vegetation overhanging temporary pools, and tadpoles develop in these pools.
Major Threats The main threat is conversion of forested areas to cultivated land (including timber and non-timber plantations) outside the Indira Gandhi National Park, and the extraction of wood and timber by local people.
Conservation Measures While known to be present in the Indira Gandhi National Park in Tamil Nadu, further habitat protection is needed.
Bibliography: Biju, S.D. (2001), Vasudevan, K. and Dutta, S.K. (2000)
Data Providers: S.D. Biju, Sushil Dutta, Karthikeyan Vasudevan, Chelmala Srinivasulu, S.P. Vijayakumar

EN *Theloderma bicolor* (Bourret, 1937)

Endangered B1ab(iii)
Order, Family: Anura, Rhacophoridae
Country Distribution: Viet Nam
Current Population Trend: Decreasing



© Nikolai L. Orlov

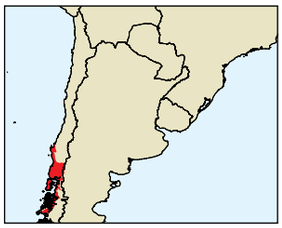
Geographic Range This species is known only from the vicinity of Sa Pa, in northern Viet Nam, from 1,200-1,900m asl (Bourret 1942; Orlov 1997b).
Population It has been collected only on a few occasions in small numbers in a very limited area (Bourret 1942; Orlov 1997b).
Habitat and Ecology It is known from a karst canyon in montane evergreen forest (Orlov 1997b). Its breeding biology has not been recorded, but breeding presumably takes place by larval development, though it is not known if it breeds in tree holes or in standing waterbodies.
Major Threats The most likely potential major threat to the species is habitat loss due to agricultural activities, selective logging, fires, and the development of infrastructure for tourist activities.
Conservation Measures Its range is within Hoang Lien Son National Park. Safeguarding the integrity of Fan Si Pan mountain and the Sa Pa vicinity is of prime importance for the conservation of this species.
Bibliography: Birdlife International (2001), Bourret, R. (1942), Ohler, A. *et al.* (2000), Orlov, N.L. (1997b)
Data Providers: Peter Paul van Dijk, Annemarie Ohler

RHINODERMATIDAE

VU *Rhinoderma darwinii* Duméril and Bibron, 1841

DARWIN'S FROG

Vulnerable A2ace
Order, Family: Anura, Rhinodermatidae
Country Distribution: Argentina, Chile
Current Population Trend: Decreasing



© Jaime Bosch

Geographic Range This species is endemic to the austral forest of Chile and Argentina. Historically, it was distributed in Chile from Concepcion Province to Palena Province. In Argentina, it is known from Neuquen and Río Negro provinces. It has an altitudinal range of 50-1,100m asl.
Population Recent surveys within the range of *Rhinoderma darwinii* in Chile reveal that some populations (including those in national parks and other preserved areas) have disappeared entirely (M. Crump and A. Veloso pers. comm.). In other areas, the density of frogs is much lower than 10 or 20 years ago (M. Crump pers. comm.). Forestry operations have destroyed large areas where northern populations were found. However, it was still abundant in at least some southern Chilean localities in 2003; indeed, it appears that the species reaches its highest densities in regions of the Archipelago, where habitat disturbance is minimal (M. Crump pers. comm.). In Argentina, this is a scarce species and appears to have declined at one site (Puerto Blest, Río Negro Province) during the past 50 years.
Habitat and Ecology It generally occurs in the leaf-litter of temperate *Nothofagus* forests; it is also present in forest bogs. Females deposit eggs in the leaf-litter. When the larvae inside the eggs begin to move, adult males ingest the eggs and incubate them in vocal sacs. Larvae develop inside the male and emerge after metamorphosis. The species is not tolerant of habitat disturbance.
Major Threats In the north, the main threats are drought and pine forestry, while in the south it is clear-cutting of forest. Declines that have taken place in suitable habitat could be the result of other threats, such as climate change or disease (possibly chytridiomycosis, although this normally impacts species that are associated with water, and it has not previously been reported from Chile).
Conservation Measures There are several protected areas in the range of the species, though there remains a need for improved maintenance and protection of native forest habitats, particularly in the north. Close population monitoring of this species is required given the declines seen in suitable habitat. In Chile, it is listed as "Endangered" (En Peligro de Extinción) (Reglamento de la Ley de Caza, Chile, 1998).
Bibliography: Busse, K. (1970), Busse, K. (1991), Cei, J.M. (1962), Cei, J.M. (1980), Formas, J.R. (1995), Glade, A. (1993), Jorquera, B. (1986), Jorquera, B., Garrido, O. and Pugín, E. (1982), Jorquera, B., Pugín, E. and Goicoechea, O. (1972), Lavilla, E.O. (1987), Lavilla, E.O. *et al.* (2000), Servicio Agrícola Ganadero (1998), Veloso, A. (1998), Veloso, A. and Navarro, J. (1988)
Data Providers: Carmen Úbeda, Alberto Veloso, Herman Núñez, Esteban Lavilla

CR *Rhinoderma rufum* (Philippi, 1902)

Critically Endangered A2ace
Order, Family: Anura, Rhinodermatidae
Country Distribution: Chile
Current Population Trend: Decreasing

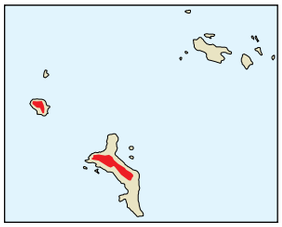
© Klaus Busse

Geographic Range This species occurs in Chile from 33° 30'S to 37° 50'S from Curico (Curico Province) to Ramadillas (Arauco Province) at elevations of 0-500m asl.
Population It formerly occurred in small, isolated populations, and was fairly regularly seen until around 1978. However, since then, there have been no confirmed reports despite several attempts to relocate the species, giving rise to fears that it might be extinct.
Habitat and Ecology It has been recorded in leaf-litter in temperate mixed forests, and also in bogs surrounded by forests. Females lay their eggs in the leaf-litter. When the larvae inside the eggs begin to move, adult males ingest the eggs and incubate them in their vocal sacs, where the larvae develop until they are regurgitated into streams where metamorphosis takes place.
Major Threats The destruction of the native vegetation through the planting of pine plantations and for the building of second homes probably had some impact on this species. However, this is unlikely to explain fully its disappearance, the causes of which are not understood. Declines that have taken place within suitable habitat might be the result of threats such as climate change or disease (possibly chytridiomycosis, although this has not previously been reported from Chile).
Conservation Measures It is not known from any protected areas. The species might well be extinct, but further survey work is urgently required to determine whether or not this is indeed the case. In view of the possible risk of disease, any surviving individuals might need to form the basis for the establishment of an *ex-situ* population.
Bibliography: Formas, J.R. (1995), Formas, J.R., Pugin, E. and Jorquera, B. (1975), Glade, A. (1993), Servicio Agrícola Ganadero (1998), Veloso, A. and Navarro, J. (1988)
Data Providers: Alberto Veloso, Herman Núñez, Helen Díaz-Paéz , Ramón Formas

SOOGLOSSIDAE

VU *Nesomantis thomasseti* Boulenger, 1909

Vulnerable D2
Order, Family: Anura, Sooglossidae
Country Distribution: Seychelles
Current Population Trend: Unknown



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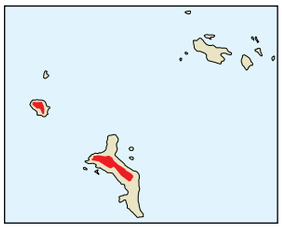
Geographic Range This species is restricted to Mahé and Silhouette Islands in the Seychelles, occurring at relatively high elevations above 350m asl, though one individual was recently found at 95m asl.
Population It is less common than other members of the family Sooglossidae.
Habitat and Ecology It is restricted to relatively undisturbed habitat in wet rocky areas along streams or dry streambeds. The recent low-altitude records were from secondary forest, but it shows a strong preference for higher altitudes and undisturbed habitats. It breeds by direct development, the eggs being laid among rocks.
Major Threats The main threat is habitat degradation, mainly due to fire and invasive species, but it is not thought to be seriously threatened in its higher altitude habitat. It might be inherently at risk because of its small range.
Conservation Measures It occurs in Morne Seychellois National Park, and in the site of a conservation project on Silhouette. There is a need for close monitoring of the population status of this species.
Bibliography: Green, D.M., Nussbaum, R.A. and Datong, Y. (1988), Nussbaum, R.A. (1984), Nussbaum, R.A., Jaslow, A. and Watson, J. (1982.)
Data Providers: Ronald Nussbaum, Justin Gerlach

VU *Sooglossus gardineri* (Boulenger, 1911)

Vulnerable D2
Order, Family: Anura, Sooglossidae
Country Distribution: Seychelles
Current Population Trend: Unknown



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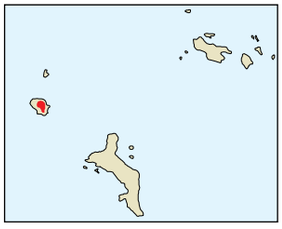
Geographic Range This species occurs on Mahé and Silhouette islands in the Seychelles.
Population It is common at many sites in both disturbed and relatively undisturbed rainforest, occurring at densities of up to 2,000 animals per hectare in the best habitat.
Habitat and Ecology It lives both on the ground in forest litter and on low vegetation in leaf axils, in disturbed and undisturbed rainforest. It also occurs in areas dominated by introduced trees such as cinnamon. It breeds by direct development, the eggs being laid on the ground.
Major Threats The main threat is habitat degradation, mainly due to fire and invasive species, but it is not thought to be seriously threatened since it is somewhat adaptable to secondary habitats. It might be inherently at risk because of its small range.
Conservation Measures It occurs in the Morne Seychellois National Park, and in the site of a conservation project on Silhouette. There is a need for close monitoring of the population status of this species.
Bibliography: Gerlach, J. and Willi, J. (2002), Green, D.M., Nussbaum, R.A. and Datong, Y. (1988), Nussbaum, R.A. (1984), Nussbaum, R.A., Jaslow, A. and Watson, J. (1982.)
Data Providers: Ronald Nussbaum, Justin Gerlach

VU *Sooglossus pipilodryas* Gerlach and Willi, 2002

SEYCHELLES PALM FROG

Vulnerable D2
Order, Family: Anura, Sooglossidae
Country Distribution: Seychelles
Current Population Trend: Unknown



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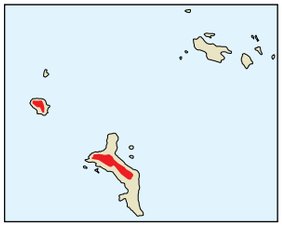
Geographic Range This species is restricted to Silhouette Island, in the Seychelles, occurring above 250m asl. It has an area of occupancy of 665ha.
Population It is common in its small range, with a maximum population density of 30 animals per hectare, and a total population estimate of fewer than 20,000 animals.
Habitat and Ecology It is restricted to high forest over 250m asl, and is closely associated with the palm *Phoenicophorium borsigianum*, most individuals being found in axils of the palm. Its breeding habits are unknown, but it probably takes place by direct development, with the eggs being laid on the ground, or in leaf axils, or both.
Major Threats There are no major current threats, other than the inherent risks associated with having a very small range.
Conservation Measures The forest areas in which this species lives are managed for conservation by the Nature Protection Trust of Seychelles-Islands Development Company Silhouette Conservation Project. However, the forests have no formal legal protection. There is a need for close monitoring of the population status of this species.
Bibliography: Gerlach, J. and Willi, J. (2002)
Data Providers: Justin Gerlach, Ronald Nussbaum

VU *Sooglossus sechellensis* (Boettger, 1896)

Vulnerable D2
Order, Family: Anura, Sooglossidae
Country Distribution: Seychelles
Current Population Trend: Unknown



© Renaud Boistel

Geographic Range This species occurs on the islands of Mahé and Silhouette in the Seychelles.
Population It is a locally common species, living at densities of 667-2,000 animals per hectare.
Habitat and Ecology It lives on the forest floor in leaf-litter in both relatively pristine and disturbed rainforest. It lays its eggs on land and guards them until they hatch. The tadpoles then wriggle onto their parent's back (although it is not clear whether or not it is the male or the female that carries the larvae).
Major Threats The main threat is habitat degradation, mainly due to fire and invasive species, but it is not thought to be seriously threatened since it is somewhat adaptable to secondary habitats. It might be inherently at risk because of its small range.
Conservation Measures It occurs in the Morne Seychellois National Park, and in the site of a conservation project on Silhouette. There is a need for close monitoring of the population status of this species.
Bibliography: Gerlach, J. and Willi, J. (2002), Green, D.M., Nussbaum, R.A. and Datong, Y. (1988), Nussbaum, R.A. (1984), Nussbaum, R.A., Jaslow, A. and Watson, J. (1982.)
Data Providers: Ronald Nussbaum, Justin Gerlach

CAUDATA

AMBYSTOMATIDAE

EN *Ambystoma altamirani* (Dugès, 1895)

Endangered A2ace; B1ab(iii,v)+2ab(iii,v)
Order, Family: Caudata, Ambystomatidae
Country Distribution: Mexico
Current Population Trend: Decreasing

Geographic Range This species occurs in isolated populations to the west and south of the valley of Mexico, in the states of Morelos and Mexico and the Distrito Federal. The known populations include Lagunas de Zempoala, Ajusco Mountain and Desierto de los Leones, although it has also been found in some additional sites. Its altitudinal range is 2,700-3,200m asl.
Population The species was formerly common, with larvae present in most small streams within its range. It appears now to be greatly reduced.
Habitat and Ecology The species lives and breeds in small, permanent streams flowing through high-elevation pine or pine-oak woodland forests. It has also been found in streams in cleared pastures. Although metamorphosis is complete, in the wild some adults as well as larvae remain in the stream year-round.
Major Threats The forest and stream habitat in the vicinity of Mexico City where the species lives has been severely altered, leading to greatly degraded habitat. Illegal logging in national parks, very heavy recreational tourism, stream pollution and sedimentation, and stream diversion have all had negative impacts. Introduced predatory fishes (trout and others) have eliminated the species from many streams, and local consumption for food may be an issue.
Conservation Measures This species occurs, or used to occur, in three national parks: Lagunas de Zempoala, Ajusco Mountain, and Desierto de los Leones. However, surveys conducted in the 1970s and 1980s recorded the species as present in Ajusco and Desierto de los Leones, but absent from Lagunas de Zempoala. There is an urgent need for more effective conservation of the forest and streams of this species, including the control of introduced predatory fishes, and for new field surveys to assess declines that may have occurred in the last 15 years. This species is protected by Mexican law under the "Special Protection" category (Pr).
Bibliography: Reilly, S.M. and Brandon, R.A. (1994), Shaffer, H.B. (1984a), Shaffer, H.B. (1984b), Shaffer, H.B. and Lauder, G.V. (1985), Shaffer, H.B. and McKnight, M.L. (1996), Uribe-Peña, Z., Ramírez-Bautista, R. and Cuadernos, G.C.A (2000)
Data Providers: Brad Shaffer, Gabriela Parra-Olea, David Wake, Oscar Flores-Villela

CR *Ambystoma amblycephalum* Taylor, 1940

Critically Endangered B1ab(iii,v)+2ab(iii,v)
Order, Family: Caudata, Ambystomatidae
Country Distribution: Mexico
Current Population Trend: Decreasing

Geographic Range This species is found in a small area around Tacicuaro, north-western Michoacan, to the west of Morelia City in Mexico. It occurs at about 2,000m asl.
Population There is no information on current population status; there has been limited fieldwork carried out on this species since the early 1980s.
Habitat and Ecology This is a metamorphosing species spending most of the time on land in a mosaic of natural grasslands and pine-oak forests. It requires ponds of moderate depth in which to breed, and is able to survive in somewhat modified landscapes, taking advantage of cattle ponds for larval development.
Major Threats The desiccation, pollution, and conversion of former ponds, small reservoirs, and open habitats to grow crops, represent the main threats to this species, coupled with the urban expansion of Morelia and Uruapan. Introduced predatory fish are also a major concern, both in ponds and small streams.
Conservation Measures It does not occur in any protected areas. The conservation and restoration of the natural habitats for this species is urgent, and new field surveys are required to assess the population status of this species. It might be possible to breed this species in captivity and reintroduce it in the wild. It is protected under the category Pr (Special protection) by the Government of Mexico.
Notes on taxonomy: Based on mitochondrial DNA (Shaffer and McKnight 1996) and allozymes (Shaffer 1984a) this species is extremely closely related to several other populations from the Mesa Central, and species boundaries are in need of careful review.
Bibliography: Highton, R. (2000), Shaffer, H.B. (1984a), Shaffer, H.B. (1984b), Shaffer, H.B. and McKnight, M.L. (1996), Webb, R.G. (2004)
Data Providers: Brad Shaffer, Oscar Flores-Villela, Gabriela Parra-Olea, David Wake

CR *Ambystoma andersoni* Krebs and Brandon, 1984

Critically Endangered B1ab(iii)+2ab(iii)
Order, Family: Caudata, Ambystomatidae
Country Distribution: Mexico
Current Population Trend: Decreasing

© James Hanken

Geographic Range This species is known only from one lake (Lago Zacapu) and its surrounding streams, in north-western Michoacan, Mexico, at 2,000m asl.
Population Although it is not rare, it is probably declining.
Habitat and Ecology This species is paedomorphic, and requires a clean, cool aquatic habitat. It is found only in Lago Zacapu and the spring-fed streams and canals associated with the lake. They do not metamorphose in nature, and individuals that have been artificially induced to metamorphose with thyroid hormone in the laboratory do not thrive. Their diet consists largely of snails and crawfish.
Major Threats The major threat to this species is the pollution of the lake, although the animals are also heavily harvested for food, and predatory fish have been introduced into the lake, which might well pose a major problem for the species.
Conservation Measures It does not occur in any protected area. However, this is a species that could recover its numbers it the lake can be kept clean and restored. Conservation and restoration of its habitat is therefore urgent. This species can be bred in laboratory conditions, and so captive animals could be a source of new individuals to repopulate the natural habitats. Studies are needed to evaluate the sustainability of the harvest as well as the impacts of introduced predatory fishes. This species is protected under the category Pr (Special protection) by the Government of Mexico.
Notes on taxonomy: Based on both allozymes and mtDNA, this is one of the more differentiated of the Mexican *Ambystoma* species; morphologically, it has evolved a superficially similar body plan to the distantly related *A. dumerilii* from Lago Pátzcuaro (H.B. Shaffer pers. comm.).
Bibliography: Dyer, W.G. (1988), Highton, R. (2000), Krebs, S.L. and Brandon, R.A. (1984), Shaffer, H.B. (1984a), Shaffer, H.B. (1984b), Shaffer, H.B. and Lauder, G.V. (1985)
Data Providers: Brad Shaffer, Oscar Flores-Villela, Gabriela Parra-Olea, David Wake

CR *Ambystoma bombypellum* Taylor, 1940

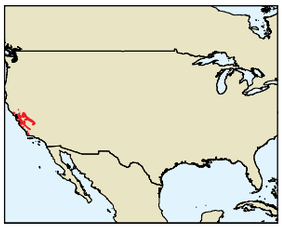
Critically Endangered B1ab(iii)+2ab(iii)
Order, Family: Caudata, Ambystomatidae
Country Distribution: Mexico
Current Population Trend: Decreasing

Geographic Range This species is known only from the type locality, San Martin, in north-western State of Mexico, at 2,500m asl.
Population There is no information on the population status of this species.
Habitat and Ecology This is a metamorphosing species spending most of its time on land in a mosaic of natural grasslands and pine-oak forests, living in somewhat more open habitats than *Ambystoma amblycephalum*. It requires ponds and small streams in which to breed.
Major Threats The habitat of this species is under threat from agriculture, in particular from commercial wheat farming, leading to the desiccation and pollution of its breeding lakes and water reservoirs within its small range. However, survival of this species appears to be compatible with cattle grazing, particularly if stock ponds are available for breeding. Introduced predatory fish also pose a serious threat to this species.
Conservation Measures It does not occur in any protected areas, making the conservation and restoration of the natural habitats for this species urgent. It might be possible to breed this species in captivity, in which case captive animals could be a source of new individuals to repopulate natural habitats. It is protected under the category Pr (Special protection) by the Government of Mexico.
Bibliography: Shaffer, H.B. (1984a), Shaffer, H.B. (1984b)
Data Providers: Brad Shaffer, Oscar Flores-Villela, Gabriela Parra-Olea, David Wake

VU *Ambystoma californiense* Gray, 1853

CALIFORNIA TIGER SALAMANDER

Vulnerable A2c
Order, Family: Caudata, Ambystomatidae
Country Distribution: United States of America
Current Population Trend: Decreasing



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Geographic Range This species has a discontinuous distribution in west-central California, USA: coast ranges between Sonoma and Santa Barbara counties, Central Valley and surrounding foothills from southern Colusa County to north-western Kern County on the west side of the valley and southern Butte County to northern Tulare County on the east side. It has been eliminated from much of its former range in the Central Valley as a result of agricultural and urban development (Stebbins 1985b), but still occurs throughout most of its overall historical range and can be locally common (Trenham *et al.* 2000). About 80% of all extant occurrences are in Alameda, Contra Costa, Madera, Merced, Monterey, San Benito, and Santa Clara counties, with 30% of all occurrences in Alameda County. It has recently been rediscovered on the San Francisco Peninsula (Lagunita Lake, Stanford University) (Barry and Shaffer 1994). Jennings (1996; Herpetological Review 27:147) provides an old record from San Mateo County. It ranges from near sea level to 1,054m asl.

Population Total adult population size is unknown, but certainly exceeds 10,000. However, it appears to be in decline due to habitat loss. It has been eliminated from 55-58% of historic breeding sites, and reportedly about 75% of the historical vernal pool-breeding habitat has been lost (Holland 1998) (though some question the reliability of this estimate). Barry and Shaffer (1994) stated that this salamander soon would be in danger of extinction throughout its range, and they noted that it already is gravely threatened in the San Francisco Bay Area and in the San Joaquin Valley. But Trenham *et al.* (2000) noted that the species still occurs in most of the historical range and can be locally common. In Santa Barbara County, of 14 documented breeding sites, half have been destroyed or have suffered severe degradation since mid-1999 (USFWS 2000).

Habitat and Ecology This species occurs in grassland or open woodland habitats, where it lives in vacant or mammal-occupied burrows (e.g., California Ground Squirrel, Valley Pocker Gopher) (Trenham 2001), and occasionally in other underground retreats, throughout most of the year. Eggs are laid on submerged stems and leaves, usually in shallow ephemeral or semi permanent pools and ponds that fill during heavy winter rains, sometimes in permanent ponds; adults spend little time in breeding sites.

Major Threats Most of the remaining range, including population strongholds in eastern Alameda and Contra Costa counties and areas south and west of Millerton Lake in Madera and Fresno counties, is imminently threatened by urban development, conversion of natural habitat to agriculture, introduction of exotic predatory animals (bullfrogs, crayfish, various fishes) that temporarily may occupy salamander breeding habitat, and/or other anthropogenic factors (e.g., rodent control programs, vehicle-related mortality). Reduced ground squirrel populations might reduce the availability of burrows, which are important habitats during the dry season. The use of pesticides for mosquito abatement might reduce food resources for salamanders. Introduction of non-native tiger salamanders might harm populations through hybridization and/or competition. Contaminated runoff from roads might adversely affect salamanders in breeding sites. Localities in the Diablo Range, inner Coast Ranges, and Sierra Nevada foothills are not significantly threatened at present, and there are still a relatively large number of remaining breeding localities. In Santa Barbara County, plans to convert remaining breeding areas from grazing to intensive agriculture are being developed and implemented (USFWS 2000). Five of the six existing habitat complexes supporting this population suffered moderate to severe levels of habitat destruction or degradation between 1996 and 2000 (USFWS 2000). See USFWS (2000) for further information on threats to the Santa Barbara County population.

Conservation Measures This species occurs in several state and regional parks and other at least semi-protected areas. Most populations are on private land; an estimated 5% of known populations occur on government-owned lands. In Santa Barbara County, all of the known and potential habitat is largely on unprotected private land (USFWS 2000). As of August 2005, the California Tiger Salamander is protected by California law as a threatened species.

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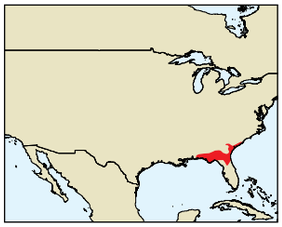
Data Providers: Geoffrey Hammerson

VU *Ambystoma cingulatum* Cope, 1867 [1868]

FLATWOODS SALAMANDER

Vulnerable A2c
Order, Family: Caudata, Ambystomatidae
Country Distribution: United States of America
Current Population Trend: Decreasing



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Geographic Range This species can be found in the lower south-eastern U.S. Coastal Plain from southern South Carolina, southward to Marion County, north-central Florida, and westward to extreme south-western Alabama, USA (Conant and Collins 1991). The inclusion of North Carolina and Mississippi on old range maps is apparently the result of the misidentification of larval specimens (Hardy and Olmon 1974, P. Moler pers. comm.). The stronghold appears to be Florida west of the Suwannee River (the only known extant Florida population east of the Suwannee River occurs in the Osceola National Forest) (J. Palis, unpubl.). In Georgia, extant populations occur at opposite ends of the state; presently known from Fort Stewart and the Naval Bombing Range in south-eastern Georgia (D. Stevenson pers. comm., Seyle, unpubl.), and Ichauway Plantation in south-western Georgia (J. Palis pers. obs.). It was not observed in Alabama from 1981 until 2003 when one larva was observed (J. Godwin, J. Palis pers. comm.). It has not been observed in South Carolina since 1990 (S. Bennett pers. comm.). See also USFWS (1997).

Population It is a species of low abundance, but the total number of adults is unknown (probably at least a few thousand and perhaps fewer than 10,000). There have been few recent collections, and trend data indicate a loss of nearly 90% of historical local breeding populations, and continuing threats to adult and larval habitats as a result of conversion to other uses.

Habitat and Ecology Post-larval individuals inhabit mesic longleaf pine-wiregrass flatwoods and savannas. The terrestrial habitat is best described as a topographically flat or slightly rolling wiregrass-dominated grassland having little to no midstorey and an open over-storey of widely scattered longleaf pine (J. Palis pers. obs.). Breeding occurs in acidic (pH 3.6-5.6 (J. Palis, unpubl.)), tannin-stained ephemeral wetlands (swamps or graminoid-dominated depressions) that range in size from 0.02-9.5ha, and are usually not more than 0.5m deep (J. Palis, unpubl.). The over-storey is typically dominated by pond cypress, black gum, and slash pine, but can also include red maple, sweet gum, sweet bay, and loblolly bay (D. Stevenson pers. comm.). Breeding sites often harbour fishes; the most typical species include pygmy sunfishes, mosquito fish, and banded sunfish (J. Palis, unpubl.). Favourable breeding habitat lacks large predatory fishes.

Major Threats Potential threats include conversion of pine flatwoods habitat for agriculture, silviculture, or commercial/residential development; drainage or enlargement (with subsequent introduction of predatory fishes) of breeding ponds; habitat alteration resulting from suppression of fire; mortality and collecting losses associated with crayfish harvest; and highway mortality during migration. The principal threat is habitat destruction as a result of agriculture, silviculture, and residential and commercial development. Modern silvicultural methods rely on altering soil hydrology, suppressing fire, shortening timber rotations, and replacing widely spaced longleaf pine with dense plantations of slash pine. Loss of groundcover vegetation due to mechanical soil preparation, fire suppression, and shading by over-storey of slash pine has been implicated in the decline in north Florida (Means, Palis and Baggett 1996). Larvae are threatened in some wetlands by the harvest of crayfish as bait. Bait harvesters drag large hardware cloth buckets through inundated vegetation, dump the contents of the bucket on the ground, and then sort out the crayfish. Flatwoods Salamander larvae taken in this manner are left to die or are collected as bait (J. Palis pers. obs.). The effect of herbicide or fertilization application on Flatwoods Salamanders is unknown. However, fertilization of plantations often results in eutrophication of wetlands, promoting algal blooms. Larval Flatwoods Salamanders have not been observed in algal-choked wetlands (J. Palis pers. obs.). Ditching or berming of small, isolated pond-cypress wetlands, a common practice when establishing slash pine plantations on mesic sites, results in lowered water levels and shortened hydroperiods (Marios and Ewel 1983). These hydrologic perturbations could prevent successful reproduction by preventing egg inundation or stranding larvae before they are capable of metamorphosis. Altered hydrology, in association with fire exclusion, results in a shift in dominance from pond cypress to broad-leaved hardwoods that reduce herbaceous groundcover vegetation through shading (Marios and Ewel 1983). This might be detrimental to this species since larvae take shelter in herbaceous vegetation during the day. Ephemeral pond-cypress depressions are sometimes converted into permanent waterbodies, rendering them unsuitable for reproduction (J. Palis pers. obs.). A constant winter-burn fire plan could be detrimental (Ashton 1992). See USFWS (1999) for additional information.

Conservation Measures This species occurs on several managed areas. About one-half of the known populations occur on public land (USFWS 1997). Sites include Apalachicola and Osceola national forests, St. Marks National Wildlife Refuge, and Eglin Air Force Base in Florida; Fort Stewart in Georgia; and Francis Marion National Forest in South Carolina. The outlook on private lands is poor.

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