

Status and Identification of Fox Sparrow Subspecies in the Central Valley of California

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The Fox Sparrow (*Passerella iliaca*) is a regular winter resident of thickets and riparian corridors in the Central Valley. It is a highly variable species, with at least thirteen subspecies divided into four groups. A recent DNA analysis suggested that the four groups are well-defined and distinct from each other, thus meriting species status (Zink and Weckstein 2003). The American Ornithological Union, however, has yet to act on this due to apparent intergrades between groups. While all four of the groups and most of the subspecies occur in the Central Valley, their status and field identification criteria are not widely understood.

The four groups of subspecies with their approximate breeding ranges are (Weckstein et al. 2002):

Sooty or *unalaschcensis* group

unalaschcensis – Aleutian Islands and Alaska Peninsula

insularis – Kodiak Island

sinuosa – Kenai Peninsula to Prince William Sound

annectens – Yakutat Sound to Southeast Alaska

townsendi – Southeast Alaska to Haida Gwaii and adjacent mainland

fuliginosa – Vancouver Island and Puget Sound

Slate-colored or *schistacea* group

altivagans – Interior British Columbia

schistacea – Central Washington to Colorado Rockies

Thick-billed or *megarhyncha* group

megarhyncha – Washington Cascades to Central Sierra Nevada

brevicauda – Northern California coast ranges

stephensi – Southern Sierra Nevada to northern Baja California

Red or *iliaca* group

iliaca – Northern taiga forest from Churchill west to Alaska

zaboria – Northern taiga forest from Churchill east to Newfoundland

There are some important caveats to this list. Historically, the Thick-billed and Slate-colored groups were merged because their plumages are similar (Swarth 1920). Modern DNA analysis has shown that they are not each other's

closest relatives (Zink and Kesson 1999). A second caveat is that *altivagans*, listed above as part of the Slate-colored group, has been considered part of the Red group, both historically (Swarth 1920) and more recently (Pyle 1997). Swarth (1920) offered the hypothesis that it represents a possible intergrade swarm between Red and Sooty. It is presented as “Red x Slate-colored intergrade” in the 2nd edition of Sibley (2014). Based on mitochondrial DNA analysis, Zink and Kesson (1999) concluded that that *altivagans* is “unequivocally in the Slate-colored Fox Sparrow group.” A final caveat is that the list of subspecies above is not all inclusive; there are several additional subspecies that have been described but are not universally accepted due to their similarities to the listed taxa. Figure 1 illustrates general breeding areas of most of the subspecies.

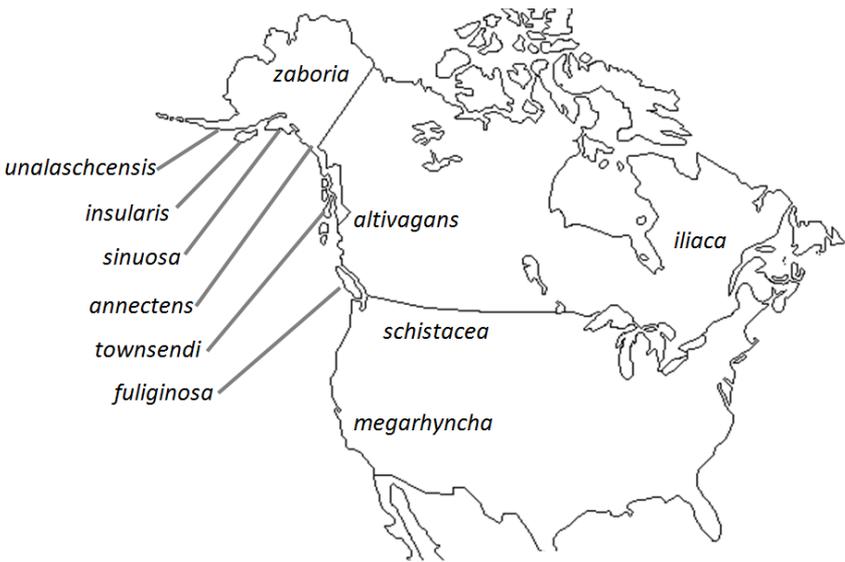


Figure 1: Approximate breeding areas of some Fox Sparrow subspecies.

All but the Red group converge in California as their primary wintering area. Including *zaboria* that show up rarely but regularly, every subspecies except *iliaca* and possibly *fuliginosa* likely occurs in California every winter.

This paper describes the identification criteria and status in the Central Valley for each group at the subspecies level. In the *Results* section, each group is presented separately, focusing first on identification and then on their status in the Central Valley. The Discussion section includes a review of Fox Sparrow illustrations in popular field guides, along with implications for identifying them in the Central Valley.

METHODS

Identification

To understand the identification of the various subspecies, I review the available literature, specimens at UC Davis, and contemporary photographs from the breeding grounds and well-known wintering areas. I also conducted several field visits to other parts of California to better understand the various subspecies of Sooty Fox Sparrow.

Information regarding identification at the subspecies level is largely limited to Swarth (1920). Swarth provided an analysis from an epic examination of approximately 1800 specimens. A slight majority of the specimens emanate from the breeding grounds. These he categorized into various subspecies and matches with winter specimens from California. He described sixteen subspecies in detail. This valuable analysis is now available on-line at www.biodiversitylibrary.org/. Besides a few early accounts that describe one or a few subspecies (such as Ridgeway 1900), the only other sources that discuss subspecies identification are Pyle (1997) and Weckstein et al. (2002). These descriptions are brief and rely largely on Swarth.

Swarth focused on the identification of birds in the hand (either for banding or as museum specimens), not birds in the field. This is an important distinction, as the identification is primarily based on upperpart plumage, underpart plumage, and measurements. The finer details of face patterns are difficult to ascertain in specimens and are generally not described. Likewise, characteristics related to natural posture, such as primary extension beyond the tertials on a perched bird, are not covered. Finally, Swarth did not consider soft part colors, such as bill color, as these fade post mortem and are inconclusive. A final concern about specimens is that they are subject to “foxing”, whereby brown tones fade reddish with time.

The University of California Davis Museum of Wildlife and Fish Biology contains 52 specimens of Fox Sparrows, most of which come from California.

I reviewed on-line photographs from the breeding grounds to correlate descriptions from Swarth and Pyle to birds in the field. For Sooty Fox Sparrow, such photographs are difficult to find; in sum I located fewer than twenty. They are more readily available for the other groups. I then compared these photos to those from wintering areas, especially from within the Central Valley. This effort was facilitated by the establishment of a Facebook group dedicated to Fox Sparrows, which has yielded dozens of photographs, primarily from the wintering grounds. It can be found at <https://www.facebook.com/groups/447117322159681/>. In summary I examined over a hundred photos from California in the winter, the majority of which were likely *sinuosa* and *annectens*.

In addition to regular birding in Yolo County and adjacent areas, I visited several sites in the Bay Area and the San Gabriel Mountains to better understand the various subspecies of Sooty Fox Sparrow (*annectens* in the former, *unalaschcensis* and *insularis* in the latter).

I also describe the field identification of each subspecies. For Sooty Fox Sparrow subspecies, these identifications are tentative.

Status

To explore the status of Fox Sparrows in the Central Valley, I first provide a review of Swarth (1920) and Grinnell and Miller (1944). Secondly, I examine recent Christmas Bird Count (CBC) data, focusing on count circles on the valley floor that have recorded Fox Sparrows every year from 2000 thru 2014. Finally, I review contemporary eBird data and available photographs.

Again, Swarth is the largest source of data at the subspecies level, with 770 records (all specimens) from California in winter (defined as between 15 October and 15 March). Grinnell and Miller also provide records of birds at the subspecies level, although they rely primarily on Swarth and add few additional records between 1920 and 1944. CBC and eBird data are not available at the subspecies level, but there are some data at the group level.

RESULTS

Before delving into the groups and subspecies, I offer a few overarching comments regarding identification and status.

With regard to identification, the good news is that “variation due to age, sex and season of the year is extremely slight” (Swarth 1920). In all groups, males are slightly larger than females, typically resulting in wing chord measurements that are about 13% larger (Pyle 1997). They molt once a year in late summer. In the field, after a short period of juvenal plumage, all Fox Sparrows from a given locality look remarkably alike. They appear to fade somewhat late in their plumage cycle, with birds appearing darker and bolder in winter than in summer.

The bad news is that, while birds within the core ranges of each subspecies are virtually identical, “intergradation of characters apparently occurs wherever two races come together” (Swarth 1920). Of the 1800 specimens he examined, Swarth was able to assign ninety percent of them to subspecies with confidence. The remaining ten percent were intermediate between two taxa. Swarth maintains there is not a smooth continuum from one subspecies to the next, but rather a series of steps. In his words, the subspecies represent “well-defined, intermediate steps, occurring within definitely circumscribed areas.” The intermediate birds occur only in those contact zones where subspecies ranges are abutting each other. Most of the intergradations involve subspecies within the same group. However, there is a known contact zone between *sinuosa* and *zaboria* in south central Alaska that

produces birds that would be Sooty x Red hybrids if the groups were elevated to species status (Gibson and Kessel 1997). This intergrade zone is extensive, extending from the base of the Alaska Peninsula to the Cook Inlet and the Copper River valley. The review of photographs from the wintering areas in California, including the Central Valley, produced several photographs that appeared to be *zaboria x sinuosa*. Likewise, *altivagans* interbreeds with Sooty in the west and Red in the north, but in very small numbers (Zink and Wesson 1999). A narrow hybrid zone between Thick-billed and Slate-colored, just east of the Sierra Nevada, contains birds with bills of intermediate size (Zink and Wesson 1999).

Another key identification issue is that the reddish tones of the wings, upper tail coverts, and tail can change from dull brown in shadow to bright rusty red or orange in sunlight (compare Figures 9 and 10). Photographs of birds angled head-on tend to show redder tails, while the same bird facing away from the camera shows a browner tail. The same phenomenon occurs with the gray in the face, which is much more visible and contrasting in bright sunlight.

With regard to status, the Central Valley remains a bit of a mystery. Historical sources ignored the region and modern birders rarely report Fox Sparrows at the group level, let alone the subspecies level. When they do, the accuracy of their reports is suspect due to taxonomic confusion and misleading illustrations in field guides. The Central Valley was largely neglected in Swarth's massive analysis. Of the 770 winter specimens collected in California, only ten were from the Central Valley. There was a single additional specimen collected during migration.

The UC Davis collection included eighteen specimens from the Central Valley, all from the southern and central Sacramento Valley. All but one of these were from the Sooty group; the other was labeled *altivagans*. Of the Sooties, only three were labeled at the subspecies level, one of which was clearly misidentified (as a *stephensi* Thick-billed).

CBC data provide a good overall picture of the status of Fox Sparrows in the Central Valley. Unfortunately, they provide limited information regarding the status of groups and no information regarding subspecies. Most of the count circles located on the valley floor have reported Fox Sparrows every year between 2000 and 2014 (101st thru 115th CBC's) (Table 1). For some, the number of birds reported dipped as low as one or two birds during a count. The results suggest that Fox Sparrows are regular winter visitors, though rather uncommon overall, with every count averaging less than one bird per party hour. There is considerable variation in their numbers from year to year, but the standard deviation is considerably less than the mean on most counts, which places them among the more consistent and least variable species as measured by CBC data (Hampton 2012). Fox Sparrows appear to be more

common in the north-central portion of the valley, from Yuba City to Modesto. Probably due to less suitable habitat, their numbers drop off considerably in the southern San Joaquin Valley.

Table 1: Fox Sparrows from Selected Christmas Bird Count Circles over a 15-year period, 2000-2014 (CBC Counts 101-115).

Count Circle (from north to south)	Total # Fox Sparrows	Average/ Party Hour
Redding	362	0.30
Chico	121	0.12
Peace Valley	431	0.59
Marysville	368	0.34
Sacramento	925	0.44
Rio Cosumnes	1973	0.83
Stockton	638	0.41
Caswell-Westley	601	0.65
Lost Lake-Fresno	116	0.10
Bakersfield	145	0.12

The only count that consistently reported subspecies, limited to the group level, was Rio Cosumnes. During this fifteen year period, the count reported 972 Sooty Fox Sparrows, 21 Slate-colored Fox Sparrows, no Thick-billed Fox Sparrows, 11 Red Fox Sparrows, and 969 unspecified Fox Sparrows (but presumably Sooty). The Stockton count reported subspecies on three counts, which included 9 Slate-colored Fox Sparrows, but no Thick-billed or Red.

Data from eBird, while less reliable, are consistent with other information: Sooty are the predominant form, Slate-colored is a distant second, followed by Red and Thick-billed, with very few reports each. eBird only provides an option for reporting Fox Sparrows at the species and group levels, not at the subspecies level, although occasionally reporters mention subspecies in the comment section. Attached photographs on eBird sometimes revealed misidentifications.

Sooty Fox Sparrow

A sparrow of the Pacific Northwest, at least six subspecies of Sooty Fox Sparrows breed along the Pacific Coast from the Aleutian Islands to Puget

Sound. They winter along the coast from Puget Sound south to northern Baja California, plus interior valleys such as the Willamette and Central Valleys. They are known for their “leap-frog migration”, in which the northern forms migrate farthest, leap-frogging the others to winter the farthest south, while the southern forms migrate shorter distances, or not at all (Swarth 1920, Bell 1997). Swarth’s data, however, suggest that winter ranges are not as well defined as breeding ranges and that there is some mixing of subspecies across the wintering grounds.

Identification

Sooty Fox Sparrows are highly variable, ranging from grayer in the north (*unalaschcensis*) to dark brown in the south (*fuliginosa*). In general, all are fairly uniform brown above, with solid brownish backs and paler rumps. Most have some amount of contrasting reddish tones on the upper tail coverts and tail. The auriculars, which are often streaked with brown, gray, or white, are usually framed by a broad gray supercilium and a gray to gray-brown nape, though this varies across subspecies in the amount of contrast and may be difficult to discern in poor light. The underparts are heavily marked with dark chevrons, merging together on the breast. The flanks have an area of solid brown wash. There is variable white in the malar region, but this only extends under the auricular patch in an irregular manner, if at all. There are no white wing bars and usually no white tips to the tertials, making the wings solid brown.

Note that, in all subspecies of Sooty Fox Sparrow, any gray in the face and nape is more noticeable in sunlight and subdued in shadow. Likewise, rusty red tones in the upper tail coverts, tail, and wings can be surprisingly striking in sunshine and dark brown in shadow. It is not an exaggeration to say that a bright, gray-faced, rusty-tailed *sinuosa* in sunshine can look like a dark chocolate *fuliginosa* when under a dark bush. This is often the case; as Grinnell and Miller point out when describing *townsendi*, the bird prefers habitats that have an “illumination of twilight intensity.”

Identification criteria for the subspecies within the Sooty group are not widely available and are largely limited to Swarth (1920) and Pyle (1997), whose analyses are based solely on specimens. Their descriptions are brief and focus on the upperpart coloration and bill size. They are sometimes contradictory. Swarth’s illustrations of bill shapes, when compared to photographs from the field, appear to be remarkably accurate. Ridgeway (1900) provides some additional descriptions for some of the subspecies. Applying their descriptions to photographs and field observations is challenging. Mlodinow et al. (2012) offered a photo essay illustrating the considerable variation within this group. They speculated on the origin of various birds, such as northern or southern, but do not assign them to subspecies.

Both Swarth and Pyle include measurements of wing chord, tail, and culmen, and sometimes other attributes. There is a general cline in body and bill size, with northern subspecies larger than southern in both categories. However, the maximum and minimum sizes are reached with the second-to-last subspecies in the cline; *insularis* is the largest-billed and similar in size to *unalaschcensis*; *townsendi* is the smallest-billed and smallest-bodied, with *fuliginosa* notably larger in those measurements (Figures 2 and 3). The body and bill size differences, at least at the extreme ends of the spectrum, are apparent in photographs from the field (for bill size) and in the specimens at UC Davis (for both body and bill). That said, in both Swarth and Pyle there is overlap in the measurements of all nearly all subspecies with regard to wing chord, tail, and culmen. For example, a wing chord of 82mm, a tail of 75mm, and a culmen of 12mm would fall within the range of measurements for Sooty Fox Sparrows of all subspecies as measured by Pyle. As measured by Swarth, only the smaller *townsendi* would be ruled out. Patterson (pers comm.), who banded Sooty Fox Sparrows in northern Oregon, found a continuum in measurements forming two clear lines of data from small to large, presumably representing males and females. Culmen length is fairly consistent between Swarth and Pyle. Their measurements of bill depth, however, use different metrics and produce contradicting results. Figures 2 and 3 present tail and culmen measurements, including the range and average, for male birds as measured by Swarth. Sample sizes were small, four to ten birds per subspecies.

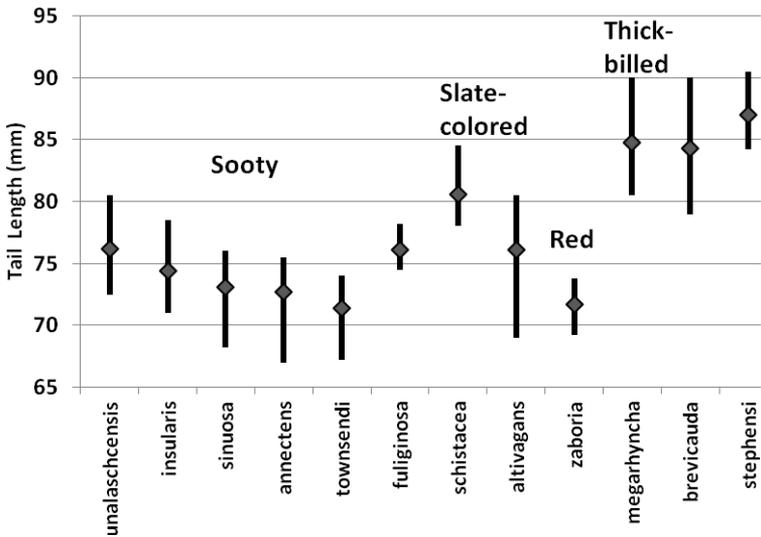


Figure 2: Tail length according to Swarth (1920) (males only).

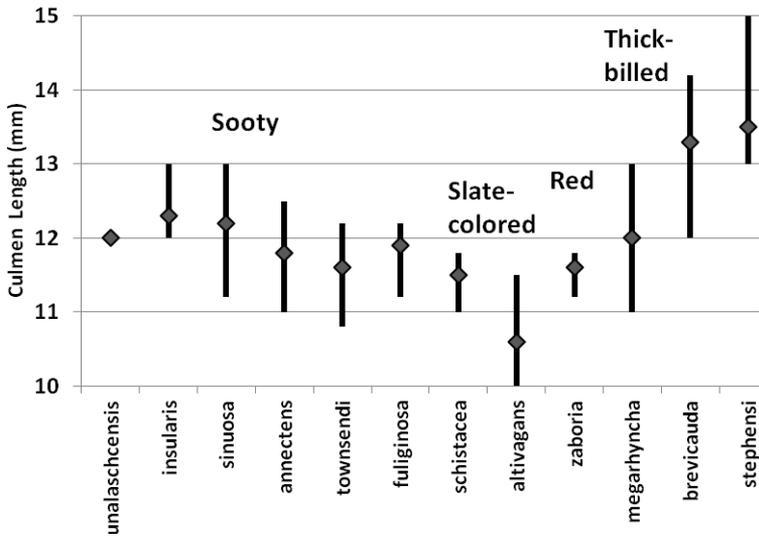


Figure 3: Culmen length according to Swarth (1920) (males only).

The review of photographs and personal observation from the core of their wintering ranges suggest that bill coloration is probably not a useful factor in distinguishing subspecies. The lower mandible is a variable shade of yellow in the winter, and paler to pinkish in summer. One possible identifying feature, which deserves further study, is the primary extension beyond the tertials on the perched bird. This appears to be longest in *unalaschcensis* and shortest in *townsendi*, although the difference is not dramatic and of course subject to posture.

The following summary is based on a combination of the literature review, contemporary photographs, and personal observations. Because many of the photographs and observations come from the wintering grounds, these descriptions are provisional. Further research into the field identification of Sooty Fox Sparrow subspecies is sorely needed.

P. i. unalaschcensis—The most northern and gray Sooty, described by Ridgeway as “very nearly as gray as *P. i. schistacea*, and closely resembles that subspecies, but has the brown color of the upper tail coverts and tail decidedly less rufescent and therefore less strongly contrasted with the brownish gray color of back” (Ridgeway 1900). Swarth agrees, noting that this form has “the minimum of red or brown coloration” of the Sooties, “and thus easily distinguished” from the three browner southern forms: *fuliginosa*, *townsendi*, and *annectens*. Swarth also notes that it is primarily distinguished from *insularis* and *sinuosa* by the absence of red in the upper tail coverts and tail. Pyle describes it similarly: “crown and back uniformly dull, dark brown

with a gray wash.” Swarth illustrates two different bill shapes: one “longer, more slenderly pointed”, associated with “ashy” birds of the Alaska Peninsula; the other “short, stubby” or “heavy-billed”, associated with darker “plumbeous” birds of Unalaska Island (and perhaps adjacent islands), suggesting that two subspecies may be involved. The upperparts of the long-billed peninsula birds “show some trace of brown or rufous”, while the short-billed birds of the Aleutian chain have “a dull slaty effect with scarcely a trace of reddish anywhere.” Pyle does not discuss two different types, simply saying the bill is “medium large”.

The only photograph available from the breeding grounds came from Dutch Harbor, thus representing one of the darker, plumbeous, shorter-billed birds. There are, however, several photographs from southern California, and one from the Central Valley, that fit the description of the paler, larger-billed form (Figure 4). The bird from Dutch Harbor looks very similar in plumage and bill shape to *sinuosa*, with a gray supercilium and nape, an ashy wash over a brown back, and a slightly grayer rump. The primary difference, as noted above, is that the upper tail coverts, tail, and wings are brown, matching the crown, and without any reddish tones. The auricular patch is streaked gray and white, with only a hint of brown.



Figure 4. Presumed *unalaschcensis* Sooty Fox Sparrow. The grayish cast to the head and upperparts, gray and white streaked auriculars, brownish (not reddish) tail, limited number of chevrons converging on the breast, and long bill all point to the most northern of the Sooty group. This bird may have been a migrant. 13 October 2015. Davis, Yolo County.

Photo by Sarah Mayhew

Photographs of presumed *unalaschcensis* from California in winter show long-billed, gray-faced, brown-winged, and brown-tailed birds. The auricular patch is gray, streaked with white. The broken white malar appears obviously under the auricular patch, more so than in other Sooties, as does a pale spot on the lores. The underpart markings are grayish brown. So few dark chevrons weakly coalesce to form an ill-defined breast spot that they can almost be individually counted. Thus, it is less marked below than other Sooties. The background color of the vent is white.

In field visits to the San Gabriel Mountains, I found a number of presumed *unalaschcensis*, which were remarkable for their predominately gray heads (pale gray in bright sunlight) and contrasting brown backs (Figure 5).

P. i. insularis—This Kodiak Island taxa, called *ridgwayi* by Pyle, is described by Ridgeway as “similar to *P. i. unalaschcensis* but much browner and more uniform above (back, etc. warm sepia), spots on chest, etc., larger and much deeper brown, and under tail-coverts more strongly tinged with buff.” Swarth says, “Compared to *sinuosa* and *unalaschcensis*, *insularis* is of brighter, ruddier coloration.” Pyle says, “crown and back uniformly bright, medium-dark brown with a reddish tinge.” The bill is “notably larger” than the three southernmost forms, *annectens*, *townsendi*, and *fuliginosa*, and “heavier than in *sinuosa*” (Swarth). Pyle describes the bill as “large”. Both sources suggest *insularis* has the largest and longest bill of all the Sooties (Figure 3).



Figure 5. Presumed *unalaschcensis* Sooty Fox Sparrow. The head can appear remarkably pale gray in bright sunlight, contrasting with the browner back. The wings and tail are a warm brown but do not have strong red tones. 16 February 2016. San Gabriel Mountains, Los Angeles County.

Photo by Steve Hampton



Figure 6. Presumed *insularis* Sooty Fox Sparrow. The redder tones combined with the large bill suggest this form from Kodiak Island. 12 February 2015. Putah Creek, Solano County. *Photo by Manfred Kusch*



Photo by Steve Hampton

Figure 7. Presumed *insularis* Sooty Fox Sparrow. The long bill and bibbed look created by the heavily marked upper breast is distinctive of this form. 18 January 2016. San Gabriel Mountains, Los Angeles County.

A review of photographs from Kodiak Island shows birds with a brown crown and back, but with contrasting reddish upper tail coverts and tail, and reddish brown wings. The rump is washed with gray. The face pattern is similar to *unalaschcensis*, with a large gray supercilium and nape, and auriculars that are mostly gray with thin white streaks and only a hint of brown. Again, the white malar makes a prominent appearance under the auricular patch. The underpart markings are especially dense from the malar to the breast, but very sparse below, creating a bibbed look. The vent appears slightly buffy in some birds, bright white in others. The bill is, indeed, long and pointed. One presumed *insularis* from the Central Valley is included here (Figure 6), as well as one from the San Gabriel Mountains (Figure 7).

P. i. sinuosa—This is the third of the northern, gray-faced Sooties. According to Swarth, “Coloration rather more reddish than in *unalaschcensis*, but decidedly less so than in the brighter colored *insularis*, and the darker *annectens* and *townsendi*. A noticeably ashy tinge dorsally and on sides of neck”. Pyle states the “crown and back uniformly dull brown with a grayish-red tinge”. The bill is described as “rather long and slender” by Swarth, yet the nalospi/depth ratio in Pyle implies it is the thickest billed of the Sooty group. Regardless, the bill is intermediate between the larger billed *unalaschcensis* and *insularis* and the darker small-billed forms to the southeast.

A review of photographs from the Kenai Peninsula show a warm brown crown and back, an ashy wash to the back and especially the rump, and bright chestnut upper tail coverts and tail (at least in sunlight). The face features a large ashy supercilium and nape which surround an auricular patch that is variably mixed brown and gray, occasionally with thin white streaks. There is usually a touch of white from the malar extending under the auriculars. The central breast spot is a dense aggregation of dark chevrons. Below this, the belly is lightly marked with fewer, smaller chevrons. The vent is usually white or slightly off-white. The bill is medium large, often appearing longish. Apparent photographs from the Central Valley are included here (Figures 8, 9, and 10).

P. i. annectens—This form, called *meruloides* by Grinnell and Miller (1944), lies midway between the gray-faced northern birds and the dark southern birds. It stands out for its overall bright orange-red upperparts, especially noticeable in sunlight. Swarth describes it as “brighter, more ruddy than in *sinuosa*, not so dark as in *townsendi*; breast spotting less heavy than in *townsendi*”. Pyle echoes this, saying “crown and back uniformly brightish, medium brown with a reddish tinge”. Regarding the bill, Swarth only says that it is “slightly smaller than in *sinuosa*”; his illustrations show a rather thin bill. Pyle, on the other hand, describes the bill as “medium in size and stout”.



Figure 8. Presumed *sinuosa* Sooty Fox Sparrow. This appears to be the most common subspecies in the Central Valley. It is distinguished by its broad gray supercilium, gray nape that fades into an ashy brown back, chestnut upper tail coverts and tail, and a medium-sized conical bill. 27 November 2014. Davis, Yolo County. *Photos by Steve Hampton*



Figure 9. Presumed *sinuosa* Sooty Fox Sparrow. Another of the most common form in the Central Valley, illustrating how much sunlight brightens the mostly gray face and red tones in the tail. From other angles, this same bird showed a browner auricular patch and browner tail. 7 November 2015. Mix Canyon, Solano County.



Figure 10. Presumed *sinuosa* Sooty Fox Sparrow. This bird is similar to the previous two, but in shadow. The gray in the face and nape contrast less with the brown, and the red tones in the wing and tail have largely disappeared. At other angles the red shows more and the gray in the face becomes hard to see. 6 November 2015. Davis, Yolo County. *Photo by Steve Hampton*

I was unable to find photographs from the breeding grounds. Even Gibson and Kessel (1997), in their review of Alaska birds, had trouble locating specimens, probably due to the difficulty of access to the breeding range. However, many photographs from the core of the winter range, in the Bay Area, show a distinctive taxon with a crown and back that is orange ruddy in sunlight and a rich dark chestnut in shadow (Figure 13). The rump is slightly more subdued. The upper tail coverts, tail, and wings show bright reddish tones. The face has an ashy supercilium. Orange-red from the crown usually bleeds into the supercilium, creating an orange-reddish eyebrow above the gray supercilium, especially near the eye. The nape is a more muddy-gray, mixed with a red-brown or orange wash (depending on light conditions). The auricular patch is reddish brown, streaked with gray and white. The red-brown is especially solid at the lower borders of the auriculars, and is thus a less-defined version of the auricular patch in Red Fox Sparrow. There is only a hint of the white malar under the auriculars. The underpart markings are a redder brown than the northern subspecies, and much heavier on the breast. So many chevrons overlap in the central breast area that the entire breast from the throat to the breast spot is more dark than white. A moderate amount of dark chevrons continues below the breast, setting it apart from the

northern forms. The vent usually appears buffy. The bill is very similar to *sinuosa*, but perhaps slightly thinner, giving it a slender appearance. Apparent *annectens* from the Central Valley are included here (Figures 11 and 12), as well as one from the Bay Area (Figure 13).

P. I townsendi—Compared to the four subspecies above, this form is described by Swarth as “much darker, more rufescent, spots on breast larger and more crowded. Compared with *fuliginosa*, to the southward, *townsendi* is brighter colored, less sooty.” Pyle states, “crown and back uniformly brightish, dark brown with a reddish wash; breast and belly spots heavy and brown with a reddish wash.” He describes the bird as small and the tail “relatively long”, although measurements by both Swarth and Pyle show it has the shortest tail of the Sooty group. Both sources describe it as the smallest-billed Sooty, which is supported by the measurements (Figures 2 and 3).



Figure 11. Presumed *annectens* Sooty Fox Sparrow. This is the predominant form wintering in the Bay Area. One of the more distinctive of the Sooty group, these are fairly uniformly ruddy across the upperparts. The bill is relatively slender. Note that all Fox Sparrows look redder in sunlight. 13 January 2015. Davis, Yolo County.

Photo by Sarah Mayhew



Figure 12. Presumed *annectens* Sooty Fox Sparrow. Presumably the same form as Figure 11, but in shadow. Note that the red tones are still quite visible, and the rust from the crown bleeds into the gray supercilium above the eye. The breast is heavily marked with reddish brown chevrons from the throat down. 20 February 2011. Sacramento, Sacramento County.

Photo by Chris Conard

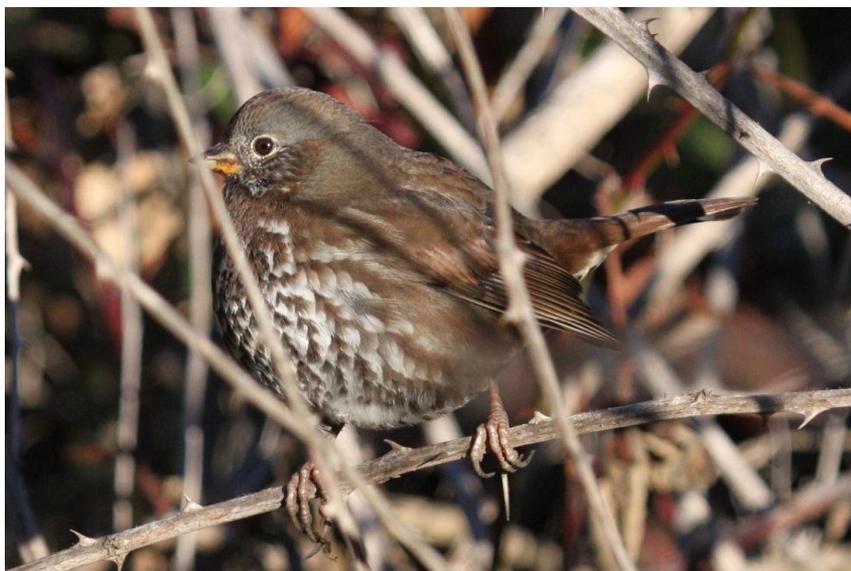


Figure 13. Presumed *annectens* Sooty Fox Sparrow. This was taken in the Bay Area, where this form is expected. Note the rusty orange tones to the back, gray nape washed with orange rust, and extensive markings from the throat to the breast. 29 November 2015. Novato, Marin County.

Photo by Steve Hampton

Photographs from Sitka and Juneau, and from Humboldt Bay in winter, reveal a crown and upperparts that is velvety dark red brown in sunlight, more chocolate in shadow. The rump is duller brown. The upper tail coverts and tail have the strongest reddish tones. The face is largely brown. The gray supercilium is most visible behind the eye. However, it is nearly as dark as the brown crown and auricular patch, making it difficult to discern except in good light. Brown from the crown may creep into it. The nape is brown, lightly washed or admixed with gray, appearing lighter brown than the crown and back. The auricular patch is brown and may be lightly flecked with thin pale streaks. The white malar is restricted to an irregular spot near the bill and may be completely absent below the auriculars, thus giving the impression of a nearly solid dark head. The underpart markings are a dark chestnut to chocolate brown, depending on lighting. Like in *annectens*, the breast area is very heavily marked, often from the throat down. Smaller chevrons continue down the belly. The vent is a cream color. The bill is notably small and more conical than other subspecies. One apparent *townsendi* from the Central Valley is included here (Figure 14).

P. i. fuliginosa—This resident of Vancouver Island and Puget Sound is the darkest and most sooty gray of the group. Swarth describes it as “much darker than any of the other subspecies, and also more heavily marked.” He describes winter plumaged birds as “of intensely deep brown coloration... very slightly more castaneous (chestnut) on the lower back. It is much more heavily marked below than is the case in *townsendi*, the dark markings being so nearly confluent across the breast that in this case it is the white ground color that shows through as interrupted markings.” Indeed, the area of heavy markings may extend well below the breast. The underpart markings are “dull and sooty, with but a suggestion of reddish.” Pyle describes this taxon as “crown and back uniformly, dark sooty brown with a reddish tinge; breast and belly spots heavy and sooty brown with a reddish tinge.” Swarth describes the bill as ranging from “long and slender” to “short, stubby”, speculating that the differences are regional. Pyle describes the bill as “medium in size and slender”.

Photographs from Puget Sound show a dark brown bird above, appearing chocolate to charcoal in different light, with a hint of reddish tones to the upper tail coverts and tail. The face is essentially dark brown, with just a remnant of a dark gray supercilium above the auriculars, variably mixed with brown and hard to see except in good light, and a hint of a gray wash in the otherwise dark brown nape. As with *townsendi*, the white malar is reduced to an irregular spot near the bill and does not continue below the auriculars. The auriculars are dark brown and may be lightly streaked with gray or white. The underparts are heavily marked, but not obviously more so than is *townsendi*. The vent is white. The bill is slightly larger than *townsendi*, but still short and conical compared to the northern subspecies.

Photo by
Steve Hampton



Figure 14. Presumed *townsendi* Sooty Fox Sparrow. Smaller and darker than the subspecies shown in Figures 11-13, the gray in the supercilium is hardly distinguishable from the brown, even in sunlight, and often appears patchy. The virtual lack of a white malar gives the head a solid appearance. Note also the small bill, short tail, and creamy vent. 1 January 2015. Babel Slough, Yolo County.

A seventh subspecies, *chilcatensis*, is described by Webster (1983) and included in Pyle. It emanates from the Haines, Alaska region, at the northern tip of the *townsendi* range. The account is perplexing, saying that the new form “represents a split of the well-known race *P. i. fuliginosa*, from which *P. i. chilcatensis* differs in being less reddish”, despite the facts that the range of *fuliginosa* is not adjacent to *chilcatensis* and that *fuliginosa* is described by both Swarth and Pyle as having hardly any red to begin with. This statement would make sense if it was split from *townsendi*, which is reddish and adjacent to it. Webster describes *chilcatensis* as “less reddish, more sepia (or yellowish), duller than *P. i. fuliginosa*, but equally dark or blackish both dorsally and on ventral spots, and with shorter tail.” Ignoring the issue of reddish tones, *chilcatensis* is apparently as dark as *fuliginosa* and as short-tailed as *townsendi*. The measurements support this, although again there is substantial overlap in tail length among these forms. I could find no photographs from the small breeding area to clarify the identification. The description suggests that, on the wintering grounds, separation from *fuliginosa* would be difficult at best.

Status

The Sooty Fox Sparrow is the default group for the Central Valley, representing over 98% of all Fox Sparrows, based on the Cosumnes CBC data. The question of which subspecies of Sooty winter in the Central Valley, however, has never been answered. In fact, probably fewer than twenty

individual Sooty Fox Sparrows have ever been identified to subspecies in the Central Valley. Most early sources describe the various forms as wintering south to “coastal California”, ignoring the Central Valley. Based on the specimens he examined, Swarth mapped out areas of the state where each subspecies predominated (Figure 4). Here is a summary of his conclusions:

P. i. unalaschcensis—“of rather rare occurrence in most parts of California, but the main winter home of the subspecies apparently lying south of Tehachapi in southern California”, predominately in the San Gabriel and San Bernardino Mountains and presumably other ranges to the east and south;

P. i. insularis—the primary wintering area is “along the California coast from Napa to Los Angeles”, primarily in the southern half of this range, particularly the San Gabriel Mountains;

P. i. sinuosa—the primary wintering area is “along the western slope of the Sierra Nevada and in the mountains east of Los Angeles;” they were the most common specimens in San Bernardino Mountains and the second most common in Santa Cruz County and the San Francisco Bay area;

P. i. annectens—the primary wintering area is “along the California coast from Sonoma to San Luis Obispo”, including the San Francisco Bay area;

P. i. townsendi—the primary wintering area is along the coast from Humboldt Bay north into Oregon;

P. i. fuliginosa—“of little more than casual occurrence in California”, although there is some evidence of irregular winter irruptions further south on the coast, similar to Varied Thrush (with one record as far south as southern California).

As Swarth had very few specimens from the Central Valley, it is not mentioned. Likewise, Grinnell and Miller fail to mention the Central Valley specifically and do not add a single record from the region. However, Swarth’s data show that most subspecies are far more widespread than Figure 15 suggests, at least in small numbers.

Based on the wide geographic range from which winter records of all subspecies have been found, it would seem that any subspecies could occur in the Central Valley, either over-wintering or as a migrant. Of the ten specimens examined by Swarth from the Central Valley, seven were *sinuosa*, one was *unalaschcensis*, one *insularis*, and one *annectens*. Webster reports one “intermediate between *chilcatensis* and one or another of the adjacent breeding races” from Tulare County.

It appears, from personal observation and the review of photographs, that most of the Fox Sparrows in the Central Valley are a close match for *sinuosa* (see Figures 8, 9, and 10). The same can be said for the birds that can be abundant in the chaparral in the Coast Ranges. Grinnell and Miller describe *sinuosa* as the most widespread subspecies and that “within winter range

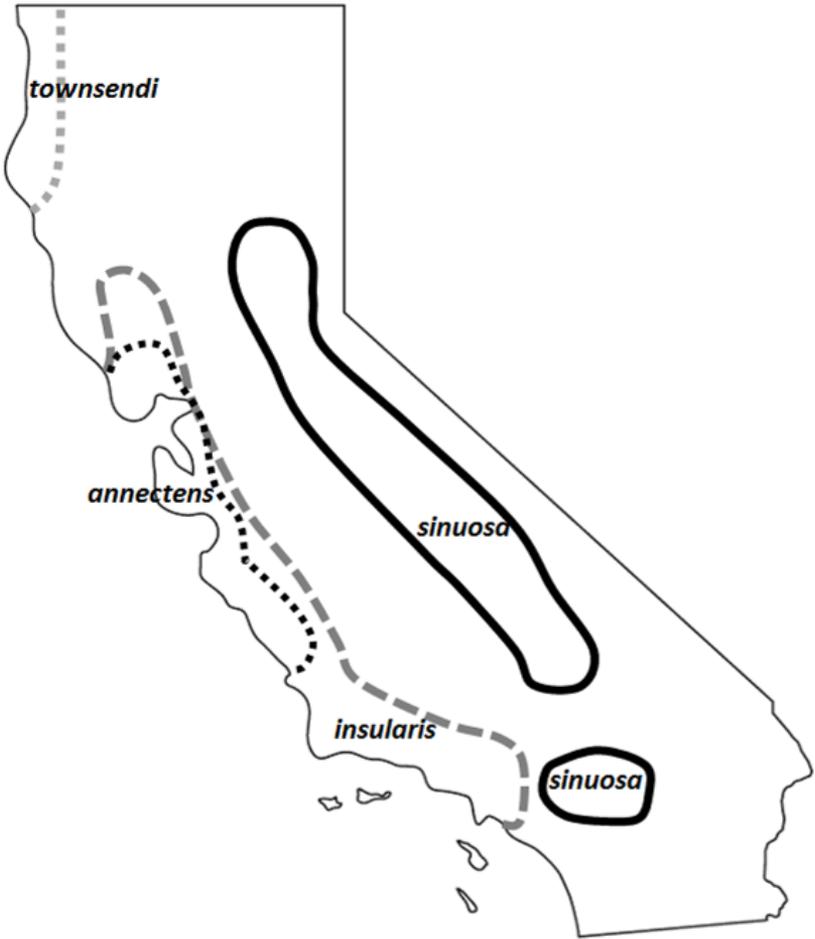


Figure 15. Presumed “main winter habitat” of Sooty Fox Sparrow subspecies according to Swarth (1920).

numbers are much greater interiorly than coastwardly.” This form also appears to be common in winter in the Puget Trough in Washington and the Willamette Valley in Oregon (my assessment based on the photographs in Mlodinow et al. 2012). Of the 770 winter specimens from California examined by Swarth, *sinuosa* accounted for 28% of the total, far more than any other. The second most common was *annectens*, nearly all from Marin to Santa Cruz, representing 16% of the total. Because 42% of Swarth’s samples were from mountains around Los Angeles, these percentages under-represent more northerly-occurring forms. Thus, *sinuosa* may account for a third of all Sooty Fox Sparrows in California in the winter, and *annectens* possibly a fourth.

Based on photographs, it appears that *unalaschensis*, *insularis*, *annectens*, and *townsendi* are also present in the Central Valley (Figures 4, 5, 6, 7, 11, 12, 13, and 14), though in much smaller numbers. Some of these occurrences may be of migrants. This assessment is provisional until greater certainty is developed regarding identification of Sooty Fox Sparrow subspecies. There do not appear to be any records of *fuliginosa* for the Central Valley. Based on their known winter dispersal, it would be the least expected, although there are historical records from Weed, Siskiyou County, and Manzanita Lake, Shasta County (Grinnell and Miller).

Slate-colored Fox Sparrow

A sparrow of the Mountain West, several subspecies of Slate-colored Fox Sparrows breed in the Rocky Mountains from British Columbia to Colorado and west to the Cascades of Washington, encompassing mountain ranges in the Great Basin as well. They winter in the desert Southwest from New Mexico to southern California.

Identification

Compared to the Sooty group, identification of the Slate-colored subspecies is well understood. Its taxonomic status, on the other hand, has been subject to more debate. In general, Slate-colored has a fairly solid gray head and back with strongly contrasting rusty upper tail coverts, tail, and wings. The bill averages the smallest of all the Fox Sparrows, although there is overlap with most of the Sooty group (Figure 3).

P. i. altivagans—This form, considered part of the Red group by Pyle and Red x Slate-colored by Sibley, appears intermediate between *schistacea* and *zaboria*. In the Central Valley, it stands out from Sooty by its bright rusty wings and tail, which contrast more strongly than any in the Sooty group. The wings and tail are a brighter red than *schistacea*, trending toward Red Fox Sparrow. The head, back, and rump are gray with a contrasting rusty streaked crown and sometimes ill-defined auricular patch, and variable rusty streaking on the back. It usually shows a prominent white malar that may wrap around under the auricular patch. The tertials and coverts usually show white tips, the latter forming two thin wing bars. Thus, only *altivagans* and Red Fox Sparrow are known for obvious wing bars and white tertial tips. The underparts are moderately streaked with rusty to dark brown chevrons. Though all these features are variable, the description largely fits Red Fox Sparrow. The primary differences are that, compared to Red, *altivagans* is more rusty brown than bright chestnut red (though still striking in bright sunlight), the auricular patch lacks a strong defined border, and the back is less boldly streaked and more gray than red. The tail is of moderate length, similar to most of the Sooty group. The bill is the smallest of all Fox Sparrows (Figure 3).

P. i. schistacea—Identification of *schistacea* is easier. It strongly resembles the Thick-billed, except the bill is smaller and thinner, the underparts are more coarsely marked, and the wings are more likely to show very thin white wing bars. The wings and tail show more brown and less red than in *altivagans*. The back is unstreaked solid gray, but may have a light olive or brown wash, especially a form sometimes called *olivacea* from Washington (Pyle). The head is mostly gray, with a contrasting white malar that wraps under the auriculars, and a blackish lateral throat stripe bordering it. The tail is noticeably longer than any in the Sooty group. The combination of small bill and long tail should distinguish it from *unalaschensis*; the tail/bill ratio averages 10% larger than that form, based on Swarth's measurements (see Figures 2 and 3).

Two additional subspecies from the Great Basin, *canescens* in Nevada and *swarthy* in Utah, are sometimes separated from *schistacea* because they are grayer, lack any brown wash on the upperparts, and have longer bills with culmen length overlapping *megarhyncha* (Swarth; Behle and Selander 1951). Photographs from Utah show remarkably long, though not thick, bills. Likewise, photographs of *olivacea* from Washington show long culmens but thin lower mandibles. See the description of Thick-billed for identification differences.

Status

The status of the Slate-colored Fox Sparrow group of subspecies in the Central Valley is difficult to quantify due to identification challenges and taxonomic uncertainty. It appears that most of the birds reported as the Slate-colored Fox Sparrow are *altivagans*, as well as some reported as Red Fox Sparrow. Either descriptor is arguably correct, as *altivagans* has been considered part of both groups. It is possible that some bright-tailed, gray-faced Sooty Fox Sparrows are mistakenly reported as Slate-colored. Regardless, it appears that *altivagans* is rare but regular in the Central Valley. On eBird, there were 137 Slate-colored Fox Sparrows reported for the valley floor, primarily since 2009. Some of these were seen together. They are also widely reported from the foothills and are perhaps more expected in drier habitats on the edges of the valley. Unfortunately, very few of these reports include photographs or descriptions that rule out other forms. Swarth (1920) reports one *altivagans* specimen from the Central Valley. See Figures 16, 17, and 18 for examples.

The status of *schistacea* (including *olivacea*, *canescens*, and *swarthy*) is even more difficult to assess. While this form is likely to be a rare migrant and winter resident in the Central Valley, especially in the southern San Joaquin Valley, there are very few reports that specifically refer to this subspecies. There are some descriptions that support *schistacea* over *altivagans*. Only two photographs that confirm this taxon in the Central Valley could be found (Figures 19 and 20).



Figure 16. *altivagans* Slate-colored Fox Sparrow. Note the mix of Slate-colored and Red characteristics: extensive gray on the face and the gray rump, bright reddish tones, white tips to coverts and tertials, and weak reddish streaking on the back. 24 December 2009. near Winters, Yolo County. Photo by Jim Tietz

Thick-billed Fox Sparrow

A sparrow primarily of the southern Cascades, Sierra Nevada, and adjacent ranges, the several subspecies of Thick-billed Fox Sparrows breed from northern Oregon (and apparently southern Washington based on recent eBird reports) to northern Baja California, encircling the Sacramento Valley north of Snow Mountain in Colusa County. They winter in dense chaparral along the coast, but may be found in very low numbers in the chaparral of the Coast Ranges as far north as Yolo County (where they are vastly outnumbered by Sooty Fox Sparrows).

Identification

Most subspecies in this group are among the most distinctive and least variable of Fox Sparrows. True to its name, the bill is indeed heavy, sometimes appearing outsized and enormous, like a grosbeak or Hawfinch (*Coccothraustes coccothraustes*). Figure 20 provides an example of *brevicauda* from the Coast Range on the west side of the Central Valley. According to Swarth, there is no overlap in bill depth between Thick-billed and Slate-colored. However, the Great Basin forms of Slate-colored, *canescens* and *swarthi*, do overlap with *megarhyncha* on culmen length, although the lower mandibles are less deep (Pyle; Behle and Selander). Likewise, Thick-billed Fox



Photo by
Steve Hampton

Figure 17. *altivagans* Slate-colored Fox Sparrow. Note the gray head and rump, bright reddish tones, white tips to coverts and tertials, and reddish mottling on the back. 17 January 2015. Capay Valley, Yolo County.



Figure 18. *altivagans* Slate-colored Fox Sparrow. It is difficult to see if the back is gray or streaked (although there is a single red streak visible above the scapulars), but the white wing bar and very red tail suggest *altivagans* over *schistacea*. The very dark underpart streaking, however, differs from the birds above. 12 February 2015. Putah Creek, Solano County.

Photo by Manfred Kusch



Figure 19. *schistacea* Slate-colored Fox Sparrow. This bird differs from those in Figures 16-18 by the more solid gray back (not streaked with red), lack of white wing bars and tertial tips, and browner upper tail coverts and tail. Note also the small bill. 4 February 2011. Sacramento, Sacramento County.

Photo by Chris Conard



Figure 20. *schistacea* Slate-colored Fox Sparrow. Based on the long culmen, thin lower mandible, and brown wash to the back, this bird is a close match for *olivacea* from Washington. Note the gray head and extensive white malar. 9 March 2016. Babel Slough, Yolo County.

Photo by Mark Sawyer

Sparrows in the northern Cascades have bills that are remarkably similar to the local Slate-colored form (*olivacea*) in the area, which, like the Great Basin forms, have a strong culmen. The primary difference is that Thick-billed has a thicker lower mandible. One important caveat is that immature birds in their first fall may not yet have a fully developed bill (Swarth).

The bill is blue-gray in summer, but the lower mandible and part of the upper mandible turn a pale yellow color in winter. Perhaps due to the bill, these birds appear larger headed, bulkier, and more towhee-like than other Fox Sparrows. The tail is the quite long, even longer than Slate-colored (Table 2). Their head, back, and rump may appear entirely uniform gray, although the back may show olive tones and be faintly marked with dark smudges or streaks. As with Slate-colored, the white malar wraps under the auriculars. The wings are brown, while the upper tail coverts and tail are a warm rusty brown. The wings are uniform, showing, at most, pale edges to the coverts for the faintest of wing bars. The underparts are more sparsely marked than other Fox Sparrows, with widely scattered and more delicate dark chevrons, sometimes coalescing on the central breast. The belly is entirely white and unmarked. Their call is also different from other Fox Sparrows, a short high *tink!* or *deet!*, reminiscent of California Towhee (*Melospiza crissalis*) though not as strident (Garrett et al. 2000). See <http://www.xeno-canto.org/125385> and <http://www.xeno-canto.org/289067> for examples.

The call note of Sooty, Red, and Slate-colored is a loud *thik!*, perhaps a thicker *chik!* in the latter. This is often referred to as the “smack” call. See <http://www.xeno-canto.org/291504> for an example from the Central Valley. They also give a weak “seep” note, usually from cover.

All of the subspecies of Thick-billed are very similar to each other, differing primarily in bill shape and size. *Megarhyncha* and *brevicauda* have a faint brownish wash to the back. Even in these forms, however, the back is largely gray.

Status

While Thick-billed Fox Sparrows breed within an hour’s drive of the Central Valley for much of its length, they are exceedingly rare on the valley floor. Because of the relative ease of identification, eBird records are probably valid. There are only eight such reports, most of which are accompanied by good descriptions (Table 2).

Based on range, Thick-bills in the Central Valley are more likely to be *megarhyncha* or *brevicauda*. Photographs were only available for the last bird listed above (Figures 22a and 22b). These showed a longer and less deep bill, suggesting the former subspecies. A *brevicauda* individual from the Coast Ranges is shown in Figure 21.

Table 2. eBird reports of Thick-billed Fox Sparrow in the Central Valley

20 Feb 1980	Gray Lodge Wildlife Area, BUT	Bruce Deuel
26 Mar 2001	Auburn Ravine/Moore Rd, PLA	Bruce Webb
10 Mar 2002	Red Bluff Rec Area, TEH	Bruce Deuel
24 Sept 2002	Grasslands Regional Park, YOL	Steve Hampton
24 Nov 2013	Heritage Oak Winery, SJ	Clifford Hawley
16 Feb 2014	Kern NWR: South Auto Tour Route, KER	Marge & Don Thornton
18 Jan 2015	320 W Bluff, Fresno, FRE	Gregory Estep
5-19 Mar 2015	Grasslands Regional Park, YOL	Steve Hampton

Based on range, Thick-bills in the Central Valley are more likely to be *megarhyncha* or *brevicauda*. Photographs were only available for the last bird listed above (Figures 22a and 22b). These showed a longer and less deep bill, suggesting the former subspecies. A *brevicauda* individual from the Coast Ranges is shown in Figure 21.

Red Fox Sparrow

The Red Fox Sparrow breeds in northern taiga forests across the continent from western Alaska to eastern Canada. As with many taiga breeders, they migrate south and east in the fall, wintering from Texas to Virginia. There are two subspecies, *zaboria* in the west and *iliaca* in the east, roughly split near Churchill, Manitoba.

Identification

Red Fox Sparrows are the most colorful of the groups, sporting strongly contrasting reddish brown (dark chestnut in *zaboria*, more orange-red in *iliaca*) and ashy gray patterns on the head and upperparts. On *zaboria*, the gray auricular frame is so distinctive that the head appears gray with a strongly contrasting chestnut streaked crown and auricular patch, which is streaked and boldly bordered with chestnut. A white malar is obvious and partially wraps underneath the auricular patch. The back is boldly streaked chestnut and gray, the rump is gray, and the tail is bright orange-red. The wings are chestnut with obvious white tips to the coverts, forming thin white wing bars, and there are usually white tips to the tertials. The underparts are patterned with chestnut chevrons. Red Fox Sparrows are short tailed, about the same as *townsendi*. The body often appears chunky.

A possible, but untested, difference between *iliaca* and *zaboria* may be that, in the former, the red tones in the tertials match the red tones in the upper tail coverts, the brightest part of the bird. In the latter, the tertials are darker and browner than the upper tail coverts.

Photo by
Sarah Mayhew



Figure 21. *brevicauda* Thick-billed Fox Sparrow. Note the large stout bill, gray head, and black markings on the underparts. This subspecies is known for its deep stout bill. The location, on a ridge top west of the Sacramento Valley, is within the normal range for *brevicauda*. 18 November 2014. Mix Canyon, Solano County.



Photos by Steve Hampton

Figures 22a and 22b:

megarhyncha Thick-billed Fox Sparrow. The large bill is less deep and the tail redder than that of *brevicauda* above, suggesting the more northern *megarhyncha*. Note the very small chevrons on the breast. These may be the only photographs of a Thick-billed Fox Sparrow from the valley floor. 19 March 2015. Grasslands Park, Yolo County.



Status

All records of Red Fox Sparrow in California are thought to be *zaboria*. Their true status in the Central Valley is difficult to assess because some presumed *altivagans* are reported as Red. Nevertheless, there are some obvious *zaboria* records, suggesting this form is quite rare but possibly annual. There are 17 reports on eBird, all from a narrow band between Yolo and Placer Counties in the north and Stanislaus County in the south. Most of these are accompanied by descriptions or photos. Swarth reports no Reds from the Central Valley. One set of photographs is a decidedly redder individual and may represent a first state record for *iliaca*. One of those photos is included here (Figure 23).



Figure 23. Possible *iliaca* Red Fox Sparrow. Note the well-defined auricular patch, boldly streaked back, and blurry reddish markings on the underparts. In sunlight, the reddish tones, especially on the rump and tail, would appear much brighter. This bird is redder than most *zaboria* and possibly represents a first record of *iliaca* for California. 7 November 2014. Folsom, Sacramento County. *Photo by Deb Weston*

DISCUSSION

Identification

Table 3 provides a summary of some of the field marks described above for selected Fox Sparrow taxa. Note that, in winter, all Fox Sparrows have yellowish bills with dark culmens extending variably down the sides of the upper mandible. Perhaps the simplest field mark is the back: brown in Sooty, gray in Thick-billed, lightly streaked in Slate-colored, and boldly streaked in Red.

Table 3: A guide to Fox Sparrow identification in the Central Valley.

	Sooty sinuosa	Slate-colored altivagans	Thick-billed	Red zaboria
Head Pattern	Gray supercilium and nape with brownish crown and variably brown and gray auricular patch	Mostly gray head with rust-streaked auricular patch and crown	Mostly gray head	Ashy gray with strongly contrasting chestnut crown and auricular patch, pointed at rear; strong white malar
Back	Dark ashy brown, unstreaked	Gray, lightly streaked with rusty red brown	Solid gray, may show faint dark mottling	Boldly streaked reddish brown and gray
Rump	Brown, slightly paler than back	Gray	Gray	Gray
Uppertail Coverts and Tail	Bright chestnut in sun, browner in shadow	Strongly contrasting rusty red	Strongly contrasting warm rusty brown	Strongly contrasting chestnut red
Wings	Solid dark chestnut brown	Rusty orange-red with white tips to coverts and tertials	Solid warm brown	Bright chestnut with white tips to coverts and tertials
Underparts	Heavily marked with dark brown chevrons, merging on flanks	Moderately marked with rusty brown to blackish chevrons	Relatively sparsely marked with blackish delicate chevrons	Fairly heavily marked with reddish brown blurry chevrons
Call Xeno- canto ref:	thik! 291504	chik! 187658	tink! 125385	thik! 149321

Many popular field guides depict Fox Sparrows at the group level, typically illustrating one of the subspecies within each group. In general, the illustrations of Red are reasonable, those of Slate-colored and Thick-billed are variable, and those of Sooty are too dark and misleading. As Mlodinow et al. (2012) note in the introduction of their photo essay, “Studying our wintering Sooty Fox Sparrows, we have discovered that there is much more variation than most field guides depict.”

Peterson Field Guide to the Birds of North America (2008)

Peterson illustrates four Fox Sparrows, one from each group. Typical of most guides, the bird labeled “Sooty” is clearly *fuliginosa*, with a solid dark brown appearance and no hint of reddish tones. It is a chocolate bird. It shows a short gray supercilium, but the gray is in the wrong place; it is before the eye rather than above the auriculars. This presentation gives the impression that Sooty Fox Sparrows do not have gray in the face or contrasting reddish wings and tail. The most common winter subspecies in California, *sinuosa*, does not come close to any of these illustrations.

The Thick-billed and Slate-colored illustrations are quite poor. The former is too brown on the upperparts and both, especially the latter, lack contrasting reddish wings and tail. They scarcely resemble birds in the field. As is usual with most guides, the Red illustration is excellent.

National Geographic Society’s (NGS) Field Guide to the Birds of North America (6th edition, 2011)

The NGS guide goes a step farther, illustrating five birds: *fuliginosa*, *unalaschcensis*, *stephensi*, *schistacea*, and *iliaca*. The *fuliginosa* illustration shows a very dark chocolate bird, with no gray at all in the supercilium, no red tones, and a buffy (not white) vent. Presumably to show the range in Sooty, *unalaschcensis* is added. This bird, however, looks like a slightly paler *fuliginosa* with a redder tail; it is essentially a decent rendition of *townsendi*. For *unalaschcensis*, however, it would need a largely grayish head, which is lacks entirely, as well as paler and browner wings and tail. The bill should also be larger and more pointed.

The *stephensi* and *schistacea* drawings are reasonable, though perhaps on the dark side. The *iliaca* is fine.

The Sibley Guide to Birds (Sibley 2000 and 2014)

Sibley illustrates six different Fox Sparrows: two Sooties, presumably *fuliginosa* (labeled “darker”) and what is described as a northern form (labeled “paler”); Thick-billed; two Slate-colored, presumably *schistacea* and *altivagans* (labeled “Canadian Rocky Mountains” in the 1st edition and “Red x Slate-colored intergrade” in the 2nd edition); and Red (presumably *iliaca*). In the 1st edition, neither of the Sooties show a gray frame to the auriculars or even a gray supercilium; they all show birds with uniform brown heads. This is somewhat corrected in the 2nd edition, where a hint of a gray auricular frame is added to the paler Sooty, and a short gray supercilium is added to the darker form. The darker form is fairly accurate for *fuliginosa*, while the paler form, at least in the later edition, comes close to *sinuosa*, the most common form in the Central Valley, although the tail and wings should be slightly darker and redder, the gray in the face should be more obvious, the auriculars should be more prominent, and the chevrons on the underparts should be darker. Sibley’s illustrations of the other Fox Sparrows are excellent.

The Stokes Field Guide to the Birds of North America (2010)

Stokes offers photographs. Again, the Sooty group is confusing. There are two photos, one of which appears to be *annectens* and the other *townsendi*. Inexplicably, the text below the photos still holds to the myth that Sooty Fox Sparrows are all dark chocolate, stating, “Usually no light gray or bright reddish brown in plumage,” despite the fact that the *annectens* photograph clearly shows both.

The Sparrows of the United States and Canada (Rising 1996)

For a guide that specializes in sparrows, the illustrations in Rising are disappointingly poor and misleading. As with NGS, it covers the range of Sooty subspecies by presenting *fuliginosa* and *unalaschcensis*. The former is nearly black with no hint of gray in the supercilium or definition to the auriculars, but perhaps accurate for this form in deep shadow. The latter is essentially a tawny brown version of the former, with no gray in the face. Likewise, the description of *unalaschcensis*, “upperparts chocolate brown”, is completely at odds with Ridgway, who described this form as difficult to separate from *schistacea*. For that matter, the Slate-colored and Thick-billed illustrations are too dark and too brown, and with scarcely any red tones in the wings and tail. They bear little resemblance to Sibley’s illustrations or to birds in the field. When this plate was reproduced in *Birding* magazine, the following text was added: “The Sooty Fox Sparrow has dark, uniformly colored plumage” (Zink and Wesson 1999). Confronted with a gray-faced, brown-backed, chestnut-tailed *sinuosa* in the Central Valley, birders would find no match with these illustrations, though the *altivagans* illustration would be the closest.

Birds of North America species account (Weckstein et al. 2002) (BNA)

The BNA account includes four decent illustrations: *unalaschcensis*, *schistacea*, *megarhyncha*, and *iliaca*. The last two are excellent. The *unalaschcensis* shows an extensive gray supercilium and nape, although the auricular patch is perhaps too brown and well-defined. Nevertheless, it is certainly one of the only Sooty illustrations published with a mostly gray face, and thus a welcome contribution. The *schistacea* illustration shows white wing bars, a streaked back, and dark chestnut brown tones even on the tail, and thus is closer to *altivagans* or *zaboria*.

Swarth (1920)

Swarth includes a plate with four color illustrations: two Sooties and two Thick-bills. They are *unalaschcensis*, *fuliginosa*, *stephensi*, and *brevicauda*. These illustrations are reasonable, though perhaps a bit dark. The last subspecies, inexplicably, shows a brown crown and back, which should be gray.

In general, most of these guides create a misconception that Sooty Fox Sparrows are uniform chocolate brown with no contrasting gray and brown pattern in the face and little to no red in the tail. Birders encountering a typical *sinuosa* Sooty Fox Sparrow in bright sunlight, with extensive gray in the face and a bright chestnut tail, may reject Sooty entirely and report the bird as Red, Slate-colored, or an intergrade.

Status

Summarizing the status of Fox Sparrows in the Central Valley, the documentation to date is extremely sparse at the subspecies level, and subject to confusion at the group level. Swarth is virtually the only source for data at the subspecies level, but largely ignores the Central Valley. Since then, most reports have been at the group level (if at all), and some of the identifications are suspect. The data are summarized in Table 4.

Additional records at the subspecies level are the single *townsendi/chilcatensis* reported in Webster (1983) and the photographs presented in this paper.

By my observations, it seems that most of the Sooty Fox Sparrows in the Central Valley are *sinuosa*, consistent with Swarth’s very small sample, but more research is needed to confirm this. Most other Sooty forms are likely present in lesser numbers. With regard to Slate-colored, *altivagans* is uncommon to rare, while *schistacea* is likely to occur, but rarely documented. Thick-billed and Red are quite rare, but likely occur nearly annually.

Table 4: A summary of Fox Sparrow records in the Central Valley.

	Sooty				Slate-colored	Thick-billed	Red
	Unalachcensis	insularis	sinuosa	annectens	altivagans		zaboria
Swarth (1920)	1	1	7	1	1	0	0
UC Davis specimens	17				1	0	0
Cosumnes CBC	972 (+969)				21	0	11
Stockton CBC	(629)				9	0	0
eBird	Too many to count				137	8	17

CONCLUSION

Almost every subspecies from all four groups of the Fox Sparrow may occur in the Central Valley in winter. Identification at the group and subspecies level is subject to confusion due to the paucity of field identification criteria, competing taxonomic assignments in the literature, and poor illustrations in field guides. The status of Fox Sparrows in the Central Valley has been historically overlooked, although contemporary photographs suggest that several forms are regular. Understanding which forms occur the most frequently is difficult primarily because field identification criteria for the subspecies within the Sooty group are still in their infancy. Until they are understood, a more complete understanding of the status of these forms in the Central Valley is not possible. Birders are encouraged to take photographs of all Fox Sparrows, ideally in good light, and to include them in their eBird lists or other on-line photo collections, such as the Facebook group dedicated to Fox Sparrows <https://www.facebook.com/groups/447117322159681/>. Such photos should include the date and exact location.

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LITERATURE CITED

- Behle, W.H. and R.K. Selander. 1951. The systematic relationships of the fox sparrows (*Passerella iliaca*) of the Wasatch Mountains, Utah, and the Great Basin. *Journal of the Washington Academy of Science* 41: 364-367.
- Bell, C.P. 1997. Leap-frog migration in the Fox Sparrow: Minimizing the cost of spring migration. *Condor* 99:470-477.
- Dunn, J.L. and J. Alderfer. 2011. *National Geographic Field Guide to the Birds of North America, Sixth Edition*. National Geographic Society, Washington D.C.
- Garrett, K.L., J.L. Dunn, and R. Righter. 2000. Call notes and winter distribution in the Fox Sparrow complex. *Birding* 32:412-417.
- Gibson, D.D. and B. Kessel. 1997. Inventory of the species and subspecies of Alaska birds. *Western Birds* 28:45-95.
- Grinnell, J., and A.H. Miller. 1944. *The Distribution of the Birds of California*. Pacific Coast Avifauna No. 27, publ., reprinted in 1986 by Artemisia Press, Lee Vining, CA.
- Hampton, S. 2012. Creating an index to analyze Christmas Bird Count data: An application to West Nile Virus at Putah Creek, California. *American Birds* 66:16-23.

- Mlodinow, S.G., B. Tweit, and D. Irons. 2012. Photo essay: The Sooty Fox Sparrows of Washington's Puget Trough. *Birding* 44: 46-52.
- Peterson, R.T. 2008. *Peterson Field Guide to Birds of North America*. Houghton Mifflin Harcourt. Boston, MA.
- Pyle, P. 1997. *Identification Guide to North American Birds. Part 1*. Slate Creek Press, Bolinas, CA.
- Ridgeway, R. 1900. New species, etc. of American birds. VI. Fringillidae (Supplement). *Auk* 17:29-30.
- Rising, J.D. 1996. *A Guide to the Identification and Natural History of the Sparrows of the United States and Canada*. Academic Press. Cambridge, MA.
- Stokes, D. and L. 2010. *The Stokes Field Guide to the Birds of North America*. Little, Brown and Company. New York, NY.
- Swarth, H.W. 1920. Revision of the avian genus *Passerella* with special reference to the distribution and migration of the races in California. *University of California Publications in Zoology* 21:75-224.
- Webster, J.D. 1983. A new subspecies of Fox Sparrow from Alaska. *Proceedings of the Biological Society of Washington* 96: 664-668.
- Weckstein, Jason D., D.E. Kroodsma and R.C. Faucett. 2002. Fox Sparrow (*Passerellailiaca*), in *The Birds of North America* (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology.
- Zink, R.M. and A.E. Kessen. 1999. Species limits in the Fox Sparrow: Past, present, and a recipe for resolution. *Birding* 31:508-517.
- Zink, R.M. and J.D. Weckstein. 2003 Recent evolutionary history of the Fox Sparrows (Genus: *Passerella*). *Auk* 120:522-527.