Spizella Sparrows

Intraspecific Variation and Identification

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Figure 1. When Chipping and Brewer's Sparrows are as clearly marked as these two individuals, identification is not especially difficult. The Chipping Sparrow (left) shows a distinct eye-line that extends through the lores, weaker dark malar stripe, and a broken eye-ring, whereas the Brewer's (right) complete eye-ring and pale lores are clearly visible. Intraspecific variation in Spizella *sparrows, however, is an under-appreciated phenomenon that causes additional identification problems. White Mountains, California, late August 1994.*

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WE ALL KNOW ABOUT interspecific variation, comprising the criteria upon which birders rely to tell one species from another. Semipalmated Sandpipers *(Calidris pusilla)* have black legs, whereas Least Sandpipers *(C. minutilla)* have yellowish or greenish legs. Bohemian Waxwings *(Bombycilla garrulus)* have chestnut undertail-coverts; Cedar Waxwings *(B. cedrorum)* have whitish undertail coverts. These are cut-and-dried examples of interspecific variation. *Intra*specific variation, however, indirectly provides birders with their greatest challenges. An understanding of what extent individuals vary within a population becomes especially crucial when considering hard-to-identify species. Trumpeter Swans *(Cygnus buccinator)* usually have straight culmens, whereas Tundra Swans *(C. columbianus)* tend to have

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slightly concave culmens. Long-billed Dowitchers *(Limnodromus scolopaceus)* have bills that *average* longer than those of Short-billed Dowitchers *(L. griseus)*. *Most* Yellow-bellied Flycatchers *(Empidonax flaviventris)* have brighter lemon-yellow edgings to the wings than do *most* "Western" Flycatchers *(E. difficilis/occidentalis)*. When separating difficult-to-identify species, the concepts of averages, overlap, and ranges of intraspecific variation become important extra dimensions.

Several causal factors lead to intraspecific variation in size and plumage. Many bird species show distinct sex-specific plumages, whereas in others females appear exactly like males. In some species there are no distinct differences, but females average smaller or duller than males. The same can be said of variation with age; in many species first-year birds average duller than adults, but the brightest first-year birds can be brighter than the dullest adults. There is seasonal variation to consider: many species show subtle or marked plumage change with feather wear or molt.

Then there is geographic variation. This variation resulted in the naming of many subspecies by ornithologists of the 1800s and early- to mid-1900s. Some of these subspecies are well-marked and have distinctly defined ranges, such as the well-known groups of White-crowned Sparrows *(Zonotrichia leucophrys;* see Dunn et al. 1995). But others, such as the many subspecies of Common Yellowthroat *(Geothlypis trichas)*, are less distinct, and show broad ranges of intergradation between adjacent forms. Thus, the degree of geographic variation is variable in itself.

Finally, there is just plain old "individual variation" that occurs among birds of the same age, sex, plumage stage, and subspecies. As with humans, even siblings of the same sex can appear quite different, the result of varying recombinations of parental genes. Again, some species show wider ranges of intraspecific variation than others. All of these factors need to be considered—in each candidate species—when faced with a challenging field identification.

For more than two decades, the Point Reyes Bird Observatory has been gathering daily census data on the large numbers of migrants and vagrants that turn up on the Farallon Islands, which lie about 30 miles off San Francisco. We have noticed considerable intraspecific variation in the *Spizella*

In Brief

As with any challenging field problem, the identification of Chipping, Clay-colored, and Brewer's Sparrows is complicated by substantial intraspecific variation. Most individuals are readily separated by a suite of "average" characters. Certain individuals of each species, however, can show characters approaching or overlapping with those of the other two species. Chipping Sparrows are usually readily distinguished from the other two species by the combination of several well-known features, although birders can be fooled by paler and less obviously marked birds. The separation of *some* Clay-colored and Brewer's Sparrows can be difficult, in part because of intraspecific variation in both species, causing paler Clay-coloreds to closely resemble darker and more richly colored Brewer's. Individuals of the intermediate-plumaged "Timberline" Brewer's Sparrow may provide further identification challenges.

Features useful in separating dull Clay-colored from Brewer's Sparrows include a partial (versus full) eye-ring, unstreaked (versus streaked) gray nape collar, a supercilium that is not duller than the submoustachial streak, moustachial streaks that thicken posteriorly (versus remaining narrow), and dark centers to the secondary wing-coverts lacking central points. Even when all criteria are combined, certain individuals—including possible hybrids—are best left unidentified in the field.

sparrows that arrive there. In particular, Chipping Sparrows (*S. passerina;* Figure 1) and Clay-colored Sparrows (*S. pallida)* can show substantial variation, such that some individuals of these species closely approach the other species, or resemble some individuals of Brewer's Sparrow (*S. breweri),* in most or all distinguishing features. Here we discuss the identification of these three sparrows, with an emphasis on understanding the intraspecific variation that occurs within each (Figure 2).

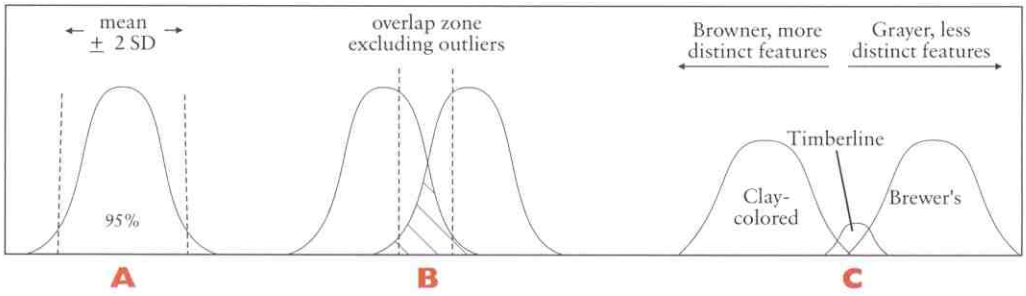

Figure 2. Intraspecific variation and degree of overlap can be statistically represented by bell-shaped curves (A). Assuming "normal distributions" (consistent variation around means), the distribution in size of a species can be represented directly and the plumage of a species conceptually by these curves. If two species overlap in a certain character, the proportion of birds falling in the overlap zones can be represented (B). Near the tails of the bell-shape curve fall the "outliers," such as individuals with abnormally small or large measurements or individuals with plumage anomalies that may cause them to appear more like similar species. Statisticians, such as those at the Bird Banding Laboratory in Maryland (when assessing the age and sex codes assigned by banders), are satisfied with 95 percent accuracy. Within a bell-shaped curve, the cut-offs for 95 percent of a population can be estimated by the mean ± twice the standard deviation (A). Ranges representing 95 percent of variation within a population are much more useful than true ranges when assessing such criteria as measurements or wing formulae on birds in the hand (see table below), because true ranges often include anomalous individuals.

Variation in Chipping Sparrow

The separation of Chipping, Clay-colored, and Brewer's Sparrows in fall is not a new problem, having been treated by Dunn (1975), Simon (1977), DeSante (1983), Bunn (1985), Rosenberg (1990), Byers et al. (1995), and, most thoroughly, by Kaufman (1990). Most Chipping Sparrows, even in first basic plumage, are readily distinguished from the other two species by the combination of their dusky eye-lines (more distinct than the malar stripes) that extend through the lores to the base of the bill, their relative lack of a moustachial stripe, their darker and more contrasting gray and rufous upperparts, their longer wing and proportionately shorter tail (table), their sharper call-notes, and, when visible, by their gray rumps that contrast with their browner backs (Figures 1, 3, and 4). Clay-colored and

MEASUREMENTS (IN MM) OF *SPIZELLA* SPARROW SPECIMENS AT THE CALIFORNIA ACADEMY OF SCIENCES

	Wing Chord	Tail Length	Exposed Culmen	Wing Minus Tail	Wing Divided by Exposed Culmen
Chipping	65.5-77.4	54.7-65.2	8.0-9.3	7.2-15.8	7.3-9.3
Clay-colored	55.7-66.6	54.1-63.0	7.8-9.1	0.5-5.7	6.6-7.9
Nominate Brewer's	58.6-67.0	54.0-65.1	7.3-8.3	0.9-7.0	7.4-8.7
Timberline	59.3-69.0	54.0-68.9	7.0-8.2	1.4-7.1	7.6-9.3

Table. These are measurements of Spizella *sparrow specimens located at the California Academy of Sciences (CAS). Presented here are ranges based on means ± twice the standard deviations, which (assuming normal distributions) include approximately 95 percent of the values within each population. This method of representation is advocated over true range, because true range may or may not include anomalous individuals and is unlikely to represent the full range when sample sizes are inadequate. See text and Pyle (in press) for more details supporting this method of representation. Sample sizes for Chipping, Clay-colored, and nominate Brewer's Sparrows were 20 of each species, 10 of each sex, from varying dates and localities of collection. For Timberline Sparrow, seven of each sex were measured, representing all specimens at CAS. These ranges are most useful for identifying birds in the hand.*

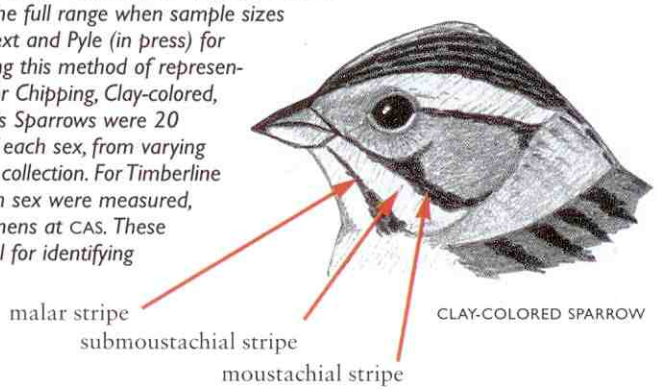

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Figure 3. It is important to keep in mind the intraspecific variation in Chipping Sparrow, and not to be fooled by a dull, pale bird among darker individuals. The bird on the right appears duller and paler than the bird on the left and does not appear to have the dark eye-line extending through the lores; thus, it might be mistaken for a Clay-colored or Brewer's Sparrow. Note, however, the distinct eye-line (more distinct than the malar stripe), the lack of a moustachial stripe, and the relatively short tail (see table). Chipping Sparrows, Southeast Farallon Island, 29 September 1985.

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Figure 4. Chipping Sparrow, Southeast Farallon Island, 15 September 1984. The heavy streaking on the breast and face is characteristic of the juvenal plumage in Chipping Sparrows, which may be retained until the birds reach the wintering grounds (through October, at least). Juvenile Clay-colored and Brewer's Sparrows may have streaking, but it is seldom if ever this heavy and rarely includes the face, except perhaps soon after fledging.

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Figure 5. The sparse streaks on the breast of this Clay-colored Sparrow indicate retained juvenal plumage or characteristics (see also Figure 20). Compare the amount of streaking on this bird with that of the Chipping Sparrow in Figure 4, above. Southeast Farallon Island, 13 September 1994.

Brewer's Sparrows usually have eye-lines that are less distinct than the malar stripes and that do not extend forward of the eyes (thus the lores are pale), indistinct to distinct moustachial stripes, paler and less contrasting brownish upperparts, softer call-notes (a thin *tsip*), and concolorous brown backs and rumps* (Figures 1 and 5–11). Kaufman (1990) correctly pointed out that birders need to consider geographic and individual variation in Chipping Sparrow plumages. Three weakly differentiated subspecies of Chipping Sparrow generally are recognized in the ABA Area (Behle 1985): two forms that average darker and more contrasting—*S.p. stridula* of the West Coast and *passerina* of the East—and the generally paler and less contrasting *arizonae* of the interior West. Although individual variation results in dull and pale birds occurring in all subspecies, it is members of the last-named subspecies that often can cause double-takes, especially by birders familiar only with the West Coast or eastern forms. Among the usual darkish *stridula* Chippings on the Farallones in fall, we have encountered extremely pale first-basic (first-winter) individuals that were initially identified as Clay-colored or Brewer's Sparrows. With sufficient views, however, the dusky streak through the lores, lack of a distinct moustachial stripe, in combination with the other features noted above, can be used to distinguish even the palest and dullest of

*A rare individual Clay-colored Sparrow may show a pale gray tinge to the rump, sometimes the result of the grayish bases of the feathers being seen.

Figures 6–8 (right). Clay-colored Sparrows, Southeast Farallon Island, showing a broad range of intraspecific variation in distinctness of plumage. It is possible that this species becomes paler through the fall and winter, the result of plumage wear. The birds were captured for banding on 15 August 1990, 27 September 1994, and 6 November 1993, respectively.

Chipping Sparrows (Kaufman 1990; Figure 3).

Many (but not all) Chipping Sparrows, especially those of the western subspecies, do not undergo the first prebasic molt until they reach the winter grounds (Willoughby 1989, 1991), and thus they can be found in their streaky juvenal plumage during migration (Figure 4). By contrast, most Clay-colored and Brewer's Sparrows complete this molt and lose the streaking before migrating; however, small percentages of both can retain at least some juvenal streaking on the underparts until reaching the winter grounds (Sutton 1967, Forster 1985; Figure 5). Note that the streaking may represent either retained juvenal feathers or replaced first-basic feathers with a retained juvenal characteristic. Heavy streaking on the breast and face of a fall bird (through October) is thus diagnostic of Chipping Sparrow (Figure 4), but, because of intraspecific variation in the prebasic molt, limited streaking on the breast (but seldom, if ever, on the face) does not exclude all Clay-colored and Brewer's Sparrows (Figure 5; see also Figure 20).

Clay-colored versus Brewer's Sparrows

The separation of Clay-colored and Brewer's Sparrows may be an under-appreciated problem, owing in part to the fact that most if not all identifying criteria comprise "average characters"—those that differ on average but that cannot be relied upon all of the time. Kaufman (1990) noted six such characters. On average, Clay-colored Sparrows have (1) a more distinct pale median crown-stripe, (2) a buffier, broader, less mottled, and more distinct supercilium, (3) more distinct malar and moustachial stripes, (4) a grayer neck collar that contrasts more obviously with a darker and warmer head and back, (5) more distinctly marked auriculars, and (6) a buffier wash to the breast. The combination of these characters produces a warmer brown and more contrastingly marked Clay-colored versus a grayer and less descript Brewer's—the field identification criteria as we know them. This works for *most* of the birds. On the Farallones, however, we see occasional birds, perhaps one in 20, that have had us alternating identifications between these two species throughout the day. Even after capturing them for banding, measuring, and scrutinization in the hand, we still have had trouble; at such close range it is often just as difficult to assess these "average" distinguishing characters, some of which require a more distant perspective to be appreciated in full context.

Historically, several of the better-known North American ornithologists have also had trouble with the identification of occasional birds, including specimens. In the 1850s, William Cooper collected a bird in Arizona that he emphatically identified as a Clay-colored Sparrow, only to have it later reidentified by himself, Robert Ridgway, and Joseph Grinnell as a Brewer's Sparrow (Grinnell 1914). Another specimen from north Texas was carefully identified by Harry C. Oberholser as a Brewer's Sparrow, the only record for the region. Nearly a century later, this bird was redesignated a Clay-colored Sparrow by Allan R. Phillips (Bunn 1985); and Phillips himself, at the same time, discovered that he had misidentified a Clay-colored specimen as a Brewer's Sparrow (Phillips 1986). Jocelyn Van Tyne and George M. Sutton (1937) collected a bird in southwest Texas with the upperparts of a Brewer's Sparrow and the underparts of a Clay-colored; they eventually and reluctantly concluded that it was a Clay-colored Sparrow. Finally, at a meeting of the California Bird Records Committee several years ago, members were decisively divided on the identity of a photographed bird from the Farallones. (The photo is now lost.) Clearly, therefore, certain birds defy conclusive identification, even by experienced birders and ornithologists.

Intraspecific Variation in Clay-colored and Brewer's Sparrows

To better understand the identification of these difficult individuals, we have carefully studied several such birds on the Farallones and have checked hundreds of museum skins for any diagnostic separating criteria. We have concluded that both Clay-colored and Brewer's Sparrows show considerable intraspecific variation (Figures 6–11), and that difficult individuals are often Clay-coloreds that, figuratively, fall at the pale and nondescript end of their intraspecific, bell-shaped curve (Figure 2C).

Clay-colored Sparrows show little or no geographic variation (no subspecies have ever been described) or variation in plumage

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Figure 9. These first-year birds exemplify individual variation that can occur between Clay-colored Sparrows of the same age and at the same time of year. The bird on the right is much duller and might be mistaken for a Brewer's Sparrow. Note, however, the partial eye-ring and full, unstreaked gray collar. Southeast Farallon Island, 18 September 1994.

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Figure 10. Brewer's Sparrow, Southeast Farallon Island, 20 September 1994. This species seems to show slightly less intraspecific variation than Clay-colored Sparrow (compare with Figures 1 and 11). Contrast the full eye-rings of Brewer's Sparrow to the partial eye-rings of the Clay-colored Sparrows in Figures 6 through 9. Note also that the supercilium is markedly duller than the submoustachial stripe; many Clay-colored Sparrows have these two areas more similar in tone.

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Figure 11. Some Brewer's Sparrows, such as this one, show moderately prominent facial features and gray collars (with only very faint dark streaks) that are characteristics suggestive of Clay-colored Sparrow. Southeast Farallon Island, 6 September 1994.

by sex (Ridgway 1901, Knapton 1978). There may be some variation according to age, with first-fall birds averaging buffier-chested than adults (Knapton 1978). Conceivably, therefore, the problem birds may be in definitive (adult) basic plumage; however, some of the less-descript Clay-coloreds that we have captured (e.g., Figure 8) have been first-years, as determined by incomplete skull pneumatization or retained juvenal streaking on the breast. We have noticed that many of the paler Clay-coloreds arrive on the Farallones later in the year, in October and November, well after the prebasic molt has been completed in most birds (Willoughby 1991). It is possible that birds lose the buffy cast and contrast of fresh basic plumage as the fall proceeds into winter (Figures

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Figures 12 and 13. The locally distributed "Timberline" Brewer's Sparrow has broader blackish streaks on the back and crown, and darker plumage overall, compared to nominate Brewer's. It also shows more contrasting features and a bolder head pattern, on average, than does nominate Brewer's, appearing somewhat intermediate between that race and Clay-colored Sparrow. Note, however, the dull but complete eye-ring and moderately heavy streaking through the nape collar. Wrangell Mountains, Alaska, July 1993.

6–8). The answers, of course, are never as simple as we would hope. We suspect that all of these factors, plus individual variation (Figure 9), are involved.

Although Brewer's Sparrow also shows intraspecific variation (Figures 1, 2C, 10, and 11), it appears to be less extensive than that shown by Clay-colored Sparrow. It is enough, however, to cause some birds to approach or overlap pale Clay-coloreds in appearance. As pointed out by Kaufman (1990), some Brewer's Sparrows show an indistinct median crown-stripe, and we have noted birds with fairly distinct facial features and grayish collars (Figure 11).

Some problem *Spizella* sparrows may belong to the locally distributed subspecies of Brewer's, the "Timberline Sparrow" (*S.b. taverneri;* Figures 12 and 13). This

Figures 14 and 15. Spizella *sparrow, Southeast Farallon Island, 22 October 1994. This bird was identified at the time of capture as a dull Clay-colored Sparrow, but after examining specimens (most of the type series of 34 birds collected by Swarth and Brooks) and considering mensural data (see below and table) we think that it is possibly a "Timberline" Sparrow. Features in favor of nominate Brewer's and Timberline include the lack of a median crown-stripe, the full (but dull) eye-ring, the dullish facial features with consistently narrow moustachial stripe, and the pointed dark centers to the wing-coverts (see Figure 19). Features in favor of Clay-colored Sparrow include the full gray collar (without streaking) and the largish bill. Measurements of this bird were wing chord 64 mm, tail length 62 mm, and exposed culmen 8.0 mm. As with any challenging identification problem, some birds are probably best left unidentified.*

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race was discovered by Harry S. Swarth and Allan R. Brooks (1925) on mountaintops in British Columbia, and later found on both slopes of the Canadian Rockies (Cowan 1946), in the Yukon, and in east-central Alaska. The Timberline Sparrow differs from nominate Brewer's mainly by the broader blackish streaks on the upperparts and its darker coloration (Phillips et al. 1964), features that may cause it to look more like Clay-colored Sparrow. As with Clay-colored Sparrow, however, there are probably other factors that result in variation within the nominate Brewer's Sparrow population. Certain birds breeding in northeastern California, for instance, show characters tending toward Timberline Sparrow in appearance (Grinnell et al. 1930). Furthermore, birds breeding along the

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Figures 16 and 17. Clay-colored Sparrows: Southeast Farallon Island, 6 November 1993 (Figure 16)—the same individual as shown in Figure 8—and Sepulveda Recreation Area, California, 2 November 1991 (Figure 17). These are potential problem birds, with dull and noncontrasting features (e.g., the abnormally dull superciliums and moustachial stripes, and somewhat pointed wing-covert centers) similar to those found in Brewer's Sparrows. The bird in Figure 16 was initially misidentified as a Brewer's. Note, however, the distinct median crown-stripe, prominent gray collar that appears unstreaked, and, especially, the dull and partial eye-ring. This bird had a wing chord of 57 mm, below the "normal" range of Brewer's Sparrow (see table). In Figure 17 the widening moustachial stripe and lack of distal points to the middle and greater wing-coverts are typical Clay-colored Sparrow characters.

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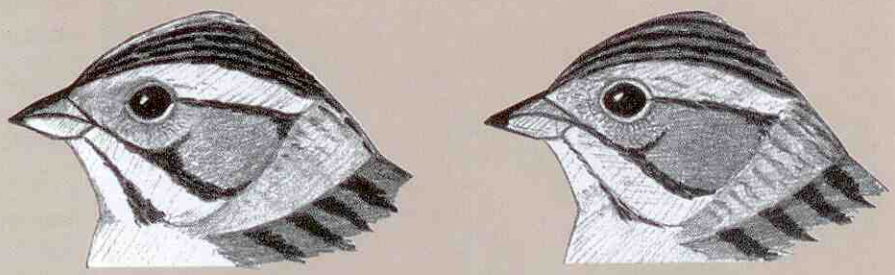
western edge of the nominate form's range are redder and have more distinct median crown-stripes than birds found farther east, and thus they resemble more closely Clay-colored Sparrows (Rea 1983). Based on an examination of specimens, we suspect that some of our "problem birds" on the Farallones may refer to browner and more distinct Brewer's or Timberline Sparrows (Figures 14 and 15), but that most refer to pale Clay-coloreds (Figures 8, 16, and 17).

Separating the Problem Birds

In addition to the criteria mentioned by Kaufman (1990), we have found several characters that should help to separate intermediate birds. The fullness and color of the eye-ring is an excellent and,

Figure 18. These Spizella sparrow heads, drawn by Steve N.G. Howell, show the identifying features.



Clay-colored Sparrow:
Note the deep bill, pale median crown-stripe, dark lateral crown-stripe contrasting distinctly with the pale supercilium, distinct unstreaked or partially streaked gray collar, plain lores, white eye-crescent found below but not above the eye, eye-line less distinct than the malar stripe, similarly pale supercilium and submoustachial stripe, and moustachial stripe that thickens posterior to the eye.

"Timberline" Sparrow:
Note the moderately slender bill, lack of a distinct pale median crown-stripe, dark lateral crown-stripe contrasting somewhat distinctly with the palish supercilium, moderately distinct gray collar, plain lores, full white eye-ring, eye-line less distinct than the malar stripe, and moustachial streak that remains narrow posterior to the eye.

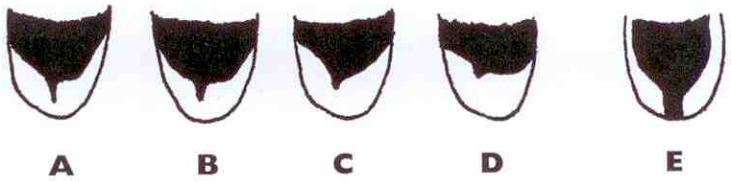


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Figure 19. Middle and greater wing-coverts of Clay-colored and Brewer's Sparrows. Note that in Brewer's Sparrow (A and B, occasionally C) the black central areas of these feathers tend to extend toward the tips in points, whereas in Clay-colored Sparrow (C and D, occasionally B) the pale tips are "cleaner," without distal points. Juveniles of both species have coverts resembling E. Most Spizella probably replace their juvenal coverts before migrating in fall (Willoughby 1991), but more study is needed, especially on birds retaining streaking on the breast.

perhaps, under-appreciated feature (see Dunn 1978, DeSante 1983). Nominate Brewer's Sparrows almost always have a uniformly full and bright white eye-ring that stands out in an otherwise plain face (Figures 1, 10, 11, and 18); occasionally, a small break may occur at the rear of the eye. In Timberline Sparrow the eye-ring appears (based on photographs and specimens) to be a little duller, not standing out as much in the face, but typically is full like nominate Brewer's (Figures 12–15 and 18). The eye-ring of Clay-colored Sparrow is variable, but in contrast to that of Brewer's it is usually brighter below the eye, and indistinct or lacking above the eye (Figures 5–9, 16–18). In dull Chipping Sparrows, the eye-ring is prominent above and below the eye but broken in front and behind (Figures 1, 3, and 18), giving an appearance somewhat like that of an immature Mourning Warbler *(Oporornis philadelphia)*. Although subtle, these eye-ring criteria seem to be consistent, even on birds otherwise intermediate in plumage.

One of the better "average" characters may be the extent of dusky streaking in the gray nape-collar: Clay-colored Sparrow lacks full streaking across all but the center of the collar (Figures 5–9 and 14–17). This creates the effect of a break in the back pattern, when viewed from a distance. Brewer's Sparrow almost always displays dark streaking here (Figures 1 and 13), but on some Brewer's this streaking is faint (Figures 11 and 15), so caution is warranted. The relative shape and boldness of the moustachial stripe may also be of use as an average character. In Clay-colored this stripe tends to be narrow or indistinct in front of the eye, becoming bolder and/or wider under and behind the eye (Figures 5–7 and

Brewer's Sparrow:
Note the slender bill, lack of a distinct pale median crown-stripe, dark lateral crown-stripe not contrasting distinctly with the dull supercilium, indistinct and heavily streaked gray collar, plain lores, full white eye-ring, eye-line less distinct than the malar stripe, supercilium darker than the submoustachial stripe, and moustachial stripe remaining narrow posterior to the eye.

Chipping Sparrow:
Note the dark lores, broken eye-ring, eye-line more distinct than the malar stripe, and relative lack of a moustachial stripe. See text for other features separating Chipping from Clay-colored and Brewer's Sparrows.

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Figures 20 and 21. This bird was thought possibly to be a Chipping × Clay-colored Sparrow hybrid, but the measurements (wing chord 58 mm, tail length 56 mm; see table) suggest that it was a variant Clay-colored Sparrow retaining juvenal plumage or characteristics. Hybrid Chipping × Clay-colored Sparrows have been reported or suspected previously (Storer 1954, Fix 1988, Parkes 1990), but hybrid parentage is difficult to confirm, and some reports might pertain to extreme or anomalous Chipping or Clay-colored Sparrows. Southeast Farallon Island, 13 September 1991.

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Figures 22 and 23. Spizella *sparrow, Southeast Farallon Island, 26 October 1988. This bird was identified as a possible Chipping × Brewer's Sparrow, a hybrid combination that has not been reported previously. Measurements included wing chord 69 mm, tail 64 mm, and exposed culmen 8.5 mm (see table). Although the plumage is most similar to Clay-colored, note the intermediate features, including the mixed gray and brown rump (although Brewer's and Clay-colored Sparrows can show grayish bases to the brown rump feathers). Another hybrid combination that has been reported (Cockrum 1952) is Clay-colored × Brewer's Sparrow. Such a hybrid would be extremely difficult to confirm, and is probably better left unidentified, given the intraspecific variation within both parental species.*

18; but note Figure 8 and right-hand bird in Figure 9). In Brewer's, this stripe tends to be evenly indistinct and/or narrow in front, under, and posterior to the eye (Figures 1, 11, and 18), although in occasional birds it widens somewhat (Figure 10). We have also noted an average difference between the two species in the patterns of the dark centers to the middle and greater wing-coverts. Those of first-basic Brewer's have dark points that extend along the shaft to the feather tips, whereas those of Clay-colored tend to lack these points (Figure 19). Many Clay-coloreds show a submoustachial stripe that is, at most, only slightly bolder and paler than the distinct supercilium, whereas in Brewer's the supercilium often is duller or darker than the submoustachial stripe. Finally, the bill of Brewer's Sparrow *averages* smaller than that of Clay-colored Sparrow, a feature that may be of limited use in the field, but, along with other measurements (table), should help to identify birds in the hand.

The Small Percentage of Birds that "Get Away"

The above criteria should allow separation of well over 95 percent of Clay-colored and Brewer's Sparrows, even those that approach each other in appearance. But what of that small fraction of anomalous birds that falls at the tails of the bell-shaped curves? As is often the case, there will be occasional birds with conflicting characters (Figures 14 and 15), birds showing extremes of intraspecific variation (Figures 9, 20,

and 21), or even possible hybrids (Figures 20–23) that simply cannot be identified with certainty. Responsible field identification always includes the willingness to let such birds "get away," without forcing a species name upon them. It then becomes possible to determine the "normal" (95 percent) limits of intraspecific variation and to apply these limits to obtain accurate field identifications.

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Literature Cited

Behle, W.H. 1985. Utah birds: Geographic distribution and systematics. *Occasional Papers of the Utah Museum of Natural History* 5: 1–147.

Bunn, R.L. 1985. Field identification of Clay-colored, Chipping, and Brewer's sparrows in fall. *Colorado Field Ornithologists' Journal* 19: 13–15.

Byers, C., J. Curson, and U. Olsson. 1995. *Sparrows and Buntings: A Guide to the Sparrows and Buntings of North America and the World*. Houghton Mifflin, Boston.

Cockrum, E.L. 1952. A check-list and bibliography of hybrid birds in North America north of Mexico. *Wilson Bulletin* 64: 140–159.

Cowan, I. McT. 1946. Notes on the distribution of *Spizella breweri taverneri*. *Condor* 48: 93–94.

DeSante, D. 1983. *In* Farrand, J., ed. *Audubon Society Master Guide to Birding*. Alfred Knopf, New York.

Dunn, J.L. 1975. Field Notes. Clay-colored Sparrow. *Western Tanager* 42(3): 4.

Dunn, J.L., K.L. Garrett, and J.K. Alderfer. 1995. White-crowned Sparrow subspecies: Identification and distribution. *Birding* 27: 182–200.

Fix, D. 1988. An apparent Clay-colored Sparrow × Chipping Sparrow hybrid in Oregon. *Oregon Birds* 14: 250–252.

Forster, R.A. 1985. Observation of a Clay-colored Sparrow in unusual plumage. *Bird Observer* 13: 21–23.

Grinnell, J. 1914. An account of the mammals and birds of the Lower Colorado Valley. *University of California Publications in Zoology* 12: 51–294.

Grinnell, J., J. Dixon, and J.M. Linsdale. 1930. Vertebrate natural history of a section of northern California through the Lassen Peak region. *University of California Publications in Zoology* 35: 1–594.

Kaufman, K. 1990. *A Field Guide to Advanced Birding*. Houghton Mifflin, Boston.

Knapton, R.W. 1978. Sex and age determination in the Clay-colored Sparrow. *Bird-Banding* 49: 152–156.

Parkes, K.C. 1990. Additional records of birds from the Distrito Federal, Mexico, including a possible hybrid *Spizella*. *Condor* 92: 1080–1081.

Phillips, A.R. 1986. *The Known Birds of North and Middle America*. Part I. A.R. Phillips, Denver, Colorado.

Phillips, A.R., J. Marshall, and G. Monson. 1964. *The Birds of Arizona*. University of Arizona Press, Tucson.

Pyle, P. In press. A new look at wing and tail formulae in *Contopus* and *Empidonax* flycatchers. Allan Phillips *Festschrift*.

Rea, A.M. 1983. *Once a River*. University of Arizona Press, Tucson.

Ridgway, R. 1901. The birds of North and Middle America. Part I. *Bulletin of the U.S. National Museum* No. 50. Washington, D.C.

Rosenberg, G.H. 1990. Arizona birding pitfalls. Part 1. Species we take for granted. *Birding* 22: 120–129.

Simon, D. 1977. Identification of Clay-colored, Brewer's, and Chipping Sparrows in fall plumage. *Birding* 9: 189–191.

Storer, R.W. 1954. A hybrid between the Chipping and Clay-colored sparrows. *Wilson Bulletin* 66: 143–144.

Sutton, G.M. 1967. *The Birds of Oklahoma*. University of Oklahoma Press, Norman.

Swarth, H.S., and A. Brooks. 1925. The Timberline Sparrow: A new species from northwestern Canada. *Condor* 27: 67–69.

Van Tyne, J., and G.M. Sutton. 1937. The birds of Brewster County, Texas. *Miscellaneous Publications of the Museum of Zoology, University of Michigan* 37: 1–119.

Willoughby, E.J. 1989. The molts of Chipping Sparrows and Field Sparrows in Maryland. *Maryland Birdlife* 45: 127–134.

———. 1991. Molt of the genus *Spizella* (Passeriformes, Emberizidae) in relation to ecological factors affecting plumage wear. *Proceedings of the Western Foundation of Vertebrate Zoology* 4: 247–286.