Selected Bird Subspecies of Interest in Colorado: Part 1

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Birders have long ignored identification to the subspecies level, but that has changed, with a recent surge of interest. This is likely driven, in part, by the splitting fever in vogue in avian taxonomy (leading to the addition of five species to the Colorado list in the past 15 years!) but undoubtedly also due to enhanced coverage in popular field guides. An additional cause may be eBird's (www.ebird.org) facility for reporting of birds to the subspecies/subspecies group level for some species. Colorado, where three major life zones converge, is a fantastic place to study subspecies: how they interact where they meet (including interbreeding), differences in their habitat choices and migration timing, and other life history disparities.

Previous "In The Scope" essays have treated this topic in a more species-focused fashion, primarily from the potential-future-splits point of view. This essay treats field-identifiable subspecies in a more-distant fashion with the aim of introducing Colorado's birders to some of the amazing variety within species that occur in our state. While some of these subspecies have potential to be elevated to spe-

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Fig. 1 (back cover). This pale beauty is a juvenile Krider's Red-tailed Hawk, as discerned by the overall paleness, with relatively little in the way of markings on the head and the white ground color to the tail. Despite previous decades of little definitive evidence of occurrence in Colorado, recent years have seen a plethora of reports backed by confirmatory photographs, most of adults. Smith Point, Chambers Co., TX; 13 November 2012. Photo by Tony Leukering

Fig. 2 (back cover). The depicted flying sprite is an Eastern Blue-gray Gnatcatcher. The most-easily used plumage feature to differentiate this form from the western subspecies is the extensive white on the outer rectrices, which extends all the way to the white undertail coverts. On Western Blue-gray, the white does not quite extend to the undertail coverts, resulting in a band of black separating the coverts from the white of the rectrices. Smith Point, Chambers Co., TX; 7 October 2012. Photo by Tony Leukering

Fig. 3 (back cover). Unlike the form that breeds in Colorado, individuals of the Eastern/Northern subspecies group of Hermit Thrushes are smaller than Swainson's Thrushes and have browner upperparts and more-orange tails. This bird, with its gray flanks, is probably referable to the western subspecies of the group, euborius, the form of most likely occurrence in the state. Cape May Point, Cape May Co., NJ; 17 January 2015. Photo by Tony Leukering

cies rank, many do not. The pictures on the back cover of this issue provide just a few illustrative examples of the variety inherent in Colorado's avifauna. This essay is *not* intended as a thorough treatment of the subject, but as a primer, and a primer that will occur in this venue in multiple parts, with the species presented in this first part being chosen for the relative ease in which birders can provide distributional data and, generally, for the widespread distribution in the state of the species. In fact, birders can greatly expand upon our knowledge of subspecies distributions, as we have so many more eyes in the field than do taxonomists.

Before digging into subspecies, though, we should take a moment to define what constitutes a subspecies. Many taxonomists in the late nineteenth century and first half of the twentieth century named subspecies on the basis of average differences between populations under study, resulting in a plethora of subspecies, many poorly defined or undefinable. Amadon (1949) followed by Mayr et al. (1953) and Patten and Unitt (2002) attacked this problem with the somewhat misleadingly named "75% rule." Depending on what parameters are chosen, the 75% rule definition means that 90–97% of the individuals of one population must be distinguishable from the equivalent percentage of the other population to be considered a subspecies (Remsen 2010). Many of the earlier classified subspecies are now placed together in "subspecies groups"—one or more subspecies of generally similar appearance and differing from other such groups

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Fig. 4 (back cover). Red Fox Sparrows are of annual occurrence in Colorado in very small numbers, being found primarily in late fall and winter. They differ in many respects from the breeding form, which is generally absent from the state in late fall and winter. The most-readily discerned plumage differences are the upperparts streaking, the thin wing bars, and the sizable patches of rufous coloration on the head. However, beware of hybrid Red × Slate-colored Fox Sparrows, which can show a bewildering mix of characteristics. Cape May Point, Cape May Co., NJ; 3 January 2014. Photo by Sam Galick

Fig. 5 (back cover). Pink-sided Junco provides one of the treats of junco ogling in Colorado from mid-fall through mid-spring. This adult (probably a male) shows off its soft gray head and upperparts contrasting with the extensive pink sides and the black loral area. This subspecies of Dark-eyed Junco is larger, and sports more white in the tail, than all Colorado juncos other than White-winged. Lyons, Boulder Co., CO; 31 January 2017. Photo by Steven G. Mlodinow

Fig. 6 (back cover). This immature White-crowned Sparrow, given this excellent view, is readily determined to belong to the Gambel's subspecies by the pale loral area and orange bill. That form is a fall through spring visitor to the state from its far-northern breeding range. Virtually all White-crowned Sparrows in the state in winter are referable to this form. Union Reservoir, Weld Co., CO; January 2017. Photo by Steven G. Mlodinow

in a fairly consistent fashion; these groupings better conform to the 75% rule.

A sampling of polytypic species of Colorado

"Polytypic" is a great little word that means "of multiple types" and is a descriptor of those species composed of two or more subspecies; the antithesis of it is "monotypic." For polytypic species, one subspecies is the "nominate" one, that is, the one for which the species was named and is indicated in the subspecies trinomial by having the species name (which *always* has a lower-case first letter) repeated (e.g., *Chordeiles minor minor*, the widespread subspecies of Common Nighthawk). Other subspecies for that species have names differing from the species name (e.g., *Chordeiles minor henryi*, the southwestern U.S. breeding form of Common Nighthawk; see Leukering 2016a). In this essay, occurrence of individual subspecies in Colorado has been garnered primarily from Bailey and Niedrach (1965) and Pyle (1997, 2008).

As a beginning to this discussion, those polytypic species that have already seen treatment in *Colorado Birds* are listed in Table 1, along with a reference to the paper treating it (the full citation of which can be found in the Literature Cited section).

Below, we discuss the occurrence in Colorado of ten polytypic species, presented in current taxonomic order promulgated by the American Ornithological Society (AOU 1998 and supplements, including the 58th [Chesser et al. 2017]). For each species, we note the various subspecies that have been officially recorded in Colorado **in boldface** the first time that each appears, with "officially" defined by Bailey and Niedrach (1965) and Pyle (1997, 2008). We also include notation of other subspecies for which there is some evidence of occurrence in the state (usually photographic) or for which potential occurrence is inferred from the subspecies' proximity to the state border. For each subspecies or subspecies group, we provide a telegraphic indication of known range (whether resident or migratory) and some gross estimation of the frequency of occurrence or potential occurrence. For a few species of particular interest, we provide greater detail on the occurrence in Colorado of the various subspecies. We provide a brief synopsis of how the various subspecies of individual species might be identified in the field, though refer readers to field-guide treatments and other publications where such are covered thoroughly. Where there are widely used English names for individual subspecies or subspecies groups, those are noted.

Red-tailed Hawk (*Buteo jamaicensis*) – This species is found in a plethora of color morphs and subspecies in Colorado and winter

ogling of buteos can be very fun, interesting, and challenging. See Wheeler (2003) for subspecific identification criteria in general.

• ***harlani*** (Harlan's Hawk), occurring in both dark and light morphs, is an uncommon migrant and winterer from its eastern Alaska and west-central Canada breeding grounds. Harlan's is decidedly more common in eastern Colorado than on the West Slope, where it is apparently regular only in the Grand Valley (in and near Grand Junction). This subspecies occurs widely in eastern Colorado from early October through mid-April and, as with Red-tailed Hawk in general, is not often found a great distance from trees. Thus, it is sought most successfully in the I-25 corridor and along the major plains riparian zones. See Schmoker and Liguori (2010) for details of an Alaskan "recovery" of a Colorado-wintering Harlan's Hawk. See Ligouri and Sullivan (2010a) for an in-depth discussion of this subspecies's identification

• ***calurus*** (Western Red-tailed Hawk) occurs throughout the state as breeder, resident, and migrant, but meets and hybridizes with *borealis* widely on the eastern plains. This form occurs in three morphs—light, intermediate (rufous), and dark—with, probably, all present in varying numbers in winter, particularly on the West Slope. Virtually all eastern-Colorado breeders are of the light morph, which generally exhibit a dark throat, a heavy belly band, and usually extensive brown or rufous barring on the upper leg feathers (= "flags"), and often have multiple dark tail bands.

• ***borealis*** (Eastern Red-tailed Hawk) breeds and winters in eastern Colorado, but see above. Many individual Red-tailed Hawks in eastern Colorado are intermediate in appearance between Western and Eastern Red-tailed Hawks, particularly in summer; the migration and winter seasons there see an influx of Easterns. Adult Eastern Red-taileds have white throats, sometimes with a dark frame; fairly minimal belly bands; unmarked whitish flags; and any banding in the tail being restricted to a single dark subterminal band.

• ***krideri*** (Krider's Hawk; subsumed into *borealis* by Pyle 2008; Fig. 1 on back cover) may actually be a pale morph of Eastern Red-tailed Hawk (Wheeler 2003, Pyle 2008), rather than a good subspecies of its own. That is because its entire known breeding range is embedded within the range of Eastern Red-tailed Hawk, a phenomenon precluded by subspecies theory. Regardless, there has been a recent plethora of well-photographed individuals referable to this form in northeastern Colorado, after decades of numerous unsubstantiated reports; recent advances in field-guide treatment of Krider's (particularly its differentiation from light-morph Harlan's Hawk) are probably the primary cause of this change. For a de-

tailed discussion of Krider's identification, see Ligouri and Sullivan (2010b).

• *abieticola* (Northern Red-tailed Hawk; subsumed into *borealis* by Pyle 2008) breeds in the extensive Canadian boreal forest, but vacates virtually all of the breeding range for winter. Little is known of this taxon, though Liguori and Sullivan (2014) thoroughly treated our current knowledge of its identification. However, that paper presented little about its distribution. Wheeler (unpubl. ms.) considers this taxon to be simply part of the incredibly extensive variation in appearance in his expanded *borealis*. There are 15 reports in eBird of this form from Colorado, with all but one from the northern plains (primarily Weld County); the other is from Bent County.

Sandhill Crane (*Antigone canadensis*) – Two subspecies occur in Colorado with, generally, Greater Sandhill Crane (***tabida***) being found in western Colorado and Lesser Sandhill Crane (***canadensis***) traveling through eastern Colorado. Greater is the form that concentrates in the San Luis Valley in spring, breeds in northwestern Colorado in summer, and has fairly recently been found wintering in the Colorado River drainage on the West Slope. Lesser is a long-distance migrant that passes through eastern Colorado on its way to winter grounds to our south and east; it is considerably less abundant as a spring migrant, as virtually the entire subspecies' population passes through eastern Nebraska at that season. The recent occurrence of Sandhill Crane breeders and summering individuals in Larimer and Weld counties are presumably of Greaters, as Lesser is unknown to breed anywhere near Colorado. Greater averages some 10–15% larger than Lesser. However, there is overlap between the two subspecies in the five mensural characters reported by Pyle (2008), though only minimal for most, particularly leg length. Greaters have flatter crowns, giving a more aggressive look, while Lessers tend to have more rounded forecrowns, producing a gentler look. Additionally, Greaters have more extensive red crowns than Lessers (Gerber et al. 2014). By age, Greaters have browner flight feathers, Lessers blacker flight feathers (Pyle 2008), probably producing a more-contrasting upper wing in Lesser.

Northern Flicker (*Colaptes auratus*) – Virtually all Colorado birders are aware of two types of flickers in Colorado, the more westerly occurring Red-shafted (***cafer***) and the more easterly Yellow-shafted (***auratus***). However, what seems much less widely known is that intergrades between the two are frequent, even common, in eastern Colorado, particularly in migration and winter, when intergrades can outnumber the parental subspecies at some locations. Indeed, subspecific identification is far more complicated than presented in field

guides. Readers should understand that the task is quite challenging and that identifying flickers to subspecies *solely* on wing/tail color or head pattern is *utterly unreliable*. A future "In The Scope" column will treat this tricky situation.

Warbling Vireo (*Vireo gilvus*) – Western (***swainsoni***) and Eastern (***gilvus***) Warbling Vireos have received particular focus in recent years in eastern Colorado, as both subspecies breed there. Unfortunately, male song is currently the only reliable differentiating character, though Westerns average drabber in appearance and are smaller-billed. Also unfortunately, the species account in the recently published second Colorado Breeding Bird Atlas (Leukering 2016b) did not provide specifics on the breeding-season distribution of the two taxa. In general, Eastern Warbling breeds in cottonwood/willow riparian habitat on the plains while Western Warbling is found in montane and western deciduous-forest types. The specifics, though, are a bit more convoluted. Both subspecies breed in a narrow band of longitude just to the east of the Front Range edge and can be found singing nearly side by side at some locations. A paper concerning the breeding distribution of Warbling Vireo taxa in eastern Colorado is planned for *Colorado Birds*. The excellent Earbirding.com blog (Spencer 2012) provides a great introduction into differentiating these two taxa, which may well be split soon.

Blue-gray Gnatcatcher (*Polioptila caerulea*) – Western Blue-gray Gnatcatcher (***obscura***) is the standard Colorado gnatcatcher, breeding commonly in suitable habitats from the Front Range and Mesa de Maya (the ridge of foothills extending east from the Rockies to the westernmost portion of Oklahoma's panhandle), westward, and occurring statewide during migration (excepting at upper elevations). However, most range maps show a gap in the Blue-gray Gnatcatcher breeding range extending from central Kansas and Nebraska to central Colorado. Yet, there are gnatcatchers breeding, at least locally, between the Front Range and central Kansas/Nebraska. Recently, some of these have been identified as Eastern Blue-gray Gnatcatchers (***caerulea***; Fig. 2 on back cover), with breeding first confirmed at South Republican State Wildlife Area (SWA; formerly Bonny Lake State Park), Yuma County (Leukering 2016c). Breeding is also suspected at Simmons SWA, Yuma County, and Tamarack Ranch SWA, Logan County. During migration, Western is fairly common east to Colorado's eastern border, while scattered records of Eastern have been noted as far west as Lincoln and western Weld counties (Fig. 7). As far as we are aware, the subspecific identity of the few wintering individuals (most regularly near Grand Junction; Righter et al. 2004) has not been ascertained.

Blue-gray Gnatcatcher subspecific identification is most reliably accomplished by differences in song and call (Pieplow 2012). The undertail pattern can also be quite useful (see Sibley 2014), and the upperpart coloration tends to be more richly blue in Eastern versus grayish-blue in Western, though this is difficult to reliably use in the field.

Hermit Thrush (*Catharus guttatus*) – Differentiation within Hermit Thrush is complex, and is best presented in subspecies groups. While Hermit Thrush occurrence in Colorado is not as complex as that for Dark-eyed Junco (see below), the difficulty of field differentiation of Hermit Thrush subspecies makes for a less-tractable problem than that presented by juncos. All plumage descriptions here are taken from Pyle (1997).

- *auduboni* group (Western Mountain group) – The three subspecies of this group are montane, with a breeding distribution centered on the Great Basin, occupying suitable habitat from eastern California north to southeast Washington and southern Montana south to west Texas and into Mexico. Their upperparts are usually grayish, with their tails being relatively dull, but still contrasting with the even-duller upperparts. The nominate subspecies of the group (***auduboni***) is the form breeding in the Rocky Mountains and is the largest form of *Catharus* thrush of any species. The back is "medium-pale grayish brown," the flanks are washed with the same color, and the undertail coverts are pale buff. This subspecies apparently vacates the U.S. for winter (Pyle 1997), thus is the longest-distance migrant of this group. The other two subspecies, *sequoiensis* and *polionotus*, have not been recorded in the state, but the latter (which has white undertail coverts) seems of likely occurrence on the West Slope (breeds eastern California to northwestern Utah and Arizona, winters south from southern Arizona).

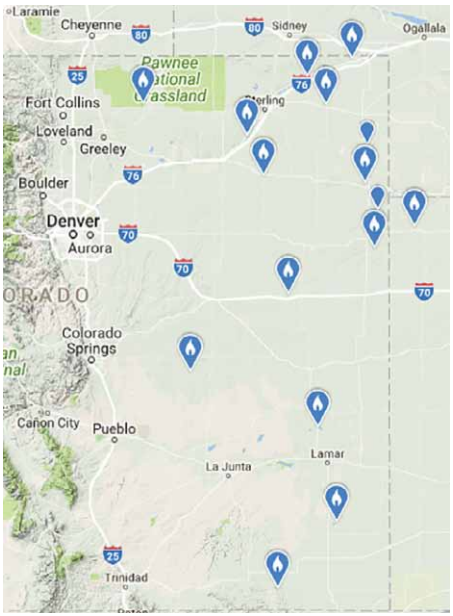

Fig. 7. Distribution of records of Eastern Blue-gray Gnatcatcher (subsp. caerulea) in Colorado (eBird 2017).

- *guttatus* group (Western Lowland group) – As a group, the

eight subspecies are nearly entirely confined as breeders to west of the Continental Divide. As indicated by the group's other moniker, Dwarf Hermit Thrush, these are small thrushes—in fact, the smallest *Catharus* thrushes in the U.S. and Canada. The northwesternmost-breeding subspecies, ***guttatus***, breeds from coastal southern Alaska to western British Columbia and winters from northern California south to Arizona and east to western Texas and into Mexico. As with other terrestrial migratory Pacific Northwest taxa (e.g., Cassin's Vireo and Townsend's Warbler), this subspecies probably occurs regularly and in some numbers in the state, as evidenced by the 11 Colorado specimens housed at the Denver Museum of Nature and Science (DMNS; Bailey and Niedrach 1965). The Northern Rockies subspecies, ***oromelus***, breeds from southern interior British Columbia to northwestern Montana southwest to northeastern California and winters from southern New Mexico to southern Texas and south into Mexico. Despite the group name of "Western Lowland," this is the subspecies that breeds in stunted, treeline and near-treeline forest in and near Glacier National Park, Montana (where it extends onto the east side of the Continental Divide). Of course, treeline there is about 2140 m (6500 feet), so, relatively low compared to Colorado elevations. Not surprisingly with those summer and winter ranges, this subspecies also occurs, probably regularly and in numbers, in Colorado, with 13 state-obtained specimens housed at DMNS (Bailey and Niedrach 1965). The Colorado specimens of Dwarf Hermit Thrush are predominantly from eastern low elevations: 10 and 11 specimens, respectively (the odd specimens out were one each of both subspecies from Grand County and one of *oromelus* from Montezuma County). From our experience in eastern Colorado, these forms may account for the lion's share of early-season Hermit Thrush occurrences in the state. Certainly, mid-April in Colorado's mountains is not conducive to breeding Hermit Thrushes and these two forms are among the longest-distance migrants in the species (thus need more time to make their spring migrations). Since *guttatus* is heading to coastal-plain habitats, it seems intuitively likely that this form would be amongst the earliest migrants to pass through Colorado, perhaps disproportionately so relative to the local breeding form (*auduboni*, above). The upperparts of this subspecies group are generally browner than in the other two subspecies groups. The back of *guttatus* is "moderately dark grayish brown" contrasting somewhat with a rump that is washed pale rufous; its flanks are washed brownish gray. This back of *oromelus* is "moderately pale brownish gray, without rufous" and the flanks are washed pale grayish.

- *faxoni* group (Northern group [a mistake in Pyle (1997) has

this group as the *nanus* group, despite that the subspecies *nanus* is included in the Western Lowland group]). – This group is composed of medium-sized Hermit Thrushes (thus, smaller than Swainson's Thrush) and has two subspecies, ***euborius*** and ***faxoni***. The group has the largest breeding range of the Hermit Thrush subspecies groups, ranging from central Alaska to the Canadian Maritimes and south in the eastern U.S. to the northern Georgia highlands. The two forms of Northern Hermit Thrush meet somewhere in western Canada and both winter east of the Rocky Mountains, so both would be expected to occur in Colorado; in fact, there are specimens of both housed in DMNS. Of the six specimens at DMNS, five are of *euborius* (Fig. 3 on back cover) and one is of *faxoni*, all taken in eastern Colorado (Bailey and Niedrach 1965). The five *euborius* are scattered in spring (22 Apr–20 May) and fall (29 Sep–5 Oct). The single *faxoni* was collected 8 February 1939 and was reported as referable to *crymophilus* of Newfoundland (Bailey and Niedrach 1965), but that taxon was considered by Pyle (1997) to be incorrectly based on old specimens whose color had changed—a well-known phenomenon among some bird groups. Interestingly, two of the five eBird records from Colorado of this subspecies group are also from winter, though both were in Boulder in the same winter (2016–2017) and separated by some 4.75 km (though both were in close proximity to Boulder Creek, so the two reports may refer to the same individual). The others were from spring (one on 15 Apr 2011, two on 16 Apr 2016) and fall (19 Oct 2010). The back of *euborius* is "moderately dark brown with a medium-dull rufous wash" and with the flanks "washed grayish brown, sometimes tinged tawny," while *faxoni* has the back "brown with a medium-bright rufous wash" and the flanks "washed tawny brown."

Spotted Towhee (*Pipilo maculatus*) – The predominant subspecies of Spotted Towhee in Colorado, during all seasons, is *montanus*, hereafter "Montane," and as for all subspecies noted here, part of Pyle's (1997) Interior group. This subspecies breeds in montane shrubland and low-elevation riparian forest. However, the breeding and migratory ranges of *arcticus*, hereafter "Prairie," apparently include the northeastern corner of Colorado. Bailey and Niedrach (1965) note 34 specimens of *arcticus* at DMNS, "the majority … from the prairie counties of eastern Colorado taken in April and May," but with an anomalous record of a June specimen from Jefferson County. eBird (2017) shows a scattering of summer (May–Jul) records of Prairie Spotted Towhee from northeastern Colorado (Fig. 8), with a small number from elsewhere on the plains. Winter and migration records of Prairie come primarily from northeastern Colorado, but with scattered records west to the I-25 corridor from Pueblo north (Fig. 9) and

with a February specimen from Adams County (Bailey and Niedrach 1965). Note, however, that most such records are from heavily birded locales (most are indicated as eBird hotspots), thus the map may be tracking birding effort more precisely than actual occurrence. Additionally, the Great Basin subspecies, *curtatus*, probably occurs in migration and winter (perhaps most likely on the West Slope), as A. R. Phillips notated labels of three Colorado specimens in the DMNS collection as referring to that subspecies, with one of those from Denver (Leukering pers. obs.).

Differentiation of Montane and Prairie relies primarily on the extent of white on the outer rectrices (most easily noted on the under side of the tail) and, particularly, the amount of white spangling above. These white features are more extensive in Prairie as compared to Montane, though data from Pyle (1997) suggest that the difference in amount of white in the tail is only marginally greater (27–42 mm on the outermost rectrix in Prairie, 25–40 in Montane). Pyle (1997) notes color differences of the head, back, and rump in males of the two subspecies, *montanus* being "uniformly black," *arcticus* being "grayish black." It also seems likely that there are at least average differences in female color; Pyle (1997) describes female *montanus* as blackish slate, *arcticus* as slaty brown. Since Montane and Prairie are subspecies, and since the subspecies apparently meet in northeastern Colorado, intergrades are to be expected, and apparent intergrades are not unusual. Finally, Great Basin Spotted Towhee is described by Pyle (1997) as having head, back, and rump uniformly blackish in males, dark slaty brown in females.

Fox Sparrow (*Passerella iliaca*) – Colorado hosts two subspecies groups, with the breeding form being ***schistacea***, the nominate member of the Slate-colored group. Slate-colored breeds primarily in the Rocky Mountains from Colorado north to northern British Columbia. It is quite rare on Colorado's plains *at any time* and is very rare anywhere in the state between September and March, though a feeder at No Name, Garfield County, has an inexplicable history of hosting the form (eight winters between 1998–1999 and 2015–2016, inclusive; T. McConnell pers. comm., eBird 2017). Despite mention in Bailey and Niedrach (1965), we seriously doubt the identification of eight at Morrison 28 January 1956; it is difficult enough to find eight together in the breeding season when they are expected, much less in winter when there are so few proven reports. Other old non-specimen reports of this subspecies group in Colorado in winter and on the plains are likewise of questionable authenticity. The Red Fox Sparrow (*P.i. iliaca* group; Fig. 4 on back cover) breeding range stretches from western Alaska to the Canadian Maritimes,

while the regular winter range extends from southeastern Minnesota and southeastern Canada south to Texas and northern Florida. This subspecies group is represented in the state by ***zaboria*** (Bailey and Niedrach 1965), whose breeding range spans interior Alaska to Manitoba. Differentiation of Red and Slate-colored is well covered in most relevant field guides. Red Fox Sparrow occurs annually in Colorado during winter and migration, with most records coming from the I-25 corridor (likely due in part to birder and feeder density) plus a scattering eastward across Colorado's plains. There are three Red Fox Sparrow records from Colorado's West Slope, including the slope's first in Ouray County (Levad and Leukering 2001, Leukering 2002:105). The other West Slope records hail from Delta and Montezuma counties (CBRC 2017).

The Sooty Fox Sparrow (*P. i. unalaschcencis* group) is a long-distance migrant, breeding as far north as southern Alaska and wintering south to northern Baja California. It has occurred as far astray as New Hampshire and certainly has the potential of appearing in Colorado. Potentially confounding the identification of both Red and Sooty Fox Sparrows is the enigmatic *P. i. altivagans*, which breeds

Fig. 8. Distribution of summer (May–Jun) records of Prairie Spotted Towhee (subsp. arcticus) in Colorado (eBird 2017).

Fig. 9. Distribution of winter and migration records of Montane Spotted Towhee (subsp. arcticus) in Colorado (eBird 2017).

primarily in northeastern British Columbia and looks like a combination of *unalaschcencis*, *schistacea*, and *iliaca* and is also a long-distance migrant, wintering in southern California. Finally, Red and Sooty Fox Sparrows interbreed where their ranges meet in south-coastal Alaska. Identifying a Sooty Fox Sparrow in Colorado would be complicated by the possibility of this hybrid (see Mlodinow et al. 2012 for more details).

Dark-eyed Junco (*Junco hyemalis*) – A book could be written on the subspecies of this widespread and incredibly variable beast. In fact, one has been (Miller 1941). Many disagree with the current taxonomic treatment of juncos; at least a few forms or groups of forms might deserve elevation to species status, reversing the great lumping of juncos beginning in 1973 (Eisenmann et al. 1973). As in the Hermit Thrush account, we treat this species by subspecies group. The various field guides, particularly the National Geographic Society (Dunn and Alderfer 2011) and Sibley (2014) guides, treat the identification of various subspecies groups fairly well. Note that appearance varies not only by subspecies, but by age and sex, with immatures and females being generally duller and browner than are adults and males within each subspecies and that field determination of some immature females to subspecies group (to say nothing of individual subspecies!) is problematic, at best.

- *oreganus* group (Oregon Junco) – The Cascades-breeding *similimus* is a medium-bright form that is probably of sporadic occurrence as a migrant and winterer. From its Sierran and western Great Basin breeding range, *thurberi* is a stunningly bright form of regular occurrence in small numbers in western Colorado. Bailey and Niedrach (1965) report a single Colorado specimen of another bright subspecies, nominate ***oreganus***, collected in Denver 16 October 1885. The subspecies ***shufeldti*** (including *montanus*) is the dull, widespread, and common wintering form in Colorado; the breeding range includes interior western Canada and the northern Rockies.

- *hyemalis* group (Slate-colored Junco) – Nominate ***hyemalis*** is a migrant and wintering form throughout Colorado, but more common in the eastern half than in the western half. Cassiar Junco (***cismontanus***), the males of which are colored like Slate-colored but has the head contrast of Oregon, is considered by Pyle (1997) and eBird as a "good" subspecies of Slate-colored. However, many (including Miller 1941 and Nunes pers. comm.) consider it to comprise a hybrid swarm of individuals originating where *hyemalis* Slate-colored and *oreganus* Oregon meet in western Canada and southeast Alaska. Such birds are of regular occurrence in small numbers along the Front Range edge in eastern Colorado, with

scattered records on the plains south to the New Mexico border and west of the Front Range.

• *mearnsii* group (Pink-sided Junco) – The pale ***mearnsii*** (Fig. 5 on back cover) is the sole member of this "group" and is about the most numerous wintering junco in the eastern portion of the state. Pink-sided is a large junco, with pale head plumage contrasting with blackish lores, extensive white in the tail, and with bright pink side coloration (not orange at all) that extends closer to the belly's longitudinal midline than in any other form of junco, at least in adults. Were it not for the pink sides, Pink-sided Junco would be much more likely to be confused with White-winged Junco than with other forms.

• *aikeni* group (White-winged Junco) – The largest form of the genus, ***aikeni*** is another monotypic "group" of Dark-eyed Junco subspecies and is restricted as a breeder to the Black Hills of South Dakota and nearby ranges in northeastern Wyoming. It is an uncommon winter resident along the Front Range and Wet Mountains, particularly in the ponderosa pine zone, and is a rare winter resident and migrant on Colorado's eastern plains. This subspecies has been recently treated in *Colorado Birds* (Leukering 2016e).

• *caniceps* group (Gray-headed Junco) – The southern Rockies breeding form, ***caniceps***, is widespread in montane parts of the state in all seasons and fairly rare to very rare on the eastern plains in migration and winter. Though *dorsalis* (Red-backed Junco) has yet to be confirmed as occurring in the state, the breeding range approaches Colorado fairly closely in northern Arizona and should be looked for, particularly in Montezuma County. It can be differentiated from Gray-headed most easily by its two-toned bill (like that of Yellow-eyed Junco). An apparent intergrade Gray-headed × Red-backed was photographed in Jefferson County (Leukering and Mlodinow 2012). Such intergrades are not rare in northern Arizona.

White-crowned Sparrow (*Zonotrichia leucophrys*) – Of the five subspecies of White-crowned Sparrow, two, possibly three, occur in Colorado. The summering, Mountain White-crowned Sparrow (***oriantha***), and wintering Gambel's White-crowned Sparrow (***gambelii***; Fig. 6 on back cover), replace each other seasonally in the state, with surprisingly little temporal overlap in occurrence. The very first Mountains typically arrive in mid-April, but the hordes not until May. The departure of Colorado's breeders probably begins in late August, though most depart in September, with only a very few stragglers found here in the first half of October. The first Gambel's typically arrive in the state in mid-September (there are a few earlier records) with peak fall passage occurring in the first three weeks of October;

the majority of Gambel's continue farther south for the winter. The first half of April sees the beginning of northward Gambel's migration, with the peak occurring near the end of April, coinciding with the beginning of the influx of Mountains. By mid-May, Gambel's has become somewhat rare and the subspecies is all but gone by the last week of May. The Eastern White-crowned Sparrow (nominate *leucophrys*) probably occurs nearly annually in northeastern Colorado, given the occurrence of dark-lored White-crowned Sparrows (see below) in an area where Mountain White-crowneds are fairly rare and with seasonal occurrence outside the norm for Mountains.

While few birders seem to endeavor to differentiate the two subspecies, there are at least three characters (other than seasonal occurrence timing) that provide certain (or nearly so) identification. Some vocalizations—song and contact call—differ by subspecies, though those aspects are not covered here (though see Sibley 2014). The two best appearance clues are bill color—pink in Mountain, orange in Gambel's—and color of the loral area—dark in Mountain (hence the term "dark-lored"), pale in Gambel's. These features are most distinctive in adult plumage, less so in immature plumage. Determining whether the loral area is dark or light can be particularly tricky in immatures. As with many sparrow species (juncos provide a particularly good example), determining whether the loral area is actually contrastingly dark is best done with a view in profile. The loral feathers lie in such a way as to nearly always look dark when viewed from head on; appearance can be deceiving even on individuals with the head turned only partly toward the observer. Under normal field conditions, Eastern White-crowned Sparrow looks identical to Mountain White-crowned Sparrow, though Pyle (1997) describes the difference in upperparts coloration as "medium-pale brownish and reddish" in Mountain and "medium-dark grayish brown and reddish" in Eastern. Because field differentiation of these two "dark-lored" subspecies is so difficult, eBird has a category—"White-crowned Sparrow (dark-lored)"—that can be used if subspecies identification is uncertain. We strongly encourage its use for dark-lored birds found in Colorado between mid-October and mid-April, inclusive, particularly for individuals found in the northeastern corner.

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Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6