

DISTRIBUTIONAL INFORMATION ON BIRDS FROM EGG SETS
COLLECTED BY HENRY ROGERS DURKEE
IN 1870 IN SOUTHWESTERN WYOMING

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ABSTRACT.—Henry Rogers Durkee collected 74 egg sets of 27 avian species in 1870 at Gilmer, Uinta County, in southwestern Wyoming. Despite the paucity of documented breeding evidence from this region during the late 19th and early 20th centuries, his material at the Smithsonian Institution was generally overlooked and has never been critically examined. Durkee's egg sets included 5 species (Sandhill Crane, *Grus canadensis*; Northern Rough-winged Swallow, *Stelgidopteryx serripennis*; Grasshopper Sparrow, *Ammodramus savannarum*; Fox Sparrow, *Passerella iliaca*; Cassin's Finch, *Carpodacus cassinii*) whose breeding distribution was then poorly known, 25 to more than 70 years before nests and eggs were otherwise documented in Wyoming. Durkee also collected complete egg sets of Lark Bunting (*Calamospiza melanocorys*) over 70 years before breeding was confirmed at other peripheral locations in Wyoming. In addition, Durkee's incomplete egg sets of Grasshopper Sparrow were the 1st for the western subspecies (*A. s. perpallidus*); his incomplete egg set and nest of the Fox Sparrow collected at Gilmer constituted the 2nd locality for the species or species group (*P. i. schistacea*). Although the number of egg sets Durkee collected is modest, he made a meaningful contribution to the early history of avifaunal exploration in Wyoming.

Key words: eggs, museum collections, Wyoming, distribution, history, *Ammodramus savannarum*, *Grasshopper Sparrow*, *Calamospiza melanocorys*, *Lark Bunting*, *Passerella iliaca schistacea*, *Fox Sparrow*, *Grus canadensis*, *Sandhill Crane*.

Distributional information on confirmed breeding birds from southwestern Wyoming during the latter half of the 19th century is scarce (Knight 1902, McCreary 1939, Dorn 1978). Apart from the journey by T. Nuttall and J.K. Townsend in 1834, ornithological exploration of Wyoming did not begin until the 1850s (Knight 1902, Dorn 1978). This included a Union Pacific Railroad survey in 1858 when over 100 species were collected by Constantin Drexler (a taxidermist at the Smithsonian Institution; Lindsay 1991) from April to June along Blacks Fork of the Green River at Fort Bridger, Uinta County, in the southwestern corner of the state (Baird et al. 1858). McCreary (1939), who was the most reliable source of information on the birds of Wyoming before the 1940s (Dorn and Dorn 1990), cited no other historical information from Uinta County. Other than a few efforts in the 1860s (Dorn 1978), ornithological expeditions in Wyoming resumed in the 1870s (Knight 1902, Dorn 1978). This included Stevenson's (1872) exploration in 1870 around Fort Bridger and the northern

slope of the Uinta Mountains (which included Utah; Behle 1981) for about 20 days after the breeding season (see map of route in Johnson 1987). During the breeding season in 1872, Nelson (1875) also explored the vicinity of Fort Bridger (and the northern slope of the Uinta Mountains in Utah, 50 km south of Fort Bridger; Behle 1981), where he documented 43 species. Another, earlier (1870) expedition during the breeding season was by Henry Rogers Durkee in Uinta County at and near Gilmer. The material Durkee collected was deposited at the United States National Museum (USNM; Henry 1871). Subsequent authorities, however, overlooked this material (other than Dorn [1978], who never examined it), except Baird et al. (1874) and Bendire (1892), who cited breeding information on the Lark Bunting (*Calamospiza melanocorys*) and Prairie Falcon (*Falco mexicanus*), respectively, and Ridgway (1889), who cited a specimen of a Prairie Falcon (adult male, USNM 60176; exchanged on 12 January 1882 to J.H. Gurney).

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Historical breeding information on Lark Bunting and other selected species is significant not only to southwestern Wyoming but to the entire state. Our purpose, where the emphasis is on verifiable distributional records (cf. Johnson 1976), is to fully document this material. We supplement this information with additional historical (late 19th and early 20th centuries) breeding records from other sources from Wyoming for the Sandhill Crane (*Grus canadensis*) and Grasshopper Sparrow (*Ammodramus savannarum*).

STUDY AREA

Gilmer (41°09'N, 110°50'W), about 50 km west-southwest of Fort Bridger (41°19'N, 110°23'W) and along a stream approximately 2135 m elevation, was founded by lumberjacks in 1867 to supply ties to the approaching Union Pacific Railroad. Later, Gilmer (shown on map of 1872 in Asher and Adam's Wyoming; Wyoming State Archives collection number C1002) was renamed Bear River City (Beartown). The railroad arrived in 1868, and by 1870 Gilmer/Beartown had become a ghost town (Larson 1965, Miller 1977, E. Kinney personal communication), when people left for Evanston (Uinta County seat), 15 km northwest of Gilmer. Elevation of the Bear River basin around Gilmer ranges from 1525 m to 2745 m (see map in Knight 1994:44).

RESULTS AND DISCUSSION

Durkee collected 74 egg sets of 27 species (Table 1) from 9 May to 14 July 1870, as well as 12 nests, some skins, and osteological material (complete skeletons and skulls). Forty-two egg sets are extant in the Smithsonian Institution, while 32 are no longer there. Three sets were exchanged to other institutions, but the whereabouts of the other 29 are unknown. We obtained information on all 32 sets from the original catalog entries, along with additional information on the remaining egg sets, from the Office of the Registrar files at the Smithsonian Institution. We provide complete documentation for 6 species.

Sandhill Crane (*Grus canadensis*)

An unknown individual collected 1 complete egg set of 2 eggs (USNM 37018) for Durkee

at Gilmer on 1 June. Measurements (mm) are 99.17×63.57 and 95.92×64.25 . The eggs were on the ground near a creek.

The only unambiguous breeding evidence for Sandhill Cranes in Wyoming during the 19th century other than Durkee's egg set was another set of 2 eggs collected by N.L. Davis at Jackson Hole, near Yellowstone National Park, on 29 May 1895 (Museum of Vertebrate Zoology 7951) and young captured in a homestead pasture near Thayne, Lincoln County, during the last decade of the 19th and 1st decade of the 20th centuries (C.M. White personal communication). Grinnell (1875), who was quoted by many later authorities (e.g., Knight 1902, Dorn 1978), stated that many cranes were breeding in the Black Hills (that included Wyoming) in 1874. However, his only detailed report of 1 non-vagile young two-thirds grown that was removed from a nest in a pine tree certainly pertained to a Great Blue Heron (*Ardea herodias*), even though he claimed to have seen only "a few" herons. Sandhill Cranes (without breeding documentation) also were reported from the Bear River valley during August and September 1839 to 1849 (Dorn 1986), on 2 May 1858 at Fort Bridger (Baird et al. 1858) where C. Drexler collected a specimen (USNM 11355; head and neck only but present whereabouts are unknown), in the foothills of the Uinta Mountains in October 1870 (Grinnell 1873), at Jackson Hole and Yellowstone National Park from July to September in the early to mid-1870s (Grinnell 1876, Dorn 1986), in the Sweetwater River valley from June to September 1877 (Dorn 1986), and near the headwaters of the Green River in 1904 (Grave and Walker 1913). In northern Utah the earliest breeding records of Sandhill Cranes are from the late 1860s to the mid-1880s (Ridgway 1877, Sugden 1938, Behle and Perry 1975). Breeding Greater Sandhill Cranes (*G. c. tabida*) were common in the central and northern Rocky Mountains until the late 19th century, when they rapidly decreased following human activities (Drewien and Bizeau 1974).

The next convincing breeding records from Wyoming occurred in the northwest. Other than undetailed reports by Skinner (1925) and Bailey (1930) that extend as far back as 1895, breeding was confirmed in 1924 (adults with young; Walkinshaw 1949) and 1931 (nest with eggs; McCreary 1939, Walkinshaw 1949).

TABLE 1. The 74 egg sets (plus 12 nests) of 27 species that H.R. Durkee collected at or near Gilmer, Uinta County, Wyoming, in 1870.

Species name ^a	Number of egg sets ^b	USNM numbers ^c
Northern Pintail (<i>Anas acuta</i>)	(3)	(15608–15610)
Northern Harrier (<i>Circus cyaneus</i>)	3 (1)	15601, 3711–37112 (15603)
Swainson's Hawk (<i>Buteo swainsoni</i>)	1	15593
Ferruginous Hawk (<i>B. regalis</i>)	1 (1)	37105 (15594)
American Kestrel (<i>Falco sparverius</i>)	1	37120
Prairie Falcon (<i>F. mexicanus</i>)	1	15596
Greater Sage-Grouse (<i>Centrocercus urophasianus</i>)	2 (1)	15605, 37080 (15607)
Sandhill Crane (<i>Grus canadensis</i>)	1	37018
Spotted Sandpiper (<i>Actitis macularia</i>)	1 (1)	15611 (15612)
Long-eared Owl (<i>Asio otus</i>)	2	15598–15599
Cliff Swallow (<i>Petrochelidon pyrrhonota</i>)	1 (1)	15643 (15642)
Barn Swallow (<i>Hirundo rustica</i>)	(1)	(15644)
Northern Rough-winged Swallow (<i>Stelgidopteryx serripennis</i>)	1	15645
Mountain Bluebird (<i>Sialia currucoides</i>)	1 (2) ^d	15626 (15625, 15649)
American Robin (<i>Turdus migratorius</i>)	2	15613–15614
Sage Thrasher (<i>Oreoscoptes montanus</i>)	3 (0) ^e	15623–15624, 37241
Yellow Warbler (<i>Dendroica aestiva</i>)	1 (1) ^e	15641 (15640)
Green-tailed Towhee (<i>Pipilo chlorurus</i>)	1 (1)	15656 (15634)
Brewer's Sparrow (<i>Spizella breweri</i>)	4 ^e (4)	15637–15639, 15663 (15661–15662, 15664–15665)
Vesper Sparrow (<i>Poocetes gramineus</i>)	3 ^e (4)	15631, 37202–37203 (15633, 15658–15660)
Lark Bunting (<i>Calamospiza melanocorys</i>)	2 (1)	15627–15628 (15669)
Savannah Sparrow (<i>Passerculus sandwichensis</i>)	1 ^d	15668
Grasshopper Sparrow (<i>Ammodramus savannarum</i>)	2	37218–37219
Fox Sparrow (<i>Passerella iliaca</i>)	1 ^d	15654
White-crowned Sparrow (<i>Zonotrichia leucophrys</i>)	3 ^d (2) ^{de}	15646–15647, 15652 (15653, 15655)
Brewer's Blackbird (<i>Euphagus cyanocephalus</i>)	2 ^d (7) ^d	15618, 15651 (15615–15617, 15619–15621, 15650)
Cassin's Finch (<i>Carpodacus cassinii</i>)	1 (1)	15629 (15666)

^aTaxonomy follows the 7th edition of the AOU Check-list of North American Birds (1998) and the 42nd supplement (AOU 2000).

^bNumbers without parentheses refer to the number of egg sets in the collections of the Smithsonian Institution; numbers within parentheses refer to number of egg sets of unknown disposition or exchanged with other institutions that have been assigned numbers from catalogs at the Smithsonian Institution.

^cNumbers without parentheses refer to egg sets in the collections of the Smithsonian Institution; numbers within parentheses refer to egg sets no longer in the collections of the Smithsonian Institution.

^dDurkee also collected 1 nest that contained an egg set of this species.

^eDuree also collected 1 empty nest of this species.

Thereafter, breeding populations began recovering in a region centered from northeastern Utah northward along the Idaho-Wyoming border to southwestern Montana (Sugden 1938, Walkinshaw 1949, 1973, Drewien and Bizeau 1974, Behle and Perry 1975). This region encompassed upper tributaries of the Bear River in southwestern Wyoming, including Uinta County (Walkinshaw 1973). Subsequent information indicates that Sandhill Crane breeding populations are continuing to recover in southwestern Wyoming (Dorn and Dorn 1990, Scott 1993, Price et al. 1995, Luce et al. 1999) and confirms nesting in latilong 22, where Gilmer was located.

The timing of the sharp decline, followed by recovery, of breeding populations in Wyoming and northern Utah, as well as elsewhere

in the central and northern Rocky Mountains from the late 19th through the 20th century, strongly suggests the egg set collected by Durkee at Gilmer in 1870 represented occupation of the original range of this species. Subsequent population recovery in Wyoming apparently began in the northwest where birds were protected in the national parks (Kemsies 1930, Walkinshaw 1949). It was also aided by elimination of direct persecution by humans (shooting for food; Walkinshaw 1949, Braun 1975) and by reestablishment of the American beaver (*Castor canadensis*), whose dams create and maintain wetland habitats (ponds, meadows, willow [*Salix* spp.]-dominated shrublands) that are suitable for breeding cranes along higher-order streams in the valleys of remote ranges (Sugden 1938, Walkinshaw 1949,

1973, Johnsgard 1986). The earliest implied association of beaver dams and Sandhill Cranes in Wyoming was along tributaries of the Tongue River in the Powder River basin on 14 August 1805, when F.A. Larocque, a French-Canadian fur trader, stated, “. . . there was no beaver work [dams] [but] I saw a few cranes” (Burpee 1910).

Northern Rough-winged Swallow
(*Stelgidopteryx serripennis*)

Durkee collected 1 incomplete egg set of 2 eggs (USNM 15645) at Gilmer on 18 June. One egg is broken into 2 pieces; the other egg measures 18.55 × 12.99 mm. Both eggs appear to be identified correctly. They are larger than Bank Swallow (*Riparia riparia*) eggs, and the shells have a slight glossy coating that Bank Swallow eggs do not. The nest was in a hole in a sand bank.

The only other documentations of the Northern Rough-winged Swallow in Wyoming during the 19th century were 3 specimens (USNM 11052–11054, the last exchanged to O. Salvin in 1863) collected at Fort Bridger on 18–19 May and 3 June 1858 (Baird et al. 1858), and at least 1 bird listed for the earliest date of spring arrival (late May) at Cheyenne in 1888 (Oberholser 1917), which may be the bird that Knight (1902) reported as “taken” by F. Bond. Regardless, the late date of this report, when compared with other earliest arrival dates (April) at all other localities in the northern Rocky Mountains, suggests the species may have been misidentified. The subsequent report in Wyoming of birds in the Teton region in the early 20th century (Grave and Walker 1913) is uncertain and may have been misidentified Bank Swallows (cf. Oregon: Jobanek and Marshall 1992; Georgia: McNair and Post 1994). Regardless, Northern Rough-winged Swallows were known to have bred as far north as Montana and North Dakota by 1910 (AOU 1910). Bailey (1930) and Kemsies (1930) stated that Northern Rough-winged Swallows were rare breeders (no nests documented) in Yellowstone National Park, but subsequent authorities found them to be fairly common to common breeders throughout Wyoming (McCreary 1939, Dorn and Dorn 1990, Scott 1993, Luce et al. 1999). Nonetheless, the 2nd documented breeding record (nest with eggs) did not occur until 62 years after Durkee’s, in 1932 (McCreary 1939). Inadequate observa-

tion in Wyoming during the late 19th and early 20th centuries, not a range expansion, is sufficient to explain this delay.

Lark Bunting
(*Calamospiza melanocorys*)

Durkee collected 3 complete egg sets in June (4 eggs each; *contra* Baird et al. 1874) at Gilmer, 1 each on the 14th (USNM 15627) and 15th (USNM 15628) as well as 1 on the 10th (USNM 15669), whose whereabouts are unknown. Measurements (mm) are 21.69 × 17.35, 21.20 × 16.80, 21.68 × 16.95, and 21.00 × 15.95 (USNM 15627) and 21.16 × 16.26, 21.83 × 16.78, 21.25 × 17.26, and 21.58 × 17.10 (USNM 15628). These sets were collected from nests on the ground (Baird et al. 1874). Durkee also collected 2 skulls (USNM 11226, 11336; the latter identified as a female) and 1 whole specimen (female, USNM 60203; whereabouts unknown) at Gilmer (exact dates unknown).

Since the time of Nuttall (1840), Lark Buntings have been abundant in Wyoming in the shortgrass plains, their “core” range (Baird et al. 1874, Coues 1874, Knight 1902, Grave and Walker 1913, McCreary 1939, Scott 1993, Rising 1996; see maps in Kantrud 1982 and Price et al. 1995; cf. Colorado: Kingery 1998). They rarely breed at elevations as high as 2227 m in grassland basins (Knight 1902). The historical evidence includes egg sets from the mid-1870s to the 1880s (USNM unpublished data) and from 1909 (McCreary 1939), as well as nests discovered in 1874 near the Black Hills that almost certainly included northeastern Wyoming (Grinnell 1875). The “core” breeding range excludes Uinta County; other than Durkee’s records, breeding (and nonbreeding) occurrences were undocumented west of central Sweetwater County before 1940 (McCreary 1939). Before 1940 in Utah, Lark Buntings occurred 5 times (Porter and Egoscue 1954). R. Ridgway collected a juvenile male (USNM 58597) in the Wasatch Mountains (which do not quite extend into Wyoming) at 1952 m on 30 July 1869, but he stated this bird was a “straggler” and it was fully fledged (Baird et al. 1874, Ridgway 1877, 1901; JPD personal examination). One bird near the Bear River marshes on 1 June 1916 may have nested, but the only confirmed breeding evidence in north central Utah was 1 nest with eggs near American Fork on 15 May 1898 (Behle 1942, Porter and Egoscue 1954, Hayward et al. 1976).

Since 1940, peripheral populations of Lark Buntings have nested irregularly in western Wyoming (including the southwestern part), especially during "wet" years (Johnsgard 1986, Scott 1993, Rising 1996, Luce et al. 1999), although breeding has not been confirmed in Uinta County except for Durkee's records. In eastern Utah peripheral populations have markedly increased since 1940 (Behle 1942, Killpack 1951, Behle and Selander 1952, Porter and Egoscue 1954, Behle et al. 1963, Behle and Perry 1975, Hayward et al. 1976, White et al. 1983). Most records have been of vernal migrants during May, but they also have included adults in breeding condition and confirmed nest records in areas near southwestern Wyoming such as Uintah County in the Uinta Basin (Killpack 1951, Porter and Egoscue 1954, Hayward et al. 1976, Behle 1981, Behle et al. 1985). In north central Colorado in a mountain park, 1 peripheral pair has nested as high as 2440 m (Bailey and Niedrach 1965), which is unusual (Rising 1996).

The similar timing of peripheral breeding populations of Lark Buntings in southwestern Wyoming and northern Utah in the late 19th century and since 1940 suggests that Durkee's nest records at Gilmer in 1870 did not constitute a bonafide range extension (cf. Colorado; Kingery 1998). The absence of observations in southwestern Wyoming between the above 2 periods could exist because Lark Buntings did not occur or were overlooked due to insufficient observer effort, notwithstanding their erratic occurrence. Our current knowledge of the Lark Bunting's breeding distribution in peripheral areas of Wyoming suggests the latter reason is more likely.

Grasshopper Sparrow
(*Ammodramus savannarum*)

Durkee collected 2 incomplete egg sets at Gilmer in June, 1 egg on the 13th (USNM 37219) and 2 eggs on the 15th (USNM 37218). Measurements (mm) are 21.09×14.27 (USNM 37219) and 19.33×15.07 and 19.38×14.95 (USNM 37218). Although all 3 eggs have a darker base color (cream) and more reddish brown spotting than most other Grasshopper Sparrow eggs in the USNM collections, they have the same coloration as some other Grasshopper Sparrow eggs. Both egg sets were taken from nests placed on the ground in grass near a creek. Durkee saw 1 adult leave a nest but was unable to shoot the bird.

At Fort (Fred) Steele, Carbon County, near the Union Pacific Railroad in south central Wyoming, W.B. Moody on 9 May 1885 discovered a nest on the ground that contained 4 eggs (Canadian Museum of Nature 1534). Measurements (mm) are 18.0×15.5 , 18.5×14.6 , 18.5×15.0 , and 18.7×15.2 . Their identity as Grasshopper Sparrows was confirmed by M. Gosselin. Moody also stated the incubating bird was seen. However, this egg set occurred in latilong 26 where the Grasshopper Sparrow has never been reported during the breeding season (Luce et al. 1999). Furthermore, the complete clutch was collected on a very early date for Wyoming, before Grasshopper Sparrows normally arrive in the latter half of May (McCreary 1939, Dorn and Dorn 1990, Scott 1993; earliest date, 14 May). Because the eggs are those of the Grasshopper Sparrow, an inadvertent transcription error of the date (9 May instead of 9 June, for example) may have occurred. A number of other reasons for a mistake are also possible. More information on the distribution and initiation of egg-laying of Grasshopper Sparrows in Wyoming is required to better ascertain the authenticity of this questionable egg set.

Near Thermopolis, Hot Springs County, A.G. Reed, collecting for G.W. Morse (of Tulsa, Oklahoma), discovered on 12 July 1923 a nest with 4 eggs that was placed on the ground at an angle of big rocks at the base of a mountain (Western Foundation of Vertebrate Zoology 118290). The nest was composed of weed stems and grasses, lined with finer grass, horsehair, and wastepaper, and sheltered by a large weed. Incubation had begun. Measurements (mm) are 17.87×14.22 , 17.89×14.04 , 17.96×14.47 , and 17.29×13.85 . Their identity as Grasshopper Sparrows was confirmed by R. Corado.

Few active nests of Grasshopper Sparrows have been discovered in Wyoming (Long and Matulionis 1966, Wyoming Natural Diversity and Wildlife Observation Databases, this study). The distribution of 3 historical nest records in Uinta and Hot Springs Counties (this study) is consistent with later confirmation of breeding in these 2 counties or an associated latilong (Long and Matulionis 1966, Luce et al. 1999, Wyoming Wildlife Observation Database: adults fed recently fledged young in latilong 10, which contains the town of Thermopolis in Hot Springs County).

Apart from the previously overlooked valid historical egg sets, Long and Matulionis (1966)

documented the 1st confirmed nest record of the Grasshopper Sparrow (*Ammodramus sava-narum*) in Wyoming on 29 June 1964, which was overlooked by Luce et al. (1999). The nest with 3 young, near Mountain View, Uinta County, at 2135 m, was at the same elevation as Gilmer and about 55 km from the town, but it was discovered 94 years later than the 1st confirmed breeding records for Wyoming in 1870.

The nest records in 1870, however, preceded by 2 years (1872) a report (overlooked by Knight 1902) that Grasshopper Sparrows were "abundant" in grassy fields from late June to mid-July in the vicinity of Fort Bridger (Nelson 1875), strongly suggesting that birds were also breeding there. Otherwise, the next occurrence was a male collected in breeding condition (gonads enlarged; Field Museum of Natural History 167607) at Newcastle, Wyoming, in the foothills of the Black Hills in 1906 (Grave and Walker 1913, McCreary 1939). Although Kantrud (1982) documented a local, patchy distribution (also see Neilson 1923) in native habitat in the shortgrass plains of eastern Wyoming, most late writers have stated that Grasshopper Sparrows are widespread in this region (Johnsgard 1986, Dorn and Dorn 1990, Scott 1993, Price et al. 1995, Vickery 1996, Luce et al. 1999). Grasshopper Sparrows do have a very local, patchy distribution in the central and western portions of the state (see maps in Price et al. 1995, Vickery 1996). The 1st breeding evidence (aside from the valid historical egg sets documented herein and Nelson's report) of several pairs (no nests documented) occurred at Yellowstone National Park in 1929 (Kemsies 1930).

Durkee's egg sets and Nelson's reports from southwestern Wyoming in 1870 and 1872 occurred during the same period (1869–1872) when breeding and nonbreeding Grasshopper Sparrows were documented by 5 pioneer collectors at a number of localities in the lowlands of northern Utah (Allen 1872, Behle and Ross 1945, Hayward et al. 1976), where they also have a local, patchy distribution (Price et al. 1995, Vickery 1996). In addition, the Grasshopper Sparrow in 1869 also occurred at higher elevations in meadows at Parley's Park (1983 m) in the Wasatch Mountains (Ridgway 1877). The next reports of birds in Utah after 1872 were in 1893 and 1927 (Pearson 1927, Hayward et al. 1976). However, in 1893 at a different locality, north of American Fork, W.

Mitchell, for H.C. Johnson, collected a previously undocumented set of 5 fresh eggs (1 broken; Western Foundation of Vertebrate Zoology 116430) on 9 June. The nest was on the ground among grass stalks in a hay field. The 4 egg measurements (mm) are 19.3×15.3 , 19.3×14.9 , 18.9×15.3 , and 18.9×15.0 . Their identity as Grasshopper Sparrow was confirmed by R. Corado. After 1927, Grasshopper Sparrows were next reported in Utah during the early 1940s, mainly in the Uinta Basin (Behle and Ross 1945, Woodbury et al. 1949, Behle and Selander 1952). They declined again (Behle et al. 1963, Hayward et al. 1976), yet partially recovered, in Utah where they are currently concentrated along the northern border (Vickery 1996). The basis for population fluctuations of Grasshopper Sparrows in Utah is unknown, although habitat degradation has been implicated as a cause for some of the declines (Behle et al. 1963, Hayward et al. 1976, Behle 1981).

In 1869, R. Ridgway (1877) collected the type specimen (adult male; USNM 58605) of the western subspecies of the Grasshopper Sparrow (*A. s. perpallidus*) in northeastern Utah on 4 June; he did not find a nest although other individuals in Utah collected 2 egg sets at Ogden in 1871–1872 (USNM 16066, 16280). Durkee's egg sets in Wyoming in 1870, however, constitute the 1st verified eggs of this subspecies.

The similar timing of occurrence of breeding Grasshopper Sparrows in southwestern Wyoming and Utah, in the early 1870s and after 1940, suggests that Durkee's egg sets at Gilmer, the nest also discovered in Uinta County by Long and Matulionis (1966), and the egg set near Thermopolis in 1923 did not document a bonafide range extension. Unlike Lark Buntings, historical populations of the Grasshopper Sparrow in Utah were well established, and their disappearance suggests that unexplained population fluctuations may have been a factor for the absence of observations of Grasshopper Sparrows over a long period from southwestern Wyoming. Nonetheless, our current knowledge of the Grasshopper Sparrow's local, patchy breeding distribution in this region also suggests the species was overlooked because of insufficient observer effort.

Fox Sparrow
(*Passerella iliaca*)

Durkee collected 1 incomplete egg set of 1 egg (USNM 15654) at Gilmer on 2 June.

Measurement is 22.45×15.94 mm. The egg has very little blue in the base color, but it matches about half of the Fox Sparrow eggs in the collections of the USNM. He also collected the nest, which was in a "bush," and a specimen (USNM 60200; whereabouts unknown).

Earlier, 11 specimens (USNM 11229–11239; 4 exchanged in 1859 and the early 1860s to H. Bryant, A.L. Heermann, G.N. Lawrence, and O. Salvin) of adult Slate-colored Fox Sparrows (*P. i. schistacea* or *P. schistacea*; see Zink 1994, Rising 1996, Zink and Kessen 1999) were collected in 1858 from 9 April to 2 June at Fort Bridger (Baird et al. 1858; also see Zink 1986), where C. Drexler stated they were very common. The collection dates, relative abundance, and qualitative statements on the relative abundance of many other species at Fort Bridger (Baird et al. 1858) suggest that Fox Sparrows were breeding in the area, where they have been an early spring migrants.

The type specimen of the Slate-colored Fox Sparrow (USNM 5718) also was described in 1858, although it was collected 2 years earlier (Baird et al. 1874, Bendire 1889; see Rising 1996). In 1869, R. Ridgway stated *schistacea* (although see Behle and Selander 1951 who separated *swarthi* from *schistacea*) was one of the most numerous species in willow thickets along streams during late June at 1952 m in the Wasatch Mountains of north central Utah. He collected 7 egg sets here although the only set still accounted for at the Smithsonian Institution is a nest and 3 eggs (USNM 15362) on 23 June that was parasitized by the hatchling from 1 egg (whereabouts unknown) of a Brown-headed Cowbird (*Molothrus ater*; Baird et al. 1874, Ridgway 1877, Bendire 1889). Other than these records, Durkee's egg and nest that he collected the next year at Gilmer, Wyoming, constituted only the 2nd verified locality for this subspecies (or species) group.

Other than Durkee, neither McCreary (1939) nor any earlier authority documented nest records of the Fox Sparrow in Wyoming, although Skinner (1925), Bailey (1930), and Kemsies (1930) stated it was a rare breeder in Yellowstone National Park. Few breeding records have been confirmed since 1940 in western Wyoming, where the Fox Sparrow is now known to have a generally uncommon, local breeding distribution (Johnsgard 1986, Zink 1986, Dorn and Dorn 1990, Scott 1993, Price et al. 1995, Rising 1996, Luce et al. 1999). This

includes the southwest in latilong 22 where Gilmer is located; Scott (1993) stated that breeding birds are present along Uinta County road 159, near Beartown (= Gilmer), at mid- to high-altitude marshes. Behle (1981), in the adjacent Uinta Mountains of Utah, called this marsh type "submontane wet meadows"; breeding Fox Sparrows are most numerous here on intermediate slopes (1830–1983 m).

In western Wyoming breeding Fox Sparrows are usually associated with mid- to high-altitude, willow-dominated wetlands along streams where they occupy dryer portions of this habitat (Salt 1957; see Rising 1996 for brief descriptions of other breeding habitats occupied by *schistacea*). The historical reduction of beavers by trapping undoubtedly eliminated many willow-dominated wetlands, and although humans did not directly persecute Fox Sparrows (unlike Sandhill Cranes), the species must have declined, although insufficient observer effort in restricted habitat (even though the bird has a loud, distinctive song) also may explain its apparent absence from western Wyoming from the mid-1870s until the 1920s. Nonetheless, our past and current knowledge of the breeding status and ecology of the Slate-colored Fox Sparrow in Wyoming and adjacent states strongly suggests the nest record at Gilmer in 1870 was not a range extension, but that the species had been overlooked. Other than the historical records at Fort Bridger and Gilmer, the next reliable occurrence of Slate-colored Fox Sparrows in Wyoming was several nonbreeding birds (including a male with a partially deformed bill, USNM 230594) near Afton, Lincoln County, on 18 August 1911 (Grave and Walker 1913).

Cassin's Finch
(*Carpodacus cassinii*)

Durkee collected 2 incomplete egg sets of 1 egg each (USNM 15629, 15666; whereabouts of latter set unknown) at Gilmer on 14 June. Measurement is 21.55×14.63 mm. The nest was on a low branch in a pine tree. Durkee also collected 1 skull (USNM 11338) and a whole specimen (female, USNM 60204; whereabouts unknown) at Gilmer (exact dates unknown).

The only earlier record of Cassin's Finch in Wyoming occurred in 1860 when 2 males in breeding condition were collected (USNM 19250–19251; the latter skin was exchanged to

the Hungarian National Museum in 1869) by F.V. Hayden on 5 June near Union Pass in the Wind River Mountains (Coues 1874). This was the presumed northeastern breeding limit of the species in western North America as known at that time, although during the 1870s Merriam (1873) and Grinnell (1876) documented the occurrence of birds in August (without breeding evidence) at Yellowstone National Park, and Williston (1879) documented non-breeding birds during early September at the Medicine Bow Mountains where Grinnell took specimens. Later authorities documented Cassin's Finch to be fairly common to common in suitable habitat in most of Wyoming, including the southwest (Grave and Walker 1913, McCreary 1939, Duvall 1945, Dorn and Dorn 1990, Scott 1993, Price et al. 1995, Luce et al. 1999). Consequently, the egg and nest collected by Durkee in 1870 at Gilmer are expected, although Cassin's Finch otherwise has not been confirmed breeding in latilong 22 in southwestern Wyoming (Luce et al. 1999), and Durkee's egg set preceded by 35 years the next confirmed breeding record in Wyoming, in 1905 (McCreary 1939).

General Evaluation

Henry Rogers Durkee (born 16 September 1847, died 6 July 1916) may have been a resident of Wyoming Territory (Henry 1871:29), but he was not listed in the official census of 1870 (nor in any other state or territory). His parents' home, where he maintained a library filled with a complete set of Pacific Railroad reports plus many other books and publications on the exploration and natural history of North America, was at Kenosha, Wisconsin (U.S. Censuses of 1850 and 1880; Smithsonian Institution archives). S.F. Baird sponsored many individuals who were engaged in scientific collecting (Dorn 1978, Mearns and Mearns 1992; cf. Manitoba, Thomas 1985, Houston and Bechard 1987, Lindsay 1991), but Baird did not know Durkee until sometime shortly before 5 May 1870 when Durkee wrote Baird from Gilmer that he had just shipped specimens (skins that included Gray-crowned Rosy Finches [*Leucosticte tephrocotis*]) to the Smithsonian Institution (archives). Durkee wrote Baird on 7 June that he did not require any payment for these specimens, but Durkee in lieu of Baird's standing offer did ask him for a copy of the results of the King Expedition

(1867–1869) of the 40th parallel (that was not published by the United States Geological Survey until 1877). Thus, Baird never sponsored Durkee, although they developed a cordial correspondence. This correspondence reveals that Durkee was an inveterate collector (zoology, paleontology, mineralogy, ethnology) and an erudite man (who had attended the University of Michigan). Durkee also contributed to the Smithsonian Institution insects (mainly Coleoptera), snails (shells with animals), fish, lizards, mammals, Tertiary fossils, human remains, and perhaps other objects from Gilmer and the nearby area (Henry 1871:29, 48; Smithsonian Institution archives).

By November 1870 Durkee had moved to Salt Lake City, Utah, where he anticipated obtaining work as an assayer and mining engineer (after spending some time prospecting for petroleum at Gilmer). He met professor O.C. Marsh, the paleontologist from Yale University (Davis 2000), but they were unable to visit Gilmer to collect fossils. Durkee also met F.V. Hayden, who led many western expeditions for the United States Geological Survey in the 1860s and 1870s (e.g., Stevenson 1872, Merriam 1873). Hayden promised Durkee that he would send him maps, a compass, and sturdy boxes for shipping specimens from Utah back to the Smithsonian Institution. This shipment was to be delivered to Durkee in care of the Salt Lake City Museum (established in 1869; Behle 1990). Durkee wrote Baird on 12 December that he had little time and opportunity to collect birds and other vertebrates but wished to develop the best mineralogical collection in the territory. Later (letter of 14 January 1871), he told Baird that he wanted to receive 75 identified minerals from the Smithsonian Institution to begin a reference collection and would ship minerals from Utah in return, but Durkee never did this. Ewan (1950), in his exhaustive compendium on naturalists of the Rocky Mountains, does not list H.R. Durkee, even though he lists other mining engineers (as well as professional geologists and itinerant prospectors) who collected objects of natural history.

Until early 1874 Durkee (letter of 6 March 1874, Smithsonian Institution archives) remained mostly in Utah and Wyoming, where his business (smelting silver ores) prevented him from continuing his collecting activities. He never again collected bird specimens, a

fact that accounts for the abrupt end to communication between Durkee and Baird after January 1871 (except for 2 later letters written by Durkee), despite obvious mutual interests and the relationship both men had cultivated. Baird (letter of 29 June 1870) had even told Durkee that his results from Gilmer would be published in King's outstanding report on the exploration of the 40th parallel. Later (ca. 1875), Durkee even met Baird at the Smithsonian Institution when the former was passing through Washington, D.C. (letter of 2 October 1877, Smithsonian Institution archives). We are uncertain why the important avian material that Durkee collected at Gilmer, other than for Lark Bunting, was apparently overlooked by S.F. Baird (and other ornithologists at the Smithsonian Institution such as R. Ridgway, who wrote the ornithology section of King's report) in the late 19th and early 20th centuries. Ironically, Baird et al. (1874) did not appear to recognize the significance of the Lark Bunting's peripheral breeding location in southwestern Wyoming. C.E. Bendire (1892, 1895) was honorary curator of the Department of Oology at the Smithsonian Institution from 1883 to 1897 (Mearns and Mearns 1992), but his 2 volumes on eggs and breeding habits of birds covered only 8 of the 27 species for which Durkee collected egg sets. This does not include any of the 6 species fully documented herein. Regardless, although the Smithsonian Institution received only a modest number of incomplete and complete egg sets from Durkee, he collected egg sets for 6 of 27 species (22%) that have made a valuable contribution to our knowledge of their early breeding distribution and the episodic development of the history of avifaunal exploration in Wyoming (cf. Utah; Behle 1938, 1990). Concurrent historical breeding information from northern Utah reinforced Durkee's results and provided a larger perspective on the importance of his material for several of these 6 species, notwithstanding our knowledge of their current breeding status in Wyoming (and the northern Great Basin and Rocky Mountains). For 5 species (excluding Lark Bunting), Durkee's egg sets at Gilmer preceded the next documented (verified or unverified) breeding records of nests that contained eggs in Wyoming by 25 (Sandhill Crane) to over 70 years (Slate-colored Fox Sparrow). In addition, the Lark Bunting eggs preceded confirmation of

breeding at other peripheral localities in Wyoming by over 70 years.

The known historical and current breeding ranges, required habitats, and juxtaposition of montane and sagebrush steppe biomes in extreme southwestern Wyoming in Uinta County (see Knight 1994 for list of major vegetation types; also see Cary 1917, Dorn 1986, Johnson 1987) suggest these 6 species and the other 21 would have been accessible to Durkee over the greater-than-2-month period in 1870 that he was at and near Gilmer, along the Bear River. Durkee collected more than 95% of the egg sets he sent to the Smithsonian Institution. He did not send some egg sets collected by finders for him because these sets could not be properly identified, although Baird reassured Durkee that the Smithsonian Institution would receive and identify these egg sets for him. The collection numbers he assigned to egg sets have some inconsistencies. Durkee did not always collect (or preserve) full clutches, perhaps because some eggs (and skins) were lost transporting them to his field or base camp, in preparation, sending them to the Smithsonian Institution, or for other reasons (cf. Montana; Bechard and Houston 1986). Skins of breeding adults of Lark Bunting, Fox Sparrow, and Cassin's Finch (and possibly Northern Rough-winged Swallow), and nests of Lark Bunting and Cassin's Finch that were associated with the egg sets documented herein, as well as skins and nests of many other species, were shipped in separate boxes from the egg sets and received at the Smithsonian Institution (where this material was cataloged). However, the 74 skins (and many nests) of 31 species are no longer here and their whereabouts (except for exchanged or destroyed specimens) are unknown. Durkee collected egg sets for 17 of 27 species (63%) for which C. Drexler collected skins during the early breeding season in 1858 at nearby Fort Bridger, where Drexler also collected birds over several months (also see Nelson 1875). This includes 3 of the 6 species fully documented herein (Sandhill Crane, Northern Rough-winged Swallow, Fox Sparrow) that during the breeding season in Wyoming rely on riparian habitats, in contrast to the remaining 3 species (Lark Bunting, Grasshopper Sparrow, Cassin's Finch) that do not. Baird et al. (1858) stated that Drexler collected his birds around Fort Bridger (built on islets in the stream; Dorn

1986), which was surrounded by open land with cottonwoods (*Populus* spp.) and other riparian species such as willows (Dorn 1986). However, we lack information that should have been attached to specimen labels on habitats and the elevations at which birds, eggs, or their nests were collected at Gilmer by Durkee, except for several species such as the Barn Swallow (*Hirundo rustica*) and Mountain Bluebird (*Sialia currucoides*) that nested on man-made structures (on a rafter in an old house, under a railroad platform) in town. Information on habitats and elevations would have been especially useful for the Lark Bunting, at the periphery of its range and rare at 2135 m.

We have generally argued that insufficient observer effort is probably the primary reason for the scarcity or absence of records of species mentioned in the late 19th (after the mid-1870s) and early 20th centuries. Grand Teton and Yellowstone National Parks, the latter the nation's first, have generally received greater observer effort than the rest of western Wyoming (Knight 1902, Dorn 1978). Even there, coverage was generally insufficient during the interregnum and several of the 6 species were not discovered or re-discovered until the 1920s, when greater observer effort resumed (Skinner 1925, Bailey 1930, Kemsies 1930, Schaller 1964; see other references in Dorn 1978; cf. Utah: Behle 1938, 1990, Hayward et al. 1976). In addition, probable misidentification of Northern Rough-winged Swallows for Bank Swallows may have delayed an accurate assessment of breeding status, regardless of their rather restrictive nest-site requirements. Nonetheless, anthropogenic habitat modification (reduction or degradation of willow-dominated wetlands following a severe decline in beavers by trapping, which required a 20-year closed season from 1899 to 1918 to help restore populations; Grasse and Putnam 1950), probably was important in the historical decline of breeding populations of 2 other riparian species. One of these (Sandhill Crane) was also shot and had a well-documented regional decline (central and northern Rocky Mountains). In addition, 1 of the 2 grassland species (Grasshopper Sparrow) also may have declined from anthropogenic causes (grazing of grasslands along riverbottoms by livestock, which greatly increased after 1870; Johnson 1987, Knight 1994), although this is not documented. Our

data on the historical breeding distribution and status of these 6 species are too incomplete to serve as more than a rudimentary basis for detecting population change, and yet these changes do reflect our increased knowledge of the avifauna of Wyoming, one of the most thinly populated areas in the continental United States.

The breeding status of the other 21 species for which Durkee collected egg sets (Table 1) is of no especial historical importance because these species were widely distributed and generally numerous in Wyoming since at least the late 19th century (Knight 1902, Grave and Walker 1913, Dorn 1978; also see Nelson 1875). Nonetheless, Durkee's egg sets constitute the 1st nest records in Wyoming for many of these common species (McNair and Dean unpublished), including 5 of 6 obligates or near-obligates (excluding only the Sage Sparrow, *Amphispiza belli*) of sagebrush communities (Baker et al. 1976). Most early expeditions focused on collecting specimens (skins), not egg sets (e.g., Baird et al. 1858; Ridgway's [1877] extended expedition in the late 1860s when 49.5% of collected material was nests and eggs were an exception), even when collectors were present at sites during the breeding season, which happened rather infrequently in Wyoming (see Dorn 1978; cf. northern plains, where egg collecting did not begin in earnest until the 1890s [Houston and Bechard 1982]). Documentation of nests and eggs for these 21 species in the 3 earliest works on Wyoming birds (Knight 1902, Grave and Walker 1913, McCreary 1939) was usually meager (although see Bendire 1892, 1895). No Wyoming authorities were ornithologists and only B.H. Grave was a zoologist (Dorn 1978); ironically, Knight, a geologist, and McCreary, a chemist, were members of the American Ornithologists' Union and Grave was not (Palmer et al. 1954). Regardless, all men were scientists, recognized the importance of verified material, and promoted collecting (especially skins). They did ignore or overlook some egg sets that were available (this study, Bendire 1892, 1895; for other references see Dorn 1978). Further research in museum collections may uncover historical breeding information for some of these 21 (and other) species in Wyoming in the late 19th and early 20th centuries, especially from sites located along or near railroads. In addition, some common species remained overlooked even in the most densely populated area of the state

(southeast Wyoming) into at least the 1920s (e.g., at Wheatland; Neilson 1925), and other regions of Wyoming remained undersampled into the 1960s and even afterwards (Dorn and Dorn 1990, Scott 1993, Price et al. 1995, Luce et al. 1999). Ornithological databases of the Wyoming Natural Diversity program and the Wyoming Fish and Game Department contain few records before the 1960s (Korfanta et al. 1998, Ayers and Anderson 1999, G.P. Beauvais personal communication). This combination of factors enhances the value of museum collections for obtaining information on the breeding status of birds in Wyoming (cf. Utah; Behle 1938, 1990, Porter and Egoscue 1954), until the eventual demise of oology as a quasi-legal hobby by the 1960s (Kiff 1989, 2000). Wyoming has a richer historical legacy than heretofore appreciated except by Dorn (1978), attested to by the egg sets collected by H.R. Durkee at Gilmer in 1870, which have been largely forgotten by modern ornithologists.

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