

ment indicate an external control over migration. The accelerations and the retardations of migration with changes in the sun lead to the belief that it is not only the guiding influence in migration movements but is probably the seasonal starter of the movements. The demonstrated limited control by the sun places us a step closer to the causal factors of migration.

From consideration of the cyclic character of migration, it is evident that there is a *continuity* to the yearly migration. We must speak of the *regularity* of migration and look upon the difference in arrival dates from year to year as a manifestation of this regularity. The time when a species is due to arrive at any point of its migration path is not accidental but is dependent upon *real cosmic* factors. This continuity of arrival, as attested by the half century record of the brant and shorter records for others, demonstrates that migration takes its place as another of the inter-related mechanics of nature.

GRASS LAKE, MICH.

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## FIELD EXPERIENCES WITH MOUNTAIN-DWELLING BIRDS OF SOUTHERN UTAH

BY ALDEN H. MILLER

Some of the mountains of southern Utah were visited in the late summer of 1872 by H. W. Henshaw and a considerable amount of information on the birds of this section of the state was set forth by him in the reports resulting from his ornithological explorations and the explorations of his associates (*U. S. Geog. and Geol. Explorations and Surveys*, Vol. V, Chap. III, 1875). Since then little has been added regarding the birds of this region. In 1927 Tanner (*Condor*, XXIX, 1927, pp. 196-200) listed the birds of the lowlands of the Virgin River and mentioned also certain species found in Zion Cañon and in the Pine Valley Mountains. Stanford in a recent article (*Auk*, XLVIII, 1931, pp. 618-621) offers notes on the hawks and owls of Sevier County, including the high mountains of the Fish Lake district. Accompanying the increased accessibility of the mountains of this part of Utah due to the development of national parks and other scenic features, considerable advance in the knowledge of local bird distribution is to be expected. It may appear presumptuous for me to offer comments on the birds of southern Utah on the basis of a short acquaintance with the region. But, my systematic collecting and study during late June and July in Utah in 1931 have disclosed a number of

facts of seeming value. These are offered as a small contribution to a complete report on the birds of the state which, it is anticipated, will be compiled by other persons who have had extended contacts with Utah birds.

Four principal mountain stations were made by Mrs. Miller and myself as follows: June 28 to July 1, Cedar Breaks, elevation 10,000 feet, Parowan Mountains, Iron County; July 2-4, summit of Escalante Mountains, elevation 9,000 feet, seven miles east of Widtsoe, Garfield County; July 5-7, ten miles north of Fish Lake, elevation 10,000 feet, Sevier County; July 8-10, Great Basin Experiment Station, elevation 8,800 feet, Wasatch Mountains east of Ephraim, Sanpete County.



FIG. 10. Left: Meadow, rocks, and Spruce timber at Cedar Breaks, Iron County, Utah. Photograph taken July 1, 1931. Right: Nest and young of Audubon's Hermit Thrush, Great Basin Experiment Station, Wasatch Mountains, Sevier County, Utah. Photograph taken July 8, 1931.

The Cedar Breaks camp was at the edge of a broad, alpine meadow on the top of the mountains surrounded by scattered clumps of conifers, chiefly Engelmann's spruce (*Picea engelmanni*) and Colorado blue spruce (*P. parryana*). Figs. 10 and 11). Clumps of low alpine willows bordered some of the stream courses running through the meadow while great piles of loose rock adjoined the meadows and provided excellent retreats for marmots and pikas. In places the meadows of the summit gave way to flats covered with artemisia brush. At lower elevations firs and yellow pines (*Pinus ponderosa*) replaced the spruce forest.

The section of the Escalante Mountains visited was lacking in open forests or meadows. The region consisted rather of steep slopes, in places densely forested with spruce, quaking aspens (*Populus tre-*

*muloides*), and firs. Somewhat more open tracts of timber on the south exposures contained a scattering of yellow pines and lodgepole pines (*Pinus murrayana*) with occasional patches of low brush on the forest floor. (Fig. 11).

In Sevier County we drove to the resorts on Fish Lake, thence north through an open valley on an old sheepherder's road to a point at the edge of a broad meadow surrounded by tracts of artemisia. To the south an open aspen, spruce, and fir forest covered the sides of a ridge which rose to an elevation of 11,000 feet.

In the vicinity of the forestry experiment station, known as the Great Basin Experiment Station, several zones of floral conditions were encountered. Below the conifers a belt of Gambel oaks (*Quercus gambelii*) formed a low dry forest at an altitude of about 7,000 to 8,000 feet. Such a forest also was present near the base of the Parowan Mountains. The oaks gave way higher up to aspens, firs, and *Pseudotsuga taxifolia*, with an extensive ground cover of bushes two to four feet high. This was the nature of the forest about the station. Here there were a few small stream-side meadows. Still higher, on the open summits of the mountains at 10,000 feet, small clumps of short spruces dotted an open terrane, largely dry at this season, although in places meadow conditions prevailed.

The majority of the birds listed below were seen at one or several of the places just described. A few were noted while we were traveling or at overnight camps between the four principal stations. The list includes all species noted in the mountains and only those occurring at lower elevations that attracted particular attention. Numbers refer to specimens in the Museum of Vertebrate Zoology.

EASTERN GOSHAWK. *Astur atricapillus atricapillus*. One was seen in the aspens on the Escalante Mountains. A female (No. 58090) taken ten miles east of Kamas, Summit County, on July 13 was of the eastern race indicated. The bird had two short-tailed juvenals stationed in the lodgepole pines. At the time of my arrival the young were feeding upon a Dusky Grouse. On the ground beside them was a dead Fremont squirrel. Stanford (*op. cit.*) records both this race and *striatulus* from Sevier County in winter but does not mention details regarding the identification of the two forms. The female which I took near Kamas is a typical light-backed *A. a. atricapillus* with the feathers of the under parts bearing narrower and lighter median streaks than in *striatulus*. I find no difficulty in distinguishing this bird from the much darker breeding *striatulus* of California.

WESTERN RED-TAILED HAWK. *Buteo borealis calurus*. Four were seen about the meadow north of Fish Lake and a single bird was noted flying over similar terrane on the summit east of Ephraim.

OSPREY. *Pandion haliaëtus carolinensis*. One was seen flying over Fish Lake where it also was reported by Stanford. The local ranger, Mr. O. Torgerson, informed me that the Osprey was seen daily and evidently was resident there.

GRAY RUFFED GROUSE. *Bonasa umbellus umbelloides*. Near the Experiment Station on July 8 I encountered a female with a number of chicks the size of small quail. The adult was greatly perturbed



FIG. 11. Left: Small meadow in the spruce timber inhabited by Gray-headed Juncos, Rocky Mountain Pine Grosbeaks, and White-crowned Sparrows, at Cedar Breaks, Iron County, Utah. Photograph taken June 29, 1931. Right: Spruces, aspens, and lodgepole pines on the Escalante Mountains, Garfield County, Utah. Photograph taken July 2, 1931.

and demonstrated her anxiety in the bushes within fifteen feet of me until the chicks stopped peeping and ceased running about. This locality is somewhat south of the range of this species in Utah as hitherto defined. Two days after the above mentioned experience a Ruffed Grouse was nearly run over by my car as I rounded a turn in the road near the Experiment Station and found the bird occupied with a dust bath.

A male (No. 58094) taken July 15 to the north in the Wasatch Mountains near Randolph, Rich County, was molting but possessed many fresh body feathers, the coloration of which agrees with that of specimens of *umbelloides* from British Columbia.

SAGE HEN. *Centrocercus urophasianus*. A hen and at least six half-grown young were flushed from a patch of low artemisia brush between the meadow and the aspen forest north of Fish Lake. This occurrence was on July 5 at an elevation of 10,000 feet.

HORNED OWL. *Bubo virginianus*, ssp.? Several times flushed from spruce thickets at Cedar Breaks and at Fish Lake. At the latter place a group of birds, presumably a family, was heard hooting about our camp on the night of July 5.

NIGHTHAWK. *Chordeiles minor*, ssp.? This species was common on the sage flats ten miles southeast of Sigurd, Sevier County, at an altitude of about 6,500 feet. On July 6 at this place they were booming frequently. None was seen in the mountains in the timbered areas or about the open meadows at 10,000 feet elevation.

BROAD-TAILED HUMMINGBIRD. *Selasphorus platycercus platycercus*. This hummingbird was seen, or its characteristic wing "rattle" heard, daily in a variety of habitats in the mountains, but perhaps most frequently along stream courses and about meadows. They were observed at all four of the principal mountain stations. They also were seen on the floor of Zion Cañon and in dry junipers and artemisia several miles from water ten miles southeast of Sigurd, Sevier County.

CALLIOPE HUMMINGBIRD. *Stellula calliope*. Identified with certainty only on the Escalante Mountains but the species probably was represented on other mountains of the southern part of the state. In the dense spruce timber on the Escalante Mountains we found a female building a nest on July 3. The nest site was six feet above ground on a small limb. As is usual in this species, the nest was sheltered from above by another and larger limb. The bird was almost without fear and permitted me to stand within two feet while she plastered the outside of the nest with cobwebs. In doing this the bill was drawn over the edge of the nest from base to tip, resulting in the head being drawn up and back into various awkward-appearing positions. The nest tree was near a small stream.

RED-SHAFTED FLICKER. *Colaptes cafer collaris*. Common throughout the regions visited, ranging up to timber line in the high mountains.

LEWIS'S WOODPECKER. *Asyndesmus lewis*. Present on June 28 in the open yellow pine timber, elevation 7,500 feet, on the east side of the Parowan Mountains.

RED-NAPED SAPSUCKER. *Sphyrapicus varius nuchalis*. This species was seen north of Fish Lake in aspens and in willows four feet high growing in the meadow. In northern Utah a similar and pronounced habitat preference was noted in agreement with Henshaw's findings (pp. 392, 393) wherein he contrasts this sapsucker with Williamson's Sapsucker which inhabits conifers almost exclusively. Although *nuchalis* clearly favors broad-leaf timber in summer, this is by no means as uniformly the case in the related *Sphyrapicus varius daggetti* (see Grinnell, Dixon, and Linsdale, Univ. Calif. Publ. Zool., Vol. 35, 1930, pp. 254, 255).

NATALIE'S SAPSUCKER. *Sphyrapicus thyroideus nataliae*. Noted only in the Escalante Mountains in the mixed fir and spruce forest.

WHITE-BREASTED WOODPECKER. *Dryobates villosus leucothorectis*. Present at Cedar Breaks, in the Escalante Mountains, and north of Fish Lake. At the Experiment Station a pair had a nest twelve feet up in the solid trunk of a living aspen. It contained large-sized young judging from the sound emanating from the hole.

BATCHELDER'S WOODPECKER. *Dryobates pubescens leucurus*. A pair of these woodpeckers was discovered in an aspen grove near the Experiment Station. The female was collected (No. 58099). No others were seen by us in the southern part of the state.

ALPINE THREE-TOED WOODPECKER. *Picoides tridactylus dorsalis*. This woodpecker was found to be at least as common as the White-breasted Woodpecker in the spruces at Cedar Breaks, in the Escalante Mountains, and north of Fish Lake. A female (No. 58102) was taken June 28 at Cedar Breaks.

WRIGHT'S FLYCATCHER. *Empidonax wrighti*. Several individuals were seen in the spruce and aspen forest north of Fish Lake.

WESTERN FLYCATCHER. *Empidonax difficilis difficilis*. One was noted in the trees along a dry stream course in a cañon in the Escalante Mountains.

WESTERN WOOD PEWEE. *Myiochanes richardsoni richardsoni*. Wood Pewees were scarce at Cedar Breaks and at Fish Lake. They were not observed at our other camps but were present on the floor of Zion Cañon.

OLIVE-SIDED FLYCATCHER. *Nuttallornis mesoleucus*. A single bird of this species was seen at Cedar Breaks on June 30. North of Fish Lake one pair was encountered in short spruce timber at an altitude of 11,000 feet.

DESERT HORNED LARK. *Otocoris alpestris leucolaema*. Besides being abundant at low elevations in the valleys, Horned Larks were

found in open places at an altitude of 10,000 feet. North of Fish Lake a few were seen in the drier portions of the meadow. They were abundant on the divide east of Ephraim on barren ground and also along small streams running from the snow banks. Males were singing occasionally on July 9 and many fully grown juvenals were seen on the same day. A pair (♂ No. 58108, ♀ No. 58109) was taken at this locality.

ROCKY MOUNTAIN JAY. *Perisoreus canadensis capitalis*. Twice these jays were encountered at Cedar Breaks in the larger of the spruce thickets. On June 29 the male of a pair of adults was collected (No. 58111). The condition of the testes (2 mm. in length) indicated that the bird was long past breeding. It also was in the middle of the annual molt. No juvenile or immature birds were accompanying the pair of adults. A single Rocky Mountain Jay was heard in the spruce forest north of Fish Lake.

LONG-CRESTED JAY. *Cyanocitta stelleri diademata*. At Cedar Breaks this species was absent but it was seen in the oak belt on the east flank of the Parowan Mountains. They were fairly common in the Escalante Mountains where I found a juvenal hidden in a spruce clump adjoining a grove of Yellow Pines. Several were seen near the Experiment Station but here, as at Cedar Breaks, they seemed to avoid the pure stands of spruce high on the mountains.

WOODHOUSE'S JAY. *Aphelocoma californica woodhousei*. On June 28 this jay was seen in the piñons along the road between Zion Cañon and Mount Carmel, Kane County. They were again observed ten miles southeast of Sigurd, Sevier County, in a small grove of junipers.

AMERICAN MAGPIE. *Pica pica hudsonia*. Noted along the valley of the Sevier River from the vicinity of Junction, Piute County, north to Ephraim. They were inhabiting the willow clumps beside the river and were foraging in the adjoining farm lands.

PIÑON JAY. *Cyanocephalus cyanocephalus*. A small flock flew through the junipers at our camp ten miles southeast of Sigurd, Sevier County, on July 7.

CLARK'S NUTCRACKER. *Nucifraga columbiana*. Present but scarce at the Experiment Station, Fish Lake, and Cedar Breaks. Five birds flying together, presumably a family group, were seen at the latter place on June 30. The species was somewhat more common on the Escalante Mountains in the mixed pine and spruce forest.

MOUNTAIN CHICKADEE. *Penthestes gambeli gambeli*. Present in small numbers in the coniferous forests at our four principal mountain stations. I noted repeatedly that the songs of this chickadee consist of two groups of notes separated by three or more half tones of pitch. In contrast to this type of song are those of the races *P. g. baileyae* and *abbreviatus* in which the greatest interval of pitch with rare exceptions is no larger than one whole tone.

ROCKY MOUNTAIN NUTHATCH. *Sitta carolinensis nelsoni*. Twice observed in the more open timber of the south-facing slopes of the Escalante Mountains.

RED-BREASTED NUTHATCH. *Sitta canadensis*. Observed in the Escalante Mountains, at Fish Lake, and at the Experiment Station. Only one or two birds were seen at each locality.

ROCKY MOUNTAIN CREEPER. *Certhia familiaris montana*. Only three individuals were seen at Cedar Breaks, but in the Escalante Mountains and north of Fish Lake they were abundant.

WESTERN ROBIN. *Turdus migratorius propinquus*. Fairly common on all the mountains, ranging from 4,000 feet in the valleys to timberline at 11,000 feet altitude as at Fish Lake. A pair were feeding young in a nest at Cedar Breaks on June 30.

AUDUBON'S HERMIT THRUSH. *Hylocichla guttata auduboni*. Many of these thrushes were seen at Cedar Breaks and in the Escalante Mountains in the dense spruce thickets. At the latter place some were seen also in moderately open spruce, pine, and aspen forest where the males were singing at midday in bright sunlight from the tops of fifty-foot spruces. At the Experiment Station they were abundant in the aspens and firs. Here, on July 8, I flushed a bird from a nest two and one-half feet up in a small fir tree at the edge of a stream-side meadow. The nest held three young estimated to be about five days old (Fig. 10). The nest was frail for this species and apparently contained no mud. A male (No. 1071, A. H. Miller) was collected here.

OLIVE-BACKED THRUSH. *Hylocichla ustulata swainsoni*. This species was first noted on July 8 at the Experiment Station in stream-side thickets. It was absent in the mountains to the south, at least in the parts visited by us. A specimen (No. 58127) taken eight miles east of Kamas, Summit County, is comparable to other Rocky Mountain and Great Basin examples of *swainsoni* (*almae* of Oberholser) but is slightly darker and grayer dorsally than available specimens of *swainsoni* from the eastern United States. The eastern specimens, however, are not in strictly comparable plumage, having been taken



in May rather than in June or July as were the available western specimens.

**MOUNTAIN BLUEBIRD.** *Sialia currucoides*. Present but not common about the meadows at Cedar Breaks, Fish Lake, and the summit east of Ephraim.

**TOWNSEND'S SOLITAIRE.** *Myadestes townsendi*. One pair was seen at Cedar Breaks in the timber at the edge of a meadow. In the Escalante Mountains there were a number of males singing in the timber near our camp. They sang abundantly in the early morning and late evening and once at midday just before a thunder shower when the sky was heavily clouded. At the Experiment Station a female (No. 58131) was collected.

**WESTERN GOLDEN-CROWNED KINGLET.** *Regulus satrapa olivaceus*. About five individuals were noted in the dense tall spruces on the Escalante Mountains. No others were encountered except on the summit east of Ephraim at 10,000 feet. Here a single male (No. 58132) was shot from a small clump of spruces.

**EASTERN RUBY-CROWNED KINGLET.** *Corthylio calendula calendula*. Common in the dense spruce clumps at Cedar Breaks but scarce in the continuous spruce forest on the Escalante Mountains. This species also was noted in the firs at the Experiment Station and on the summit east of the station.

**AMERICAN PIPIT.** *Anthus spinoletta rubescens*. A solitary pipit was seen on June 30 in the alpine meadow at Cedar Breaks. Although I failed to note other individuals, the presence of this bird on this date seems to indicate summer residence.

**PLUMBEOUS VIREO.** *Vireo solitarius plumbeus*. Seen in the birches and aspens along a stream course five miles south of Belknap Ranger Station, southern Sevier County, elevation 8,000 feet, on July 4. They were present also at the Experiment Station.

**WESTERN WARBLING VIREO.** *Vireo gilvus swainsoni*. Seen in the aspens at the Experiment Station.

**VIRGINIA'S WARBLER.** *Vermivora virginiae*. This warbler was found in the hot dry oak belt five miles south of Belknap Ranger Station, southern Sevier County, on July 4.

**ROCKY MOUNTAIN AUDUBON'S WARBLER.** *Dendroica auduboni memorabilis*.\* Audubon's Warblers were found on all of the mountains visited. A male (No. 58154) taken at Cedar Breaks is long-winged, measuring 81.2 mm. as is characteristic of *memorabilis*. This

\*Not included in the A. O. U. Check-List.—Ed.

particular specimen does not seem to differ from Pacific Coast examples of *D. a. auduboni* in coloration. The size difference between *D. a. auduboni* and *memorabilis* is pronounced, however.

MACGILLIVRAY'S WARBLER. *Oporornis tolmiei*. A few individuals inhabited the bushes beneath the aspen trees at the Experiment Station.

ROCKY MOUNTAIN BREWER'S BLACKBIRD. *Euphagus cyanocephalus cyanocephalus*. Small flocks of this blackbird were seen about Fish Lake but otherwise the species was encountered only in the valleys at much lower elevations.

WESTERN TANAGER. *Piranga ludoviciana*. This species was unaccountably scarce. Two birds only were seen, both in the Escalante Mountains.

WESTERN BLUE GROSBEAK. *Guiraca caerulea interfusa*. Although strictly a lowland species, its occurrence in Zion Cañon makes desirable the recording of this observation. On June 27 a first-year male with partly blue plumage was observed closely as it sang in the willows and tall weeds near the stream. The bird became excited at my approach and gave the characteristic warning note. On the same day another male was heard singing 400 yards down stream from this point.

LAZULI BUNTING. *Passerina amoena*. Several were seen about the bushes in the clearing at the Experiment Station. They also were present in Zion Cañon.

CASSIN'S PURPLE FINCH. *Carpodacus cassini*. Seen, at least in small numbers, on all of the mountains. At Cedar Breaks in the borders of the timber they were abundant and at similar places on the summit east of Ephraim they were common.

ROCKY MOUNTAIN PINE GROSBEAK. *Pinicola enucleator montana*. Abundant at Cedar Breaks where they were in sight almost continually throughout the day. They usually frequented the low dense spruces near the meadows but also were to be found away from the meadows in the spruce forest. They fed in small groups or in pairs in the meadow at our camp, foraging both on ground and on the low limbs of trees. Although some of the groups of individuals seemed to be families in which the young were independent of the adults, other aggregations of at least twelve individuals were seen on occasions. At times birds were heard singing. Two adult females (Nos. 58166 and 58167) taken here were long past breeding condition. The testes of a male (No. 58165) measured 7 mm.

North of Fish Lake half a dozen birds were seen about small meadows at 10,500 feet altitude. On the summit of the Wasatch

Mountains east of Ephraim a loose band of approximately twenty individuals were feeding about an open meadow at the edge of a small grove of spruces. An orange-headed male (No. 58168) was collected here.

**NORTHERN PINE SISKIN.** *Spinus pinus pinus*. This species occurred throughout the coniferous forests of the mountains which we visited, but it was especially abundant in the meadows at Cedar Breaks where siskins were feeding on the heads of short composites which were in seed.

**BENDIRE'S CROSSBILL.** *Loxia curvirostra bendirei*. Small flocks of crossbills were present at Cedar Breaks where a post-breeding female (No. 58338) was collected. At our camp on the Escalante Mountains they were exceedingly abundant, feeding on the spruce cones. A flock of at least fifty birds, probably many more, was flushed from a single tree. Prior to their leaving, a continuous shower of scales and remains of seeds could be seen falling to the ground. The birds were silent while feeding except for the subdued rustle of their feeding activities. Two males were collected here (Nos. 58339 and 58340). A few crossbills were seen north of Fish Lake; a considerable number was present on the summit east of Ephraim.

**GREEN-TAILED TOWHEE.** *Oberholseria chlorura*. This species was first met in the Escalante Mountains where a few pairs inhabited the patches of ceanothus brush. A nest was found as a bird flushed from it in the characteristic "green-tail" manner, that is, by dropping to the ground and running with tail elevated, thus resembling a chipmunk running through the brush. The nest was situated eighteen inches above ground in an open ceanothus bush on a south-facing slope (Fig. 12). Green-tailed Towhees were seen at Fish Lake in the artemisia and in the bushes about the Experiment Station.

**NEVADA SAVANNAH SPARROW.** *Passerculus sandwichensis nevadensis*. Savannah Sparrows, presumably of this race, were found in the meadow north of Fish Lake. They still were in song on July 6.

**WESTERN VESPER SPARROW.** *Pooecetes gramineus confinis*. Noted on June 25 in an artemisia flat at 10,000 feet near Brian Head, Parowan Mountains. They occurred in the same plant association near the town of Widtsoe and again on the mountain tops east of Ephraim. At the latter locality they were found in sparse one-foot bushes on the drier portions of the summit associated with Horned Larks. Five or more pairs were seen here. Two males were collected (Nos. 58345 and 58346). The males sang frequently from the ground but occa-

sionally mounted to the tops of the bushes or even to the tops of twenty-five-foot trees.

**GRAY-HEADED JUNCO.** *Junco caniceps*. Juncos were the main objective of our expedition and accordingly they were collected in considerable numbers. They were moderately common on all of the mountains visited, ranging from the lower limit of coniferous trees to timber line, with the exception of the summit east of Ephraim. Here they were absent, at least locally. All specimens taken from this section of the state were *J. c. caniceps* (Fig. 12).



FIG. 12. Left: Nest and eggs of the Gray-headed Junco, *Junco caniceps caniceps*. Photograph taken June 29, 1931. Right: Nest and eggs of the Green-tailed Towhee, Escalante Mountains, Garfield County, Utah. Photograph taken July 2, 1931.

**WESTERN CHIPPING SPARROW.** *Spizella passerina arizonae*. Abundant about the borders of the meadows at Cedar Breaks where several groups of young were seen. Once a male was heard singing by moonlight. North of Fish Lake, where they also were abundant, a nest was found on July 6 in a five-foot spruce in a meadow. The nest was three feet from the ground against the trunk of the tree and contained four fresh eggs. East of Ephraim the species was present in the open timber of the summit but was absent in the dense timber about the Experiment Station.

**BREWER'S SPARROW.** *Spizella breweri breweri*. Common in the artemisia brush of the valleys at low elevations but also found on July 9 on the summit east of Ephraim in some low bushes near a snow bank. A male was singing here on this date.

**WHITE-CROWNED SPARROW.** *Zonotrichia leucophrys leucophrys*. Abundant in the high meadows and artemisia brush at Cedar Breaks,

Fish Lake, and the summit east of Ephraim. In the meadows they inhabited the low clumps of willows and conifers. A pair at Cedar Breaks had a nest located on the ground in a dry clump of grass in the edge of a wet meadow. On June 28 it contained four eggs. The eggs all hatched between daylight and noon of the following day. Other pairs had young either in the nest or just able to run about. A pair of birds (♂ No. 58356 and ♀ No. 58355) was collected at Cedar Breaks; a single male (No. 58357) was taken east of Ephraim.

Males at Cedar Breaks sang regularly by moonlight. Songs of this sparrow in the Rocky Mountain region are different from those of *Z. l. leucophrys* of the Sierra Nevada as far as my observations could determine. Although there was considerable individual variation, the rise to the highest pitched note of the song was by a succession of three to five notes in the Rocky Mountain birds. The birds of the Sierra Nevada in my experience progress directly from the opening note of the song to the highest note. The Utah birds also lacked the low clear concluding note which is almost always given by the Sierra Nevada birds.

SLATE-COLORED FOX SPARROW. *Passerella iliaca schistacea*. One male was located in a small meadow near the Experiment Station. No others were seen in southern Utah. Fox Sparrows were moderately common farther north in the Wasatch Mountains where they frequented the willows of the beaver meadows. A specimen (♀ No. 58347) of this race was secured west of Woodruff, Rich County, July 18.

LINCOLN'S SPARROW. *Melospiza lincolni lincolni*. Three males of this sparrow were stationed along the wettest part of the meadow at our camp at Cedar Breaks. They also were present at Fish Lake and on the summit east of Ephraim, inhabiting scrub willows in the meadows. A male (No. 58358) was collected at Cedar Breaks.

MOUNTAIN SONG SPARROW. *Melospiza melodia fallax*. This species was noted along the shores of Fish Lake at 8,800 feet elevation.

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