

4892

UNIVERSITY OF UTAH BIOLOGICAL SERIES

Vol. XI

January 10, 1955

No. 4

The Birds of  
The Deep Creek Mountains  
of Central Western Utah

BY

WILLIAM H. BEHLE



PUBLISHED BY

UNIVERSITY OF UTAH

SALT LAKE CITY

# THE BIRDS OF THE DEEP CREEK MOUNTAINS OF CENTRAL WESTERN UTAH

BY

WILLIAM H. BEHLE

In furtherance of a long-time survey of the avifauna of Utah the Deep Creek Mountain region of the central western part of the state was chosen as an area for intensive study. It was expected that gradients would occur in the characters of geographically variable birds between populations from the isolated ranges of the Great Basin and birds from the Wasatch Mountains to the northeast, those mountains that form the abrupt eastern margin of the Great Basin or the high plateaus of central and southern Utah. The Deep Creek region seemed most propitious for collecting a representation of the Great Basin races. While the analysis of the geographical variation was the main objective of the study and large series of the variable birds were desired, in accord with the general practice of making avifaunistic studies of particular regions, samples of other birds were taken when possible, and a study was made of the ecology of the birds of the region. Although the emphasis was on collecting, attention was paid to abundance, behavior, and life history features, as opportunity was afforded. Working out the details of the variation throughout Utah must await the accumulation of additional material from many other locations, but in the meantime the results of the Deep Creek Mountain survey may well be placed on record to reveal the nature of the avifauna of this portion of Utah.



FIG. 1. West side Deep Creek Mountains with Mt. Ibapah, 12,101 feet, in center. Note timber line, the spruce-fir forest at upper elevations, the mountain mahogany and pygmy forest belt near the base of the steep slopes, the extensive sagebrush at lower elevations and the streamside deciduous vegetation extending out into the sage area. Photograph taken September 15, 1947.

The area was virtually unknown ornithologically at the outset of the study. Three government survey parties visited the region in the early days but contributed little on the ornithology. The Beckwith party of 1854, one of the Pacific Railroad Surveys, while enroute westward to California, crossed the southern part of the salt desert, camped at Fish Springs on May 13 and at Goshute Lake on May 18, but no birds are mentioned in the narrative of Beckwith (1855). Some birds had been taken previously at Salt Lake City by this expedition but in Baird's report (1859) on the birds of the survey no specimens are listed from the Deep Creek area.

The Simpson party of 1859, while exploring a route from Camp Floyd, Utah, westward to Genoa, Nevada, stopped at Fish Springs on May 7. Then, skirting the northern end of the Fish Spring Mountains, the party traveled southwest to the southern end of the Deep Creek Mountains passing through Goshute Pass and Pleasant Valley. Charles McCarthy served as taxidermist for this group and in Baird's report (1876) on the birds collected by McCarthy, two species are listed as having been collected at Goshute Pass, namely the Traill Flycatcher and Brewer Sparrow. In Simpson's narrative (1876:51) two other species are mentioned as having been heard on the desert probably near the present town of Callao. These birds are the Long-billed Curlew and the Sandhill Crane.

One division of the Wheeler Survey of the West 100th Meridian in the summer of 1872 traveled westward following closely upon Simpson's route. They visited Fish Springs and Deep Creek in mid-August. The party then proceeded south into Nevada. Dr. H. C. Yarrow accompanied the party as naturalist. The only information on the birds of the region gathered by this expedition apparently pertains to two species, the Sandhill Crane seen at Fish Springs and a specimen of Green-winged Teal secured at Deep Creek on August 12. These are mentioned in the main report by Henshaw (1875).

In his report of the ornithology of the King Survey of the 40th parallel, Ridgway (1877:366) gives as his collecting station number 34 "Deep Creek, Northwestern Utah (October 5, 1868)" and lists six species as the principal birds observed there. It is very improbable that this is the Deep Creek of the present report. More likely it was Ridgway's designation for some small creek at the north end of Great Salt Lake which he passed enroute from the City of Rocks in southern Idaho (near the present town of Almo, Cassia County) to Salt Lake City, where the field work terminated for the season. He was at City of Rocks in Camp Number 33 on October 2 and three days later was at the locality designated as Deep Creek. It would have been virtually impossible in that day and age to travel from the City of the Rocks south across the desert country to the Deep Creek in Tooele County in three days with a pack outfit. Furthermore, Ridgway's description does not agree with the Deep Creek Mountain area. He says "At this point of our route, the nearly level sagebrush plain was intersected by a narrow valley considerably below the general level, through which flowed, with a sluggish current, a very narrow but remarkably deep creek, a tributary of the Great Salt Lake. The banks of this creek were lined with rushes, while in the valley itself were willow thickets." The Deep Creek of Tooele County is not a tributary of Great Salt Lake.

As to visits to the Deep Creek region in more recent times by ornithologists, in October, 1930, a party from the University of Utah visited Iapah for a day or so (see Chamberlin 1950:269) but few if any birds were collected. The late John W. Sugden visited Fish Springs on May 17, 1936 and recorded

his observations on the Sandhill Cranes (1938:19). In his survey of nesting grounds of the Sandhill Crane, Lawrence H. Walkinshaw visited Fish Springs in the company of the late John W. Sugden on May 11, 1941. In his report (Walkinshaw, 1949:73) he describes the area and lists several species of birds seen.

#### FIELD WORK

My initial trip to the Deep Creek region was from May 17 to 23, 1942. Camp was established at the Parrish Ranch, five miles north of Ibapah Post Office and the surrounding region was worked. Harold Higgins and the writer collected birds while S. D. Durrant and Harold Crane collected mammals. On May 21, an exploratory trip was made to the Queen of Sheba Mine. A reconnaissance visit to Fish Springs was a one day trip made on June 23, 1946 by John Bushman, Larry Hill and the writer. The Queen of Sheba Mine area was next visited from September 14 to 17, 1947 by John Downey, Clifton Greenhalgh and the writer and again on June 16-19, 1948 by Robert Selander, Harold Stark and the writer. I took a large party of students to the region from May 14 to 20, 1949. They were Ian Bell, Nick Cozakos, Robert Evans, Jay Keller, Wallace Livingston, Ralph Parker, Kay Pierson, John Riches, Donald Thurston, Jim Warenski, and William Wilson. Fish Springs was visited by this group on May 14. Two days were spent at the Parrish Ranch, May 15-16. Then the party moved up to the Queen of Sheba Mine where we remained until May 20.

A three day trip to the region was made from May 12 to 14, 1950 by Richard Porter, Robert Draper and the writer. The first day was spent around Ibapah. On the 13th a reconnaissance was made up Pass Creek, following



FIG. 2. East side Deep Creek Mountains showing granite dome and belting of vegetation. In the foreground is the desert shrub community. Photograph taken September 7, 1947.

which we drove to the east side of the mountain and camped at Trout Creek. The return to Salt Lake City was made via Gandy. On June 4, 1950 Robert Selander, Richard Hansen, and the writer joined Richard Porter at Ibapah and on the 5th we established camp at the head of Pass Creek where we remained until June 8. A special trip to climb Mt. Ibapah was made from June 30 to July 4, 1950 by Richard Porter, Richard Hansen and the writer, with the Queen of Sheba Mine serving as base camp. Another ascent of the peak was made by Richard Porter on September 3, 1951.

The final trip to the region was made on May 30 and 31, 1953. In addition to the writer members of the party were Bruce Clark, Russell Goodman and William Toole. Observations were made at Gandy and collecting was done at the south end of the Deep Creek Mountains near the Utah-Nevada line about 11 miles west of Trout Creek, Juab County, Utah. The return trip was made via Ibapah.

In addition to the general survey of the avifauna of the Deep Creek Mountain area made on the several field trips indicated, some special problems were being investigated by graduate students at the University of Utah, constituting their research for the master's degree. Calvin McMillan was concerned with the floristic features of the region (1948). Richard Hansen (1951) worked on the mammals. In a systematic study of some geographically variable birds in northern Utah, Robert Selander (1951) studied certain species in the Deep Creek region. Richard Porter (1951) in studying the Hungarian Partridge in Utah spent many days in the field in the vicinity of Ibapah. All of these people contributed to this report, especially Porter and Selander.

In connection with the present study a total of 480 study skins were prepared. One subspecies of Dusky Grouse was described, *Dendragapus obscurus oreinus*. One hundred forty seven kinds (species and subspecies) were found to occur in the Deep Creek Mountain region.

#### ACKNOWLEDGMENTS

I wish to thank all those students and colleagues mentioned in the resume of field work for their companionship in the field and for help in collecting birds. Henry Setzer, who did prior work on mammals in the area provided information on the region. The pictures accompanying this report were taken by Calvin McMillan. Financial assistance covering field expenses was rendered by a grant from the University of Utah Research Fund. I am also indebted to C. W. Lockerie for his lists of birds observed at Fish Springs on June 25, 1946 and the abandoned mining camps of Clifton and Gold Hill on June 25-29, 1946.

#### THE REGION

**PHYSIOGRAPHY.** The Deep Creek Mountain range runs in a north-south direction and is situated in both Tooele and Juab counties, Utah, approximately one hundred fifty miles southwest of Salt Lake City and eight miles east of the Utah-Nevada border. Thus the range is located just east of 114th Meridian and parallels the Utah-Nevada line. The Deep Creek Mountains commence about 45 miles south of Wendover and extend southward for about 30 miles airline. Hence they cross the 40th Parallel of Latitude. Pleasant Valley and Goshute Pass lie at the southern end of the Deep Creek Mountains separating them from the Kern and Snake Mountains in Nevada. At the north end is the Gold Hill area with the smaller Ochre, Dutch and Clifton Mountains.

The Deep Creek Mountains represent a fault range. The mass rises abruptly on both sides, especially on the west where the escarpment shows over 6,000 feet exposure. Slopes of  $45^\circ$  or greater occur commonly throughout the range. The mountains are narrow, being only about seven miles in width. The canyons are virtually inaccessible to automobiles because of the steep and rugged nature of the terrain. The crest of the range reaches a height that is well above timber line. The summit of Haystack Peak, also known as Mt. Ibapah, is the highest point of the range with an elevation of 12,101 feet above sea level. It is nearly 8,000 feet above the Great Salt Lake Desert to the east. Bald Mountain or Granite Peak is about 11,800 feet elevation. The Deep Creek Mountains did not constitute an island in the Pleistocene Lake Bonneville for the west base is about a thousand feet higher than the east. The lake did, however, come up to the north and east side of the mountains where old lake levels may be seen.

On the east side of the mountain the streams quickly disappear into the alkaline desert. There are only two sparsely populated hamlets here. Callao is located in the desert at some springs near the Juab-Tooele County line, 4,326 feet. Trout Creek, 4,679 feet, is near the south end of the range on the east side. The next mountain to the east of the Deep Creek Mountains is the Fish Creek range. This is a much lower, drier and less diversified mountain. At its base on the northeast side are the Fish Springs where brackish water bubbles up from sandy pools and flows out to form channels, pools and a marsh that covers several miles before the water is dissipated in the Great Salt Desert to the north and east. Near the north end of the Deep Creek range is the nearly abandoned mining town of Gold Hill (5,321 feet). On the west side of the Deep Creek Mountains is Deep Creek Valley with Deep Creek



FIG. 3. Fifteen Mile Creek and the Queen of Sheba Mine area with its variety of habitats. Photograph taken September 15, 1947.

being formed near the southern end from the merging of several streams, whereupon it meanders northward. It is a narrow stream full in the spring from snow melt but dwindling to virtually nothing by late summer and fall. In the southern part of the valley the Goshute Indian Reservation is located. It occupies about one and three-fourths townships. In the northern portion of the valley are a few stock ranches and the hamlet of Ibapah (5,288 feet). This whole area is now remote and isolated from transcontinental travel but at an earlier date the Overland Stage Route and later the Lincoln Highway crossed the southern part of the Great Salt Lake Desert and passed through Deep Creek Valley.

**GEOLOGY.** The geology of the Deep Creek Mountains has been studied by Reagan (1929) and Nolan (1935), the former being more concerned with the high southern portion, the latter concentrating on the more heavily mineralized northern end in the Gold Hill area. The geology as well as the geography and physiography of the region is also discussed by Butler (1920:469-486). There are three structural divisions of the range. The northern one is made up chiefly of metamorphosed sedimentary rock of Paleozoic age. It averages 8,000 feet in elevation. The central portion is approximately eight miles long, seven miles wide and averages 11,000 feet in elevation. It is almost entirely of granite. The southern portion of the range is composed principally of quartzite and shistose quartzite and has an average elevation of 9,000 feet along the crest. There is evidence of glaciation in the Deep Creek Mountains, the glaciers evidently coexisting with Lake Bonneville. Cirques are well marked at the bases of Mt. Ibapah and Bald Mountain and both lateral and terminal moraines are discernible at several of the steep canyons.



FIG. 4. Trout Creek, east side Deep Creek Mountains. The principal birds found in this type of environment were the Dusky Grouse, Hammond and Wright Flycatchers, Wood Pewee, Steller Jay, Mountain Chickadee, Red-breasted Nuthatch, House Wren, Hermit Thrush, Ruby-crowned Kinglet, Audubon Warbler, Gray-headed Junco. Photograph taken September 7, 1947.

CLIMATE. Records over a twenty-six year period up to 1930 (data from Porter (1951:22) ) indicate that Ibapah had an average annual precipitation of 12.76 inches per year and 64.1 inches of snowfall. The average annual temperature was  $45.1^{\circ}$  F with a minimum of  $-32^{\circ}$  F and a maximum of  $104^{\circ}$  F. The growing season was eighty-four days. Thus great annual and diurnal temperature ranges characterize the region with mean temperatures being considerably colder in the winter as compared with summer and during the summer, hot days alternating with cool nights. Prevailing winds come from the southwest (except October through December) and as they approach the Deep Creek Mountains they rise and drop most of their moisture on the west face of the mountains. Weather Bureau records kept at the Queen of Sheba Mine, 8,000 feet, from 1906 to 1911 showed an average of 15.55 inches (data from McMillan, 1948:24). Records were not kept at this time at Ibapah. At Callao on the east side, there was an average of 5.04 inches from 1939 to 1947.

### ECOLOGIC FORMATIONS

MARSH. The most extensive marsh in the area which we visited is that at Fish Springs. The vegetation consists of tules, rushes, spike rush, arrow grass, milkweed, salt grass, and a few cattails were observed. Here a number



FIG. 5. Looking down Fifteen Mile Creek from the summit of the Deep Creek Mountains showing the steep slope and tongue of streamside vegetation extending out into desert area at the base of the mountain. Photograph taken August 7, 1947.



of water birds and marsh birds were found, mostly present as breeders. These were: American Bittern, Mallard, Cinnamon Teal, Gadwall, Marsh Hawk, Virginia Rail, American Coot, Killdeer, American Avocet, Short-eared Owl, Western Belted Kingfisher, Western Yellow-throat, Yellow-headed Blackbird, Red-winged Blackbird, Savannah Sparrow.

At some ponds and wet meadows in Ibapah Valley we saw in addition in the spring the White-faced Glossy Ibis, Black Tern, and Wilson Phalarope, all of which were probably migrants. A pair of Solitary Sandpipers seen along an irrigation canal near Ibapah seemed to be breeding birds.

**DESERT SHRUB.** At the base of the Deep Creek Mountains and occurring extensively throughout the Great Basin is the Desert Shrub Community. The major type of vegetation in any one area is determined largely by edaphic factors such as concentration of the soil salts and available water. For instance on the north and east sides of the mountain, in areas formerly covered by Lake Bonneville, the soil is strongly alkaline and here pickleweed (*Allenrolfia occidentalis*) occurs extensively, in many places in pure stands. There are also a few places in Deep Creek Valley where this species occurs. In higher areas where the soils are still alkaline but the water table is low, greasewood (*Sarcobatus vermiculatus*) grows extensively. Where the soils are still less alkaline, shadscale (*Atriplex confertifolia*) exists. Where the soils are richer and nonalkaline, sagebrush occurs. There are two subspecies, *Artemisia tridentata* and *A. nova*. Sagebrush extends up the alluvial fans to the base of the mountains and to even higher elevations on exposed slopes.

From a bird-distributional standpoint, little seems to be gained by making refinements like Pickleweed Community, Shadscale Community, and Greasewood Community, for we did not find species confined to these individual plant associations. Rather they were wide-ranging through several vegetative communities. It seemed that a more important factor in determining occurrence of the birds was the life form of the vegetation in the nature of scattered, low, shrubby types with maximum height of four or five feet and with bare or sparsely vegetated areas intervening between the bushes. Under such environmental conditions the following birds were found to occur in what may be considered as one general desert shrub community: Sage Grouse, Mourning Dove, Burrowing Owl, Nuttall Poor-will, Ash-throated Flycatcher, Say Phoebe, Horned Lark, Mockingbird, Sage Thrasher, Loggerhead Shrike, Western Meadowlark, Brewer Blackbird, Common House Finch, Vesper Sparrow, Lark Sparrow, Black-throated Sparrow, Bell Sparrow, Chipping Sparrow, Brewer Sparrow. At the upper limits of the Desert Shrub Community where bitterbrush (*Purshia tridentata*) and service berry (*Amelanchior utahensis*) occur, one finds the abundant Green-tailed Towhee and Spotted Towhee. Wide-ranging "overhead" species commonly occurring in the Desert Shrub areas of the region are: Turkey Vulture, Red-tailed Hawk, Swainson Hawk, Ferruginous Rough-legged Hawk, Golden Eagle, Prairie Falcon, Sparrow Hawk, Booming Nighthawk, American Black-billed Magpie and American Holarctic Raven. A similar list of birds found to occur in this ecologic formation as major or minor influents is given by Fautin (1946:276, 285) who studied an area to the south and east of the Deep Creek area.

**DESERT RIPARIAN WOODLAND.** Along streams as they flow through the valleys or around springs, artesian wells, or permanent irrigation canals, are growths of willows (*Salix caudata* and *S. exigua*) and stands of cottonwoods (*Populus angustifolia*). The willows are very dense in places, especially along

Deep Creek, and often grow to heights of twenty feet. In places there is a lower shrub layer of rose, rabbit brush, or sage pushing in from surrounding areas. In the willows we found the Traill Flycatcher, Catbird, Yellow-throat, Long-tailed Chat, Lazuli Bunting, and Song Sparrow. Occurring in the willows occasionally, but more commonly in the cottonwoods, were: Western Kingbird, Yellow Warbler and Bullock Oriole. Wide-ranging forms occurring in this community as well as elsewhere were: Horned Owl, Red-shafted Flicker, American Black-billed Magpie, American Crow, Common House Finch, and Lark Sparrow. During migration the willows and cottonwoods were utilized by such species as Wright Flycatcher, Wood Pewee, Orange-crowned Warbler, Audubon Warbler, Water Thrush, Pileolated Warbler, and White-crowned Sparrow. Along Deep Creek we found Rough-winged and Cliff Swallows as summer residents.

**PINON-JUNIPER WOODLAND.** At intermediate elevations in dry, rocky areas, a prominent plant association is formed by the single-leaved piñon (*Pinus monophylla*) and two types of junipers (*Juniperus scopulorum* and *J. utahensis*). These stunted trees, called by some the pigmy conifers, extend down into the sagebrush as low as 5,500 feet while they reach as high as 7,500 feet in some parts of the range.

Virtually confined to this habitat are the following birds: Gray Flycatcher, Scrub Jay, Piñon Jay, Plain Titmouse, Lead-colored Bush-tit, Black-throated Gray Warbler. Occurring here frequently but ranging widely were: Mourning Dove, Booming Nighthawk, Common House Finch, and Chipping Sparrow.



FIG. 6. Steve's Canyon, Mt. Iapah in background and showing the character of the spruce-fir forest. Up to about 8,000 feet white fir and aspens are predominant while from 8,000 feet to timber line, alpine fir and Engelmann spruce occur. Photograph taken August 11, 1947.

**SUBMONTANE SHRUB.** Occurring on exposed ridges or south-facing slopes usually above the piñon-juniper association from about 7,500 to 9,500 feet, are stands of mountain mahogany (*Cercocarpus ledifolius*). The trees are about twenty feet in height and form a dense overhead cover. The ground vegetation is sparse. A conspicuous element of this community, namely scrub oak (*Quercus gambeli*) which is found further east in the Wasatch Mountains, is lacking in the Deep Creek Mountains. Usually *Artemisia* occurs between the groves of mountain mahogany causing some authors to refer to this as the *Artemisia-Cercocarpus* Community. Several kinds of birds were found in the groves of mountain mahogany but none seemed to be confined to this vegetation since they also occurred in the piñon-juniper or montane streamside communities. These species are: Lead-colored Bush-tits, Black-throated Gray Warbler, Black-headed Grosbeak, Chipping Sparrow.

**MONTANE RIPARIAN AND CANYON FLOOR WOODLAND.** Although somewhat similar in general aspect to the streamside community of the valleys and desert regions, the component vegetative forms are different from about 6,500 to 8,000 feet and a different assemblage of birds occupies the community. Willows are represented by the species (*Salix lutea*, *S. scouleriana* and *S. pseudocordata*) and they occur in scattered clumps. The cottonwoods are replaced by aspens (*Populus tremuloides*). Other plants that occur extensively here are red river birch (*Betula fontinalis*), Chokecherry (*Prunus virginianus*) and wild rose (*Rosa woodsii*). This community extends to lower elevations along the streams forming tongues out into the surrounding sagebrush of the dry slopes. A gradual transition occurs to the valley type of streamside community.



FIG. 7. Divide south of Mt. Iapah which is shown on left. Clark Nutcrackers were common here. In the fall chickadees and juncos occurred right up to timber line. Photograph taken August 7, 1947.

The following birds are commonly found in this community: Cooper and Sharp-shinned Hawks, Dusky Grouse (especially in spring), Red-shafted Flicker, Yellow-bellied Sapsucker, Downy Woodpecker, Western Flycatcher, House Wren, Robin, Hermit Thrush, Warbling Vireo, Orange-crowned Warbler, Tolmie Warbler, Black-headed Grosbeak, and Gray-headed Junco. Many other species which are mostly found in the coniferous forest may be seen here occasionally. Along the streams themselves are Dippers.

**MOUNTAIN MEADOW.** Because of the steep slopes, mountain meadows are scarce, yet a few such areas were found at the heads of the canyons on the east side where boggy conditions favored the growth of sedges, false helobore and willows. Here Broad-tailed Hummingbirds, Gray-headed Juncos and a Fox Sparrow were found. Probably White-crowned Sparrows and Lincoln Sparrows also breed here but we did not obtain any specimens.

**MONTANE CONIFEROUS FOREST.** On the north-facing slopes, canyon floors, and pockets of the mountains from about 7,000 to 11,000 feet, an extensive coniferous forest exists. In the lower portions up to about 8,000 feet, white fir (*Abies concolor*) and aspens are the dominant forms. At the upper part of the coniferous belt, from 8,000 feet to timber line, the predominant forms are alpine fir (*Abies lasiocarpa*) and Engelmann spruce (*Picea engelmanni*). Douglas fir (*Pseudotsuga taxifolia*) occurs in many places mixed with the spruce-fir forest. On the south-facing slopes one finds the limber pine (*Pinus flexilis*) which also extends to timber line. As timber line is approached the trees show the usual bent, dwarfed or a creeping habit. Also they become discontinuously distributed forming copses.

On the basis of the differing elements of the principal vegetative type and associated changes in the fauna some students of ecology have found



FIG. 8. Moisture area at head of Red Cedar Canyon at base of Mt. Ibapah. Pipits occupied this habitat and the alpine tundra above timber line. Photograph taken August 7, 1947.

it useful to divide the montane forest into a lower and upper portion. However, from the standpoint of bird distribution in the Deep Creek Mountains little seems to be gained by this, for we found that the species ranged widely through all parts of the forest. This is in accord with Miller's (1951:540) finding that there is little usefulness under the life zone distributional concept in distinguishing between Canadian, Hudsonian and Alpine-Arctic. He therefore advocates use of the single unit Boreal Zone for these three heretofore recognized zones.

Some characteristic birds of the Montane Coniferous Community are as follows: Sharp-shinned Hawk, Dusky Grouse, Hairy Woodpecker, Hammond and Wright Flycatchers, Wood Pewee, Olive-sided Flycatcher, Steller Jay, Clark Nutcracker, Mountain Chickadee, White-breasted Nuthatch, Red-breasted Nuthatch, Brown Creeper, House Wren, Hermit Thrush, Townsend Solitaire, Golden-crowned Kinglet, Ruby-crowned Kinglet, Audubon Warbler, Western Tanager, Cassin Purple Finch, Pine Siskin, Gray-headed Junco.

**ALPINE TUNDRA.** Timber line is at approximately 11,500 feet on southern exposures and at about 11,000 feet on north-facing slopes. Above timber line an alpine tundra exists in the nature of dwarfed annuals and perennials that exist in the small pockets of soil between the glacier-scoured rock and talus strewn slopes.

Pipits were found feeding at the edges of patches of snow in the cirque between Mt. Ibapah and Bald Mountain. Rock Wrens occurred on the talus slopes right up to the mountain summits. White-throated Swifts and Violet-green Swallows flew overhead and Mountain Bluebirds were found on bare rock areas well above timber line. Only the pipit, however, can be considered as truly confined to this community as a breeding bird, for the others are wide-ranging.

#### COLLECTING STATIONS

**PARRISH RANCH.** This ranch, abandoned as a dwelling place, is located about five miles north of Ibapah Post Office. It was once the site of the Deep Creek Station of the first transcontinental telegraph line. The location is indicated on the 1928 edition of the Gold Hill, Utah, Quadrangle, U.S. Geological Survey topographical map as "Artesian Well" at elevation 5,175 feet. This flowing well at the edge of the ranch house is surrounded by cottonwood trees. To the northwest of the ranch house, Deep Creek forms a wet meadow. South and west of the ranch house the creek is of good size, about two feet deep and ten feet across, and bordered with willows and an occasional clump of cottonwood trees. Surrounding the ranch are extensive tracts of dry range-land with the typical desert shrub type of vegetation. The entire area for a mile around the ranch was collected and the ranch served as base camp for longer sorties out to surrounding regions.

**THE SHERIDAN RANCH.** This place, commonly known just as Sheridans, is located about two miles north of the Ibapah Post Office and was an important stopping place on the old Lincoln Highway. There were more cultivated fields here than farther north at the Parrish Ranch.

**THE BOYD RANCH, TWO MILES EAST OF IBAPAH.** A spring and seepage area located here is indicated on the topographical map as Chadman Spring with an elevation of about 5,600 feet. The trees and other vegetation present because of the water serve as an oasis attracting many birds. A mile farther east the piñon-juniper forest is found.

**HEAD OF PASS CREEK.** In the Deep Creek Mountains about five miles northeast of the Goshute Indian Village is a low pass. We worked our way to the base of this pass over a steep road that leads to a range cabin at about 8,000 feet. The stream originating here and flowing west we called Pass Creek. There is much sage and some aspen-coniferous forest here. We were able to work over the pass to the east side of the mountain to the head of two canyons there, namely, Basin and Thoms Creek, as well as progress up the ridge to timber line on the north slope of Mt. Baldy.

**THE QUEEN OF SHEBA MINE.** Near the south end of the Deep Creek Mountains on the west side, about twelve miles south of Ibapah, is Fifteen Mile Creek. Two forks join to form this creek and on the south fork at about 8,000 feet elevation is the long abandoned Queen of Sheba Mine. A half mile below the actual mine where the two forks join at about 7,000 feet, is the location of the former stamp mill. Here is a cabin. In inclement weather we used the cabin; otherwise we camped a quarter of a mile below which was as far as a car could be driven. The Queen of Sheba Mine area was our principal collecting station and the whole surrounding country was visited. A great variety of environmental situations were afforded. A projection of the mountain to the southwest forms a pocket so a dense forest of spruces and fir exists with interspersed groves of aspens. In the more exposed rocky areas at higher elevations are stands of limber pines, while at lower elevations mountain mahogany is found in such areas. Sage is extensive on the lower slopes. The canyon bottoms and streams afford a heavy riparian thicket type of covering on the canyon floor. Notwithstanding the presence of much suitable habitat, birds were scarce. The slopes were steep and sizable series of geographically variable forms were difficult to obtain even of such ordinarily common birds as chickadees. From the Queen of Sheba area we were able to climb Mt. Ibapah and reach the alpine tundra.

**TROUT CREEK.** The only camp we put in on the east slope of the Deep Creek Mountains was along Trout Creek located about a mile west and slightly north of the cluster of ranches that constitute the "town" of Trout Creek. This, too, was rocky terrain with extensive sage-covered slopes, some pygmy forest, a streamside thicket of birch and willow, and limited stands of coniferous forest farther upstream.

**FISH SPRINGS.** This isolated marsh area bordered by extensive salt desert to the north and east was included in the study in an effort to round out the species of water and marsh birds in the area. The springs are located at the northeast base of the Fish Springs Mountain. The ranch was a stopping place on the Pony Express, Overland Mail, and Lincoln Highway routes. On the Fish Springs, Utah, U.S. Geological Survey Quadrangle it is designated also as Thomas' Ranch, 4,319 feet elevation. The Fish Springs of this report is not to be confused with the former mining town of that name located on the west side of the mountain.

**GANDY.** This area, where a few ranches are located along a warm stream that gushes out at the base of a nearby mountain, is located about twenty miles south of Trout Creek and so lies to the south of the Deep Creek Mountains. We collected a few birds here on May 14, 1950 and made observations again on May 30, 1953.

**PLEASANT VALLEY AND GOSHUTE PASS.** These are located at the south end of the Deep Creek Mountains. Our special objective here was to study the birds of the piñon-juniper forest. Collections were made in Juab County, Utah, near the Utah-Nevada line, about eleven miles west of Trout Creek. The cluster of ranch houses designated as Uvada lies in Pleasant Valley close to the Utah-Nevada border.



FIG. 9. Top of cirque at base of Mt. Ibapah, head of Red Cedar Canyon. Firs dwarfed at timber line. Violet-green Swallows, Rock Wrens, Mountain Bluebirds and probably Rosy Finches occur here. Photograph taken August 7, 1947.

## ANNOTATED LIST OF BIRDS

*Gavia immer* (Brünnich). Common Loon. On June 10, 1942 a lone individual was found by Donald Nielson in a pond of brine near Wendover. It was so encrusted with salt that it couldn't fly. He removed it to a fresh water area from which it disappeared a few days later.

*Leucophoyx thula brewsteri* (Thayer and Bangs). Brewster Snowy Egret. Two were seen along the stream at Gandy on May 30, 1953.

*Botaurus lentiginosus* (Montagu). American Bittern. Fish Springs, June 23, 1946. Total specimens, 2. On the day the specimens were collected, 4 other bitterns were seen. Other sight records for Fish Springs are 4 on June 23, 1946, 8 on June 25, 1946 by Lockerbie and 4 on June 16, 1948. Porter observed one at Ibapah on July 15, 1950.

*Plegadis mexicana* (Gmelin). White-faced Glossy Ibis. A flock of 8 flew north over the Parrish Ranch on May 18, 1942.

*Ajaia ajaia* (Linnaeus). Roseate Spoonbill. A flock of 5 was reported from Wendover on July 2, 1919 by Barnes (1919:565). The specimen secured was reported as lost (Behle, 1944:69) but has since been found and is now in the Museum of Zoology, University of Utah.

*Anas platyrhynchos platyrhynchos* Linnaeus. Common Mallard. Fish Springs, June 23, 1946. One specimen. At the same locality on June 25, 1946, Lockerbie found 16 adults and 2 broods of young, each brood numbering 6 to 8 ducklings. We found a pair nesting at Fish Springs on June 16, 1948. The species was also common in the marsh near the Parrish Ranch north of Ibapah on May 17-22, 1942 and May 15, 1949 where the birds were probably nesting. A pair was seen at the Sheridan Ranch on May 20. Two pairs were flushed along the creek west of Gandy on May 30, 1953.

*Anas strepera* Linnaeus. Gadwall. One was seen by Lockerbie at Fish Springs on June 25, 1946, and 1 by us near the Parrish Ranch on May 15, 1949.

*Anas acuta tztizhou* Vieillot. American Pintail. A male was seen at Fish Springs on June 16, 1948.

*Anas carolinensis* Gmelin. Green-winged Teal. A juvenile male was collected at Deep Creek by Dr. H. C. Yarrow on August 12, 1872 (see Henshaw, 1875:476). We saw a female and 6 young at Fish Springs on June 16, 1948.

*Anas cyanoptera septentrionalium* Snyder and Lumsden. North American Cinnamon Teal. Parrish Ranch, May 21; Fish Springs, June 23, 1946. Total specimens, 2. This teal was common in the marsh area adjacent to Deep Creek in Ibapah Valley in mid-May of 1942 and again in 1949 where they were probably nesting. The species was breeding at Fish Springs in June, 2 pairs being seen. On June 16, 1948 the species was again seen there. Lockerbie also saw a pair at Fish Springs on June 25, 1946. Two were seen at Gandy on May 14, 1950.

*Mareca americana* (Gmelin). Baldpate. A carcass several days old was seen at Fish Springs on June 16, 1948.

*Aythya valisineria* (Wilson). Canvasback. A lone individual was seen on a pond near Sheridans on May 13, 1950.

*Mergus serrator* Linnaeus. Red-breasted Merganser. A pair was observed in flight on the evening of May 17, 1942, flying northward along Deep Creek.

*Cathartes aura teter* Friedmann. Western Turkey Vulture. Observed at Parrish Ranch on May 15-16, 1949; at Ibapah on June 4, 1950 by Porter, and again by him along a ridge about 11,000 feet elevation near the summit of Mt. Ibapah on September 3, 1951. We saw one at the Queen of Sheba Mine area September 16, 1947.

*Accipiter gentilis atricapillus* (Wilson). Eastern Goshawk. An adult was observed near the Queen of Sheba Mine on September 15, 1947 and another on September 3, 1951.



*Accipiter striatus velox* (Wilson). Sharp-shinned Hawk. Pass Creek, 9,000 feet, 6 mi. E. Indian Village, June 7, 1950. Total specimens, 2. The 2 specimens represent a pair. They were perched side by side on a branch near the ground in the spruce-fir forest. The species was seen near the Queen of Sheba Mine on June 17, 1948 and again on May 17, 1949.

*Accipiter cooperii* (Bonaparte). Cooper Hawk. One was seen at the Queen of Sheba Mine area on September 14, 1946, another there on September 3, 1951 and 1 at Ibabah on August 7, 1950.

*Buteo jamaicensis calurus* Cassin. Western Red-tailed Hawk. One was seen at Fish Springs on June 16, 1948, others at the Queen of Sheba Mine area, September 16, 1947, June 17, 1948 and September 3, 1951 and at Ibabah on May 12, June 4, and July 1, 1950.

*Buteo swainsoni* Bonaparte. Swainson Hawk. One observed by Porter near Ibabah on July 18, 1950.

*Buteo regalis* (Gray). Ferruginous Rough-leg Hawk. One seen at Clifton Flat, 6,000 feet, midway between Ibabah and Gold Hill on May 18, 1942, another by Lockerbie at Fish Springs on June 25, 1946, and a pair at Ibabah on May 20, 1949.

*Aquila chrysaetos canadensis* (Linnaeus). Golden Eagle. Two adults were seen at a cliff near the highway about 15 miles southwest of Ibabah on May 12, 1950. A nest was found there on June 2. It was located about 50 feet up the face of the cliff and was constructed of juniper branches and sage. Adults were seen in flight in the area but no young at this time. Later, on July 3, 2 young and 1 adult were seen. An immature was seen near Ibabah on July 1. In addition to occurring in the valley, the species ranged throughout the mountains. On June 5, 1950 1 was seen at the head of Thoms Creek and 3 near the summit of Bald Mountain. We saw 3 near the top of Mt. Ibabah on July 2, 1950. On September 3, 1951 Porter saw 1 at the Queen of Sheba Mine and again at the top of Mt. Ibabah.

*Circus cyaneus hudsonius* (Linnaeus). Marsh Hawk. Fish Springs, June 23, 1946. One specimen. One was seen there by Lockerbie on June 25, 1946 and by us at the same locality on June 16, 1948 and May 14, 1949. We also saw the species at Ibabah on September 17, 1947 and at Boyd Ranch, 2 miles to the east on June 4, 1950. At the latter place a nest was found on June 30 this same year. It was located on the ground among weeds and greasewood about 20 yards from the edge of a wet bog and meadow area. The nest consisted of a mat of mustard stems and Russian thistle. It contained 2 young and 3 infertile eggs. The young were banded. Remnants of lizards were found in the nest. A Marsh Hawk was seen at Gandy on May 30, 1953.

*Falco mexicanus* Schlegel. Prairie Falcon. One was seen on May 18, 1942 near the Parrish Ranch, on September 17, 1947, and again on June 19, 1948. One was seen at the Sheridan Ranch on July 16, 1950. Porter saw a pair in flight over the top of Mt. Ibabah on September 3, 1951.

*Falco sparverius sparverius* Linnaeus. American Sparrow Hawk. Queen of Sheba Mine, June 19, 1948. One specimen. Sight records for this location are: September 14-17, 1947 and July 1, 1950. One was seen at Gandy on May 14, 1950 and at Ibabah, May 16, 1949. They were observed around Boyd's Ranch on May 12, 1950 where a nest was found on June 4, 1950. Five young were present. 3 females and 2 males. Lizards seemed to be a principal item of food brought by adults to the young. One was seen near Uvada on May 31, 1953.

*Dendragapus obscurus oreinus* Behle and Selander. Great Basin Dusky Grouse. Queen of Sheba Mine, 9000 ft., May 19, 1949; 3 miles N. Queen of Sheba Mine, 7500 ft., April 23, 1950; head of Pass Creek, 8000 ft., June 6-7, 1950. Total specimens, 5. The specimens taken at 7500 feet on April 23 frequented a streamside habitat of river birch bordered with sage and were about three miles from the nearest conifers. They represented a pair. The female had an egg 14 mm. in diameter while the testes of the male measured 14 mm. in length. Others, especially seen later in the season, were at higher elevations in the spruce-fir forest.

This suggests that the grouse move down along the streams for the breeding season. The female collected on June 7 had a well developed brood patch. Sight records for the species at the Queen of Sheba Mine area are September 16, 1947 and May 17-18, 1949. Five were seen by Porter at 11,000 feet in a spruce cove on the slopes of Mt. Ibapah on September 3, 1951. The specimens obtained proved to represent a new geographic race which has been described by Behle and Selander (1951:125).

*Centrocercus urophasianus* (Bonaparte). Sage Hen. Ibapah, July 17 and September 9, 1950. Total specimens, 3. On June 18, 1948 a flock of 11 was flushed from the sagebrush about one half mile southwest of the Queen of Sheba Mine. A hen and 7 young were seen at Pass Creek on June 8, 1950. On July 15, 1950 a flock of 10 was seen in an alfalfa field near Ibapah by Porter. The following day 8 were seen and later these and 36 more were flushed and flew to the surrounding sagebrush.

*Perdix perdix perdix* (Linnaeus). European Partridge. Ibapah, July 19, 1950; 2 miles E. Ibapah, April 23, 1950. Total specimens, 2 (1 adult, 1 juvenile). Hungarian partridges were first reported in the Ibapah area during 1945. Since there are no records of the species having been introduced there the inference is that the birds spread into Utah from Nevada. A study was made of the species in this area during the summer of 1950 by Richard Porter (1951:10) who estimated that there were 700 birds. A pair was reported at Gold Hill in 1950. The species also was found to occur on the east side of the Deep Creek Mountains. At Callao, 200 were reported in the fall of 1947 and the population was estimated at 300 by 1950. Fifteen were seen at Granite Creek in 1949. At Trout Creek they were likewise first observed in 1945 the estimated population being 100 birds. Porter and the writer saw 15 there on May 15, 1950 (See Porter, *loc. cit.*).

In the Ibapah area, Porter's study indicated that the permanent cover types frequented by these birds consisted of sagebrush, rabbit brush, greasewood, rose thickets and wild rye. However, after the hatching season they had a preference for temporary cover consisting of Russian thistle, cheat grass, wild hay and pasture land, sweet clover and alfalfa. At no time were they seen more than a half mile from water.

As indicative of the progress of the nesting season, Porter flushed at Ibapah on June 28 a pair of adults with chicks that were 1 or 2 weeks old. On June 30 he located an abandoned nest with 12 egg caps. On August 10 he found a pair with 21 good-sized young.

*Lophortyx californica* (Shaw). California Quail. Trout Creek, August 24, 1950. One specimen. This was taken by Richard Hansen and is our only record for the region.

*Phasianus colchicus* Linnaeus. Ring-necked Pheasant. Parrish Ranch, May 22, 1942. One specimen. Although not abundant, the species was seen several times around the ranches in Ibapah Valley. However, they were sometimes encountered out in the sagebrush, thus not being confined to cultivated fields and pastures.

*Grus canadensis tubida* (Peters). Greater Sandhill Crane. In the narrative of Captain Simpson (1876:51) under date of May 8, 1859, while at his camp No. 6, which was near the Trout Creek of today, mention is made of the "harsh croaking of the sand-hill crane" having been heard. H. C. Yarrow of the Wheeler Survey said the species was first noted at Fish Springs in August, 1872 and that companies of 2 or 3 were observed on the plains later in the season (see Yarrow and Henshaw, 1874:30 and Henshaw, 1875:467). Sugden (1938:19) expressed the opinion that the species has been a breeding bird in this region probably continuously throughout the years. He visited Fish Springs on May 17, 1936 and observed one bird but did not locate any nests. From the rancher living there at the time he learned that some 10 years previously there were about 6 pairs nesting but that they had been gradually decreasing and that in 1936 there were but 2 or 3 pairs. Sugden further learned from the rancher (*op. cit.*:22) that the cranes usually appear about March 15 to 20 and depart about September 15 to 20. In 1936 they arrived on March 19.

In the course of his study of the species Walkinshaw was taken to Fish Springs by Sugden on May 11, 1941. Walkinshaw (1949:73) tells of this visit.

indicates that one individual was seen "near the mountains" and noted that the dense growth of the marsh near the sagebrush border and the many groups of phragmites provided the necessary protection for the nesting cranes. He gives egg dates as April 30, 1939 and May 4, 1940 citing Bee and Hutchings (1942:68-69). The latter state that "nests observed were platforms of bayonet grass with two or three stray feathers and were in and above water. They were placed in small clearings in a bayonet grass marsh near a spring creek."

At our first visit to Fish Springs on June 23, 1946 2 were seen but no nests found. However, the rancher said that the cranes were nesting and estimated the population to be 6 birds. Lockerbie reported that he found 6 birds there 2 days later on June 25, 1946. On our visit of June 16, 1948 only 1 crane was seen but the rancher's son said that 5 had arrived this year and that they frequently came into the yard near the ranch house. On our third visit on May 14, 1949, none were seen and the rancher was not at home to inform us of the welfare of the birds. Fish Springs is probably the southernmost breeding site of the species in the intermountain region.

*Rallus limicola limicola* Vieillot. Virginia Rail. Lockerbie heard the call of this rail at Fish Springs on June 25, 1946.

*Porzana carolina* Linnaeus. Sora Rail. One seen in a swamp adjacent to Deep Creek near the Parrish Ranch on May 20, 1942.

*Fulica americana americana* Gmelin. American Coot. Walkinshaw (1949:73) saw this species at Fish Springs on May 11, 1941. Two adults with 1 young were seen by Lockerbie at the same place on June 25, 1946. We saw 3 there on June 16, 1948.

*Charadrius vociferus vociferus*. Linnaeus. Killdeer. These shorebirds were seen commonly in Ibapah Valley from May 17 to 22, 1942 wherever ponds or marshes existed as at the Parrish and Boyd ranches. Twenty were seen at Fish Springs by Lockerbie on June 25, 1946. We saw 2 there on June 16, 1948. Several were seen at Gandy on May 14, 1950.

*Numenius americanus americanus* Bechstein. Long-billed Curlew. Simpson, in the narrative of his explorations (1876:51) under date of May 8, 1859, while at his Camp No. 6, probably near the Trout Creek of today, speaks of the "shrill whistle of the curlew." One was seen by us at Fish Springs on June 16, 1948.

*Tringa solitaria solitaria* Wilson. Eastern Solitary Sandpiper. Ibapah, July 15, 1950. One specimen. This was one of a pair taken along an irrigation canal by Porter. The testes were 12 mm. long. The characters and systematic relationships of the specimen have been discussed by Behle and Selander (1952:26).

*Actitis macularia* (Linnaeus). Spotted Sandpiper. Parrish Ranch, May 17, 1942 and May 15, 1949. Total specimens, 2. These sandpipers were seen on each of our visits and were common along Deep Creek and in wet sedge meadows. Six were seen at Gandy on May 14, 1950.

*Capella gallinago delicata* (Ord). Wilson Snipe. Lockerbie found a breeding pair at the Sheridan Ranch, 3 miles north of Ibapah on June 27, 1950.

*Recurvirostra americana* Gmelin. Avocet. Four were seen at Fish Springs by Lockerbie on June 25, 1946.

*Steganopus tricolor* Vieillot. Wilson Phalarope. Many were seen at the marsh area near the Parrish Ranch on May 17-21, 1942 and 6 were seen at a pond near Sheridans on May 13, 1950.

*Chlidonias nigra surinamensis* (Gmelin). Black Tern. Parrish Ranch, May 20, 1942. One specimen. This was 1 of 3 individuals actively foraging at a small pond. They were probably transients for they were not seen on subsequent days. Reference to this record has been made by Behle and Ross (1945:168). Another specimen was seen May 13, 1950 near Sheridans.

*Sterna forsteri* Nuttall. Forster Tern. One was seen at a pond near Sheridans on May 13, 1950.

*Zenaidura macroura marginella* (Woodhouse). Western Mourning Dove. Parrish Ranch, May 16, 1949. One specimen. Doves were commonly seen around the

ranches in Ibapah Valley on all our visits. Lockerbie saw 2 at Clifton on June 29, 1946 and one at Fish Springs on June 25, 1946. We saw several at Fish Springs on May 14, 1949. They were common at Gandy, May 14, 1950 and Uvada on May 31, 1953.

*Bubo virginianus occidentalis* Stone. Montana Horned Owl. Parrish Ranch, May 18-20, 1942. Total specimens, 4 (2 adults and 2 juveniles). These represent a nesting family. The nest was located in a crotch of a cottonwood adjacent to Deep Creek. Owls were found nesting in the same grove on May 15, 1949. Calls of the species were heard by Lockerbie at Fish Springs on June 25, 1946, and he saw 1 and heard calls at Clifton on June 29, 1946. We saw 1 in the Queen of Sheba Mine area on September 16, 1947.

*Speotyto cunicularia hypugaea* (Bonaparte). Western Burrowing Owl. Parrish Ranch, May 22, 1942. One specimen. The specimen was secured at the mouth of a burrow in an unused barnyard. The entire area surrounding the opening, for a foot or more in all directions, was overlaid with dry manure. This also extended down the hole and may have been gathered for nest-lining material.

*Asio otus wilsonianus* (Lesson). Long-eared Owl. Boyd Ranch, April 23, 1950. Total specimens, 2. They were taken from cottonwood trees. Both were males, with testes measuring 10 mm. A nest with 4 eggs was also found in the trees at this time.

*Chordeiles minor hesperis* Grinnell. Pacific Nighthawk. Fifteen Mile Creek, 8,500 ft., near Queen of Sheba Mine, September 14, 1949 and July 3, 1950. Two specimens. Nighthawks were common in flight at dusk in Ibapah Valley being seen on every trip. We also saw several in flight at noon in the juniper-piñon forest about 3 miles east of Ibapah on June 4, 1950. Lockerbie reports about 10 seen at Fish Springs on June 25, 1946 and about 10 at Clifton on June 29, 1946.

*Phalaenoptilus nuttallii nuttallii* (Audubon). Nuttall Poor-Will. Fifteen mi. S. Wendover, White Pine County, Nevada. June 7, 1950; Boyd Ranch, June 4 and August 9, 1950. Total specimens, 4. Calls were heard at Clifton by Lockerbie on June 29, 1952. The specimens from Boyd Ranch were foraging at night around the ranch house beneath cottonwoods.

*Aeronautes saxatalis* (Woodhouse). White-throated Swift. Swifts were seen on the slopes of Mt. Ibapah on June 17, 1948, and at the summit of Mt. Ibapah on July 3, 1950 and September 3, 1951.

*Selasphorus platycercus platycercus* (Swainson). Broad-tailed Hummingbird. Queen of Sheba Mine, 10,000 ft., July 2, 1950. One specimen. Seen or heard upon each visit to the Queen of Sheba Mine area. On September 3, 1951 a female was observed by Porter extracting sap from holes in the bark of willows made by sapsuckers. Nearby a Sphecoidea wasp was engaged in cutting bark from the edges of one of these holes. The hummingbird placed her bill in the hole, whereupon the wasp flew at the hummingbird driving it away.

*Megaceryle alcyon caurina* (Grinnell). Western Belted Kingfisher. The species was seen by Walkinshaw (1949:73) at Fish Springs, May 11, 1941.

*Colaptes cafer collaris* Vigors. Red-shafted Flicker. Parrish Ranch, May 14, 1949; Queen of Sheba Mine, 8,000-9,000 ft., May 17-18, 1949 and September 16, 1947. Total specimens, 4. Also seen at Parrish Ranch, May 19, 1942 and at Clifton by Lockerbie on June 29, 1946 and in the Queen of Sheba Mine area September 16, 1947. At Boyd Ranch they were nesting in cottonwoods on June 4, 1950. The nestlings had left the nest by June 30, 1950. A nest was located in an aspen at Pass Creek on June 5, 1950. One was seen at Uvada on May 31, 1953.

*Asyndesmus lewis* Gray. Lewis Woodpecker. Parrish Ranch, May 19, 1942. One specimen. Four were seen at the same ranch on May 17, 1942. They were probably transients.

*Sphyrapicus varius nuchalis* Baird. Red-naped Sapsucker. Queen of Sheba Mine, 7,000-8,000 ft., June 18, 1948, May 17-18, 1949, July 3, 1950. Total specimens, 4. Sapsuckers occurred in willows, aspens, spruces and white fir.

*Dendrocopos villosus leucothorectis* Oberholser. White-breasted Hairy Woodpecker. Queen of Sheba Mine, 8,000-9,000 ft., July 2-3, 1950. Total specimens, 2. The 2 obtained were taken in aspens. Another was seen in some willows. Considering the dense stands of conifers the species was scarce yet we saw at least 1 upon each visit to the Queen of Sheba Mine area.

Linsdale (1936:72) referred specimens from the Jarbidge Mountains, Elko County, and the Snake Range, White Pine County, Nevada to the race *leucothorectis*. The Deep Creek examples are seemingly closest to this race but atypical being intermediate in size between *leucothorectis* and *monticola*. Selander (1951: 48) suggests that the small size may be due to the influence of the race *orius* to the west rather than to the southern form *leucothorectis*. However, the Deep Creek specimens have none of the natural brown pigment on the underparts as in *orius* even though the skins are stained brown below adventitiously. The specimens were both males and measure as follows: wing, 127.0 and 130.0; tail, 77.7 and 85.7; exposed culmen, 32.6 and 33.9; tarsus, 20.5 and 21.1.

*Dendrocopos pubescens leucurus* (Hartlaub). Rocky Mountain Downy Woodpecker. Queen of Sheba Mine, 8,000-8,500 ft., May 17-19, 1949; April 23, 1950. Total specimens, 3. One seen at same locality June 18, 1948 in mountain mahogany bordering on a spruce forest.

*Tyrannus verticalis* Say. Arkansas Kingbird. Parrish Ranch, May 21, 1942, May 15-18, 1949. Total specimens, 5. Two were seen by Lockerbie at Fish Springs on June 25, 1946. We found a pair nesting there on June 16, 1948. On both visits at the Parrish Ranch in mid-May these kingbirds were much in evidence as they carried on courtship and nesting activities. Two were seen at Boyd Ranch on May 12, 1950. By June 4, they were more abundant and nesting. They were still common there July 1, 1950. Two were seen at Ibapah on May 31, 1953.

*Myiarchus cinerascens cinerascens* (Lawrence). Ash-throated Flycatcher. One seen by Lockerbie at Clifton on June 29, 1946.

*Sayornis saya saya* (Bonaparte). Say Phoebe. Parrish Ranch, May 18, 1942 and May 15, 1949. Total specimens, 3. One was seen at Fish Springs by Lockerbie on June 25, 1946 and a family group of 5 at Clifton on June 29, 1946. We found Say Phoebes to be common in the sagebrush area, frequently perching on fence posts around ranches. They were nesting at the Parrish Ranch, at the time of our visit on May 15, 1949, one nest containing newly-hatched young.

*Empidonax traillii brewsteri* Oberholser. Little Flycatcher. Sheridan Ranch, May 22, 1942. Total specimens, 2. Baird (1876:378) in reporting on McCarthy's collection made on the Simpson expedition lists a specimen taken at Goshute Pass. According to Simpson's narrative the party traversed the pass on May 9, 1859. We found this species of flycatcher frequenting dense willow patches along Deep Creek.

*Empidonax hammondii* (Xantus). Hammond Flycatcher. South end Deep Creek Mts., 5,500 ft., 11 mi. W. Trout Creek nr. Utah-Nevada border, Juab County, Utah, May 30-31, 1953. Total specimens, 4. These were taken in the piñon-juniper forest and were evidently lagging at lower elevations before moving to higher elevations for breeding. The specimens were fat and the gonads not greatly enlarged.

*Empidonax wrightii* Baird. Wright Flycatcher. Sheridan Ranch, May 22, 1942; Parrish Ranch, May 17-18, 1942; Queen of Sheba Mine, 7,500-9,000 ft., June 17-19, 1948 and May 15-18, 1949; Head of Pass Creek, 8,000-9,000 ft., 5-6 mi. E. Indian Village, June 5-7, 1950. Total specimens, 14. The specimens from the Sheridan and Parrish ranches were transients in the lowlands taken from cottonwoods whereas the others were on their breeding grounds. In the mountains the species occurred commonly in conifers, aspens, chokecherry and especially mountain mahogany. The species was seen on every visit to the Queen of Sheba Mine area.

*Empidonax griseus* Brewster. Gray Flycatcher. South end Deep Creek Mts., 5,500 ft., 11 mi. W. Trout Creek nr. Utah-Nevada border, Juab County, Utah, May 30-31, 1953. Total specimens, 2. Occurred in the piñon pine-juniper forest.

*Empidonax difficilis difficilis* Baird. Western Flycatcher. Queen of Sheba Mine, 7,500 ft., June 17-18, 1948; south end Deep Creek Mts., 5,500 ft., 11 mi. W. Trout Creek nr. Utah-Nevada border, Juab County, Utah, May 31, 1953. Total specimens, 4. These flycatchers were taken in various situations including a canyon bottom habitat in a birch-spruce-chokecherry association, piñon pines, and a dense spruce-fir forest. As to their systematic relationships they are intermediate between the two races *difficilis* and *hellmayri*, closest, perhaps, to the former in the total aggregate of characters. On the basis of wing and tail length they are closest to *hellmayri* but in average length of middle toe, culmen and tarsus they approach *difficilis*. In coloration they are like *difficilis* in being richly yellow beneath, slightly more so than in examples from the Wasatch Mountains to the east which are referable to *hellmayri*. In dorsal coloration they are close to *hellmayri*. The one male measures as follows: wing, 70.1; tail, 62.1; culmen, 11.4; tarsus 18.0; middle toe with claw, 11.7. Three females had measurements as follows: wing, 63.1-66.2 (64.3); tail 56.5-60.8 (58.3); culmen, 10.2-11.5 (10.7); tarsus, 16.0-17.2 (16.5); middle toe with claw, 10.8-12.6 (11.7).

*Contopus richardsonii richardsonii* (Swainson). Western Wood Pewee. Parrish Ranch, May 20, 1942; Boyd Ranch, June 4, 1950; south end Deep Creek Mts., 5,500 ft., 11 mi. W. Trout Creek nr. Utah-Nevada border, Juab Co., Utah, May 31, 1953. Total specimens, 3. The specimens were taken from an apple orchard, cottonwoods and the piñon-juniper forest. They were evidently migrants for the gonads were small and they were fat. Pewees were seen at Ibapah on May 31, 1953. The species were also seen at the Queen of Sheba Mine area during each visit where they were on their breeding grounds.

*Nuttallornis borealis* (Swainson). Olive-sided Flycatcher. Queen of Sheba Mine, 8,000 ft., Sept. 15, 1947. One specimen. Another was seen Sept. 3, 1951 by Porter at the same locality. Both were in the spruce forest.

*Eremophila alpestris utahensis* (Behle). Salt Lake Horned Lark. Parrish Ranch, May 17-19, 1942; 10-15 mi. N. Ibapah, 5,000 ft., September 14-17, 1947; Fifteen Mile Cr., near Queen of Sheba Mine, 8,000 feet, September 15, 1947. Total specimens, 13. The species was seen at Fish Springs on May 11, 1941 by Walkinshaw (1949:73). We saw some there on June 16, 1948. Lockerbie reported 2 there on June 25, 1952. Horned Larks were common throughout the region wherever open country occurred whether it was in a sagebrush community or close cropped sedge meadow. In the latter situation existing near the Parrish Ranch they occupied small dry patches which were surrounded by moist areas. They were flocking at Gandy on May 30, 1953, about 15 occurring in one group.

*Tachycineta thalassina lepida* Mearns. Violet-green Swallow. Parrish Ranch, 5,175 feet, 5 mi. N. Ibapah P.O., May 19, 1942. One specimen. Lockerbie reported 6 individuals at Fish Springs on June 25, 1946. The species was common along Deep Creek in spring being seen on all our visits. A few were seen at the top of Bald Mountain on May 5, 1950 by Porter and 1 was seen at the summit of Mt. Ibapah on July 2, 1950.

*Stelgidopteryx ruficollis serripennis* (Audubon). Rough-winged Swallow. Sheridan Ranch, May 22, 1942; Parrish Ranch, May 15, 1949. Total specimens, 15. The species was fairly common foraging along Deep Creek, being seen on all our visits in the spring.

*Hirundo rustica erythrogaster* Boddaert. Barn Swallow. One was seen at Fish Springs on June 16, 1948 and a pair was nesting in the barn. Nests were found in abandoned buildings on all visits to the Parrish Ranch. When disturbed at night by flashlights the adults fluttered about in erratic flight bumping into objects. Also seen at Gandy, May 14, 1950 and May 30, 1953.

*Petrochelidon pyrrhonota hypopolia* Oberholser. Cliff Swallow. Parrish Ranch, May 18-20, 1942. Total specimens, 4. The species was fairly common in the region but no large colonies were found. Rather were they scattered around stables and abandoned buildings at ranches where they were starting to nest. These specimens are typical of the race occupying the Great Basin and have been commented on previously in connection with a systematic discussion of the races in Utah (see Behle, 1948:73).

*Cyanocitta stelleri macrolopha* Baird. Long-crested Steller Jay. One mi. E. Queen of Sheba Mine, 8,500 ft., April 23, 1950; Head of Pass Creek, 9,000 ft., June 5, 1950; Head of Thoms Creek, 10,500 ft., June 5, 1950. Total specimens, 3. Additional sight records at the Queen of Sheba Mine were on May 21, 1942, September 16, 1947 and September 3, 1951. Steller Jays were not common. They occurred in mixed aspen-spruce forests, dense spruce stands and scattered limber pine.

In dorsal coloration these birds are similar to examples from locations in more eastern sections of the state and thus are referable to *macrolopha* (see Phillips, 1950). However these 3 birds show more white on the forehead than examples from central and southern Utah.

*Aphelocoma coerulescens nevadae* Pitelka. Nevada Scrub Jay. Four mi. E. Ibabah, 5,500 ft., June 4, 1950. One specimen. Seven were seen at Clifton on June 29, 1946 by Lockerbie and they were heard near the mouth of Trout Creek on May 13, 1950.

*Pica pica hudsonia* (Sabine). American Magpie. A pair flew over the Parrish Ranch on May 18, 1942. Others were seen at the willow thicket bordering Deep Creek on the Indian Reservation on May 21, 1942. Three were seen at Ibabah September 17, 1947. A nest with young was found at Boyd Ranch on June 4, 1950. A flock of about 50 was seen at Ibabah July 1, 1950.

*Corvus corax sinuatus* Wagler. American Raven. Two were seen at Ibabah on May 17, 1942, 2 more there on July 18, 1950 and 2 along the ridge at 11,000 feet near Mt. Ibabah on September 3, 1951. They were reported at Fish Springs by Walkinshaw (1949:73) on May 11, 1941, 2 were seen there by Lockerbie on June 25, 1946, and 1 by us on June 16, 1948. They were also seen at Gandy, May 14, 1950.

*Corvus brachyrhynchos hesperis* Ridgway. Western Crow. A lone bird was seen at Ibabah on May 12, 1950 and 5 more on June 30. One rancher stated that this was the first summer he had seen crows in the valley. One was seen at Ibabah again on May 31, 1953.

*Gymnorhinus cyanocephalus cassinii* McCall. Western Piñon Jay. Parrish Ranch, May 15, 1949; South end Deep Creek Mts., 5,500 ft., 11 mi. W. Trout Creek nr. Utah-Nevada border, Juab County, Utah, May 31, 1953. Total specimens, 7. Hundreds were seen by Lockerbie at Clifton on June 29, 1946. A small flock of 13 were seen near the Queen of Sheba Mine on September 15, 1947. A flock of about 30 was seen in the pygmy forest 3 miles east of Ibabah on June 4, 1950. In the piñon-juniper forest at the south end of the Deep Creek Mountains they were common in flocks of 50 to 75 on May 30-31, 1953.

*Nucifraga columbiana* (Wilson). Clark Nutcracker. Queen of Sheba Mine, 9,000 ft., June 18, 1948 and May 19, 1949; north face Mt. Baldy, 11,000 ft., June 2, 1950. Total specimens, 3. The species was common at higher elevations being seen on all our visits to the Queen of Sheba Mine areas. Several scattered individuals were seen on June 17, 1948 but on the 18th a flock of 15 was encountered. A flock of 30 was seen at timber line on Bald Mountain by Porter on June 5, 1950.

*Parus atricapillus nevadensis* (Linsdale). Pallid Black-capped Chickadee. Only 1 was seen. It was in the dense willows at the Sheridan Ranch on May 20, 1942.

*Parus gambeli inyoensis* (Grinnell). Inyo Mountain Chickadee. Queen of Sheba Mine, 7,000-9,000 ft., May 21, 1942, September 15-16, 1947, June 18, 1948, May 16-19, 1949, July 1, 1950; Head of Pass Creek 9,000 ft., June 6, 1950; south end Deep Creek Mountains, 5,500 ft., 11 mi. W. Trout Creek near Utah-Nevada line, Juab County, Utah, May 30, 1953. Total specimens, 35. While not abundant, chickadees were still among the commonest birds of the mountains being seen or heard on all our trips to the Queen of Sheba Mine area, where they frequented the spruce-fir forest. They were also found in small numbers in the piñon pines where they were paired and breeding in late May. Chickadees seemed to show an altitudinal migration upwards in the fall of the year, being common along the ridge nearly to the top of Mt. Ibabah on September 3, 1951. For systematic discussion of this chickadee see Behle (1950:273).

*Parus inornatus griseus* (Ridgway). Gray Titmouse. South end Deep Creek Mts., 5,500 ft., 11 mi. W. Trout Creek near Utah-Nevada line, Juab County, Utah. May 30, 1953. One specimen. Seen and heard in the juniper-piñon belt about 3 miles east of Ibapah Post Office on June 4, 1950. They were uncommon at the south end of the Deep Creek Mountains on May 30-31, 1953.

*Psaltriparus minimus plumbeus* (Baird). Lead-colored Bush-tit. Queen of Sheba Mine, 7,800 ft., June 18, 1948. Total specimens, 2. These were taken in a mountain mahogany grove. The species was seen but was uncommon in the piñon-juniper forest at the south end of the Deep Creek Mountains, May 30-31.

*Sitta carolinensis nelsoni* Mearns. Rocky Mountain Nuthatch. Near Queen of Sheba Mine, 9,500 ft., July 2, 1950; Summit of Queen of Sheba Canyon, 10,000 ft., west side Deep Creek Mts., Juab County, Utah, September 2, 1951; South end Deep Creek Mts., 5,500 ft., 11 mi. W. Trout Creek, nr. Utah-Nevada border, Juab County, Utah, May 31, 1953. Total specimens, 5. This Nuthatch was rare in the Deep Creek Mountains proper being seen only twice, each time in limber pines. The specimen obtained in July was a female with a brood patch and contained an egg in the oviduct measuring 12 mm. in diameter. They were more common in the pygmy forest at the south end of the mountain where they occurred in large piñon pines. There was no evidence of their breeding, however. Of these 3 specimens the male had testes only 2 mm. long and the two females had ovaries 2 and 5 mm. long. Hawbecker (1948:35) has indicated that specimens from the nearby Snake Mountains were typical of *nelsoni*. These specimens likewise are of this race. The one male measured: wing, 89.5; tail 47.4; culmen 18.6; tarsus 17.0. Four females had extreme and average measurements as follows: wing, 86.7-89.9 (87.8); tail, 47.0-47.7 (47.3); culmen, 18.4-20.0 (19.2); tarsus, 17.2-19.2 (18.2).

*Sitta canadensis* Linnaeus. Red-breasted Nuthatch. Queen of Sheba Mine, 8,000-9,000 ft., September 15, 1947; June 18, 1948; May 18, 1949. Total specimens, 3. The species was seen or heard on each of our visits to the Queen of Sheba Mine area but was uncommon.

*Certhia familiaris leucosticta* van Rossem. Great Basin Creeper. Queen of Sheba Mine, 9,000-9,500 ft., May 18-19, 1949; Bald Peak, 9,500 ft., June 5, 1950. Total specimens, 4. While the species was uncommon, it was reported as having been seen or heard at least once on most of our visits to the Queen of Sheba Mine area. These examples from the Deep Creek Mountains have the spots on the wing feathers of a lighter buff color and the dorsum generally lighter, thus being like the race *leucosticta*.

*Cinclus mexicanus unicolor* Bonaparte. Dipper. Queen of Sheba Mine, 7,000 ft., May 18-19, 1949; Head of Pass Creek, 8,000 ft., June 6, 1950. Total specimens, 3. Also seen at Queen of Sheba Mine area on September 15, 1947.

*Troglodytes aedon parkmanii* Audubon. Western House Wren. Queen of Sheba Mine, 7,300-9,000 ft., September 15, 1947, May 17-19, 1949; Head of Basin Creek, E. slope Deep Creek Mts., 9,000 ft., June 6, 1950. Total specimens, 5. House wrens were fairly common being seen on each trip to the Queen of Sheba Mine area.

*Catherpes mexicanus conspersus* Ridgway. Canyon Wren. One seen on the rocky slopes adjacent to Deep Creek about 10 miles north of Ibapah on May 15, 1949.

*Salpinctes obsoletus obsoletus* (Say). Common Rock Wren. N. slope of Mt. Ibapah, 10,500 ft., July 2, 1950. One specimen. Reported at Fish Springs by Walkinshaw (1949:73) on May 11, 1941 and 1 seen there on June 25, 1946 by Lockerbie. About 10 were also seen at Clifton by Lockerbie, June 29, 1946. We saw 1 at the summit of Mt. Ibapah on July 2, 1950 and Porter saw 1 at the same place on September 3, 1951.

*Mimus polyglottos leucopterus* (Vigors). Western Mockingbird. Tanner (1936:185) states that several adult mockingbirds were seen near Gandy, Juab County, on June 18 and 19, 1928. They were singing at night and the indications were that they may have been nesting.

*Dumetella carolinensis ruficrissa* Aldrich. Western Catbird. Parrish Ranch, May 22, 1942. One specimen. It was taken in a willow patch.



*Oreoscoptes montanus* (Townsend). Sage Thrasher. Deep Creek, 5,175 ft., 10 mi. N. Ibapah P.O., May 15, 1949; Parrish Ranch, May 17-21, 1942, May 15, 1949. Total specimens, 5. They were common throughout the sagebrush at Clifton Flat on May 18, 1942. Ten were seen by Lockerbie at Clifton, June 26, 1952. A nest with 3 eggs was located at the head of Pass Creek. It was located in a sage bush about a foot off the ground. A second nest in a similar location had 4 eggs.

*Turdus migratorius propinquus* Ridgway. Western Robin. Johnson Canyon, 7,500 ft., 5 mi. S. Indian Village, May 3, 1953. One specimen. A few were seen at Callao on June 16, 1948. A nest with 1 egg was found in an orchard at the Boyd Ranch near Ibapah on May 13, 1950. Robins were seen on every visit to the Queen of Sheba Mine area. Two noteworthy observations: there was a nest with 3 eggs on May 18, 1949 and a flock of 8 on September 16, 1947.

*Hylocichla guttata polionota* Grinnell. Mono Hermit Thrush. Queen of Sheba Mine, 8,000 ft., September 15, 1947, and May 17-19, 1949; Head of Pass Creek, 9,500 ft., June 5-7, 1950. Total specimens, 20. On June 5, 1950 they were found on the slopes of Bald Mountain as high as 10,000 feet. They were seen or heard on every visit to the Queen of Sheba Mine area. Linsdale (1936:97 and 1951:241) referred his specimens from the nearby Snake Mountains in eastern Nevada to the race *auduboni* but the Deep Creek specimens instead represent the race *polionota*.

*Sialia mexicana* Swainson. Mexican Bluebird. In their report on the birds of the Wheeler Survey in 1872, Yarrow and Henshaw (1874:7) indicate that "but a single specimen was seen at Fish Springs, Utah," yet in the main report of the Wheeler Survey by Henshaw (1875:161) the statement is made "In Utah, it was not found by our parties at all, nor do I know of its occurrence in that Territory." If the bird was seen, it was a migrant. This species is uncommon in northern Utah.

*Sialia currucoides* (Bechstein). Mountain Bluebird. Parrish Ranch, May 21, 1942, May 14-17, 1949; south end Deep Creek Mts., 5,500 ft., 11 mi. W. Trout Creek, nr. Utah-Nevada border, Juab County, Utah, May 31, 1953. Total specimens, 7. The species was common in the valleys being seen on every visit to the Ibapah area. Lockerbie reported 2 at Clifton on June 29, 1946. They also occurred up the mountain to the summit where several were seen at the top of Mt. Baldy on June 5, 1950 and on top Mt. Ibapah on July 2, 1950 and September 3, 1951. They were feeding on the talus slopes in the alpine-arctic environment. A nest with young was found at the Parrish Ranch on May 22, 1942 and at Trout Creek on May 13, 1950. Here they used holes in cottonwoods. Another nest was located in an aspen at 9,000 feet near the Queen of Sheba Mine on July 1, 1950. A pair was also found nesting on May 31, 1953 in a piñon pine at the south end of the Deep Creek Mountains.

*Myadestes townsendi townsendi* (Audubon). Northern Townsend Solitaire. Queen of Sheba Mine, 8,000-10,000 ft., September 15, 1947 and May 19, 1949. Total specimens, 3. Not common but found on most visits to the Queen of Sheba Mine area.

*Polioptila caerulea amoenissima* Grinnell. Western Gnatcatcher. A flock of 10 was seen at Clifton, June 29, 1946 by Lockerbie.

*Regulus satrapa olivaceus* Baird. Western Golden-crowned Kinglet. Queen of Sheba Mine, 8,000 ft., May 21, 1942 and May 16, 1949. Total specimens, 2. One of these has previously been reported by Behle and Ross (1945:168). Sight records were obtained at the Queen of Sheba Mine area, September 14-17, 1946.

*Regulus calendula cineraceus* Grinnell. Western Ruby-crowned Kinglet. Queen of Sheba Mine, 9,000 ft., June 17, 1948; May 17-18, 1949. Total specimens, 7. A few were seen or heard upon each visit to the Queen of Sheba Mine area.

*Anthus spinoletta alticola* Todd. Rocky Mountain Pipit. Summit of Bald Mt., 11,000 ft., June 5, 1950; Cirque between Mt. Ibapah and Bald Mt., 11,600 ft., July 2, 1950. Total specimens, 2. A loosely arranged flock of about 12 pipits was found by Porter on June 5, 1950 on the north face of Bald Mountain at about 11,600 feet. One was obtained, a female with an egg 4 mm. in the oviduct. They occurred in

a tundra area of small boulders with patches of dirt between. On July 2, 1950 a flock of about 15 was seen feeding together at the edge of a large snow bank in the cirque at the north base of Mt. Ibapah at about 11,500 feet elevation by Porter and Behle. Some ventured out on the snow in their foraging. One was obtained, whereupon the flock became very wild. When a storm struck they sought refuge from the strong wind by flying down to the nearest patch of trees at timber line. Several were observed near the summit of Mt. Ibapah on September 3, 1951 by Porter. The occurrence of these pipits has been previously reported by Behle and Selander (1952:29).

*Lanius ludovicianus nevadensis* Miller. Great Basin Shrike. Utah-Nevada line, 5,000 ft., 50 mi. S. Wendover, Tooele County, Utah, April 22, 1950; Gandy, 5,000 ft., Juab County, Utah, May 14, 1950. Total specimens, 2. A pair was seen at Clifton Flat on May 18, 1942. Two were seen at Clifton by Lockerbie on June 29, 1952.

*Vireo solitarius cassinii* Xantus. Cassin Vireo. Queen of Sheba Mine, 9,000 ft., September 16, 1947. One specimen. It was a lone migrant taken in an aspen in a canyon bottom habitat.

*Vireo gilvus swainsonii* Baird. Western Warbling Vireo. Queen of Sheba Mine, 8,500 ft., September 16, 1947. One specimen. This was evidently a migrant, not representing the resident race. It has been previously reported by Behle (1948:77).

*Vireo gilvus leucopolius* (Oberholser). Oregon Warbling Vireo. Queen of Sheba Mine, 8,000 ft., May 17-19, 1949, July 3, 1950; 2 mi. E. Ibapah, 5,400 ft., June 4, 1950; Head of Pass Creek, 8,000-9,000 ft., June 6-8, 1950. Total specimens, 13. Warbling Vireos were abundant in the broad leafed deciduous trees, being taken in cottonwood, chokecherry and aspen trees. They were found on every trip to the Queen of Sheba Mine area.

*Vermivora celata orestera* Oberholser. Rocky Mountain Orange-crowned Warbler. Parrish Ranch, May 15-20, 1942, May 15, 1949; Queen of Sheba Mine, 8,000 ft., May 18, 1949. Total specimens, 6. Those from the valley were migrants occurring in willows. The specimen from the Queen of Sheba Mine area was secured in an aspen and was probably breeding since the testes measured 5 mm. Two females had measurements as follows: wing, 59.2-61.5 (60.3); tail, 47.5-49.9 (48.7); Culmen, 9.7-10.9 (10.3); tarsus, 17.2-18.6 (17.9); middle toe with claw, 12.4-12.7 (12.5). Four males measured as follows: wing, 59.1-63.0 (60.9); tail, 45.1-49.2 (47.9); culmen, 9.2-10.3 (9.7); tarsus, 17.3-19.7 (18.5); middle toe with claw, 11.3-13.2 (12.2).

*Vermivora virginiae* (Baird). Virginia Warbler. South end Deep Creek Mts., 5,500 ft., 11 mi. W. Trout Creek nr. Utah-Nevada border, Juab County, Utah, May 30, 1953. One specimen. This was taken in the piñon-juniper forest but the species was also found in the montane riparian habitat near the Queen of Sheba Mine and along Pass Creek.

*Dendroica petechia morcomi* Coale. Rocky Mountain Yellow Warbler. Deep Creek, 5,500 ft., 10 mi. N. Ibapah, June 19, 1948; Parrish Ranch, May 17-20, 1942, May 15, 1949; Ibapah, July 18, 1950; Boyd Ranch, June 4, 1950; Gandy, 5,000 ft., May 14, 1950. Total specimens, 20. Yellow Warblers were common in the valleys occurring in willow patches or cottonwood groves. They were seen on all our visits to the Ibapah area and were common at Gandy on May 30, 1953.

*Dendroica auduboni* (J. K. Townsend). Audubon Warbler. Parrish Ranch, May 19-22, 1942, May 15, 1949; Queen of Sheba Mine, 7,000-9,000 ft., June 18, 1948, May 17-19, 1949. Total specimens, 15. The transient specimens in the lowlands occurred in cottonwoods and were seen as late as May 13, 1950 at the Boyd Ranch near Ibapah. The breeding birds were found in aspens or the coniferous forest. They were common and found on all our trips to the Queen of Sheba Mine area. Several were seen at Gandy on May 30, 1953. Grinnell and Miller (1944:404) deem it inadvisable to recognize a large interior race, *D. a. memorabilis*.

*Dendroica nigrescens* (Townsend). Black-throated Gray Warbler. 4 mi. E. Ibapah, 5,500 ft., June 4, 1950; south end Deep Creek Mts., 5,500 ft., 11 mi. W. Trout Creek nr. Utah-Nevada border, Juab County, Utah, May 31, 1953. Total specimens, 5. Common in the piñon-juniper forest.

*Dendroica townsendi* (Townsend). Townsend Warbler. Nr. Head Pass Cr., 8,000 ft., 6 mi. E. Indian Village, June 7, 1950. One specimen. The ova were 1 mm. in diameter and the specimen was fat. This record has been previously reported by Behle and Selander (1952:30).

*Seiurus noveboracensis notabilis* Ridgway. Grinnell Water Thrush. Parrish Ranch, May 18, 1942. One specimen. This is an atypical migrant previously commented upon by Behle and Ross (1945:168).

*Oporornis tolmiei monticola* Phillips. Tolmie Warbler. Parrish Ranch, May 22, 1942; Queen of Sheba Mine, 7,000-8,000 ft., May 21, 1942, September 15, 1947, May 19, 1949; Deep Cr. Mts., 8,000 ft., 6 mi. E. Indian Village, June 6, 1950. Total specimens, 7. Regardless of where found, they frequented a dense deciduous thicket, either in willows, cottonwoods or chokecherry. These specimens are assigned to the race *monticola* following Phillips (1947:297). However, the tails do not average as long as his data indicate for the race. The one female measured: wing, 56.4; tail, 50.7; culmen, 10.6; tarsus, 20.0. Six males had extreme and average measurements as follows: wing, 57.8-60.5 (58.9); tail, 50-58.4 (54.9); culmen, 10.0-10.7 (10.2); tarsus, 18.8-21.8 (20.5); middle toe with claw, 13.0-14.8 (13.8).

*Geothlypis trichas campicola* Behle and Aldrich. Northern Plains Yellowthroat. Wendover, Tooele County, Utah, March 15, 1940. One specimen. This specimen has been previously reported by Behle (1948:78).

*Geothlypis trichas occidentalis* Brewster. Western Yellowthroat. Sheridan Ranch, May 22, 1942. Total specimens, 2. They frequented the dense willow thicket along Deep Creek. A pair was seen at Ibapah on July 18, 1950 by Porter. Walkinshaw (1949:73) saw them at Fish Springs on May 11, 1941 and 1 was seen there by Lockerbie on June 25, 1946. We found them common there on June 16, 1948.

*Icteria virens auricollis* (Lichtenstein). Long-tailed Chat. Parrish Ranch, May 18, 1942 and May 15, 1949. Total specimens, 2. The specimens were taken in bushes and were in breeding condition. One was heard at the head of the creek at Gandy on May 30, 1953.

*Wilsonia pusilla pileolata* (Pallas). Northern Pileolated Warbler. Parrish Ranch, May 18-22, 1942, May 15, 1949; Queen of Sheba Mine, 8,000 ft., September 16, 1947; South end Deep Creek Mts., 5,500 ft., 11 mi. W. Trout Creek nr. Utah-Nevada border, Juab County, Utah, May 31, 1953. Total specimens, 6. These specimens were all migrants. Also seen at the Boyd Ranch on May 4, 1950.

*Passer domesticus* (Linnaeus). English Sparrow. Parrish Ranch, May 17, 1942. One specimen. Common around ranches, nesting in haystacks and buildings. About 10 seen by Lockerbie at Fish Springs, June 25, 1946.

*Dolichonyx oryzivorus* (Linnaeus). Bobolink. Ibapah, 5,288 ft., July 25, 1950. One specimen. Taken from a dry meadow by Porter.

*Sturnella neglecta* Audubon. Western Meadowlark. Common throughout Ibapah Valley having been seen on every field trip. Five seen at Fish Springs by Lockerbie, June 25, 1946 and 1 seen by him at Clifton on June 29, 1946. Seen at Fish Springs by us on June 16, 1948 and again on May 14, 1949.

*Xanthocephalus xanthocephalus* (Bonaparte). Yellow-headed Blackbird. Fifteen were seen by Lockerbie at Fish Springs on June 25, 1946. We saw one there on June 16, 1948. Several were seen at Callao on May 13, 1950. They occurred in bushes alongside the road and were evidently migrating. One was seen by Porter at the Sheridan Ranch, June 16, 1950.

*Agelaius phoeniceus nevadensis* Grinnell. Nevada Red-wing. Parrish Ranch, May 17-21, 1942; 2 mi. E. Ibapah, May 13 and June 4, 1950; Fish Springs, June 23, 1946. Total specimens, 14. Lockerbie found 14 at Fish Springs on June 25, 1946. We found them common there on June 16, 1948 and May 14, 1949. They were abundant in Ibapah Valley being seen on all of our visits. They nested in wet meadows. Systematic comment has been made previously on these birds (Behle, 1948:78-79). The population is an intergrading one towards *utahensis*.

*Icterus bullockii bullockii* (Swainson). Bullock Oriole. Parrish Ranch, May 19-21, 1942. Total specimens, 3. Several additional ones were seen in the cottonwoods at Ibabah. They were starting to nest at the Boyd Ranch on June 4, 1950. Reported by Walkinshaw (1949:73) in the trees at the ranch house at Fish Springs, May 11, 1941. Also seen there by Lockerbie June 25, 1946 and by us May 14, 1949.

*Euphagus cyanocephalus* (Wagler). Brewer Blackbird. Parrish Ranch, May 20-22, 1942 and May 15, 1949; 2 mi. E. Ibabah P.O., 5,300 ft., May 13, 1950. Total specimens, 7. Two were seen at Fish Springs on June 25, 1946 and several at Callao on June 16, 1948. The species was common at nearly all the ranches along Deep Creek. During the week of May 20-25, 1942, nests were found in various situations but they did not have full complements of eggs. One was found in the crotch of a cottonwood tree about 8 feet off the ground. It was a bulky structure constructed mostly of Russian thistle even though wild hay was abundant. Indeed a nest was found in a haystack yet it was made of Russian thistle. Some nests were found in wet meadows built among the sedges an inch or two off the ground. Close by were the nests of Redwings. A flock of 20 was seen at Boyd Ranch May 12, 1950. They were nesting there on June 4th. Three nests were found on the lowest limb of a cottonwood bordering the seepage area. One nest had 5 eggs. They were still common there on July 1, 1950 but less vociferous. Brewer blackbirds were common around the ranches at Gandy, Uvada and Ibabah on May 30-31, 1953.

*Piranga ludoviciana* (Wilson). Western Tanager. Parrish Ranch, May 20-21, 1942; 4 mi. E. Ibabah, 5,500 ft., June 4, 1950; Queen of Sheba Mine, 8,000 ft., September 16, 1947; south end Deep Creek Mts., 5,500 ft., 11 mi. W. Trout Creek, nr. Utah-Nevada border, Juab County, Utah, May 31, 1953. Total specimens, 7. One was seen in the Queen of Sheba Mine area on September 16, 1947. They were common at Pass Creek on June 5, 1950 and at Gandy, Uvada and Ibabah on May 30-31, 1953. As transients they were found in cottonwoods in the valley and in the piñon-juniper belt. The spruce-fir-aspen forest seemed to represent the nesting habitat.

*Pheucticus melanocephalus melanocephalus* (Swainson). Rocky Mountain Black-headed Grosbeak. Parrish Ranch, May 21, 1942; Queen of Sheba Mine, 7,500-8,000 ft., June 18, 1948 and May 18, 1949; Head of Pass Creek, 8,500 ft., June 6, 1950. Total specimens, 4. The species was found in cottonwoods, mountain mahogany, chokecherry stands and aspens.

*Passerina amoena* (Say). Lazuli Bunting. Parrish Ranch, May 18, 1942; Boyd Ranch, June 4, 1950. Total specimens, 2. The species was common in the willow thickets along Deep Creek being seen on all our trips and was the commonest bird in the tongues of streamside vegetation extending down through the sage at the base of the mountains.

*Carpodacus cassinii* Baird. Cassin Purple Finch. Queen of Sheba Mine, 8,000 ft., May 17, 1949. Total specimens, 2. Although uncommon, the species was nevertheless seen at least once on all our trips to the Queen of Sheba Mine area.

*Carpodacus mexicanus frontalis* (Say). House Finch. Parrish Ranch, May 18-21, 1942; May 15-18, 1949; Boyd Ranch, 5,400 ft., May 13, 1950. Total specimens, 15. Abundant about the ranches in Ibabah Valley, being seen on all visits. It was nesting in mid-May on the roofs of sheds which were thatched with grass or wild hay. Also seen at Gandy, May 14, 1950. Systematic comment on these birds has been previously made by Behle (1948:79).

*Leucosticte sp.* Rosy Finch. Dr. Walter P. Cottam climbed Mt. Ibabah during the last week in June, 1947 and saw several Rosy Finches on the talus slope near the top of the peak at about 12,000 feet elevation. The species was not determined. No evidence was obtained of their breeding. Four attempts were made subsequently to obtain specimens by visiting the talus slopes above timber line, including two trips to the very area where the birds were seen, but with negative results. However, on June 4, 1950, Porter saw 2 birds that looked like Rosy Finches on the north face of Bald Mountain, 11,600 feet about the same place where he found the pipits. It was dusk and he couldn't ascertain the species nor get a shot at the birds.

*Spinus pinus* (Wilson). Pine Siskin. Queen of Sheba Mine. 8,000-9,000 ft., September 15, 1947, July 2, 1950. Total specimens, 2. A mixed flock of siskins and goldfinches was seen at the Parrish Ranch on May 19, 1942 and a small flock of siskins only at Sheridan Ranch on May 22. Lockerbie saw one at Clifton on June 29, 1952. One or two were seen on every trip to the Queen of Sheba Mine area.

*Spinus tristis* (Linnaeus). American Goldfinch. Small flocks were sporadically at the Parrish Ranch, May 17-22, 1942 suggesting successive migratory waves passing through. A few were seen at Ibapah on May 31, 1953.

*Loxia curvirostra* Linnaeus. Red Crossbill. Four seen in Queen of Sheba Mine area September 16, 1947.

*Chlorura chlorura* (Audubon). Green-tailed Towhee. Queen of Sheba Mine, 7,000-7,500 ft., May 17, 1949 and July 3, 1950; South end Deep Creek Mts., 5,500 ft., 11 mi. W. Trout Creek nr. Utah-Nevada border, Juab County, Utah, May 31, 1953. Total specimens, 9. The species was also seen at Clifton Flat on May 18, 1942. They were common in occurrence. The typical habitat occupied as breeding birds seemed to be isolated clumps of bushes like service berry or chokecherry interspersed among the sage on the slopes.

*Pipilo maculatus montanus* Swarth. Spurred Towhee. Birch Creek, 6,000 ft., September 20, 1951. One specimen. One was also seen about 4 miles east of the Indian Village near Pass Creek on May 13, 1950. The specimens occurred in a mountain mahogany-juniper association.

*Passerculus sandwichensis nevadensis* Grinnell. Nevada Savannah Sparrow. Parrish Ranch, May 17-22, 1942, May 15, 1949; Sheridan Ranch, May 22, 1942. Total specimens, 11. About 20 were seen by Lockerbie at Fish Springs on June 25, 1946. We saw them there on June 16, 1948 and May 14, 1949. The species occurred in wet sedge meadows near Ibapah being evenly distributed in pairs in mid-May.

*Poocetes gramineus confinis* Baird. Western Vesper Sparrow. Parrish Ranch, May 18, 1942; Queen of Sheba Mine, 7,000 ft., July 3, 1950. Total specimens, 3. They occurred in dry, sagebrush communities where they were seen upon all our visits to the Queen of Sheba Mine area.

*Chondestes grammacus strigatus* Swainson. Western Lark Sparrow. Parrish Ranch, May 15, 1949; Queen of Sheba Mine, May 17, 1949 and July 3, 1950. Total specimens, 3. Three were seen at Clifton by Lockerbie on June 29, 1946. Other sight records are: Queen of Sheba Mine area, June 19, 1948; Boyd Ranch, May 13, 1950; Ibapah, August 7, 1950. The preferred habitat was sagebrush.

*Amphispiza bilineata deserticola* Ridgway. Desert Black-throated Sparrow. Four were seen at Fish Springs, June 25, 1946 and about 10 at Clifton on June 29, 1946 by Lockerbie.

*Amphispiza belli nevadensis* (Ridgway). Northern Sage Sparrow. Three mi. E. Ibapah, June 4, 1950. Total specimens, 3. They were also seen on the sagebrush slopes adjacent to Fifteen Mile Creek in the Queen of Sheba Mine area on July 3, 1950.

*Junco caniceps caniceps* (Woodhouse). Gray-headed Junco. Queen of Sheba Mine, April 23, May 16-21, June 18, September 15, 1942-1950; Head Basin Creek, June 5, 1950; Head of Pass Creek, June 5, 1950; Johnson Canyon, 7,500 ft., 5 mi. S. Indian Village, May 3, 1953. Total specimens, 26. Juncos were common in the Queen of Sheba Mine area on all our visits. They seemed to show an altitudinal migration upward in the fall before coming down into the valleys, for on July 2, 1950 they were seen right up to the last tree at timber line. The species was common in the sagebrush on the lower mountain slopes on September 3, 1951. These birds show no characters of *J. o. mearnsi*, being typical of *caniceps*. The majority of individuals show the light hood appearance. About 45 per cent of the specimens had the inner web of the fifth rectrix completely white. (See Miller, 1941:182-184 for comparisons.)

*Spizella passerina arizonae* Coues. Western Chipping Sparrow. Queen of Sheba Mine, May 21, 1942; May 17-18, 1949; June 18 and July 1, 1950; Head Pass Creek, June 6-7, 1950; nr. Summit Mt. Ibapah, 11,500 ft., September 2, 1951; south end Deep Creek Mts., 5,500 ft., 11 mi. W. Trout Creek nr. Utah-Nevada border, Juab County, Utah, May 31, 1953. Total specimens, 13. Two were seen at Clifton by Lockerbie on June 29. They were common at the Queen of Sheba Mine area on September 14-17, 1947 where they showed an attraction for stands of mountain mahogany. They were also abundant in the piñon-juniper forest at the south end of the mountains on May 30-31, 1953.

*Spizella breweri breweri* Cassin. Brewer Sparrow. Parrish Ranch, May 16-20, 1942; June 15-16, 1949; 4 mi. E. Ibapah, June 4, 1950; Queen of Sheba Mine, May 17, 1949; July 3, 1950. Total specimens, 10. Charles McCarthy collected specimens in Goshute Pass (see Baird, 1876:379) probably on May 9, 1859 judging by the narrative of Simpson (1876:52). We found Brewer Sparrows to be common denizens of the desert shrub habitat. They were seen on all our trips in Ibapah Valley and in the Queen of Sheba Mine area. A nest was found at Boyd Ranch on June 8, 1950. It was located in sagebrush about a foot off the ground. Porter saw Brewer Sparrows at the top of Mt. Ibapah on September 3, 1951. This suggests a post breeding season upward movement.

*Zonotrichia leucophrys oriantha* Oberholser. Oregon White-crowned Sparrow. Parrish Ranch, May 15-17, 1949; Boyd Ranch, May 13, 1950; Queen of Sheba Mine, September 15, 1947. Total specimens, 5. No certain evidence was found of the species breeding although it is likely that they do so in the Deep Creek Mountains. One was seen near the summit of Mt. Ibapah on September 3. They were common in migration in the valley in mid-May.

*Zonotrichia leucophrys gambelii* (Nuttall). Gambel Sparrow. Common in migration in Spring and Autumn. Observed in Parrish Ranch area May 17-23, 1942, May 15, 1949 and at the Queen of Sheba Mine area September 14-17, 1947.

*Passerella iliaca swarthi* Behle and Selander. Wasatch Fox Sparrow. Head of Basin Cr., 9,500 ft., east slope Deep Creek Mts., 6 mi. E. Indian Village, June 6, 1950. One specimen. Taken in a willow thicket with much dead wood and bog beneath. The characters of the specimen have been commented on by Behle and Selander (1952:367).

*Melospiza melodia montana* Henshaw. Mountain Song Sparrow. Sheridan Ranch, May 20-22, 1942; 10 mi. N. Ibapah, September 17, 1947. Total specimens, 8. We found them to be rather infrequent. They occurred in the willows along Deep Creek.

## LITERATURE CITED

## BAIRD, S. F

1859. Report on birds collected on the survey. Pacific Railroad Reports, vol. 10, pp. 11-16, 7 pls.
1876. List of birds collected by Charles S. McCarthy, taxidermist. Rep't Expl. across the Great Basin of the Terr. of Utah . . . in 1859, by Captain J. H. Simpson. Pp. 377-381.

## BARNES, CLAUDE T.

1919. Roseate spoonbill in Utah. Auk, 36:565-566.

## BEE, ROBERT G., AND JOHN HUTCHINGS

1942. Breeding records of Utah birds. Great Basin Nat., 3(3-4):61-85.

## BECKWITH, E. G.

1855. Report of exploration for a route for the Pacific Railroad on the line of the forty-first parallel of north latitude by Lieut. E. G. Beckwith, Third Artillery. Pacific Railroad Reports, vol. 2:1-132, numerous pls.

## BEHLE, WILLIAM H.

1943. Birds of Pine Valley Mountain region, southwestern Utah. Bull. Univ. Utah, 34(2):1-85, 13 figs. in text.
1944. Check list of the birds of Utah. Condor, 46:67-87.
1948. Systematic comment on some geographically variable birds occurring in Utah. Condor, 50:71-80.
1950. A new race of mountain chickadee from the Utah-Idaho area. Condor, 52:273-274.

## BEHLE, WILLIAM H., AND AARON ROSS

1945. Miscellaneous records of birds uncommon in Utah. Condor, 47:168-170.

## BEHLE, WILLIAM H., AND ROBERT K. SELANDER

1951. A new race of dusky grouse (*Dendragapus obscurus*) from the Great Basin. Proc. Biol. Soc. Wash., 64:125-128. Nov. 19, 1951.
1952. New and additional records of Utah birds. Wilson Bull., 64:26-32.

## BUTLER, B.S., G.F. LOUGHLIN, AND V. C. HEIKES

1920. The ore deposits of Utah. U.S. Geol. Surv. Prof. Paper No. 111:1-672. 74 figs., 57 pls.

## FAUTIN, REED W.

1946. Biotic communities of the northern desert shrub biome in western Utah. Ecol. Mon., 16:251-310, 19 figs. in text.

## GRINNELL, J., AND ALDEN H. MILLER

1944. The distribution of the birds of California. Pac. Coast Avifauna No. 27. 608 pp., 57 figs. in text, 1 col. pl.

## HANSEN, RICHARD M.

1951. A systematic comparison of the mammals of Mount Nebo and the Deep Creek Mountains, Utah. Unpublished Master's Thesis, Univ. Utah, v+1-98, 6 figs., 2 charts.

## HAWBECKER, A. C.

1948. Analysis of variation in western races of the white-breasted nuthatches. *Condor*, 50:26-39, 5 figs.

## HENSHAW, H. W.

1875. Report upon the ornithological collections made in portions of Nevada, Utah, California, Colorado, New Mexico and Arizona during the years 1871, 1872, 1873, and 1874, by H. W. Henshaw. *Rept. Geog. and Geol. Expl. and Surv. West 100th Mer.* by George M. Wheeler. Vol. 5, pp. 131-507, 977-989, pls. 1-15.

## LINSDALE, J. M.

1936. The birds of Nevada. *Pacific Coast Avifauna* No. 23:1-145, 1 map.  
1938. Environmental responses of vertebrates in the Great Basin. *Am. Midland Nat.*, 19:1-206, 12 figs. in text.  
1951. A list of the birds of Nevada. *Condor*, 53:228-249.

## MCMILLAN, CALVIN

1948. A taxonomic and ecological study of the flora of the Deep Creek Mountains of central western Utah. Unpublished Master's Thesis, Univ. Utah, iii+1-99 pp., 20 figs.

## MILLER, ALDEN H.

1951. An analysis of the distribution of the birds of California. *Univ. Calif. Publ. Zool.*, 50(6):531-644, pls. 32-40, 5 figs. in text.

## NOLAN, T. B.

1935. The Gold Hill mining district Utah. *U.S. Geol. Surv. Prof. Paper* 177:viii+1-172 figs., 15 pls.

## PHILLIPS, A. R.

1947. The races of MacGillivray's warbler. *Auk*, 64:296-300.  
1950. The pale races of the Steller jay. *Condor*, 52:252-254.

## PORTER, RICHARD D.

1951. The Hungarian partridge in Utah, with special reference to ecology and life history. Unpublished Master's Thesis, Univ. Utah, ix+1-90 pp., 13 pls. with 26 figs., frontispiece.

## REAGAN, ALBERT B.

1929. Geology of the Deep Creek Reservation, Utah, and its environs. *Trans. Kansas Acad. Sci.*, 32:105-116.

## RIDGWAY, R.

1877. Ornithology. in "Ornithology and Palæontology." *U.S. Geol. Expl. Fortieth Parallel*, vol. 4, part 3, pp. 303-669.



## SELANDER, ROBERT K.

1951. A systematic study of some geographically variable birds of northern Utah. Unpublished Master's Thesis. Univ. Utah, iii+1-193, 11 figs.

## SIMPSON, J. H.

1876. Report of explorations across the Great Basin of the territory of Utah for a direct wagon-route from Camp Floyd to Genoa, in Carson Valley, in 1859, by Captain J. H. Simpson. . . . Gov't Printing Office, Washington, 518 pp., 24 pls. 1 map.

## SUGDEN, J. W.

1938. The status of the sandhill crane in Utah and southern Idaho. *Condor*, 40:18-22.

## TANNER, VASCO M.

1936. The western mockingbird in Utah. *Proc. Utah Acad. Sci., Arts, Lett.*, 13:185-187.

## VAN ROSSEN, A. J.

1931. Descriptions of new birds from the mountains of southern Nevada. *Trans. San Diego Soc. Nat. Hist.*, 6:325-332.

## WALKINSHAW, LAWRENCE H.

1949. The sandhill cranes. *Bull. No. 29, Cranbrook Inst. Sci.*, x+1-202 pp.

## YARROW, H. C. AND HENSHAW, H. W.

1874. Report upon and list of birds collected by the expedition for explorations west of the one hundredth meridian in 1872; Lieut. Geo. M. Wheeler, Corps of Engineers, in charge. *In Rept. upon ornithological specimens collected in the years 1871, 1872, and 1873. Geog. and Geol. Expl. and Surv. West 100th Mer.*, George M. Wheeler, Pp. 5-38.