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**BIRDS RECORDED FROM THE SANTA RITA MOUNTAINS
IN SOUTHERN ARIZONA**

BY

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NOTE

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INTRODUCTION

The recorded birds from the ranges adjoining the Santa Ritas—the Santa Catalinas and the Huachuclas—have long since been published on by Mr. W. E. D. Scott and Mr. H. S. Swarth and others, but comparatively little has been published on the available material from the Santa Rita Mountains which, as Mr. Swarth discovered, have a markedly different set of breeding birds from that of the Huachuclas. Work has been done in the Santa Ritas at various times for fifty years, from 1873 to 1923, on both sides of the range, in almost every month of the year, and it has seemed desirable to bring the results together, not only for the convenience of students of distribution and migration, but for the benefit of future field students in this interesting Mexican borderland¹. The warm valleys on the eastern and southern sides of the mountains may add some winter residents to the foothills not found on the northern and western sides; the migrations may at any time and place afford rewarding surprises; and much may be learned by a study of the life histories of the summer residents, especially of some of the many hummingbirds and rare Mexican species straying across the border.

The published records of specimens collected are mainly those of Mr. H. W. Henshaw, Mr. Frank Stephens, and Mr. H. S. Swarth, while the unpublished records, to be found in the catalogue of the U. S. National Museum and in the files of the U. S. Biological Survey, are from Dr. E. W. Nelson, Mr. A. B. Howell, Dr. Walter P. Taylor, and Mr. Vernon Bailey.

In 1872, when Captain Charles Bendire was stationed at Fort Lowell, north of Tucson, he explored the surrounding country for hostile Apaches, but almost no personal notes on the birds of the Santa Ritas are found in his Life Histories. He quotes, however, from the notes of Mr. Stephens and Dr. Nelson.²

In 1873 and 1874, when ornithologist of the Wheeler Survey, Mr. Henshaw did a little collecting at Camp Crittenden (Old Fort Crittenden), at about 4,700 feet altitude, on the east side of the range, where foothill canyons and rocky hillsides on the west and Sonoita Valley on the east afford a great variety of species. His notes from this locality were incorporated in his main Survey report.³

In 1881, Mr. Frank Stephens made a collection of Arizona birds for Mr. William Brewster, and when working in the vicinity of Tucson made "a brief

¹This contribution is offered by courtesy of the Biological Survey of the U. S. Department of Agriculture and of the U. S. National Museum, whose files contain most of the records drawn upon.

²Bendire, Charles, Captain U. S. Army, Life Histories of North American Birds, Smithsonian Institution, Special Bulletin No. I, 1892.

³Henshaw, H. W., 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. —Rep. Geog. Surv. west 100th Merid. by George M. Wheeler, 1875, vol. V, chapter III, pp. 131-507, 977-989, pls. I-XV.

visit to the Santa Rita Mountains," about forty miles to the south, where he collected in Madera Canyon, known locally as White House Canyon, on the west side of the range, and made some important observations. The notes of this collecting trip were published by Mr. Brewster in the Nuttall Bulletin.⁴

In the summer of 1884, Mr. Stephens revisited Arizona on his way to Mexico and made a large collection of birds, and in 1885, a few of the most important results of his work, especially concerning range, were published by Mr. Brewster in the Auk.⁵

In the summer of 1884, Dr. E. W. Nelson collected both in the region of Tucson, Fullers, and the Santa Ritas, procuring altogether some eight hundred and eighty specimens, about three hundred and fifty of which were obtained in the Santa Ritas. All these are now in the National Museum. Dr. Nelson's Santa Rita work was done almost entirely in June and July, mainly

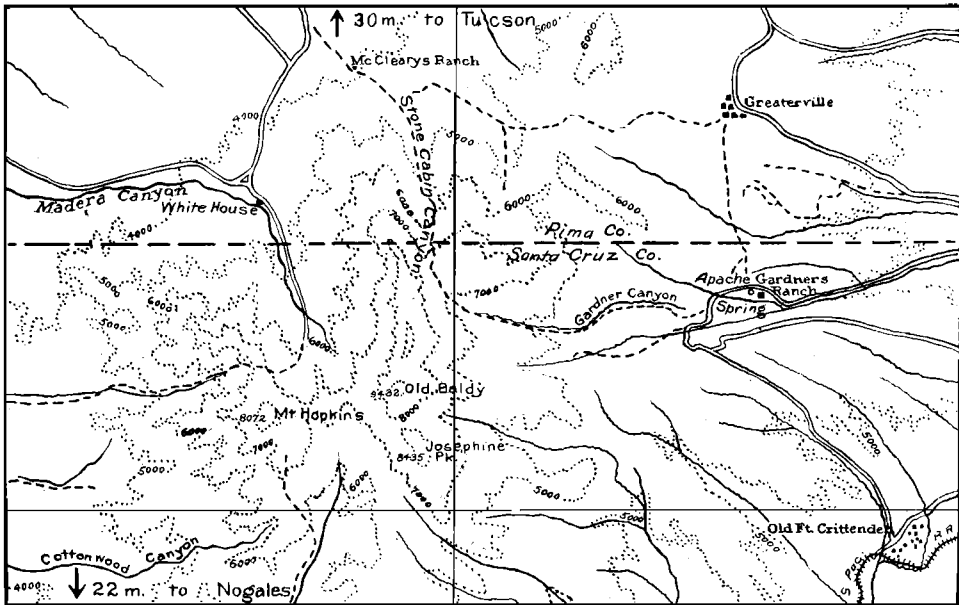


Fig. 1. MAP OF SANTA RITA MOUNTAINS

Drawn from Patagonia Quadrangle
U. S. Geological Survey

in the vicinity of the Gardner, Vail, and Harshaw ranches in the Upper Sonoran Zone on the east side of the range, when both he and Mr. Stephens were camped at Gardner's Ranch.

June 15-30, 1903, Mr. H. S. Swarth and Mr. Stephens collected in the mountains, camping at the mouth of Madera Canyon, Mr. Swarth's notes appearing later in the Condor.⁶

⁴Brewster, William, Bull. Nuttall Orn. Club, VII, 1882, pp. 65-86, 135-147, 193-212; VIII, 1883, pp. 21-36.

⁵Brewster, William, The Auk, II, 1885, pp. 84-85, 196-200.

⁶Swarth, H. S., Summer Birds of the Papago Indian Reservation and of the Santa Rita Mountains, Arizona, The Condor, VII, 1905, pp. 22-28, 47-50, 77-81 (Santa Rita notes, pp. 77-81).

October 25-29, 1913, Mr. Vernon Bailey visited McCleary's Ranch and Stone Cabin Canyon on the west side of the range, climbing to 9,200 feet and sending a bird report and a few specimens to the Biological Survey.

July 28-August 15, 1918, Mr. A. B. Howell and his assistant, Mr. Luther Little, collected for the Survey from a base camp in Madera Canyon, where he secured about a hundred and seventy-five specimens, which are now in the Biological Survey collection of the National Museum. These, added to those of Dr. Nelson, give considerably over five hundred specimens from the Santa Rita Mountains of which there is no published record.

From November 20, 1920, to May 6, 1921, while Mr. Bailey was engaged in the study of desert mammals at the west foot of the range, we were camped

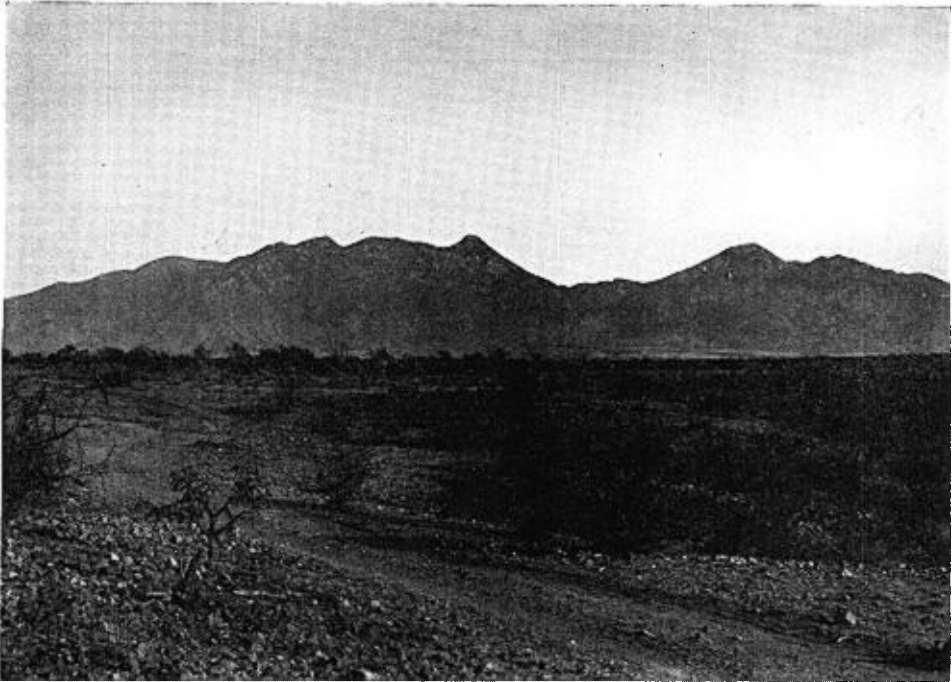


Fig. 2. SANTA RITA MOUNTAINS FROM THE NORTHWEST

Madera, or White House, Canyon leads up to the saddle between Old Baldy (9432 feet) on the left and Mt. Hopkins (8072 feet) on the right. Below the mountains, mesquite, catsclaw, cholla and green pad cactus and ocotillo are scattered over the desert slope.

Photograph by Dr. Charles T. Vorhies

at 4,000 feet, at what is given as McCleary's Ranch on the 1905 contour map of the Geological Survey, but which is now Nicholson's Ranch, where the headquarters of the U. S. Range Reserve Experiment Station is located. Situated at the upper edge of the Lower Sonoran zone, Upper Sonoran species are brought down by the wash from Stone Cabin Canyon, and migrants and summer residents naturally pass through on their way to the higher levels, so that I was enabled to obtain a list of a hundred and twenty species, most of them seen between 4,000 and 4,500 feet.

In January and February, 1923, Dr. Walter P. Taylor, of the Biological Survey, made four short trips to the Santa Ritas from Tucson, crossing the range between Rosemont and Helvetia, climbing the mountains above Madera Canyon, Gardner's Ranch, and Stone Cabin Canyon. About twenty-five specimens were collected, and a very full report prepared.

The Santa Rita Mountains which rise from within a few miles of the Mexican border near Nogales and extend mainly northward in the direction of Tucson, for about twenty-five miles, lie west of the Huachuclas and east of the Santa Cruz River. The range rises from a base of about 3,500 feet on the west—only 500 feet above the Lower Sonoran giant cactus belt—and culminates in two peaks facing across the head of Madera Canyon, Mt. Hopkins with an altitude of 8,072 feet and Old Baldy 9,432 feet, together with Josephine



Fig. 3. MCCLEARY'S OF THE 1905 MAP: NOW NICHOLSON'S

The old adobe built by McCleary in 1900, with a frame addition built by Nicholson in 1918. Some of the live oaks in which the birds took shelter during the snow-storm of April 5, 1921.

Peak, south of Baldy, which reaches an altitude of 8,435 feet; and a trace of the Canadian zone is found on the heights. The Lower Sonoran zone, represented by cactus, ocotillo, mesquite, catslaw, and zizyphus, extends from the Santa Cruz Valley up over the gradually sloping plain spoken of as the mesa, well up the mouths of the canyons and over their warm slopes; while the Upper Sonoran zone, represented by the checker-barked juniper, Mexican nut pine, Emory and Arizona live oaks, manzanita, and ceanothus, on warm slopes extends nearly to the top of the mountains; the Transition zone, represented by the Douglas spruce, the Chihuahua, Arizona, and white pines, madrone and locust occupying only the cold canyon bottoms and the upper cold slopes

of the mountains from 6,000 to 9,000 feet. A few Canadian zone aspens were found by Mr. Bailey on a cold northeast slope at 9,000 feet.



Fig. 4. CHARACTERISTIC VEGETATION ON THE SOUTH-FACING SLOPE OF STONE CABIN CANYON—OCOTILLO, GREEN PAD CACTUS, AND THE SLANTING STALK OF A CENTURY PLANT.

The mesquite and catsclaw slopes attract Desert Sparrows, Phainopeplas, Palmer Thrashers, Cactus Wrens, Verdins, and Western Gnatcatchers, the berry-laden balls of red mistletoe affording winter food for the Phainopeplas and safe nesting sites for the Cactus Wrens; the ocotillo slopes and hillsides in spring when their flaming tubular flowers are full of honey attract hummingbirds, orioles, flycatchers, and warblers; the oaks, with their abundant supply of both acorns and insects, attract Band-tailed Pigeons, the Ant-eating, Arizona, and Gila woodpeckers, the Arizona and Woodhouse jays, Bridled Titmice, and many besides; while the pines attract the Buff-breasted Flycatcher, Long-crested Jay, the Olive Warbler, Mexican Creeper, Rocky Mountain and Pygmy nut-hatches, and others.

As water is the great desideratum in a desert range, ranches where there are water tanks and dripping faucets, and canyon bottoms where running water, or in times of drought water holes and small pools are to be found, are the especial resorts of the birds.

Birds collected by E. W. Nelson, in June and July, 1884, in the region of Gardner's Ranch on the east side of the Santa Ritas, at about 5,000 feet, in the Upper Sonoran Zone.

Mearns Quail
Band-tailed Pigeon
Western Red-tailed Hawk
Zone-tailed Hawk
California Cuckoo
Ant-eating Woodpecker
Stephens Whip-poor-will
Western Nighthawk

Black-chinned Hummingbird
Costa Hummingbird
Cassin Kingbird
Ash-throated Flycatcher
Olivaceous Flycatcher
Coues Flycatcher
Western Wood Pewee
Western Flycatcher

Vermilion Flycatcher	Plumbeous Vireo
Long-crested Jay	Stephens Vireo
Arizona Jay	Lucy Warbler
Dwarf Cowbird	Virginia Warbler
Scott Oriole	Sonora Yellow Warbler
Arizona Hooded Oriole	Black-throated Gray Warbler
House Finch	Painted Redstart
Western Grasshopper Sparrow	Red-faced Warbler
Desert Sparrow	Palmer Thrasher
Botteri Sparrow	Bendire Thrasher
Scott Sparrow	Rock Wren
Spurred Towhee	Baird Wren
Canyon Towhee	Western House Wren
Arizona Cardinal	Rocky Mountain Nuthatch
Black-headed Grosbeak	Pygmy Nuthatch
Western Blue Grosbeak	Bridled Titmouse
Western Tanager	Lead-colored Bush-Tit
Hepatic Tanager	Western Gnatcatcher
Cooper Tanager	

Birds collected or reported by A. B. Howell, July 28-August 15, 1918,
in Madera Canyon, on the west side of the Santa Ritas.

Mearns Quail	Western Lark Sparrow
Band-tailed Pigeon	Arizona Junco
Western Mourning Dove	Desert Sparrow
White-winged Dove	Scott Sparrow
Turkey Vulture	Spurred Towhee
Cooper Hawk	Canyon Towhee
Western Red-tailed Hawk	Black-headed Grosbeak
Swainson Hawk	Western Tanager
Sahuaro Screech Owl	Hepatic Tanager
Rocky Mountain Pygmy Owl	Mexican (?) Cliff Swallow
Coppery-tailed Trogon	Western Warbling Vireo
Belted Kingfisher	Plumbeous Vireo
Arizona Woodpecker	Virginia Warbler
Ant-eating Woodpecker	Lutescent Warbler
Red-shafted Flicker	Olive Warbler
Western Nighthawk	Grace Warbler
White-throated Swift	Black-throated Gray Warbler
Rufous Hummingbird	Hermit Warbler
Allen Hummingbird	Pileolated Warbler
Broad-billed Hummingbird	Golden Pileolated Warbler
Cassin Kingbird	Painted Redstart
Sulphur-bellied Flycatcher	Red-faced Warbler
Olivaceous Flycatcher	Bendire Thrasher
Black Phoebe	Canyon Wren
Coues Flycatcher	Baird Wren
Western Wood Pewee	Western House Wren
Western Flycatcher	Mexican Creeper
Long-crested Jay	Rocky Mountain Nuthatch
Arizona Jay	Pygmy Nuthatch
Arizona Hooded Oriole	Bridled Titmouse
Bullock Oriole	

Lead-colored Bush-Tit
Western Gnatcatcher

Audubon Hermit Thrush
Chestnut-backed Bluebird

Birds noted by V. and F. M. Bailey, November 20, 1920, to May 6, 1921, between McCleary's Ranch (Nicholson's) at 4,000 feet and the mouth of Stone Cabin Canyon at 4,500 feet, near the junction of the Upper and Lower Sonoran zones.

RESIDENTS AND WINTER VISITANTS⁷

Gambel Quail	Western Chipping Sparrow
Western Mourning Dove	Black-chinned Sparrow
Sharp-shinned Hawk	Shufeldt Junco
Cooper Hawk	Arizona Junco
Western Red-tailed Hawk	Desert Sparrow
Golden Eagle	Scott Sparrow
Desert Sparrow Hawk	Lincoln Sparrow
Spotted Owl	Spurred Towhee
Sahuaro Screech Owl	Canyon Towhee
Western Horned Owl	Green-tailed Towhee
Roadrunner	Arizona Cardinal
Cactus Woodpecker	Arizona Pyrrhuloxia
Arizona Woodpecker	Phainopepla
Red-naped Sapsucker	White-rumped Shrike
Gila Woodpecker	Audubon Warbler
Red-shafted Flicker	Western Mockingbird
White-throated Swift	Palmer Thrasher
Say Phoebe	Cactus Wren
Black Phoebe	Rock Wren
Horned Lark (subsp. ?)	Canyon Wren
Woodhouse Jay	Bridled Titmouse
Arizona Jay	Verdin
Raven	Ruby-crowned Kinglet
Western Meadowlark	Western Gnatcatcher
House Finch	Townsend Solitaire
Green-backed Goldfinch (?)	Sierra Hermit Thrush
Western Vesper Sparrow	Chestnut-backed Bluebird
Gambel Sparrow	

SPRING MIGRANTS OR WANDERERS FROM THE VALLEY

Inca Dove ⁸	Lutescent Warbler
Belted Kingfisher	Townsend Warbler
Bronzed Cowbird	Hermit Warbler
Lazuli Bunting	Macgillivray Warbler
Cedar Waxwing	Long-tailed Chat
Cassin Vireo	Golden Pileolated Warbler

⁷Additional species noted by V. Bailey, October 25-29, 1913, from 4,000 feet (McCleary's) to 9,200 feet—Williamson Sapsucker, Long-crested Jay, Mexican Crossbill, Mexican Creeper.

⁸Seen below 4,000 feet in winter.

SUMMER RESIDENTS

Band-tailed Pigeon	Scott Oriole
White-winged Dove	Arizona Hooded Oriole
Turkey Vulture*	Bullock Oriole
Zone-tailed Hawk	Western Lark Sparrow
Poor-will	Mountain Song Sparrow (?)
Blue-throated Hummingbird (?)	Black-headed Grosbeak
Black-chinned Hummingbird	Western Tanager
Costa Hummingbird	Hepatic Tanager
Broad-tailed Hummingbird	Cooper Tanager
Broad-billed Hummingbird	Northern Violet-green Swallow
Cassin Kingbird	Western Warbling Vireo
Ash-throated Flycatcher	Plumbeous Vireo (?)
Olive-sided Flycatcher	Lucy Warbler
Coues Flycatcher	Virginia Warbler
Western Flycatcher	Grace Warbler
Buff-breasted Flycatcher	Black-throated Gray Warbler
Vermilion Flycatcher	Painted Redstart
Beardless Flycatcher	Western House Wren
White-necked Raven	Plumbeous Gnatcatcher

Additional species noted by W. P. Taylor on four trips to the mountains between January 14 and February 27, 1923, from 4,000 to 7,800 feet altitude in the regions of Madera Canyon, Stone Cabin Canyon, Rosemont to Helvetia, and Gardner's Ranch.

Wilson Snipe	Montana Junco
Killdeer	Pink-sided Junco
Red-breasted Sapsucker	Western Robin
English Sparrow	Mountain Bluebird

*Seen below 4,000 feet in winter.

LIST OF SPECIES

The birds of the Santa Rita Mountains gathered from all known sources are given in the following list. The nomenclature employed is that of the Third (1910) edition of the A. O. U. Check-List of North American Birds, together with the Sixteenth (1912) and Seventeenth (1920) Supplements to the A. O. U. Check-List; but footnote references are given to Arizona forms which have been described but not yet accepted by the A. O. U. Committee.

Gallinago delicata. Wilson Snipe

One was taken from the six or more noted by Taylor, February 10, 1923, at Gardner's Ranch, "along the seepage below Apache Spring."¹⁰ The company of half a dozen birds remained fairly close together, but their actions were for the most part independent of one another, one flushing, and then another, there being no synchronous flocking or flying." In flushing the actions were characteristic, one rising in air with the "peculiar grating call-note, flying irregularly and dropping to earth at perhaps thirty to fifty yards, walking immediately behind some thicket or other obstacle, and remaining quiet until again approached." Though repeatedly flushed the Snipe were never seen to alight except on moist, marshy ground, and their wonderfully developed hiding proclivities combined with their protective coloration made them hard to find.

Oxyechus vociferus. Killdeer

A pair of Killdeer were seen by Taylor, February 10, 1923, "on the marshy ground near Apache Spring," at Gardner's Ranch.

Callipepla squamata squamata. Scaled Quail

Taken by Stephens in 1881 in Madera Canyon; also by Nelson, June 4 and 5, 1884, at Harshaw's Ranch. A few adults were seen by Swarth and Stephens in June, 1903, and a family with "young about the size of sparrows," on June 26, on the mesa below Madera Canyon. A few were seen by Bailey "on the open mesa, five or six miles from any ranch or water," and specimens were taken October 21 and 28, 1913. A flock was occasionally seen by us in the winter of 1920-1921, near McCleary's Ranch (Nicholson's) on the mesquite slope below 4,000 feet, while on the Experimental U. S. Range Reserve, a little lower, in parts of the "big pasture," coveys of Scaled Quail were as common as those of the Gambel Quail.

Lophortyx gambelii. Gambel Quail

"Frequently seen and oftener heard" by Swarth, in June, 1903, below Madera Canyon. A flock of about twenty was seen by Bailey in October, 1913, at McCleary's Ranch where they came to drink at the well and from

¹⁰Gardner's Ranch of Nelson's day is now abandoned, being used as a cow camp.

water tubs and barrels, making themselves at home in the dooryard and in the trees over the house. One was seen in a live oak over the house eating ripe mistletoe berries. The same conditions prevailed at our subsequent visit in 1920-1921, for William Nicholson, who had succeeded W. B. McCleary, prided himself on his handsome covey. After coming to the cattle tanks for water in the morning, the Quail would scatter through the mesquite to feed during the day. The thorny catsclaw seemed to be one of their favorite roosting trees. Nine miles below, at the foot of the slope from the mountains near Continental—2,900 feet altitude—on August 15-19, 1918, Howell found the quail common, "both adults in pairs and families of various ages, the youngest being the size of towhees."

At Rosemont (4,700 feet) on January 17, 1923, where a covey of nine was noted by Taylor, two took shelter in a dense growth of flat-leaved cactus, one remaining in the protection of the bush until he was close at hand when, with a sharp whirr, it flew off. The others of the covey were sighted in the protection of a small mesquite. The same day two others were seen by Taylor on the Sonoita-Vail highway.

***Cyrtonyx montezumae mearnsi.* Mearns Quail**

Found several times by Bendire, in August, 1872, "in the foothills and canyons of the Santa Rita, Patagonia, and Huachuca Mountains" while he was scouting after hostile Indians when, as he naively remarks, he had no time to study their habits. Specimens were taken by Nelson June 7 and 25, 1884, at Gardner's Ranch, and he found them not uncommon in July in the live oak belt below the lower limit of the pines, the summer range being just above that of the Gambel Quail, the two overlapping when the Mearns descends in winter. In fact, the Mearns, Gambel, and Scaled quails have all been found by R. D. Lusk at the mouth of Madera Canyon. In 1913, Bailey was told that "fool quail" were common in the mountains, and in 1918, Howell was told by Shorb that a few were still to be found in the mouth of Madera Canyon.

***Meleagris gallopavo merriami.* Merriam Turkey**

On June 15, 1884, Bendire reports, Stephens took a probably incomplete set of nine fresh eggs, about five miles south of Greaterville on the east side of the Santa Ritas, in the oak timber, just where the first scattering pines commenced, at an altitude of perhaps 5,000 feet. The photograph shows the nest "close to the trunk of an oak tree on a hillside, near which a good-sized yucca grew, covering, apparently, a part of the nest." In 1913, Bailey was told that a few Turkeys still ranged over the east slope of the mountains but were never seen on the west slope.

***Columba fasciata fasciata.* Band-tailed Pigeon**

One was taken by Nelson, July 6, 1884, at Gardner's Ranch. A number

of quite large flocks were seen by Swarth and Stephens the last of June, 1903, in Madera Canyon. Flocks of from twelve to twenty were seen by Bailey October 25-29, 1913, in the mountains "circling around or lighting in tall trees." They were found abundant by Howell, July 28-August 15, 1918, "above 5,000 feet in Upper Sonoran and in low Transition" of Madera Canyon, "feeding on the acorns of the live oaks in pairs and small flocks. Two shot were so crammed with these acorns that their crops burst when they hit the ground. At a shot, all the pigeons within a quarter of a mile would flush and join forces, to fly over in one flock." A few of the "Ring Necks" or "Mountain Pigeons" as they are called locally, were seen by us in April, 1921, the first being seen April 1 and 2, at 4,000 feet, flying swiftly toward Stone Cabin Canyon.

Zenaidura macroura marginella. Western Mourning Dove

Full grown young of the year were found abundant by Swarth during the latter half of June, 1903, in the canyons below Madera. An occasional pair was seen by Howell July 28-August 15, 1918, below 5,000 feet in Madera Canyon. Individuals were met with by us on December 17, 1920, and February 12, 1921, in the mesquite at about 4,000 feet; and on April 10, they were heard calling at camp. In the Santa Cruz Valley at Continental, they were common in the river bottoms on our first visit in March.

At Rosemont (5,000 feet), January 15, 1923, one was flushed by Taylor from a sunny south slope; and at Gardner's Ranch (5,200 feet), February 9, 1923, two were flushed from Apache Spring at twilight.

Melopelia asiatica trudeaui.¹¹ White-winged Dove

Found common in the lower parts of the mountains by Swarth, in June, 1903, only a very few being seen about his camp in Madera Canyon. But one nest was found, and hardly any of the birds secured appeared to be breeding. Later in the season—July 28-August 15, 1918, they were found abundant by Howell, many being seen flying up and down Madera Canyon. A few passed his camp at 5,000 feet, "hence trespassing on the range of *Columba*." The only time they were seen to alight was when stopping to drink at the stream. They were equally common through the bottom lands at Continental, Howell reported, occurring mostly in pairs but also in flocks of four and six. At our camp at 4,000 feet, in 1921, the first of the season were seen by Nicholson, on April 19, around the ranch-house, and by April 27 their loud calls were heard all day from the live oaks in front of the house, where they habitually nest.

One was seen displaying as he gave his call, as is described by Bendire. Instead of inflating his chest pouter-pigeon style, as is done by the Band-tails, he puffed out his throat, and, as if about to launch into the air, threw up his wings as some of the ducks do in courtship display of the speculum, showing the handsome white wing crescent; and at the same time curved up

¹¹The Arizona form has been referred to under the name *Melopelia asiatica mearnsi*, Western White-winged Dove.

the rounded fan tail so that its white thumb-mark band showed strikingly—all this as he gave his loud emotional call—*Kroo-kroo'-kroo-kru'*. A rather distant answering call suggested that he was displaying for a prospective mate. Display actually before a female was witnessed a week later by Mrs. Nicholson when I was down in the valley. When the call was given without the emotional display it lapsed almost to monotony, being heard at camp all through the day. Some of the notes were heavily mouthed, while others were muffled. The noise of the flight was volitional. One that I saw, puffed out his chest and started with whacking wings, soaring around, wings and tail spread; but shortly afterward it or another bird was seen flying by silently.

Scardafella inca. Inca Dove

One came to our camp bird table for water, April 25, 1921, but then disappeared. Nests were reported to us in Tucson, May 7, on our return from the mountains.

Cathartes aura septentrionalis. Turkey Vulture

Frequently seen by Swarth in June, 1903, flying overhead, and occasionally seen by Howell July 28-August 15, 1918, in Madera Canyon, "very far overhead." While nineteen were counted by us November 20, 1920, between Tucson and Continental, and one was seen on the Range Reserve on January 1, and again on March 24, 1921, they were not seen at the higher level (4,000 feet) of the Nicholson Ranch until April and May, when they were occasionally noted. Five were seen on April 16, flying over the narrow gorge of Stone Cabin Canyon, and six were seen May 2, flying together, one in the lead.

Accipiter velox. Sharp-shinned Hawk.

One or two were seen in June, 1903, by Swarth, and one or more were seen occasionally by us during the winter of 1921. On January 23, one was seen in Stone Cabin Canyon above 4,500 feet, where it had been bathing in a small pool. During the winter now and then one would dart through camp, routing a flock of Gambel Sparrows from the bird table, and once the tell-tale feathers of a Quail were found under the mesquites only a few rods away. On March 23, on the Santa Rita Range Reserve, when a mixed flock of Vesper Sparrows, Lark Buntings, and Brewer Sparrows flew into a dense hackberry bush, a Sharp-shin darted after them, circling around the bush as if baffled.

Accipiter cooperii. Cooper Hawk¹²

One was seen and a nest with eggs slightly incubated was found by Stephens, May 18, 1881, in Madera Canyon; and a nest containing young was

¹²The Arizona form has been referred to under the name *Accipiter cooperi mexicanus*, Western Cooper Hawk.

found by Swarth the latter half of June, 1903, also in Madera Canyon, where several of the birds were seen. An adult male was shot July 29, 1918, by Howell at 5,200 feet in Madera Canyon, and the following day a young one with fully grown tail was taken. One was occasionally seen by us during the winter of 1921 near Stone Cabin Canyon, where its roosting place and the feathers of a Roadrunner were discovered.

One was seen by Taylor at McCleary's Ranch (Nicholson's) about 7:30 A. M. on February 27, 1923, swooping through the mesquites after small birds.

***Buteo borealis calurus.* Western Red-tailed Hawk**

A juvenile was taken by Nelson, July 8, 1884, at Gardner's Ranch; one or two were seen by Swarth in June, 1903; a few were seen by Bailey in late October, 1913; and one was seen by Howell, August 4, 1918, at about 6,000 feet in Madera Canyon. One or two were seen by us during the winter and spring of 1920-1921, from 4,500 feet down, and in the Santa Cruz bottoms near Continental, 2,900 feet, a pair was found, March 9, nesting in a cottonwood. On April 21, the downy young were standing up in the nest calling shrilly for their parents to feed them.

At Rosemont (4,700 feet), a hawk supposed to be of this species was seen by Taylor, January 17, 1923; and at Gardner's Ranch, 5,200 feet, one was seen by him on February 10, 1923, circling overhead.

***Buteo abbreviatus.* Zone-tailed Hawk**

One was taken by Nelson in 1884, at Gardner's Ranch, and two by Stephens in 1903, in Madera Canyon. Stephens mistook one that he saw trying to catch minnows, for a Turkey Vulture, and Swarth says the resemblance "both in style of coloration and manner of flight is so close that it is exceedingly difficult to distinguish between the two." Our own experience fell in with his, for when we were in camp on April 12, 1921, watching what we supposed was a Vulture, we discovered with amazement a white tail band. Not only the gray cloak of the under-wings but the characteristically beaked head and tilting flight carried out the resemblance. Another of the Zone-tails was seen April 23, 1921.

It was interesting to remember that the famous Zone-tail egg of the Bendire Smithsonian collection was taken in this region—at Old Fort Lowell—at the time when Bendire was stationed there. The egg—it should perhaps be said for those who have forgotten the episode—was carried in the Captain's mouth from the nest, forty feet up in a cottonwood whence he discovered a band of Apaches watching him, five miles on horseback with Apaches in pursuit, back to his camp, where it was extracted with both pain and difficulty. The Apaches' trail, in the days of Geronimo and "the Apache Kid," led from the White Mountains to Mexico, following along the east base of the Santa Ritas and the Apaches had a lookout cave in a cliff above Nelson's camp in 1884, although, fortunately, he was there between raids.

Buteo swainsoni. Swainson Hawk

A few were seen in June, 1903, by Swarth, one in Madera Canyon at about 6,000 feet; a pair were seen by Howell, August 16, 1918, at Continental; and one was found by us in April, 1921, lying dead on the road four or five miles below Nicholson's.

Asturina plagiata. Mexican Goshawk

Reported by Swarth from the foothills of the Santa Ritas, the center of its abundance in Arizona apparently being the valley of the Santa Cruz.

Aquila chrysaëtos. Golden Eagle

One was seen by us several times during the winter of 1920-1921, sailing around the head of Stone Cabin Canyon. Two were seen in March, 1921, flying over the Santa Rita Range Reserve, one with the white tail base of the immature.

Falco sparverius phalaena. Desert Sparrow Hawk

Found by Swarth in June, 1903, "fairly common along the foothills," and often seen by Bailey in late October, 1913. One was occasionally seen by us in the winter of 1920-1921, in the mesquites at about 4,000 feet, and others in the Santa Cruz Valley near Continental where a family had been found by Howell in 1918. One was seen by Taylor, February 10, 1923, in the vicinity of Gardner's Ranch, 5,200 feet, and the species was "fairly common below the ranch in the broad canyon."

Strix occidentalis occidentalis. Spotted Owl¹⁸

During the last week in October, 1913, Bailey wrote—"A Spotted Owl was surprised in the upper part of Stone Cabin Canyon at about 7,000 feet. He was sitting in a Douglas spruce in a dark part of the canyon behind a big cliff, and was within fifty feet of me when I saw and recognized him. The aux brought him down promptly and for the first time I held this beautiful owl in my hands. The eyes were large and dull blue, but a narrow dark iris surrounded the greatly dilated blue pupil. The stomach was full of mice bones and teeth." During the winter of 1920-1921, from our camp at 4,000 feet we occasionally heard the Spotted Owl hooting.

In Madera Canyon, at 6,500 feet, on February 4, 1923, Taylor secured a specimen. When discovered, about noon, it was sitting fluffed up, apparently asleep, in plain sight on an upper limb of a long-leafed yellow pine. The trees in the vicinity were mostly oaks, with a few pinyon and long-leafed pines. "About a foot of snow lay on the ground."

¹⁸The Arizona form has been referred to under the name *Strix occidentalis lucida*, Arizona Spotted Owl.

Otus asio gilmani. Sahuaro Screech Owl

One was shot by Howell, July 30, 1918, at 5,000 feet in Madera Canyon, "at dusk, as it lit on a sycamore stub below camp." The quavering cry was frequently heard near our tent on winter evenings, and on March 9 and 11, 1921, two were heard answering each other. One was found by Bailey on March 9, 1921, in a cottonwood stub on the bank of the Santa Cruz River. The pellets taken from the cavity contained bones of wood rat, kangaroo rats, pocket mice, deer mice, and a grasshopper mouse, the skull of one young *Neotoma albigula*, numerous jaws and bones of *Perodipus ordii* and *Dipodomys merriami*, together with a few jaws of *Perognathus eremicus*, *Peromyscus eremicus* and *sonoriensis*, and *Onychomys torridus*. The same day the head of another Sahuaro Screech Owl was seen framed in a hole of a sahuaro, or giant cactus, on the mountain road above Continental, and at dusk the little owl was seen starting out on his nightly hunt. Two days later he was taken out of his roosting hole, in which was the partly eaten body of a sparrow, and after being photographed he was returned to finish his meal.

Bubo virginianus pallescens. Western Horned Owl

Frequently heard at night during the winter of 1920-1921, from our camp near the Nicholson ranch-house. In daylight, one was flushed on December 2, from a gulch below 4,000 feet, and another, March 21, on the Range Reserve, from a mesquite disguisingly hung with large bunches of mistletoe.

In Gardner Canyon, below the ranch, Taylor reports, a specimen was secured by a trapper on February 10, 1923.

Speotyto cunicularia hypogaea. Burrowing Owl

One was seen by Dr. Charles T. Vorhies, of the University of Arizona, October 19, 1919, at the old wooden gate below McCleary's.

Glaucidium gnoma pinicola. Rocky Mountain Pygmy Owl

A specimen was taken by Little, Howell's assistant, August 13, 1918, "in the scrub oak at about 5,300 feet," in Madera Canyon. The little owl was being mobbed by Bridled Titmice.

Geococcyx californianus. Roadrunner

Seen occasionally by Swarth, in June, 1903. Found by Bailey in October, 1913, in the lower ends of the canyons, where its tracks were seen along the trails. At Continental, August 15-19, 1918, Howell reports, a single bird "hung around" his camp. Several were seen by us during the winter of 1921, below 4,500 feet, both in the mesquite and on stony cactus slopes. One which was often seen near the cattle tanks, came familiarly to our tent for food from January until the first week in March, when warm days brought out some of the lizards. He would take small mammals thrown him, whether skinned or

unskinned, and when the supply failed would accept pieces of jack rabbit or beef.

We were told of Roadrunners killing young quail and other birds for food, but never saw any indication of interest on the part of ours in the flock of birds which came to our feeding table and around our tent. One day, however, on going to a trap set for live rabbits—a wire cage tilted up on a figure-4 trigger and baited with viznaga—a headless, mutilated Canyon Towhee was found under the edge of the trap and Roadrunner tracks all around the outside. Soon after, another dead Towhee was found in the trap. This time the top of the cage was flattened down and the bird below almost beheaded. The Great Horned Owl would have been suspected but a regular rabbit trail of incriminating Roadrunner tracks—two toes pointing forward and two back—close around the trap gave indisputable evidence. Perhaps the hunter was especially hard pressed for food on those days, for after an interval during which, for the protection of *mesoleucus*, the trap was kept set only at night, when it was again set in the day time, although the Towhees promptly got in, they remained unharmed.

On February 9, a second Roadrunner was seen with our camp bird. After the first week in March, when the lizards came out and we were away too much to feed the birds regularly, we rarely saw them, but on April 26, the love song was heard.

On February 15, a Roadrunner was found just before sunset roosting in the saucer-shaped hollow in the top of a barrel cactus (viznaga), which stood about three feet above the ground and had lost its cap of yellow fruit. The curved thorns of the ribs of the barrel afforded protection from prowling coyotes and a thorny mesquite branch overhead might well have discouraged any winged prowler even though endowed with keen enough eyes and brain to connect the long narrow line of the closed tail with the dull, streaked, motionless form in the cup.

On the morning of March 15, on our way to Continental, before the sun had taken the chill out of the air, two Roadrunners were seen in the tops of two mesquite trees, apparently trying to get warm. The unique tracks had been seen and the characteristic snapping of a bill heard, March 9, in the dry, sandy bed of the Santa Cruz River at Continental; and near there, on February 3, 1923, one of the Roadrunners was noted by Taylor.

In the spring of 1923, Mrs. Nicholson wrote of finding one that she took to be our tame Roadrunner dead on our old camp site. Another one, she said, had become just as tame, coming regularly to be fed with her chickens.

***Coccyzus americanus occidentalis.* California Cuckoo**

One was taken by Nelson, June 29, 1884, at Gardner's Ranch; another by Little, Howell's assistant, August 16, 1918, at Continental; while a third was seen by Howell, August 19, 1918, in the mesquite forest, thirteen miles south of Tucson. They were also noted by Vorhies, at McCleary's Ranch (Nicholson's) in the summer of 1919 and on June 25, 1922.

Trogon ambiguus. Coppery-tailed Trogon

The discovery of this bird by Howell in 1918, gives a most interesting addition to the Santa Rita list. In describing it he writes: "While wrapping two birds which I had shot at 6,000 feet in a canyon, August 4, I looked up and saw a pair of these birds watching me from live oak branches at perhaps a hundred yards. I had an unobstructed view of their bright underparts and characteristic form and flight, and identification was sure. They were very 'wise,' and as I carefully approached, they as slowly receded, flying from oak to oak until they separated and I lost them in the denser growth. The trees were almost entirely live oaks here with a very occasional pine. A careful two hours hunt was without result, but as I returned home in the afternoon I saw a bird which could have been nothing else, apparently feeding after the manner of a low-foraging flycatcher in the oak scrub on a ridge two hundred yards away from where I saw the pair in the morning. As I approached, it disappeared over the ridge and was not to be seen again. Systematic working of this locality on two later days was without result."

Ceryle alcyon alcyon. Belted Kingfisher

One was seen by us on April 22, 1921, at the ranch over the dry wash which at this season, we were told by the Nicholsons, for a number of years previous, had been a running stream. After perching in the live oaks for a time the Kingfisher went rattling up the canyon. One was reported by Forest Ranger Schofield from Rosemont, about April 4, "the day of the heavy wind." While these birds were doubtless migrants they call to mind Bendire's statement that in southern Arizona where running streams are few he has found Kingfishers "breeding in localities where fish must have formed but a small percentage of their daily fare," and where "they lived principally on lizards, beetles, and large grasshoppers." A Kingfisher passed Howell's camp in Madera Canyon several times on August 11, 1918, "although the stream here is a mere trickle, disappearing entirely at frequent intervals."

Dryobates scalaris cactophilus. Cactus Woodpecker

Found by Swarth in June, 1903, fairly common along a gulch below Madera Canyon, and out on the mesa. It was also taken by Bailey, October 28, 1913, about McCleary's Ranch. One was seen by Howell, August 16, 1918, in the mesquites at Continental. It was seen occasionally by us during the winter of 1920-1921, on the mesquite slopes, in the live oaks of the ranch, and about camp. On April 28, when looking for Cactus Wrens' nests about two miles above Continental, I flushed one of the small Woodpeckers from its nest in the trunk of a large cholla cactus.

Several were seen and two taken by Taylor, January 15-17, 1923, at Rosemont (5,000 feet), in oaks and desert willows. The call-note suggested *chip* or *plick*.

Dryobates arizonae. Ant-eating Woodpecker¹⁵

Added to our fauna by Henshaw when on the Wheeler Survey and reported as "numerous in the Santa Rita Mountains where probably a resident." A nest containing young was found by Stephens on May 16, 1881, in a sycamore in Madera Canyon; and he reported the species as nearly as abundant in the Santa Ritas as in the Chiricahuas. Adults were taken May 12-17, 1881. A young one in first plumage was taken by him on June 24, 1884. Six adults were taken by Nelson, June 11-29, and three juveniles, June 28 and 29, 1884, at Gardner's Ranch. Very few of the woodpeckers were seen by Swarth in June, 1903, in Madera Canyon, which he attributed to a disastrous series of dry years. A number were seen by Bailey, October 25-29, 1913, in the mesquites around McCleary's Ranch. Two adults were secured by Howell, July 30, and an immature August 14, 1918, at about 5,000 feet in the live oaks of Madera Canyon, and two were seen and one secured by Bailey December 29, 1920, at about 4,500 feet in the live oaks at the mouth of Stone Cabin Canyon.

Sphyrapicus varius nuchalis. Red-naped Sapsucker

A few were seen by Bailey, October 25-29, and one taken October 28, 1913. One was seen, December 29, 1920, and January 22, 1921, at about 4,500 feet in live oaks at the mouth of Stone Cabin Canyon. Another, called the "mountain woodpecker" by Nicholson, was seen February 15, 1921, by the ranch corral in a small black oak that had several *Sphyrapicus* girdles.

At Rosemont (5,000 feet), several were found by Taylor, January 15-17, 1923, one in the top of a large mesquite. Six or more were noted in Barrel Canyon. The peculiar *chirr* was heard. In Madera Canyon, at about 5,000 feet, one was taken February 4, by Taylor, from an oak. It was twice seen chasing a smaller bird from the neighborhood where it was foraging.

Sphyrapicus ruber ruber. Red-breasted Sapsucker

An immature male of the California form, which has been described as *daggetti*, was taken by Taylor, January 17, 1923, at Rosemont (4,700 feet). It was "on the trunk of a good-sized mesquite in the wash below the ranger station, about 11 A. M."

Sphyrapicus thyroideus. Williamson Sapsucker¹⁴

One was seen by Bailey, October 28, 1913, at about 6,000 feet.

Melanerpes formicivorus formicivorus. Ant-eating Woodpecker¹³

Four adults were taken by Nelson, June 7-22, 1884, at Gardner's Ranch.

¹⁴The Arizona form has been referred to under the name *Sphyrapicus thyroideus nataliae*, Rocky Mountain Sapsucker.

¹³The Arizona form has been referred to under the name *Melanerpes formicivorus aculeatus*, Mearns Woodpecker.

It was found fairly common and immatures were taken by Swarth in the latter half of June, 1903, in the lower parts of the mountains; and it was found by Howell, one of the most abundant birds of Upper Sonoran and Transition zones in Madera Canyon, five adults being taken July 29-August 5, and four immatures, July 29, and August 4, 6, and 9, 1918. One was seen by Bailey, December 29, 1920, at about 4,500 feet in the live oaks of Stone Cabin Canyon and one, April 13, 1921, in the sycamores and live oaks at about 4,500 feet in Madera Canyon.

Three or four were noted by Taylor, January 15, 1923, at Rosemont (5,000 feet), all in oak trees. One seen on an oak near a tub of water in the back yard of the ranger station, in order to reach the barrel "appeared to go into reverse," hopping backward down the tree so as to get at the water. One was taken and another noted by Taylor, February 4, 1923, in Madera Canyon, at 6,000 feet.

Centurus uropygialis. Gila Woodpecker

Taken by Dr. J. T. Rothrock, September 4, 1874, at Camp Crittenden. Taken also by Howell, August 16, at Continental, where several were seen. It was noisy around our camp during the winter of 1920-1921 in the sycamores, mesquites, and hackberries, frequently visiting the beef bones and bacon rind put out for its benefit and getting water from a dripping ranch faucet. A pair had nested in one of the live oaks in front of the ranch house the previous year, and although no nest was located, the birds were commonly seen in the oaks until our departure on May 6. This adds another species of tree to those enumerated by Bendire as used for nesting sites by the Gila Woodpecker when not using the giant cactus. Nidification in southern Arizona, his observations led him to think, begins about the latter part of April.

At Rosemont (5,000 feet), Taylor saw three, two in oaks and one in the wash below the ranger station. At the station, the tub of water that had attracted the ant-eating was visited by the Gila. He backed down the oak beside the tub and "reached over, still clinging to the tree, and drank some water."

Colaptes cafer collaris. Red-shafted Flicker

A few were seen by Swarth in June, 1903, a few were seen by Bailey in October, 1913, and they were found common by Howell in August, 1918, in the Upper Sonoran and Transition zones of Madera Canyon, an immature being taken August 7 and an adult August 11, 1918. They were seen occasionally by us in 1920-1921, from about 4,500 feet in Stone Cabin Canyon down to about 2,900 feet in the Santa Cruz Valley near Continental.

Several were seen by Taylor in January and February, 1923. At Rosemont (5,000 feet), January 15, he saw three or four in the oak country; January 16, two or three in Barrel Canyon; January 17, two or three in the wash below the Rosemont ranger station. At McCleary's Ranch (Nicholson's) Feb-

ruary 3, he saw from three to six; in Madera Canyon below 6,000 feet February 4, he heard and saw others; and at Gardner's Ranch, February 10, noted one and perhaps two. "One seemed to be roosting in a hole under the eaves of the adobe ranch house," he says, "as it burst out when I approached in the late twilight, as if it had been planning to remain there for the night."

***Colaptes chrysoides mearnsi*. Mearns Gilded Flicker**

Found by Stephens almost exclusively in the giant cactus belt. One, doubtless a wanderer, was seen by us late in the winter of 1921, on the mesquite slope not much below 4,000 feet, the first giant cactus being about nine miles below. A pair was also seen on March 15, in a large cottonwood in the Santa Cruz River bottoms, giant cactus being found on the first terrace above the river valley. Others were seen during the winter on the mountain road to Continental in the first of the giant cactus; and there, on March 9, at sundown, when we were watching the Sahuaro Screech Owl, four flew in, apparently meaning to roost in the sahuaro.

***Antrostomus vociferus macromystax*. Stephens Whip-poor-will**

Found by Stephens, May 11, 1881, in Madera Canyon, and taken by Nelson July 4 and 6, 1884, in the mountains above Gardner's, its favorite resorts apparently being the rocky sides of canyons. One was seen by Swarth in the latter half of June, 1903, at about 7,000 feet in Madera Canyon, but none was heard calling. They were heard by Vorhies in June, 1918, and also on June 10 and 11, 1922, in Madera Canyon.

***Phalaenoptilus nuttallii nuttallii*. Poor-will**

Frequently heard by Swarth in June, 1903, calling about his camp in the Upper Sonoran zone of Madera Canyon. The call was also heard at our camp, April 17 and 30, 1921, near the upper edge of Lower Sonoran zone, coming down from above.

***Chordeiles virginianus henryi*. Western Nighthawk**

Taken by Nelson, June 11 and 14, 1884, at Gardner's Ranch. One was seen by Howell, July 28, 1918, flying "high over camp," at 5,000 feet in Madera Canyon. As this would put it above Lower Sonoran it accords with Swarth's statement that it "apparently does not occur below Upper Sonoran, even in the migrations."¹⁶

***Chordeiles acutipennis texensis*. Texas Nighthawk**

Taken by Stephens, May 16, 1881, in Madera Canyon, and found by Swarth and Stephens, in the latter half of June, 1903, also in Madera Canyon,

¹⁶Swarth, H. S., A Distributional List of the Birds of Arizona, Pacific Coast Avifauna, No. 10, 1914, p. 36.

where dozens were seen flying about camp in the evenings. One was taken by Howell, August 18, 1918, at Continental, where they were abundant and he flushed three from the ground among the mesquites in the day time. A night-hawk, presumably of this species, was seen by us at a distance May 1, 1921, flying over the mesquite slope a little below 4,000 feet, and one seen near enough for identification, May 6, at Tucson. Between Tucson and Nicholson's Ranch, on June 9, 1922, Vorhies saw "great numbers of Texas Nighthawks in the road, not only in the valley but all the way up to camp," which was reached about nine o'clock. "In many cases the automobile almost ran over them before they flew up." Two or three years previously, Vorhies found numbers of them dead in the road between Continental and Tucson, undoubtedly killed by cars in the night.

Aëronautes melanoleucus. White-throated Swift

Frequently seen flying overhead by Swarth in June, 1903, his camp being within easy flying distance of Elephant Head, a vertical rock mass where, as he inferred, they probably nest. One or two were seen by Howell in August, 1918, every time he went up to 7000 feet; and whenever heavy clouds hung low enough they were driven down to 5,000 feet, the altitude of his camp. On December 24, 1920, January 14, and February 9 and 10, 1921, they were seen by us at about 4,000 feet. Only one was seen at a time from camp on February 9 and 10, and at Continental, March 8; but two were seen on December 24 and 29, January 14, and April 8 and 9, and several April 13. Most of those seen were going toward the mountains south of us rather than toward the Elephant Head cliffs west of us, but on April 13, when we were going to Madera Canyon, Swifts came rushing down from the mountains, perhaps from the Madera region but perhaps from Elephant Head.

Eugenes fulgens. Rivoli Hummingbird

A juvenile was taken by Nelson, July 5, 1884, at Gardner's Ranch. A large hummingbird, taken for the Rivoli, was shot by Howell, August 12, 1918, from a pine on a very steep slope at 7,500 feet in Madera Canyon, but it fell into "a great tangle of bracken" and he was unable to recover it.

Cyanolaemus clemenciae. Blue-throated Hummingbird¹⁷

A strikingly large hummingbird, with a long dark tail, was seen by us on March 29, 1921, in the top of a tall sycamore at camp, and with the glass we thought we could detect the blue of the throat. It flew, however, without giving us a better view. It has been reported, Swarth says, not only from the Santa Ritas, but the Santa Catalinas, the Huachucas, and the Chiricahuas, in Arizona, and the San Luis Mountains in New Mexico.

¹⁷The Arizona form has been referred to under the name *Cyanolaemus clemenciae bessophilus*, Arizona Blue-throated Hummingbird.

Archilochus alexandri. Black-chinned Hummingbird

Taken by Henshaw, August 23-29, 1874, at Camp Crittenden, where it was feeding in beds of morning glory; and found breeding in Madera Canyon by Stephens, in 1881. Two adults were taken by Nelson, June 15 and July 10, and five juveniles July 10, 17, 21, and 22, 1884, at Gardner's Ranch. Swarth, in June, 1903, found it the only hummingbird that was at all common, and it was found along the canyon streams. The protracted drought doubtless accounted for the absence of other species. In 1921, while several other hummingbirds were seen by us, *alexandri* was the commonest, possibly due to the same cause, for the season of 1920-1921 was said to be the dryest in thirty years. The first seen close enough for identification was on April 2, although hummingbirds of various species had come north in numbers the latter half of March. On April 6, an adult male was shot when it was feeding from the orange-colored tubes of honeysuckle (*Anisocanthus thurberi*), which is considered by Mr. Gorm Lottfield one of the favorite hummingbird foods of the region. It weighed three grams and its throat was full of nectar. Other males were seen about the red terminal blossoms of ocotillo, the white collar making a good field character in contrast to the velvety black of the gorget and the dark shade of the underparts.

Still other Black-chins were seen giving their aerial courtship dance from among the mesquites. One that I watched varied the usual triangulation by first flying back and forth horizontally across the face of a bush, then making narrow V's with the point at the bush, followed by wide-sweeping swings out over the mesquites as if from pure spirits. Near the ranch a nest was found practically completed the last of April. It was in a hackberry about eight feet from the ground and from below was a buffy brownish ball, made apparently of the soft down from sycamore leaves or balls wrapped with web. The builder had a yellowish chest band that puzzled me until I saw her feeding from the honeysuckle tubes, when to my surprise I saw the long-stemmed stamens rise and apparently brush her chest.

Calypte costae. Costa Hummingbird

One was recorded by Stephens, April 26 and 27, 1881, at Tucson; and an adult and a juvenile were taken by Nelson, on July 10, 1884, at Gardner's Ranch. A few were seen by Swarth, in the latter half of June, 1903, "along the canyons." One taken for this species was seen by us on April 2, 1921; and on April 20, as we were breakfasting out of doors, a rush of wings called our attention to two hummingbirds, bill to bill in air, one an adult male with flaring brilliant pink ruff. Before we could recover from our surprise, they were gone.

Selasphorus platycercus. Broad-tailed Hummingbird

Taken by Stephens, May 13 and 15, 1881, in Madera Canyon. On March 13, 1921, the first hummingbird of the season whizzed past our camp up the dry

wash and later in the day—perhaps disappointed by the scarcity of blooming flowers—whirred back again with its characteristic rattle, which called to mind the yellow pine country of the San Francisco Mountains. On March 14 and 23 it was also heard, and once a large vanishing hummingbird form was caught sight of overhead. But it was not until April 2 that one visited our improvised hummingbird-flower-garden, coming so close that we could see his burnished bronzy green head and back and his deep rose pink gorget. Another of these noisy hummingbirds came to camp on April 10, but that was the last noted.

Selasphorus rufus. Rufous Hummingbird

Three immatures were taken by Howell, August 12, 1918, in Madera Canyon.

Selasphorus alleni. Allen Hummingbird

An adult was taken by Howell, August 4, and an immature, August 12, 1918, in Madera Canyon. After meeting with the first of the genus on August 4, Howell says, "a trip above 6,000 feet was almost sure to result in one being seen. August 12, I came upon a beautiful spot in a little canyon at about 7,000 feet, grown thick with bracken and lupines in flower. Here in about three acres, there must have been two dozen birds of the genus, chasing each other, feeding, or perching on dead twigs."

Basilinna leucotis. White-eared Hummingbird

An immature, "probably a bird of the previous year", was secured by Stephens, June 24, 1903, at about 5,500 feet.

Cynanthus latirostris. Broad-billed Hummingbird

Added to our fauna by Henshaw who took two adult males, August 23, 1874, a few miles from Camp Crittenden. Five specimens were taken by Stephens in the same locality May 12-19, 1881. Five additional adults were taken by Nelson June 11-July 22, and a juvenile July 11, 1884, at Gardner's Ranch. Two juveniles were seen and one secured by Howell, August 15, 1918, at 5,000 feet. The first seen by us was on March 24, and one was taken April 12, 1921, from an ocotillo slope above 4,000 feet. Its wide bill was livid Turkey-Vulture carmine, the under mandible especially so, the upper mandible being blackish at tip. On April 15, one was seen probing the red, stamen-fringed flower tubes of the ocotillo.

While watching the light-breasted female *alexandri* and her sycamore-down nest, on April 29, I discovered a large dark hummingbird working on a dark nest close by. The nest was about three and a half feet above the ground on a twig so slanting that it made the top of the cup slant. The sides of the nest were plastered over with the tiny pinnæ of weathered mesquite leaves.

The rim was thin and the inside of the cup looked grayish. The female came with a long fiber of some kind and sat high trying to work it into the nest with her long bill. Although she was in shadow a dark streak showed below her eye and a light streak above, and when she rose her tail showed dark bluish black with white tips. While it was too dark to see distinctly, I thought I caught the wide reddish base of the bill of *Cyananthus*.

Tyrannus verticalis. Arkansas Kingbird

Reported by Swarth in June, 1903, as "not common. Seen mostly below the mountains," and by Howell as "abundant along the roadside south of Tucson, July 28, 1918." One was taken by him on August 15, 1918, at Continental, where they were also abundant.

Tyrannus vociferans. Cassin Kingbird

Taken by Rothrock, July 4 and 10, 1874, at Camp Crittenden; by Stephens in 1881, in Madera Canyon; and five by Nelson, June 7-20, 1884, at Gardner's Ranch. By Swarth it was found quite common in June, 1903, much more so than *verticalis*, in Madera Canyon. One was seen by Howell, August 6, 1918, in Madera Canyon at about 4,100 feet; and one was taken by him August 16, 1918, at Continental, where they were abundant. At our camp the first was discovered on April 1, 1921; on April 13, others were seen in Madera Canyon, where there was running water. On April 15, at camp near sunset six were seen in the top of a hackberry sitting fluffed up in the cold, apparently enjoying the last rays of the sun; but a Phainopepla which came for the hackberries disputed the tree top with them. After this the birds apparently dispersed, perhaps looking for water, as one or more were seen in Stone Cabin Canyon at about 4,500 feet. On April 27, one came to our birds' water pan to drink. By that time they had been seen about a good deal and heard calling in the early mornings, so much that the camp Mockingbird had incorporated their harsh cry in his song.

Myiodynastes luteiventris. Sulphur-bellied Flycatcher

Four were reported from the Santa Ritas by Henshaw during the Wheeler Survey. Six adults were taken by Little, July 29-August 13, and a nestling, August 10, 1918. They were found only from 5,000 to 5,300 feet "among the sycamores, all within a stretch two-thirds of a mile long. . . . Just above camp were five . . . a short distance above were several more." An unlined twig nest was found thirty feet up in a knot of a live sycamore and a single nestling on the ground below. An adult was secured by Little, August 13, near the same place. In neither the Santa Ritas nor the Huachuacas had Howell ever known the bird to occur outside of "positive Upper Sonoran."

Myiarchus cinerascens cinerascens. Ash-throated Flycatcher

Taken by Henshaw, August 30, 1874, at Camp Crittenden; two by Nelson,

June 10, 1884, in the mountains above Gardner's Ranch, and July 9, 1884, at Gardner's Ranch. Found by Swarth in June, 1903, "along the canyon streams," and taken by Howell at Continental, August 15, 1918, where they were abundant, "both singly and in family parties." Two were noted by us on March 28, 1921, one in the mesquites above camp and the other in the bottom of a hot, dry gulch of the mesquite slope protected from the heavy wind. On April 6, one was secured and its stomach found to contain mainly beetles.

Myiarchus lawrencei olivascens. Olivaceous Flycatcher

Discovered by Stephens in 1881 in Madera Canyon, it was added to our fauna by Brewster, soon afterward. It was "apparently not uncommon, but very local." Adults were taken May 12-17, 1881, and a female shot on May 17, was laying. A young in first plumage was taken July 15, 1881. A series of twenty-nine adults was taken by Nelson, June 8-July 21, 1884, at Gardner's Ranch. He says it was "nesting in hollow dead branches and knot holes in the live oaks above Gardner's Ranch. The end of a snake skin hung out of the entrance to one nest cavity near our camp." It was supposed to be fairly abundant by Swarth in the latter half of June, 1903, the note being heard "from some wooded hillside far more often than the birds themselves were seen." Two adults were secured by Howell July 31 and August 3, 1918, in Madera Canyon. "No others were seen." Some were "taken among the oaks of the hillsides and some close to the stream, all well down in Upper Sonoran."

Sayornis sayus. Say Phoebe

A few were seen by Swarth in June, 1903, along the base of the mountains. One was seen by us on December 4, 1920, and January 1, 1921, on a grass-plot fence of the Santa Rita Range Reserve near Huerfano Butte. Another was seen occasionally during the winter a little above 4,000 feet, near an abandoned mining shaft where it could find water and a safe roosting place. When the mistletoe bloomed an abundant supply of insects was also to be found close at hand. In the Santa Cruz bottoms near Continental, where Howell had seen one on August 17, 1918, we saw a number of the birds on a barbed wire fence in February and March.

At Rosemont (5,000 feet), on January 15, 1923, Taylor heard one near an old mine building and in the evening saw one "after flies under the porch roof at the ranger station office." On January 16, he noted one "in Barrel Canyon, perching in low bushes in an open place." At Gardner's Ranch, February 10, he saw two or three "in the open clearing about the ranch houses and corrals."

Sayornis nigricans. Black Phoebe

A fully grown young one was taken by Howell, July 29, and an adult, August 10, 1918, both at 5,000 feet. One was seen by us on February 6, 1921,

during a snowstorm and for two or three days following, wandering up and down the gulch in front of the Nicholson ranch-house. It, or another, appeared again later, staying for a short period. Several were seen in February and March, 1921, within easy reach of irrigation water near Continental, where one was seen by Howell, August 18, 1918. A number were noted February 22, 1921, along an irrigation ditch of the Canoa Ranch where Song Sparrows, a Black-crowned Night Heron, and Cinnamon and Green-winged teal were seen.

Nuttallornis borealis. Olive-sided Flycatcher¹⁸

Two were taken by Stephens in May, 1881, in Madera Canyon. One was heard by me on April 30, 1921, and seen near camp, May 2, 1921.

Myiochanes pertinax pallidiventris. Coues Flycatcher

One was taken by Stephens, May 16, 1881, and two by Nelson, July 1 and 5, 1884, at Gardner's Ranch. It was reported by Stephens as "a rare summer resident" in southern Arizona, and seen by Swarth "only on one or two occasions," none below 6,000 feet. Only about two pairs were seen by Howell, three adults being taken, August 1 and 4, 1918, "not far up in Transition, in canyon bottoms." The last was seen on August 4. One was found by me on April 5, 1921, with other birds not seen before, taking shelter in the live oaks of the Nicholson Ranch during a prolonged snow storm, perhaps driven down from the mountains which were covered with snow, perhaps overtaken on their way up to their summer homes. When the storm was over, the visitor from the Transition zone disappeared and was seen no more in the Lower Sonoran zone.

Its slow, plaintive notes which Swarth says the Mexicans translate as Jose Maria—pronounced Ho-say Ma-réah—as I heard them lacked the first syllable of the Ma-ré-ah, there being only four notes—

1 1 1 1

Jo-say, re'-ah.

The simple phrase, rightly compared by Henshaw and Swarth to the call of the Olive-sided Flycatcher in character, was repeated over and over as the bird flew with the "sudden erratic flights" which Henshaw noted, back and forth low through the line of trees while I followed him down the road and back, near enough at times to note all his characters—the light-colored under mandible with its wide base, the whitish chin, brownish upperparts, and uniformly grayish underparts with their wash of dull yellow on the belly.

Myiochanes richardsonii richardsonii. Western Wood Pewee

One was taken by Stephens, May 13, 1881, in Madera Canyon, and six others by Nelson, June 7-July 10, 1884, at Gardner's Ranch. They were found

¹⁸The Arizona form has been referred to under the name *Nuttallornis borealis majorinus*, Western Olive-sided Flycatcher.

by Swarth, in June, 1903, "quite common along the lower canyons," and several were taken which were evidently not breeding. They were reported by Howell, July 28-August 15, 1918, "exceedingly abundant, especially in the Upper Sonoran and low Transition canyon bottoms," none being noted above 6,000 feet. Ten adults were taken July 30-August 10, 1918.

***Empidonax difficilis difficilis*.** Western Flycatcher

An adult was taken by Nelson, June 14, 1884, at Gardner's Ranch and four others by Howell, August 1, 6, and 10, together with an immature on August 4, 1918, two or three being seen later, in Madera Canyon, between about 5,000 and 6,000 feet. An *Empidonax* taken for this species, although seen only in the shade of the live oaks was found by me on March 25, April 29, and May 2, 1921, not far from camp.

***Empidonax traillii traillii*.** Traill Flycatcher

One was taken by Henshaw, September 1, 1874, at Camp Crittenden, and one by Howell, August 15, 1918, at Continental, while three were seen altogether on August 15 and 18, 1918, in the mesquite.

***Empidonax hammondi*.** Hammond Flycatcher

One was taken by Stephens, May 12, 1881, in Madera Canyon.

***Empidonax fulvifrons pygmaeus*.** Buff-breasted Flycatcher

One was taken May 17, 1881, by Stephens, but he reported it as rare. A single individual was seen by Lusk, April 20, 1899, "low down in the foothills of the Santa Ritas." A few were seen by Swarth in June, 1903, "in the pines in the very highest parts of the range." One or two were seen by me during the snowstorm of April 5, 1921, at the Nicholsons', in the live oaks and on the fence of the ranch corral.

***Pyrocephalus rubinus mexicanus*.** Vermilion Flycatcher

Found by Stephens during May, 1881, in Madera Canyon. Five taken by Nelson, June 16-29, 1884, at Gardner's Ranch. Reported by Swarth in June, 1903, as "fairly common in the lower canyons." Most of those seen by us were found in the Santa Cruz bottoms near Continental in March, 1921—where Howell saw about four, August 15-19, 1918—but on April 2, one was seen near the Nicholson ranch-house and on April 5, during the snow storm, one spent the day flycatching under the protection of the oaks. On April 16, one was seen a little above 4,000 feet. On our way to Madera Canyon on April 13, a pair was found in the gulch below the canyon, and the male was seen on the mesa, giving his flight song high over the mesquites.

***Camptostoma imberbe*.** Beardless Flycatcher

A striking, unusual song was first heard on March 14, 1921; then on

March 29, and after that day by day around camp until at least the 24th of April. The notes were loud, slow, and plaintive, in descending chromatic scale. Sometimes they were preluded, but oftener concluded, by a flycatcher-like flourish of small notes corresponding to the notes of the *Camptostoma* which Stephens found breeding near Tucson in 1881, which he described as "yoop-yoop-yoopec'-deedledec', the first half given very deliberately, the remainder rapidly." While the number of notes as I heard them varied from three to seven, four or five chromatic notes were perhaps most commonly heard and the song with three was merely an abbreviation of that with five

notes as ㄱ ㄱ ㄱ and ㄱ ㄱ ㄱ ㄱ ㄱ. Another form frequently heard was

ㄱ ㄱ ㄱ ㄱ ㄱ ㄱ ㄱ ㄱ ㄱ ㄱ ㄱ ㄱ
he-hi-ho-ho-ho or *he-hi-ho-hu he-he-he*

This also tallies well with Stephens' description of "a commoner cry, used by both sexes in calling to one another . . . a shrill *piér piér piér piér*, beginning in a high key and falling a note each time." The call as I heard it was a loud *pe-ook* or *pe-uck* of quality similar to that of the song.

While generally hard to see in the leafy mesquite thickets the small bird occasionally appeared out in plain sight on a bare tree and once came to a mesquite close by our tent, perching in characteristic flycatcher style, with wings and tail held loosely, the tail square-spread ready for a spring into the air, his grayish back, light wing bars, and white underparts faintly washed with yellow on belly, showing clearly; his bill, wide at base, showing black above and light below. The same song was reported from a camp about a mile above. As, by reason of his song, the bird could not have been any one of our native Empidonaxes, by élimination it seems that he must have been the little Beardless Flycatcher whose song described by Stephens tallies so well with his own. Stephens not only found *Camptostoma* breeding near Tucson in 1881, but when with Swarth on the Papago Indian Reservation a few miles farther south in 1903, found what was probably a pair and their brood, an adult male and a full grown juvenile being taken; so the species had already been recorded about twenty miles from our camp. Sixty miles north of Tucson, Lusk informs me, he took a Beardless Flycatcher, March 1, 1911, during migration, on the San Pedro River, ten miles above its junction with the Gila.

Otocoris alpestris adusta. Scorched Horned Lark

A young bird in first plumage was taken by Stephens in 1881 on the plains at the base of the Santa Ritas. Three were taken by Nelson, June 4, 1884, at Gardner's Ranch. A few, presumably of this subspecies, which is the breeding one of the region, were seen by Swarth in June, 1903, "on the barren mesa just below the mountains."

Horned Larks of some species were seen by us several times during the winter of 1920-1921, flying overhead. One was seen in December and a flock of twenty or thirty on January 15, on the ridge between Stone Cabin Canyon

and Sawmill Canyon. Others were heard, March 9, flying overhead at Continental.

At Gardner's Ranch (5,200 feet), on February 10, 1923, Taylor saw a flock of "probably twenty to thirty individuals, working over the ground in the open fields near the ranch buildings." Two specimens secured proved what Oberholser has described as *aphrasta*, the Chihuahua Horned Lark, which is a winter resident in the Santa Rita region.

Cyanocitta stelleri diademata. Long-crested Jay

One was taken by Nelson, July 1, 1884, at Gardner's Ranch. It was found common by Bailey, October 28, 1913, in the pine timber of the mountains. Two adults were taken by Howell, July 30 and August 2, 1918, when he found it "fairly common but not abundant above 6,000 feet."

Aphelocoma woodhousei. Woodhouse Jay

A few lived at the Nicholson Ranch throughout our stay, feeding largely on acorns from the live oaks. With other birds they frequented the jerky line back of the ranch-house until it was taken down. One was accidentally caught, January 24, 1921, in Stone Cabin Canyon, in a mouse trap baited with squash seed. Its stomach was filled largely with hackberry seeds, many black beetles, and gravel. The shells of the hackberry seeds which are so hard that they fossilize in limestone, were broken and being ground to powder. The Woodhouse Jay was also found at the Nicholson Ranch, March 25, 1923, by Taylor.

Aphelocoma sieberi arizonae. Arizona Jay

Added to our fauna by Col. Bernard J. D. Irwin, Surgeon, U. S. A., at Fort Buchanan, December 9 (1858 ?),¹⁹ it was sent to the Smithsonian Institution and described by Robert Ridgway in 1873.²⁰

¹⁹The year is not given on the label or in the museum catalogue, but from the relation of the entry to others from Irwin, Dr. C. W. Richmond thinks it was probably collected in 1858.

²⁰The fact that the Arizona Jay was described from the Santa Ritas was brought to my attention by Swarth, and on looking up the type in the National Museum an interesting bit of history was brought to light. The location of Fort Buchanan was perplexing as the maps show old Fort Crittenden in the region ascribed to it—45 miles southeast of Tucson—but when the matter was referred to the War Department it was explained by the records. Fort Buchanan, formerly Camp Moore, was established at the head of Sonoita Creek, November 7, 1856, and destroyed and abandoned, July 23, 1861; birds and eggs being sent in from there by Irwin in 1858 and 1859. Fort Crittenden was established on the same site, March 4, 1868, being in its turn abandoned, June 1, 1873, when it went back to the public domain by proclamation of President Grant. On investigation it was found that peculiar historic interest attaches to the forgotten collector as well as to the locality of the type. For in Mearns' Mammals of the Mexican Boundary, Irwin is said to have sent to the Smithsonian Institution, at the suggestion of Prof. Baird, "very large collections of the reptiles and batrachians of old Fort Buchanan" and, Mearns adds, "More important than all Colonel Irwin's contributions of notes and specimens to the Smithsonian Institution was his early training of Charles Emil Bendire, the distinguished author of Life Histories of North American Birds, in exact methods of scientific observation. Bendire was then a young soldier of his command, attached to the hospital corps, and stationed at old Fort Buchanan and other camps in the vicinity of Fort Lowell and Tucson." (Mammals of the Mexican Boundary of the United States, by E. A. Mearns, M. D., Smithsonian Institution, U. S. National Museum, Bulletin 56, 1907, p. 109.)

It was found by Stephens in 1881, going about generally in the foothills of the Santa Ritas in flocks of from five to twenty. A nest found May 16, 1881, had "four eggs on the point of hatching." A series of nineteen adults was taken by Nelson, June 5-28, and five juveniles June 5, 17, and 20, and July 3, 1884, at Gardner's Ranch. It was found by Swarth in the latter half of June, 1903, very abundant in Madera Canyon, troops of juveniles being seen accompanied by their parents. One was taken by Bailey, October 23, 1913, between 4,000 and 4,500 feet above McCleary's. Three adults were taken by Howell, July 30 and August 1, and two immatures, August 3 and 8, 1918, in Madera Canyon. A flock was seen by us in the winter of 1920-1921 at about 4,500 feet near the water pools of Stone Cabin Canyon. A specimen was taken, April 10, 1921, by Stanley Kitts of Tucson.

In January and February, 1923, Taylor found them numerous in the oak country. At Rosemont (5,000 feet), January 15, he noted 20 or more, usually in companies of three or four. Three or four stayed about the ranger station grounds and if any unusual noise was heard, or any unusual object appeared around the corner, their scolding notes were almost sure to be heard. In the morning they were seen drinking water, perched on the edge of the tub by the windmill. Once when Taylor threw out some Vienna sausages, five Jays came to the feast. One seized a small sausage by the end and "proudly bore it off with him, intact, to some more distant perch," his actions suggesting those of the Rocky Mountain Jay. On February 3, Taylor heard the Arizona about McCleary's Ranch (Nicholson's), and February 4, several times along the lower portion of Madera Canyon. At Gardner's Ranch February 8-10, he found them in the oaks at intervals from below the ranch at 5,200 feet up to 6,000 feet or more, usually in companies of four or five.

***Corvus corax sinuatus.* Raven²¹**

The hoarse croaking of Ravens was heard several times by Bailey, October 25-29, 1913, near McCleary's, and the birds were occasionally seen there throughout our stay in 1920-1921, about the canyons and over the pastured mesquite slopes, flying singly or in twos, threes, or fives. On December 4, 1920, two were seen at open water in Box Canyon. On February 14, 1921, three were seen circling the sky.

***Corvus cryptoleucus.* White-necked Raven**

From 4,000 to 4,500 feet during most of the winter of 1920-1921, the ravens seen were the larger species, but at 2,900 feet in the Santa Cruz bottoms near Continental, large numbers of White-necks were seen. On February 21, 1921, a flock of seventy-nine was counted drifting low across the fields. On February 28, twenty-five were seen in a freshly plowed field and some were seen following the plow. Flocks of different sizes were seen mulling

²¹The Arizona form has been referred to under the name *Corvus corax clarionensis*, Clarion Island Raven.

over the dry river bottoms, one flock of thirty or forty talking softly with a continuous croaking *kackack-kackack*, as they rose higher and higher, perhaps to 600 or 700 feet; when they gradually drifted off until only ten were left overhead. On March 4, a hundred and twenty White-necks were counted, mulling in the sky. On February 28, a Turkey Vulture was driven off and on March 4, a Red-tailed Hawk that had joined the flock in the sky was chased by a Raven. On March 9, they were noticed flying in twos as if the breeding season were approaching.

After the middle of February a few questionable birds were seen between Continental and the Nicholson Ranch, and on April 1, five with the undoubted voice of *cryptoleucus* passed by our camp at 4,000 feet. On April 5, after the snowstorm, fifteen were seen gathering to roost in the timbered bottom of the gulch below camp. On April 11, at sunset, over sixty were counted flying up the gulch toward camp, where they gathered in the mesquites for their summer roost. On April 15, when disturbed there they rose with an actual roar, and we were told by the Nicholsons that during the previous summer when they had been roosting in the same place they made so much noise that their suffering neighbors finally broke up the roost. On April 20, at sunset, we found about twenty of the birds perching on the pasture water tank and standing around on the ground below. When the wind blew up the neck feathers of one the white showed well underneath.

Molothrus ater obscurus. Dwarf Cowbird

One was taken by Stephens, May 20, 1881, in Madera Canyon, and others by Nelson, June 24 and 26, 1884, at Gardner's Ranch. It was found by Swarth in June, 1903, "fairly abundant, though not nearly so common as in the lowlands." One young bird was being fed by a Plumbeous Gnatcatcher. One or two small flocks were seen by Howell, August 15-19, 1918, on their way to the milo patch, near Continental.

Tangavius aeneus aeneus. Bronzed Cowbird

One visited our bird table on May 1, 1921, when he ate and drank and then disappeared.

Sturnella magna hoopesi. Rio Grande Meadowlark

Specimens were taken by Stephens, July 22 and 24, 1884, at Camp Crittenden.

Sturnella neglecta. Western Meadowlark

Meadowlarks of one or the other species were seen by us on the open grassy slopes of the foothills, on the Santa Rita Range Reserve and sometimes on the mesquite slopes, from December 4 on, during the winter of 1920-1921. Nine were seen January 15, and a flock of at least twenty-five on February 4. In the warm, irrigated Santa Cruz bottoms near Continental they were

heard singing exuberantly the unmistakable song of *neglecta*, on March 4, 7, 15, and 16; and on March 16 a flock of fifteen was seen flying across the river channel.

In Gardner Canyon, at 5,200 feet, on February 9 and 10, 1923, Taylor noted a company of twelve meadowlarks, very likely of both species, "busily working over the ground near the ranch buildings." A specimen of *neglecta* was secured.

Icterus parisorum. Scott Oriole

Seen by Stephens during the breeding season of 1881, near Tucson, as well as in Madera Canyon in the Santa Rita Mountains. Nine adults were taken by Nelson, June 9-July 24, and a juvenile June 11, 1884, at Gardner's Ranch (one, "Santa Rita Mountains, June 5"). Nelson found it "common among the live oaks at and above Gardner Ranch" and says "the males were in full song in June and early July, usually singing from the ends of higher branches or the tops of the low trees." A few were seen by Swarth in June, 1903, in Madera Canyon. Our first oriole of the spring migration, presumably an immature male Scott, was seen for a moment, March 15, 1921, in a sycamore top at our camp, when he gave a loud song. On March 27, an adult male Scott appeared, and during the snowstorm of April 5, two were in the live oaks; on April 7, one was seen in the camp sycamore in the early morning, and on April 13 and May 3, one was seen feeding from the blooming ocotillos.

Icterus cucullatus nelsoni. Arizona Hooded Oriole

An adult and a juvenile were taken by Nelson, June 5, 1884, at Vail's Ranch; and a juvenile, June 17, at Gardner's Ranch. It was found by Swarth in June, 1903, commoner and at a lower altitude than *parisorum*, mostly in the "deep ravine below the mountains." An adult was taken by Howell, August 6, 1918, in Madera Canyon, and near Continental, August 15-19, 1918, he found "flocks of large young feeding in the low brush." At our camp, the first was seen March 29, 1921, and when we left the mountains on May 6, there were presumably three pairs nesting in the sycamores near the ranch-house. Individuals were seen on the ocotillo slopes probing the flowers.

Icterus bullockii. Bullock Oriole

Found by Howell, July 28 to August 15, 1918, common in the canyon below 4,700 feet. At our camp on March 29, 1921, an Oriole with a yellow line over the eye was caught sight of hidden in the leafy tops of both live oak and sycamore, and a handsome male with two light-colored females or immatures were seen April 4, in the mesquites close to camp. Another male was seen on May 3, shortly before we left the mountains.

Carpodacus mexicanus frontalis. House Finch

Two juveniles were taken by Nelson on June 18 and again on July 8, and

adults, July 1, 1884, at Gardner's Ranch. They were found abundant by Swarth in June, 1903, along the lower canyons, particularly in the deep ravine below Madera Canyon. He thinks that they are restricted to the warmer valleys in winter, which accords with our experience, only an occasional one being seen by us during the winter of 1920-1921 in the vicinity of 4,000 feet. These were seen for a few moments as they stopped in passing, or were found perching on viznaga heads leaning over the juicy yellow fruit, where they were doubtless both feeding on the seeds and drinking the water. The first song was heard on February 9, while snow was still lying on the cold side of our tent. On February 24, and occasionally after that, the song was heard in the trees about camp, and on May 3, several of the birds were seen in a sycamore top between flights. But in the irrigated bottoms of the Santa Cruz Valley near Continental, in March, they were congregated in the cottonwoods, eating their ripe seeds, showers of cotton falling as they worked. On March 15, while we were watching a treetop noisy with their talk, about thirty of them suddenly burst into the air, the only suggested explanation being the discovery of the Short-eared Owl which, innocently enough, had shortly before sent a neighboring flock of Red-winged Blackbirds flying. Near Continental, August 15-19, 1918, Howell found them particularly abundant.

At Rosemont (5,000 feet), a flock of twenty-five to thirty was noted by Taylor, January 15, 1923, taking shelter "in the brush at the bottom of a narrow canyon." At Vail, twenty miles southeast of Tucson, on January 17, he found a number about a water car. At Gardner's Ranch at 5,200 feet, half a dozen or more were noted about the buildings, and at 6,000 feet, in Stetson Dam Canyon, a solitary female was secured.

Loxia curvirostra stricklandi. Mexican Crossbill

A flock of six or eight was seen by Bailey, October 28, 1913, on the summit of the ridge above Stone Cabin Canyon at 8,000 feet.

Astragalinus psaltria hesperophilus. Green-backed Goldfinch

A goldfinch of some species was seen, December 30, 1920, in the top of our camp sycamore, and others were heard March 20, 23, and 25, 1921. On April 13 and May 4, *hesperophilus* was seen near enough for identification; on April 13, seen in an ocotillo between Nicholson's corrals and Madera Canyon. After that, the soft lisping note was heard at intervals at camp.

Passer domesticus domesticus. English Sparrow

A dozen or more were seen by Taylor on January 16, 1923, at Rosemont (5,000 feet), "near and in an outbuilding" of the V R Ranch, and he was told that they also occurred about the ranger station. At Vail, on January 17, Taylor found them abundant near the railroad station and about a water car.

Poocetes gramineus confinis. Western Vesper Sparrow

Occasionally seen by us during the winter and spring of 1920-1921 both above and below 4,000 feet; on the grassy foothill slopes, on the U. S. Range Reserve, and at 2,900 feet in the Santa Cruz Valley near Continental, where it was common. A considerable flock was seen by Taylor, February 4, 1923, at 4,500 feet, not far from the mouth of Madera Canyon.

Ammodramus bairdii. Baird Sparrow

Reported from Camp Crittenden and found by Henshaw in 1873, in southeastern Arizona and southern New Mexico "in immense numbers, from September 20 till late in October, throughout the rolling plains along the bases of the mountains, and even quite high up among the foothills."

Ammodramus savannarum bimaculatus. Western Grasshopper Sparrow

Adults and young were taken by Henshaw in 1874 and one each by Nelson, July 15, 1884, at Camp Crittenden. One was taken by Bailey, February 25, 1921, on the U. S. Range Reserve below 4,000 feet.

Chondestes grammacus strigatus. Western Lark Sparrow

An adult was taken by Howell, August 18, 1918, at Continental. A number were seen by us, April 21, 1921, in the Santa Cruz bottoms near Continental, and on April 26, one was seen on our bird table at camp, after which others joined it and they came regularly until the time of our departure, May 6. On April 30, seven were seen near one of the ranch water tanks, and on April 29 and 30, four were seen on our bird table at once. In the Santa Cruz bottoms near Continental, April 21, 1921, they were common, as they were at the time of Howell's visit—August 15-19, 1918.

Zonotrichia leucophrys leucophrys. White-crowned Sparrow

One was seen by me on February 2, 1921, on the mesquite slope below 4,000 feet. The next one positively identified was seen on May 1, at our bird table, but its presence had been suspected some days previous.

Zonotrichia leucophrys gambelii. Gambel Sparrow

Found common by Bailey, October 25-29, 1913, about McCleary's Ranch and in the canyons. In 1920, the first flock was seen by us on December 3, near 4,000 feet, after which others were seen on the mesquite and catslaw slopes throughout the winter. A large flock of both adults and immatures came to camp early in December and frequented our bird table during our stay.

Spizella passerina arizonae. Western Chipping Sparrow

Found by Bailey, October 25-29, 1913, common in the mesquites. Seen

by us, December 31, 1920, on the slope above 4,000 feet, with *Polioptila* and *Amphispiza*. A flock of fifty or more was seen, January 16, 1921, at the first large water pools in Stone Cabin Canyon, and they were seen wandering up and down between 4,500 and 4,000 feet on January 22 and 23. A few were also seen on April 16. In the irrigated Santa Cruz bottoms near Continental one was seen close at hand on March 8, 1921, and numerous other small sparrows, perhaps of the same species, were seen at a distance.

At Rosemont (5,000 feet), on January 15, 1923, two companies of four each were noted by Taylor. In the oaks and open fields of Barrel Canyon, January 16, several flocks of small sparrows, probably of this species, aggregating perhaps thirty or forty were noted; while at Gardner's Ranch (5,500 feet), February 9-10, several birds taken for this species were seen in clearings in the vicinity.

Spizella pallida. Clay-colored Sparrow

Three specimens were taken by Henshaw, September 1, 2, and 5, 1874, at Camp Crittenden, where it was rather common and was supposed to winter.

Spizella breweri. Brewer Sparrow

One was taken by Henshaw September 10, 1874, at Camp Crittenden. Another was taken by Bailey, March 22, 1921, on the Range Reserve below 4,000 feet. On March 23, a number were seen by us in the same place, in a mixed flock with Lark Buntings and Western Vesper Sparrows. On April 13, three others were seen in a gulch below Madera Canyon. Small sparrows, apparently of this species, were frequently flushed in the mesquites near 4,000 feet.

Spizella atrogularis. Black-chinned Sparrow

A female or immature was seen by me on January 16, 1921, at the water pools at about 4,500 feet, in Stone Cabin Canyon; and one with strongly marked black chin near the same place, April 16, 1921.

Junco hyemalis connectens. Shufeldt Junco

One was taken by Bailey, October 28, 1913, and another January 16, 1921, when numbers of black-headed juncos supposed to be of this species were seen, as they had also been on December 29, 1920, near water at about 4,500 feet in Stone Cabin Canyon.

Junco hyemalis montanus. Montana Junco

Mixed flocks of juncos were found by Taylor, January 16, 1923, at Rosemont (5,000 feet), about the ranger station and in Barrel Canyon; two specimens of *montanus* and one of *mearnsi* being sent to the Biological Survey. At Gardner's Ranch (5,200 feet), February 9 and 10, he found mixed species of

juncos "in enormous flocks, up to several hundred in two or three instances, in clearings about the ranch buildings and in the broad wash below." They were seen less frequently in the oak canyons above the ranch. Three specimens of *montanus* and one of *mearnsi* were sent in.

Junco hyemalis mearnsi. Pink-sided Junco

From the mixed flocks of juncos seen January 16, 1923, by Taylor, at Rosemont and in Barrel Canyon, one *mearnsi* was sent in. Also at Gardner's Ranch (5,200 feet), on February 9-10, from the enormous mixed flocks, another *mearnsi* was sent in.

Junco phaeonotus palliatus. Arizona Junco

Reported by Henshaw when on the Wheeler Survey as "abundant in the Santa Rita Mountains, where probably resident." A few were seen and some juveniles secured by Swarth, the latter half of June, 1903, none below 6,000 feet. They were found very common by Howell, July 28-August 15, 1918, above 5,400 feet in Madera Canyon. No adults were seen below that but a flock of juveniles stayed around 4,900 feet for a couple of days. Many pairs were seen but they were beginning to gather in flocks. Ten adults were taken July 30-August 12; three immatures (?), July 30 and August 10; and six immatures, July 30, and August 2, 4, 8, and 10, 1918.

Six or more were picked out from mixed flocks by Taylor at Rosemont (5,000 feet), January 15, 1923, where they were seen mainly about the barn yards; and they were found fairly common in the canyons above Gardner's Ranch, February 9-10, usually in small groups and in the oaks or brush; while "the other juncos seemed to prefer the more open fields and clearings about the ranch and in the broad wash below."

Junco phaeonotus caniceps. Gray-headed Junco

Numbers of undetermined gray-headed juncos quite likely of this species were seen by Bailey, December 29, 1920, with the black-headed ones near water at 4,500 feet in Stone Cabin Canyon. Others were seen January 22, 1921, in the same general locality. A single wanderer apparently of this species, was seen by me, February 25, 1921, on the U. S. Range Reserve among the mesquites below 4,000 feet.

Amphispiza bilineata deserticola. Desert Sparrow

Taken May 20, 1881, by Stephens who reported it from "barren plains sparsely covered with bushes." A juvenile was taken by Nelson, June 5, in the mountains, and an adult, June 18, 1884, at Gardner's Ranch. Full grown juveniles were taken by Swarth the latter half of June, 1903, when the birds were very common both along the foothills and out on the mesa. They were found common by Bailey, October 25-29, 1913, in the mesquite and catsclaw

below McCleary's Ranch. One was seen by Howell, July 28, 1918, on the mesa. It was found by us, in the winter of 1920-1921, one of the commonest birds of the mesquite and catslaw, seen mainly in small flocks, often in low bushes with other species, Cactus Wrens, Verdins, and sometimes Gambel Sparrows. It was also common, April 21, 1921, in the Santa Cruz bottoms near Continental, where Howell had found a number in the denser mesquites. August 15-19, 1918.

The white eye stripe is a surprisingly conspicuous field character. The song may be rendered as *chee-weet, whit, wher'r'r'r'r, cha, cha, cha*, and also

↑ ↑ ~~~~~ ↑

chee cha cher'r'r'r'r chee.

Peucaea botterii. Botteri Sparrow

Adults and juveniles were taken by Henshaw, September 1 and 2, 1874, at Camp Crittenden. One was taken by Nelson, June 5, 1884, at Vail's Ranch, and five July 15, 1884, at Camp Crittenden.

Aimophila ruficeps scotti. Scott Sparrow

Taken by Stephens, May 16 and 20, 1881, in Madera Canyon. A series of nineteen adults was taken by Nelson June 8-July 8, and six juveniles June 22 and July 1, 17, and 24, 1884, at Gardner's Ranch. An adult was also taken July 15, at Camp Crittenden. It was found by Swarth in June, 1903, "fairly common on the rock-strewn foothills." Specimens were taken by Bailey, October 28, 1913, when it was common about McCleary's Ranch and in the lower parts of the canyons. One was seen by Howell August 12, 1918, at 4,900 feet in Madera Canyon. One was taken by Bailey the last of December, 1920, in Stone Cabin Canyon. Another, seen on the south slope of the canyon at about 4,500 feet on January 16, 1921, came down through a tangle of wild grape to drink from a pool and then went back up the rocky hillside, with its nolina, cactus, sotol, and ocotillo. Later in the month the bird was again seen in the same locality.

One was taken by Taylor, January 15, 1923, at Rosemont, from a similar south slope at 5,300 feet; and another February 10, from a grassy ridge top near Gardner's Ranch; after which one or more were heard on a grassy south slope—a characteristic location—near the ranch. Two pairs were seen by Taylor February 27, 1923, at about 4,500 feet on the southwest slope of Stone Cabin Canyon.

Melospiza melodia fallax. Desert Song Sparrow

Taken by Nelson, July 14, 1884, at Camp Crittenden.

Melospiza melodia montana. Mountain Song Sparrow

Several Song Sparrows were seen by us on February 22, 1921, along the

broad irrigation ditch of the Canoa Ranch below 3,000 feet, and one was seen, March 21, 1921, at the Nicholson Ranch, at 4,000 feet.

Melospiza lincolni lincolni. Lincoln Sparrow

Recorded by Stephens in March, 1881, in Madera Canyon as "common along streams." One was identified by Bailey, January 16, 1921, at camp, where, as there was only a dry wash, it stayed but a short time.

Pipilo maculatus montanus. Spurred Towhee

Six adults were taken by Nelson, June 22-July 5, and a juvenile on July 1, 1884, at Gardner's Ranch. They were found quite common by Swarth in June, 1903, "mostly along the canyons." A few were seen by Bailey, October 25-29, 1913, "on the mountain-sides." They were found abundant by Howell, July 28-August 15, 1918, between 5,400 and 7,500 feet. Eight adults were taken July 30-August 13, and an immature, August 9, 1918, in Madera Canyon. One shot August 8, had recently laid and there were several eggs still in the ovary. They were seen commonly around our camp and in brushy parts of the ranch throughout the winter of 1920-1921. But the mixture of Lower with Upper Sonoran species evidently did not satisfy their requirements and the bird which had been coming to our feeding table during the winter disappeared some time before our departure in early May, doubtless looking for pure Upper Sonoran or Transition conditions.

About Rosemont (5,000 feet), January 15-17, 1923, Taylor found it "one of the truly abundant species." Twenty or more were noted January 15. As he says, one's attention is almost certain to be attracted to it, "either by its cat-like call, or the noise it makes scratching about in the dry leaves on the ground." Perhaps twenty were noted, January 16, "in the brush and oaks of Barrel Canyon"; and it was found common, January 17, below the ranger station. It was also seen about McCleary's Ranch (Nicholson's) February 4, and at 5,000 feet in Madera Canyon the same day several were observed in the brush. At Gardner's Ranch, February 9, one was noted above Stetson Dam at 6,000 feet, but on account of a storm, Taylor says, the species was keeping very quiet.

Pipilo fuscus mesoleucus. Canyon Towhee

Taken by Stephens May 20, 1881, in Madera Canyon. Five adults were taken by Nelson, June 17-29, and two juveniles, June 23 and July 3, 1884, at Gardner's Ranch. It was found fairly common by Swarth, the latter half of June, 1903, in the lower parts of the mountains. One nest with young just hatched was found, but full grown juveniles were also seen. It was found common by Bailey, October 25-29, 1913, in the canyons and about McCleary's Ranch. One was taken October 28. One was seen by Little, Howell's assistant, August 1, 1918, in Madera Canyon, at 4,800 feet, and by Howell, August 6, 1918, in the canyon bottom at 4,500 feet. It was one of the commonest birds

of the mesquite and catsclaw as well as of the canyons in the region of McCleary's (Nicholson's) during the winter and spring of 1920-1921. Several were caught in traps set for live mammals, evidently attracted by the popular rolled oats. The call is one quick emphatic note, often suggesting that of the Gila Woodpecker. One of the winter songs, given January 5, when perched on top of a bush with crest raised and tail swinging from side to side, was *true-weet, true-weet*. One of its commonest calls, resembling that of the California Towhee, was a rapid *scree-kee-gee, kee-gee-kee*.

In the region of Rosemont, January 15-17, 1923, Taylor found Canyon Towhees all along the road through the oak country, in twos, threes, or fours; usually on the ground, often on the steep side of a wash, and sometimes in low bushes. Probably thirty were seen, January 15; twenty or more were noted January 16, about the ranger station and in Barrel Canyon; and they were found common, January 17, below the ranger station. At McCleary's Ranch (Nicholson's) February 4, Taylor found them common; and at Gardner's Ranch February 10, they were among the most conspicuous birds around the ranch buildings and yards. Four were seen in one group, busily searching over the ground.

Oberholseria chlorura. Green-tailed Towhee

One, seen first on December 9, 1920, was a familiar visitor at our feeding table throughout the winter. On March 29 it was joined by another, and on May 3, three were seen about the table at one time. Two were noted below 4,000 feet, one on December 14 and one on February 2; and in the first week of April, a number were seen under the live oaks of the ranch.

Cardinalis cardinalis superbus. Arizona Cardinal

One was taken by Nelson, July 15, 1884, at Camp Crittenden. It was found by Bailey, October 25-29, 1913, fairly common about McCleary's Ranch. One was taken October 28. A pair came to our camp for food and water during the winter of 1920-1921, and a second male was occasionally driven away by the resident. Others were seen between 4,000 and 4,500 feet, and three males were noted April 15. On April 27, a male was seen carrying food from the bird table. The first full song was noticed on February 18. After a light rain on February 27, the song was heard again. On March 18, it was heard continuously during the morning, mostly one refrain—*whu-ee, whu-ee, ep-ep-ep*; and on March 22, when the songster and his mate were in the mesquites near camp, he sang rather low and very happily, *weet-up, weet-up*, and in still lower tones, *weet-eeep, weet-eeep*. On March 25, he was singing contentedly in the trees and grape vines of camp—*weet-ah, weet-ah, weet-ah, weet-ah*, with many variations, one of which was *weet-ah, weet-ah, weet, hahaha*. During the night of April 8, the song was heard by our tent. The absence of the long-drawn out *cue* of the eastern Cardinal is noticeable. The general character of the song when given at full length may be suggested by—*Wheet-ah, weet-ah,*

whee-ah, cha-cha-cha-cha-cha-cha, pur'r'r'r'r'r, the purr being quite characteristic.

At Rosemont (5,000 feet), one was seen by Taylor, January 16, 1923, at the ranger station; another was noted the next day in the wash below the station; and at McCleary's Ranch (Nicholson's), February 4, two were seen in the early morning.

Pyrrhuloxia sinuata sinuata. Arizona Pyrrhuloxia

One was reported by Howell as seen by Little, July 29, 1918, in Madera Canyon at 4,900 feet, where there was a patch of Lower Sonoran mesquite. One was seen by us, December 5, 1920, above 4,000 feet in a shallow stony gulch bordered by mesquite; and one passed through camp on February 14 and April 22, 1921. On April 20 near 4,000 feet in the mesquite bordering the stony gulch in which we had seen one on December 5, a loud insistent *hue-ee, hue-ee, hue-ee* was whistled over and over again. In the vicinity of Continental, on August 15-18, 1918, Howell found the birds "abundant everywhere along the river." On February 3, 1923, Taylor noted a pair in the trees about the houses of Continental.

Zamelodia melanocephala. Black-headed Grosbeak

Taken by Henshaw, September 1 and 2, 1874, at Camp Crittenden, and found by Stephens, May 13 and 16, 1881, "common at high elevations among the mountains." Five adults were taken by Nelson, June 8-23, and a juvenile, July 1, 1884, at Gardner's Ranch. It was seen by Swarth in June, 1903, in the higher parts of the range; some also being seen "in the lower foothills where they certainly were not breeding." It was found by Howell, July 28-August 15, 1918, in Madera Canyon, "abundant in Upper Sonoran and low Transition," four adults being taken August 11 and 13; an immature, July 29; immature (?), August 2; and an immature, August 17, near Continental, where they were abundant along the river. On April 22 and 23, 1921, a note taken for that of the Grosbeak was heard at our camp, and on April 27 the characteristic *ick* was followed by the full song and a glimpse of the male through the leaves. A female was seen April 28, and the song heard again, April 29 and 30, and May 4.

Guiraca caerulea lazula. Western Blue Grosbeak

Two were taken by Nelson, July 15, 1884, at Camp Crittenden. They were found quite common by Howell, August 15-19, 1918, in the vicinity of Continental.

Passerina amoena. Lazuli Bunting

Two were taken by Henshaw, September 1, 1874, at Camp Crittenden. Two were seen by Stephens, April 25, 1881, at Tucson. They were found abundant by Howell, August 19, 1918, in flocks near the mesquite forest thir-

teen miles south of Tucson. An adult male stopped at our camp for a few moments, May 1, 1921.

Passerina versicolor versicolor. Varied Bunting

One was taken by Stephens, July 14, 1884, at Camp Crittenden.

Spiza americana. Dickcissel

Taken by Henshaw, in 1873, and on August 23 and 24, 1874, near Camp Crittenden, where there were "usually four or five together, associated sometimes with other sparrows in the canyons and among the brush of the rocky hillsides."

Calamospiza melanocorys. Lark Bunting

One was taken by Howell, August 16, 1918, at Continental. While all the many large flocks seen by us in 1921 were in the Santa Cruz Valley near Continental, a few were seen, March 17, between Continental and the Santa Ritas, and a few others, March 23, in a flock of Vesper and Brewer sparrows on the U. S. Range Reserve a little below 4,000 feet. On April 21, when enormous flocks were seen at Continental and in the Santa Cruz bottoms, one black male was conspicuous among many others which had only partly assumed the black breeding plumage.

Piranga ludoviciana. Western Tanager

Taken by Henshaw, September 1, 1874, at Camp Crittenden. One was taken by Stephens, May 18, 1881, in Madera Canyon; two others by Nelson, June 9 and 11, 1884, at Gardner's Ranch; and two adults by Howell, August 3 and 12, 1918, when all seen were close to 5,000 feet. At our camp at 4,000 feet, in the spring migration in 1921, an adult male was seen May 2 and 3, and two were seen, May 4.

Piranga hepatica. Hepatic Tanager²²

Taken by Henshaw, August 26 and 27, 1874, at Camp Crittenden; and by Stephens May 12, 14, and 15, 1881, when he reported it "not uncommon in the Santa Rita Mountains," ranging "from the foothills through the oaks to the lower pines on the mountains." One was taken by him on July 9, 1884. Three juveniles were taken by Nelson, June 7, 18, 28, and eight adults June 10-July 3, 1884, at Gardner's Ranch. A few were seen by Swarth, the latter half of June, 1903, "in the higher parts of the mountains," and both adults and juveniles secured. Five adults were taken by Howell, July 30-August 4, 1918, when it was "not rare from 4,800-7,500 feet. But one family party was seen, all the rest being lone birds or pairs." One was seen in a mesquite at our camp on April 27, 1921.

²²The Arizona form has been referred to under the name *Piranga hepatica oreo-phasma*, Northern Hepatic Tanager.

Piranga rubra cooperi. Cooper Tanager

Found by Stephens in 1881, rather common in cottonwoods along a small river about five miles south of Tucson. Taken by Nelson, July 14 and 15, 1884, at Camp Crittenden. Found by Swarth in the latter half of June, 1903, "breeding quite commonly," most of them in the deep wooded gulches below the mountains. Several were seen by Howell, August 19, 1918, in the mesquite forest about thirteen miles south of Tucson, and one taken at Tucson, July 14, 1918. One was seen by me, May 2, 3, 4, and 5, 1921, near our camp at 4,000 feet.

Petrochelidon lunifrons melanogastra. Mexican Cliff Swallow (?)

A single swallow which Howell took to be of this species, was seen by him on August 6, 1918, flying over Madera Canyon at 4,500 feet, and one from a family was taken by him, August 16, near Continental.

Tachycineta thalassina lepida. Northern Violet-green Swallow

A swallow with entire white underparts and white rump patches was seen by us March 5, 1921, flying over the mesquite and catsclaw below 4,000 feet. Five others were seen, March 24, one over the U. S. Range Reserve. Six were seen near enough to see color on March 26, a little above 4,000 feet. Not far below Madera Canyon, on April 13, Violet-greens and White-throated Swifts were seen coming rapidly down from the mountains and passing on out over the foothill slopes. The last were seen May 3, shortly before our departure.

Bombycilla cedrorum. Cedar Waxwing

Three Waxwings were seen in the mesquites over our camp table April 23, 1921. The next seen was May 1, and one came to the table, May 3.

Phainopepla nitens. Phainopepla

Found by Swarth in the latter half of June, 1903, "one of the commonest birds in the lower parts of the mountains, where both adults and juveniles were seen." A few were seen by Bailey, October 25-29, 1913, below McCleary's Ranch, in the mesquites. A few, both black and gray, were commonly seen during the winter of 1920-1921, about our camp near the upper edge of the Lower Sonoran Zone and in the mesquites below. About the middle of April, a number suddenly appeared, and from that time on until they were seen going around in pairs, they frequented our bird table for water; as many as eleven, about half of them black adult males, being seen on or close around it at one time. During the winter they apparently fed mainly on mistletoe berries but two seen in hackberry trees were doubtless eating the juicy mucilaginous hackberries. The call is a liquid *weep* and a short staccato *wip*, five or six times repeated. The song was not heard.

At Rosemont, January 15, 1923, a female was taken by Taylor; and on

January 16, probably ten or more were noted in the oaks of Barrel Canyon, where mistletoe was abundant.

Lanius ludovicianus excubitorides. White-rumped Shrike

Found by Swarth in June, 1903, out on the mesa below Madera Canyon. On June 21, he found a nest with five eggs in a mesquite. The Shrike was frequently seen by Bailey, October 25-29, 1913. A few were seen by us in 1921, from a little above our camp at 4,000 feet down to Continental at 2,900 feet, and others were seen on the telephone wires between Continental and Tucson. On a very cold morning, January 23, 1921, when presumably no grasshoppers had been out for weeks, a Shrike was seen flying into a low mesquite and picking at what proved to be an old dried, wingless grasshopper, impaled through the thorax. A few hours later the grasshopper was gone, so in this instance the storing instinct served its purpose. On March 1, several of the birds were seen on the Continental-Tucson telephone wires. On March 22, two were seen on the U. S. Range Reserve. On January 16, 1923, two were seen and one taken by Taylor at Rosemont (5,000 feet).

Vireosylva gilva swainsoni. Western Warbling Vireo

Taken by Henshaw, August 28, 31, and September 1, 1874, near Camp Crittenden. An adult female was taken by Stephens on June 23, 1903, in Madera Canyon, but as it did not appear to be a breeding bird, it was probably a straggler. After the breeding season, from July 28-August 15, 1918, Howell found it "fairly common in Upper Sonoran and low Transition, usually in company with *Baeolophus*." Two adults were taken August 1 and 2, 1918. In the spring migration of 1921, I saw one on March 25 and another on April 8, among the live oaks at about 4,000 feet.

Lanivireo solitarius cassini. Cassin Vireo

Taken by Henshaw the last few days of August, 1874, at Camp Crittenden, quite a number being seen among the deciduous trees. Taken by Stephens, May 11, 1881, in Madera Canyon. A gray-headed vireo with olive back was seen by me on April 5 and 8, and May 3, 1921, in the live oaks of the Nicholson Ranch.

Lanivireo solitarius plumbeus. Plumbeous Vireo

Three specimens were secured by Nelson, June 11, 15, and 18, 1884, at Gardner's Ranch. It was seen by Swarth the latter half of June, 1903, "on various occasions in the higher parts of the mountains," and was found by Howell, July 28-August 15, 1918, slightly commoner than *swainsoni*, in Transition, "usually in company with tits and warblers." Four adults were taken August 1, 4, and 12, and an immature, August 12, 1918. One, presumably of this species, was seen by me on March 31 and April 1, 1921, in the live oaks of the ranchhouse.

1918, at 4,800 feet, after which "they were occasionally seen in mixed flocks of other birds as high as 7,500 feet." An adult was taken, August 11, and two immatures, August 6 and 12. On the afternoon of April 5, 1921, when the snowstorm was over, a Virginia and a Lucy Warbler were found in the mesquites of the ranch, so they may perhaps have taken shelter in the oaks with the other birds of the region.

Vermivora ruficapilla gutturalis. Calaveras Warbler

Found by Henshaw "quite common during the last few days of August and the first of September", 1874, about Camp Crittenden, "in the low trees and bushes," specimens being taken August 27, 29, and September 3. An adult was taken by Howell August 4, 1918, at about 6,000 feet in Madera Canyon, and a few were seen by him August 19, 1918, in the cottonwoods and in the mesquite forest south of Tucson.

Vermivora celata lutescens. Lutescent Warbler

One was taken by Howell, August 11, 1918, in the sycamores of Madera Canyon at 5,000 feet. On March 15, 1921, two were discovered in the blooming sycamore tops at camp—the first warbler migrants. The next were seen three days later and soon they became abundant, daintily picking insects from the under-sides of leaves, occasionally dropping to the ground to hunt over the leaves, but mainly hunting in the flowering sycamores, mesquites, and live oaks which were full of insects. Two were seen on May 2, shortly before we left the mountains.

Peucedramus olivaceus. Olive Warbler

A young bird was taken by Howell, August 1, 1918, in a pine in Madera Canyon at about 7,200 feet. A female was taken by Taylor, February 4, 1923, at 5,000 feet in Madera Canyon. "It was in the same general locality with Bridled Titmice and a Ruby-crowned Kinglet," but was alone, "foraging nervously through the foliage of an oak."

Dendroica aestiva sonorana. Sonora Yellow Warbler

A juvenile was taken by Nelson, July 14, 1884, at Camp Crittenden, and an adult by Howell, August 16, 1918, at Continental.

Dendroica auduboni auduboni. Audubon Warbler²⁴

One was seen by Bailey, January 22, 1921, in Stone Cabin Canyon, one was seen January 30 and several February 12, at camp, after which their numbers gradually increased until they were very common, hunting through the mesquites, live oaks, and sycamores. By April 2, there had been a de-

²⁴The Arizona form has been referred to under the name *Dendroica auduboni memorabilis*, Greater Audubon Warbler.

cided falling off in their numbers, and after April 10, none were noted until May 3, when two were seen on an ocotillo. At Rosemont, January 15, 1923, Taylor reported them, "probably pretty common all through this oak country."

***Dendroica graciae*. Grace Warbler**

Taken August 1 and 12, 1918, by Howell and found "fairly common, usually with flocks of other warblers and tits in Transition zone." Three or four were seen by Bailey, April 15, 1921, at about 4,000 feet at the upper edge of the Lower Sonoran zone.

***Dendroica nigrescens*. Black-throated Gray Warbler**

Taken by Henshaw, August 25 and 26, 1874, at Camp Crittenden; and by Stephens, May 12, 1881; twelve adults were taken by Nelson, June 15-July 5; and three juveniles, July 1, 5, and 8, 1884, at Gardner's Ranch. They were found by Swarth the latter half of June, 1903, "quite common everywhere in the oak brush," and reported by Howell, July 28-August 15, 1918, in Madera Canyon, "next to the commonest warbler; in Upper Sonoran and Transition. Occurs either alone or with flocks of other small birds." Adults were taken, August 1-12; immatures, August 1, 10, and 12, 1918. Several were seen by us in the mesquites, March 21, 1921, and they were quite common during most of April, being frequently seen in the live oaks of the ranch. The last recorded was apparently a female, seen on May 4, two days before we left the mountains. The black and white head markings of this warbler make an excellent field character as he looks up and turns his head over. Occasionally he drops down through the branches, when his white tail shears show to especial advantage. He was seen hunting assiduously in both mesquites and live oaks.

***Dendroica townsendi*. Townsend Warbler**

Taken by Stephens, May 13, 1881, in the oaks of the foothills. Individuals were seen by us, April 29 and May 2, 1921, in mesquites, and one May 4, in a live oak, at the ranch.

***Dendroica occidentalis*. Hermit Warbler**

Many were seen and both adult and immature taken by Howell, August 12, 1918, from 6-500-7,500 feet, in flocks of other small birds. Individuals were seen by me, April 22, 29, and 30, and May 1, 1921, in the mesquites and live oaks at about 4,000 feet. When reaching up for insects, the Hermit shows the black triangle on his throat, and when slowly leaning down to look below, as he does characteristically, he shows the black triangle pointing forward from the back of his head—both striking and unusual markings.

Seiurus noveboracensis notabilis. Grinnell Water-Thrush

Found by Henshaw, the latter part of August, 1873, on a small water course near Camp Crittenden.

Oporornis tolmiei. MacGillivray Warbler

Two were taken by Stephens, at Tucson, April 20 and June 8, 1881. Several individuals were seen by us, April 5, 13, 24, and 27, and May 4, 1921, at about 4,000 feet, at camp or about the ranch, and one April 21, at about 2,900 feet, in the Santa Cruz bottoms near Continental.

Icteria virens longicauda. Long-tailed Chat

Taken by Henshaw, September 1, 1874, at Camp Crittenden; and by Stephens soon after April 30, 1881, in the vicinity of Tucson; also found by Howell, August 19, 1918, "abundant in the mesquite forest" thirteen miles south of Tucson. At our camp, on April 27, 1921, one was discovered under the mesquites of our bird table where it was seen almost every day until May 3, just before our departure.

Wilsonia pusilla pileolata. Pileolated Warbler

Taken by Stephens, April 21, 1881, at Tucson, and one by Howell, August 14, 1918, from flocks of tits in Upper Sonoran zone.

Wilsonia pusilla chryseola. Golden Pileolated Warbler

Two adults were taken by Howell, August 10, and an immature each on August 11 and 12, 1918, in Madera Canyon in flocks of tits in Upper Sonoran zone. Several black-caps, with the brilliant yellow breast, presumably of this subspecies, were seen in the mesquites not far from camp, April 12, 17 (2), and occasionally until May 4, 1921. One was seen May 3, on a blooming ocotillo not far away.

Setophaga picta. Painted Redstart

A young one in first plumage was taken by Henshaw, August 29, 1874, near Camp Crittenden. The previously unknown nest was discovered by Mr. Herbert Brown on June 6, 1880, and a second by Stephens in May, 1881, in "a canyon between the two Santa Rita peaks, heavily timbered with oak and sycamore." Nine juveniles were taken by Nelson, June 18 and 22, and July 5, 10, and 24, and six adults June 22-July 24, 1884, at Gardner's Ranch. Two were taken by George F. Breninger in 1897 in the Santa Ritas. They were found breeding by Swarth and Stephens, in June, 1903, in the same canyon where Stephens had found his first nest. That they were breeding, Swarth says, "was evidenced by the number of juveniles seen." Three adults were taken by Howell, July 31-August 10; and five immatures, July 28, 30, and 31, and August 6, besides two undetermined, August 3 and 11, 1918, in Madera

Canyon. He said that it was "the commonest warbler by far, in Upper Sonoran and low Transition, along the stream beds." It traveled "singly or in pairs, spreading its tail and wings and darting after insects." Occasionally he found it "extraordinarily confiding."

The first seen at our camp at the upper edge of the Lower Sonoran zone was on March 16 and 17, 1921, after which one to three were seen on cold days about the ranch until April 25, hunting over the trunks and branches of the live oaks and flycatching in characteristic Redstart manner. Others were seen on the ocotillo slope above camp and by the pools in Stone Cabin Canyon at about 4,500 feet, and they were also reported from a camp about a mile above. Several times one was chased out of a tree-top by an Audubon Warbler. They hunted in the mesquite and on the oak roots, stones, and ground, but their favorite hunting place seemed to be the massive trunks and branches of the old live oaks. They would climb up the sides of the trunks, their short legs helped by flips of their long tail, and twist and turn with spread plumes. Sometimes they would cling to the underside of a branch like a woodpecker. But in the main they would, by help of their short legs and long balancing tails, hop across the great boles, picking insects from the crevices of the closely knit bark. In flight, sometimes the white scissors of the tail are all one sees, the black and red of the plumage being lost in the dense shadows of the live oak tops and against the sky. And when one darts out from the dense shadow into the sun, the tail seems all white. They fly out like flycatchers, catching an insect and darting back to the tree trunk with it. Their song begins with an ordinary warbler *whee-tee, whee-tee*, but ends unusually, both call and song having individual rich contralto quality.

On June 21, 1923, Mrs. Nicholson wrote—"there has been a lot of Redstarts down this spring," and commented on their tameness.

***Cardellina rubrifrons.* Red-faced Warbler**

Four adults were taken by Nelson, July 1 and 5, and three juveniles July 5, 1884, in the mountains above Gardner's Ranch. One was seen by Vorhies, June 15, 1918, at the head of Madera Canyon, and a single immature bird was taken by Howell, August 1, 1918, from a live oak on a hillside in Madera Canyon. No others were seen.

***Oreoscoptes montanus.* Sage Thrasher**

One was seen by us in January and again on February 1, 1921, in the mesquite and catslaw below 4,000 feet. On March 15, another was seen running over the sand in the Santa Cruz bottoms, at about 2,900 feet.

***Mimus polyglottos leucopterus.* Western Mockingbird**

Mockingbirds were very common, Nelson says, "among the live oaks at Gardner's Ranch in June and July, 1884. They were in full song and during the brilliantly clear moonlight in June they sang in an ecstasy of bird joy

throughout the night in such a chorus of melodious throats that sleep was difficult in our tents among the trees. I have never seen so many Mockingbirds in any area as among these live oaks nor have I ever forgotten the wonderful effect of their jubilant night songs. By day they were not very noticeable and sang only here and there without any approach to the outburst of song evoked by the radiance of the moon which changed all the surroundings into a fairyland of beauty.'*

They were found by Swarth, in June, 1903, quite common in the lower parts of the mountains. They were seen by us throughout our stay, November 20, 1920, to May 6, 1921, chiefly about our camp and the ranch, but occasionally above 4,000 feet. One was heard singing softly in January. They were seen eating hackberry seeds. Two or three had been seen daily by Howell, August 15-19, 1918, near Continental; and they were noted by us at Continental, Tucson, and about ranches in the Santa Cruz Valley. At Rosemont, on January 15, 1923, Taylor twice saw a Mockingbird, perching on top of the oaks near the ranger station, as if staying in the locality.

***Toxostoma curvirostre palmeri.* Palmer Thrasher**

An adult was taken by Nelson, June 5, 1884, at Gardner's Ranch. It was found by Swarth, June, 1903, abundant out on the mesa and frequently seen in the lower canyons; and by Howell, July 28, 1918, abundant everywhere in the low country south of Tucson and abundant August 15-19, 1918, near Continental. One was taken by Bailey, October 28, 1913. In 1920-1921 we found it common about the Nicholson Ranch and in the surrounding mesquites. One was seen drinking from a dripping faucet and another seen perched on top of a viznaga reaching down with its long curved bill digging out the shining black seeds and the moist pulp which the House Finches had also found a ready source of both food and moisture. A Thrasher accidentally caught in a trap, January 28, had an empty crop but a gizzard full of the seeds of cactus (*Opuntia* sp. ?), and the shrubby hackberry (*Celtis pallida*), a few oat shells, one grain, a few insect remains, apparently ants, and some gravel. One of the birds was seen, February 3, walking in the mesquite pasture, flipping up cow-chips as he went, evidently looking for insects or other toothsome morsels below—a scorpion had been found under one of them.

The three-syllabled liquid *tee-dle-lah* was heard commonly all winter and the loud strident call occasionally, and on the morning of January 12, while the ground was still covered with white frost, a soft low song was heard coming from one of the birds sitting fluffed up in the cold. The song was heard again on January 19 and February 3, and on March 4, one was heard singing loudly from the peak of a tent at Continental.

Two of the birds hunted familiarly about the ranch-house during the winter, taking advantage of the "jerky" line when the meat was drying, and apparently considered nesting in a large cholla cactus near the house where remains of a former nest was found. On March 14, a few fresh sticks were seen there and the male came and sang near them, but the pair evidently de-

cided to go farther away, as they disappeared not long afterwards. On April 21, 1923, however, Mrs. Nicholson wrote me that the Thrashers had finally built again "in the big cactus behind the house" and she thought they would soon "hatch their young."

Toxostoma bendirei. Bendire Thrasher

An adult was taken by Nelson, June 4, 1884, at Harshaw's Ranch, and four juveniles June 5, 1884, at Gardner's Ranch. It was found by Swarth, in June, 1903, common on the mesa below the mountains, but not seen in any of the canyons. One was taken by Howell, August 15, 1918, at Continental, and presumably a few more were seen. One was seen by us in 1921 in the mesquite and catsclaw a little below 4,000 feet.

Heleodytes brunneicapillus couesi. Cactus Wren

Adults and juveniles were seen by Swarth, the latter half of June, 1903, everywhere on the mesa and along the foothills. It was found common by Bailey, October 25-29, 1913, in the mesquite and cactus about McCleary's. Old nests were found, in 1920-1921, up to over 4,000 feet, in catsclaw, zizyphus, shrubby hackberry, and mesquite, frequently placed in bunches of red mistletoe. Thirty of the Wrens were found using repaired nests in these locations for winter roosts. One cholla nest was found at about 4,200 feet, while below, especially in the giant cactus belt, cholla nests abounded.

Salpinctes obsoletus obsoletus. Rock Wren

An adult and two juveniles were taken by Nelson, June 22, 1884, at Gardner's Ranch. They were found by Swarth, in June, 1903, "fairly common along the rock-strewn foothills." A few were seen by Bailey in late October, 1913, and they were occasionally seen by us in 1920-1921, from 4,500 feet in Stone Cabin Canyon down through the rocky dry wash to the Nicholson Ranch at 4,000 feet.

At Rosemont one was noted on January 15, 1923, by Taylor among the rocks of a sidehill; and two days later, from the ranger station, the birds' call-note was heard, early in the morning. In Gardner Canyon, at 5,200 feet, on February 10, he noted one or two on the rocks of a hillside near the ranch.

Catherpes mexicanus conspersus. Canyon Wren²⁵

Full grown juveniles, usually two or three together, were seen by Swarth the latter half of June, 1903, in Madera Canyon. A few were seen and heard by Bailey, October 25-29, 1913. Adults were taken by Howell, August 6, 1918, in the bottom of Madera Canyon, between 4,800 and 5,000 feet, and immatures were taken July 30 and August 5, 1918, in the canyon. They were seen by us, in 1920-1921, in Stone Cabin Canyon, mainly at about 4,500 feet.

²⁵The Arizona form has been referred to under the name *Catherpes mexicanus polioptilus*, Texas Canyon Wren.

Several were seen by Taylor, February 27, 1923, from 4,000-4,500 feet along the bottom and low on the sidehills of Stone Cabin Canyon.

***Thryomanes bewickii bairdi*. Baird Wren²⁰**

Taken by Henshaw, August 24, 1874, at Camp Crittenden. Six adults were taken by Nelson, June 19-23, and five juveniles, June 22 and 23, 1884, at Gardner's Ranch. They were seen by Swarth in June, 1903, "along the canyons but not in any numbers," and found by Howell, July 28-August 15, 1918, "common in Upper Sonoran in all situations." Adults were taken August 2-12, and immatures, August 3, 4, 5, 6, and 11, 1918, in Madera Canyon. They were found by us, November, 1920, to May, 1921, fairly common residents among the mesquites and about the live oaks. On April 8, two were seen exploring a crack in the underside of a live oak branch. The song, as I have noted from another form in southern Oregon, is singularly suggestive of that of the black Towhee, a refined thin parallel ♪ ♪ ♪ ♪. On April 1, the song was heard for a long time as one crept over the great trunks. At another time one of the birds, apparently excited by the presence of a companion, spread its tail so that the white circle showed.

Near Rosemont, at 4,750 feet, one was seen, January 15, 1923, by Taylor, near the house of the ranger, and it was apparently a permanent resident; on June 16, one was seen under a clump of oaks in Barrel Canyon. Near Gardner's Ranch at 5,200 feet, in Stetson Dam Canyon, several wrens, presumably of this species, were heard February 9-10, 1923. From McCleary's Ranch (Nicholson's) at 4,000 feet to perhaps 6,800 feet on brushy hillsides throughout the oak country, on February 27, 1923, Taylor found the wrens fairly common and usually in pairs. One was noted in a yucca; another among the rocks on the ground.

***Troglodytes aedon parkmani*. Western House Wren**

Taken by Nelson, July 5, 1884, at Gardner's Ranch. Found by Swarth in the latter half of June, 1903, only in the higher parts of the range, usually about fallen trees or in brush piles. An immature was taken by Howell, July 30, 1918, when the birds were "abundant only in certain places in low Transition where the canyons widen a little, the ground is covered with bracken, and there is more or less brush, or fallen trees, creepers, and grape vines." At our camp the first were seen on April 7 and 8, 1921, among the trees of the ranch.

***Certhia familiaris albescens*. Mexican Creeper**

Two specimens were taken by Stephens, July 5, 1884, on the east side of the range; one by Bailey, October 28, 1913, in Stone Cabin Canyon, on the west side; and one by Howell, August 1, 1918, in Madera Canyon, in a pine at 7,200

²⁰The Arizona form has been referred to under the name *Thryomanes bewickii eremophilus*, Desert Wren.

feet. A second was seen the next day in the same place, and a third on August 4, 1918, "in an oak among scattered pines at 6,000 feet." One was seen by Vorhies, in February, 1918, in the big oaks at Nicholson's.

On February 4, 1923, one was taken by Taylor at 5,000 feet in Madera Canyon from an oak over whose bark it was working; and on February 9, one, perhaps more, was noted by him at 6,000 feet in Stetson Dam Canyon near Gardner's Ranch, in company with a band of Bridled Titmice which were working through the oaks of the canyon during a storm. On February 27, Taylor found them "apparently common in the Transition Zone." Two were taken at about 7,000 feet, on the bark of conifers, one six feet up on a Douglas fir.

***Sitta carolinensis nelsoni*. Rocky Mountain Nuthatch**

Three juveniles were taken by Nelson, June 11 and 15, 1884, at Gardner's Ranch. A few pairs were seen by Swarth, in June, 1903, in the higher parts of the mountains, and they were found by Howell, July 28-August 15, 1918, "common in very high Upper Sonoran and Transition, often with Bridled Tits."

At Rosemont, January 15, 1923, Taylor noted five or more in the oaks; on January 16, three or four in Barrel Canyon; and on January 17, found them common below the ranger station. In Madera Canyon, on February 4, he found half a dozen quite noisy birds between 5,000 and 6,500 feet; and on February 9, during a storm, heard two or three on the Old Baldy trail above Gardner's Ranch.

***Sitta pygmaea pygmaea*. Pygmy Nuthatch**

An adult and a juvenile were taken by Nelson, July 5, 1884, above Gardner's Ranch. Adult and immature were taken by Howell, August 1, 1918, but found "common only in the upper two-thirds of Transition, often with Bridled Tits and once with *nelsoni*."

***Baeolophus wollweberi*. Bridled Titmouse²⁷**

Found by Henshaw, August 27 and 29, 1874, near Camp Crittenden. A pair were taken by Stephens in May, 1881, in Madera Canyon. Six adults were taken by Nelson, June 8-22, and five juveniles, June 18 and 19, and July 22, 1884, at Gardner's Ranch. They were found by Swarth in the latter half of June, 1903, "very abundant in the oak regions where troops of young accompanied by the parents were met with continually." One was taken by Bailey, October 28, 1913, and reported "common in the oaks of the canyons." Immatures were taken by Howell, July 29 and August 3 and 4, and an adult, August 12, 1918, in Madera Canyon, where he found them abundant in both zones, "at least as high as there are many oaks." He found that other small

²⁷The Arizona form has been referred to under the name *Baeolophus wollweberi annexus*, Bridled Titmouse.

birds often join their flocks. They were seen by Bailey, December 29, 1920, in the live oaks at the mouth of Stone Cabin Canyon, at about 4,500 feet.

At Rosemont, on January 16, 1923, six were seen by Taylor, "two in one place in company with a flock of Lead-colored Bush-Tits, four in another place." One of their calls, he says, resembles that of the Plain Titmouse, while another has "a querulous quality, a little like the 'complaint' note of a vireo or shrike." In Madera Canyon on February 4, Taylor found four groups of perhaps half a dozen birds each, "foraging about in the snow-laden branches of the oaks. Usually a kinglet was not far away, and the solitary Olive Warbler collected was also, apparently, a member of one of the Bridled Titmouse's neighborhood gatherings." In Stetson Dam Canyon, between 6,000 and 6,500 feet on February 9, 1923, one group was noted on a north slope working through the oaks during a storm. The next day several groups were observed in the oaks near Gardner's Ranch.

Psaltriparus plumbeus. Lead-colored Bush-Tit

Taken by Stephens, in 1881, on the west side of the range, where it was found oftenest among the oaks of the foothills associated with the Bridled Titmouse, the Ruby-crowned Kinglet, and several other small birds. Seven adults were taken by Nelson, June 8-July 9, and nine juveniles, June 11 and 23, and July 6 and 9, 1884, at Gardner's Ranch. They were found quite abundant by Swarth, in June, 1903. Four were taken by Bailey, October 28, 1913, when they were common in flocks or families of ten or a dozen. They were feeding in the *Brickellia californica* which were full of seeds and probably also of insects. Specimens were taken by Howell, August 1 and 8, 1918, when a small flock was seen at 7,000 feet and another at 5,500 feet.

A flock of ten or twelve was seen, January 16, 1923, by Taylor in the oaks of Barrel Canyon. Two Bridled Titmice and a Stephens Vireo were with the flock.

Auriparus flaviceps flaviceps. Verdin

Found by Swarth, in June, 1903, common in the foothill regions and over the mesas below. Old nests found by us in 1920-1921, were common on the Lower Sonoran mesquite slopes at about 4,000 feet, being located mainly in thorny zizyphus bushes, frequently under mesquite trees. Eight birds were found using their old nests, warmly lined with feathers, for winter roosts.

While the Verdin's loud emphatic call and its small running talk, suggestive of that of the Bush-Tits, were heard all winter as it went about examining twigs and leaves and flitting from tree to tree, the greenish yellow of its head showing as it turned, the real song was noted for the first time on April 2, when one sat perched on a twig, with tail hanging or pressed in for steadiness when the wind blew. The song was of three, four, or five notes,

suggesting

he—ho—he or he—ho—he—he.

When there were five notes, the last was dropped.

Regulus calendula calendula. Ruby-crowned Kinglet²⁸

One was taken by Bailey, October 28, 1913, in Stone Cabin Canyon. They were abundant throughout the winter of 1920-1921, coming to our camp feeding table and hunting through the live oaks and mesquites. Not only the common chattering scold but the rippling song was heard occasionally during the winter. After April 20, when apparently the last was seen, a wind storm followed by cooler temperature seemed to bring back a few of them, and with cold nights they were seen until April 30.

At Rosemont, January 15, 1923, Taylor found them "common all around the ranger station and frequently met with in the oaks from the station to the Narragansett Mine." In the oaks of Barrel Canyon, January 16, perhaps fifteen were noted; and they were common, January 17, below the ranger station. In Madera Canyon, February 4, they were "noted at intervals between 5,000 and 6,500 feet." At Gardner's Ranch, February 9-10, they were "heard at intervals in the oaks throughout the neighborhood."

Polioptila caerulea obscura. Western Gnatcatcher

Taken by Stephens, May 20, 1881, in Madera Canyon, and two by Nelson, June 12 and 22, 1884, at Gardner's Ranch. A pair was taken by Howell, August 7, 1918, at 5,000 feet in Madera Canyon, another having been seen the previous day at 4,700 feet. They were found by us in 1920-1921, fairly common in the mesquites and on the open slopes not far from 4,000 feet, at the upper edge of the Lower Sonoran zone.

Polioptila plumbea. Plumbeous Gnatcatcher

Seen occasionally by Swarth in June, 1903, "just below the mountains but not ascending into the canyons at all." Seen by me, on April 8 and 22, 1921, in the mesquites below 4,000 feet, when the hoarse call note was recognized as strikingly different from the *tang* of *caerulea*.

Myadestes townsendi. Townsend Solitaire

Taken by Stephens, May 13, 1881, in Madera Canyon. One was seen by me, March 25, 1921, at about 4,000 feet, in the live oaks of the dry wash leading back to Stone Cabin Canyon.

At Rosemont (5,000 feet), one was taken January 15, 1923, by Taylor. On January 17, he saw four, three in one place, "feeding on the berries of *Celtis reticulata*." In Madera Canyon, February 4, they were heard on the sunny southwest wall. Near Gardner's Ranch, February 9, one was noted at 6,000 feet in Stetson Dam Canyon, near several junipers which were laden with the berries the Solitaire feeds on in the juniper and nut pine country on coming down from its breeding grounds. In Stone Cabin Canyon, February

²⁸The Arizona form has been referred to under the name *Regulus calendula cineraceus*, Western Ruby-crowned Kinglet.

27, Taylor also found Solitaires common. "They were noted in the vicinity of McCleary's Ranch (Nicholson's), at 4,000 feet, and also up the canyon practically to the limit of the oaks, about 6,800 feet."

Hylocichla ustulata ustulata. Russet-backed Thrush

One was taken by Stephens, May 17, 1881, in Madera Canyon, and a second taken at Camp Lowell, May 21, 1884.

Hylocichla guttata guttata. Alaska Hermit Thrush

A thrush, presumably of this subspecies, was seen near the ranch-house from December 2, 1920, to April 30, 1921. One taken April 6, had its gizzard filled almost entirely with berries from the hackberry tree, although there was also a trace of insects. During the snowstorm of April 5, and also on April 6, 1921, a number were seen in the bushes and on the ground under the live oaks.

In Madera Canyon, February 4, 1923, Taylor noted about half a dozen Hermit Thrushes between 5,000 and about 6,000 feet, and secured two. One was seen on a snow-covered rock by a stream and others were in the lower branches of the hillside trees. Near Gardner's Ranch, in Stetson Dam Canyon, February 9, one was noted at 6,000 feet in a manzanita.

Hylocichla guttata auduboni. Audubon Hermit Thrush

A single full grown juvenile was taken by Howell, July 30, 1918, "at the very lowest point of Transition" in Madera Canyon. No others were seen.

Hylocichla guttata sequoiensis. Sierra Hermit Thrush

One was taken by Taylor, October 13, 1919, and one by Bailey, April 6, 1921, at Nicholson's Ranch.

Planesticus migratorius propinquus. Western Robin

One was seen and another heard, February 4, 1923, by Taylor, at Nicholson's (4,000 feet), and on February 27, they were common in the trees about the ranch, but not seen elsewhere.

Sialia sialis fulva. Azure Bluebird

Taken by Stephens, June 18 and 20, 1884, on the east side of the range.

Sialia mexicana bairdi. Chestnut-backed Bluebird

One was seen by Howell, July 28, 1918, "on the mesa at the junction of Lower and Upper Sonoran zones." It was seen by us during the winter of 1920-1921, going about in flocks of from five to thirteen over the mesquite

slopes, mainly between 4,000 and 4,500 feet. The last noted was seen on March 3, 1921.

At Rosemont (5,000 feet), a number of groups were observed by Taylor, one flock of twenty-five to thirty, but for the most part groups of four to six. One of these groups was perched near a clump of mistletoe in an oak, and one taken "had obviously been feeding on the berries. Forty or more were noted all together." On January 16, thirty to forty were seen along Barrel Canyon, and January 17, they were common below the ranger station. On February 4, near the mouth of Madera Canyon, two flocks were noted. February 9 to 10, at Gardner's Ranch, they were heard flying overhead and companies of four to six seen feeding on low bushes and on the ground, usually with juncos.

Sialia currucoides. Mountain Bluebird

A pair were seen January 15, 1923, by Taylor at Rosemont (5,000 feet), perched on a leafless Fouquieria, when the male was secured. A flock of twelve to twenty-four brilliant bluebirds, apparently of this species, were observed, February 4, 1923, about 9:30 A. M. at 4,500 feet near the mouth of Madera Canyon. One was seen February 8, on a fence post by the road at Sonoita, 4,750 feet.