

tions, which are published in this number of 'The Auk.' See *antea*, pp. 9-14.

**Icteria virens.** YELLOW-BREASTED CHAT. — The evidence of the occurrence of the Yellow-breasted Chat on the Gulf coast of Florida is so far of a negative character. I have been unable to detect its presence nor has Mr. Atkins found out anything with regard to its occurrence at either of the points where he has so carefully collected. It is not a little remarkable that so conspicuous a species, which breeds but little to the north of the region under consideration, and which apparently winters to the south of the United States, should be unknown at these points as a migrant.

**Sylvania mitrata.** HOODED WARBLER. — A rather common spring migrant in and about Tarpon Springs, but rare in the fall. It appears here late in March or early in April and remains about three weeks. I have no record of its breeding in the area under consideration. The latest fall date is on September 17, 1886. At Punta Rassa Mr. Atkins did not meet with this species, nor has he found it at all common at Key West. At that point his records are March 18, April 1 and 3, August 30, and September 13, 1887, a single bird on each day. "1889, arrived from north August 19, two or three seen later."

**Setophaga ruticilla.** REDSTART. — A not very common spring and fall migrant in the country about Tarpon Springs. In the spring it passes through here during the first two weeks in May, and appears again returning about August 5 to 10 and remains till the first of November. Mr. Atkins gives it as a rare spring and common fall migrant at Punta Rassa and as equally common both spring and fall at Key West. His notes in regard to the latter point are: "Last migrants northward May 21, 1887. Returned August 9, 1887; young birds of year, both sexes, taken. 1889, July 22, young of year and adult female; July 30, adult male."

(To be continued.)

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## NOTES ON *PIPILO FUSCUS MESOLEUCUS* AND *PIPILO ABERTI*, THEIR HABITS, NESTS AND EGGS.

BY CAPT. CHARLES E. BENDIRE.

THE CAÑON TOWHEE is a common resident throughout the year, in the southern portions of Arizona at least, and I found it especially abundant during the breeding season in 1872 in the vicinity of the present site of Camp Lowell, near Tucson, the principal town in the Territory at the time. The bird was first obtained by Dr. Kennerly, the naturalist of the Pacific Rail-

road expedition along the 35th Parallel, on Bill Williams Fork, Arizona, February 5, 1854, and was shortly afterwards described by Prof. Spencer F. Baird, as *Pipilo mesoleucus*. In the A. O. U. Code and Check-List it is placed as one of the races of the Brown Towhee (*Pipilo fuscus*). These, besides the bird in question, are *Pipilo fuscus albigula*, found in Lower California, and *Pipilo fuscus crissalis* in California proper.

If eggs counted for anything in the relationship of birds, *Pipilo fuscus mesoleucus* then would certainly have to be classed as a distinct species from the other two forms, and I always held that it should till recently, after examining a series of skins of these three forms in the National Museum collection, I found that the California race, *P. fuscus crissalis*, was the darkest colored, as well as the largest in size, showing more of a rufous tint generally. *P. fuscus mesoleucus* comes next in size, but is much paler than the former, especially about the throat, and has a distinct reddish cap on the head. *P. fuscus albigula* is the smallest of the three, has the reddish cap also, and is generally still paler colored throughout than *P. fuscus mesoleucus*, but comes very close to this in general appearance, and if a number of unmarked skins of these two forms were mixed together, it would certainly be difficult to tell where one race began and the other ended. Now one might reasonably presume that the eggs of the last two races at least would resemble each other closely, but they do not.

The eggs of *P. fuscus crissalis* and *P. fuscus albigula* resemble each other both in their ground color and in markings. The ground color is a light greenish blue, very similar to that of the eggs of *Agelaius phœniceus*. They are sparsely spotted or blotched with a very dark brown, almost a black, the markings being principally confined to the larger end of the eggs; occasionally these spots are connected with fine hair-like lines; there are also a few lighter colored shell markings of lavender and purple to be found in most of the specimens. Their shape varies from ovate to elliptical ovate. The average measurement of fifty specimens of *P. fuscus crissalis* is  $.98 \times .72$  inch, the largest egg measuring  $1.03 \times .78$  inch, the smallest  $.91 \times .70$  inch. The average measurements of twenty-three specimens of *Pipilo fuscus albigula* are as follows: average size  $.90 \times .66$ , largest egg  $.98 \times .69$ , smallest  $.80 \times .64$  inch. In the eggs of the Saint Lucas Towhee, the ground color is a trifle paler also, due no doubt to fading out by age. For the purpose of better comparison I gave the description of the above races, although not

strictly within the scope of this paper. It will be seen that the eggs of *P. fuscus mesoleucus* are entirely different, both in ground color and in the amount of markings, from the other two races. Similar cases occur in the genera *Spinus*, *Aphelocoma*, *Harporhynchus*, as well as others, showing conclusively that the egg alone cannot always be relied upon, to point out the relationship of species.

But to come back to the subject proper. No mention, as far as I am aware, has been made of the eggs of this subspecies by the earlier ornithological writers, excepting Dr. J. G. Cooper who says in his 'Ornithology of California,' page 248, as follows: "This species is very abundant in southern Arizona, where its habits are much like those of *P. aberti*. The eggs resemble those of *P. fusca*," The late Dr. T. M. Brewer published the first correct description of these eggs on page 516, Appendix to Vol. III, 'History of North American Birds' by Baird, Brewer and Ridgway, from specimens collected by the writer in 1872, in the vicinity of the present site of Camp Lowell, about seven miles northeast of Tucson, Arizona. Here I found the Cañon Towhee nesting quite abundantly on the more or less open plains immediately back from the Rillitto Creek bottom, which are here covered with straggling mesquite trees and bushes of various kinds, some of them attaining a height of ten or twelve feet, interspersed here and there with cacti and yuccas of different species, the cholla cactus predominating. The nests were usually found from one to two hundred yards distant from the creek bottom and scarcely ever more than a mile away from this, but never in the bottom proper, the chosen home of *Pipilo aberti*. According to Mr. W. E. D. Scott, who has done so much excellent work in Arizona in more recent years, the Cañon Towhee is equally abundant in the neighboring mountains and ranges well up to the pine forests. He found his first nests in the Catalina Mountains at an altitude of 3500 feet, about the middle of March, and according to him the breeding period extended well into July.\* To explore the same localities that Mr. Scott did in 1883, would have been exceedingly unwholesome in 1872, on my second visit to Arizona, and still more so in previous years. The chances would have been more than even, that an inquisitive naturalist, venturing into the recesses of the Catalina Mountains, even

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\* Auk, Vol. IV, No. 3, July 1887, p. 204.

with a fair-sized and well-armed party, would have been himself collected sooner or later by one of Chief Cachise's enterprising cut-throats who then roamed over these mountain ranges more or less at their own sweet will. The ornithologist collecting in Arizona at the present day cannot imagine the changes that twenty years have brought about in that country, and it is hard to realize the difficulties under which the earlier explorers labored. It would take too much space to enumerate even a few of these here, but having entered Arizona myself as early as 1857, although I had no means to collect anything then, I am quite competent to judge what risks and discomforts the pioneer naturalists of Arizona, Drs. Coues, Cooper, and Palmer, underwent in the interests of science. Only on my second visit to the Territory in 1872 was I enabled to add a little to our knowledge of the avifauna of that even then still little known region. Fortunately there was a cessation of hostilities on our part, only, however, against the hostile Apaches, for a portion of the year, as peace commissioners had been sent out from Washington to make terms with the hostiles, which enabled me to make a few interesting discoveries which I could not have done otherwise.

I found my first nest of *Pipilo fuscus mesoleucus* on June 4, 1872; it contained two fresh eggs, and was placed in a mesquite bush about four feet from the ground and not particularly well concealed. According to my observations (I examined some seventy nests) by far the greater majority were placed in low mesquite trees, sometimes close to the trunk, in the forks of limbs, and again well out on a branch, rarely more than eight feet from the ground. An occasional nest was placed in a cholla cactus. None were found directly on the ground. The nest is a large one for the size of the bird, loosely constructed externally. It is composed of weed stalks and coarse, dry grasses, and is lined with fine thread-like rootlets and horse-hair, when the latter is obtainable. It is an unusually deep nest. One collected by Lieut. H. C. Benson, 4th Cav., U. S. Army, at Fort Huachuca, Arizona, April 9, 1887, and now before me, measures outwardly  $5\frac{1}{2}$  inches across, inner diameter 3 inches, outer depth  $3\frac{1}{2}$  inches, inner 2 inches. Externally it is principally constructed of the stems and dry blossoms of a species of *Gnaphalium*, small twigs, leaves, etc. The inner lining consists of the seed-tops of grasses belonging to the genus *Fistuca* and hemp-like plant fibres.

The eggs are usually three in number; about one nest in ten contains four; occasionally I have found the bird sitting hard on but two, probably a second or third brood. On comparing notes with Mr. Herbert Brown of Tucson, an enthusiastic naturalist, who has made careful and extended observations over pretty much the same ground I did in 1872, I found the nesting season of 1872 must have been an unusually late one, as he has since then found many species breeding there fully two months earlier than I did. Nests of this species with perfectly fresh eggs were found by me as late as Sept. 11, and it is reasonable to presume that as many as three broods are raised by some of these birds at least.

The ground color of the eggs of the Cañon Towhee is a very pale bluish white, or very light pearl gray, scarcely an egg in a series of one hundred and three specimens can be called pure white. As far as markings are concerned, these eggs can be divided into two types. In one the spots are sharp, well defined, occasionally connected with each other by lines and scrawls, and principally concentrated about the larger end. Their color is a very deep brown, almost a black. This pattern includes the less heavily marked specimens. In the second type, the markings are less clearly defined, more irregular in shape, mere blotches, and much more profuse. The color is less deep, more of a claret brown or vinaceous rufous. In addition fine shell markings of lavender and heliotrope purple are scattered more or less profusely over the entire egg in both types. The eggs bear a certain resemblance to those of *Sturnella*, especially to heavily marked specimens of the western race, *Sturnella magna neglecta*. Nearly all the eggs of *Pipilo fuscus mesoleucus* are much more heavily marked than those of the other two races, aside from the radical difference of the ground color, which is also more lustrous. In a series of one hundred and three specimens before me, all but eleven collected by myself, there is considerable difference both in size and shape. The eggs are mostly ovate, some elliptical ovate. The average size of the series before me is  $.92 \times .69$  inch. The largest egg measures  $1.04 \times .71$ , the smallest  $.81 \times .66$  inch, and a runt egg of this species in the collection measures but  $.70 \times .56$  inch.

In its habits and its call notes the Cañon Towhee does not differ materially from *Pipilo aberti*. Neither can be called a songster. It is more or less terrestrial at all times, rather shy,

sticking close to the underbrush, but not nearly as much so as *Pipilo aberti*. It is much more easily obtained, as the localities frequented by it during the breeding season are much more open and free from undergrowth and creeping vines than the bottoms where the former lives. During winter I have noticed it frequently associated with other ground-feeding species like *Zonotrichia leucophrys* and *intermedia*, *Melospiza fasciata fallax*, *Calamospiza melanocorys*, *Peucaea carpalis* and *arizonæ*, and *Amphispiza bilineata*, as well as others. Large flocks composed principally of the species mentioned would frequently alight on the open ground about my camp, especially about the picket line where the cavalry horses were tied up at night and fed, and at such times they would allow themselves to be approached rather closely, and it was generally an easy matter to select such specimens as one wanted while they were searching for food.

#### **Pipilo aberti.**

The life history of Abert's Towhee seems to be much better known than that of the Cañon Towhee; a pretty full account of its habits is given in Vol. II, 'History of North American Birds,' Baird, Brewer and Ridgway, pp. 128-130. It appears that its nest and eggs were first discovered by Dr. J. G. Cooper, and described by him from specimens taken near Fort Mohave, Arizona, April 1, 1861. The types, Nos. 7275 and 7276, are still in the National Museum collection, in a good state of preservation.

Abert's Towhee is the largest of the plain colored Pipilos of the Pacific coast, and a quite different looking bird from the Cañon Towhee, its most striking characters being its uniform pale cinnamon color, only relieved by a slight edging of black around the base of the bill, and its unusually long tail. I found it a quite common resident, and breeding abundantly, in the vicinity of my camp on Rillitto Creek, if possible even more common than the Cañon Towhee. In its habits it is one of the shyest birds I know, and although I could readily find one of its nests, every hundred feet, in a certain limited area, it was quite a different matter to secure the parent for identification. I wasted more than one hour in watching for these birds. Their loud alarm note of *huit, huit*, indicated their whereabouts readily enough, but getting a good view of them was another thing. Even during the winter

months they were hard to secure, and not by any means as social in their habits as the Cañon Towhee. I found my first nest with eggs on May 13, 1872, placed in a willow thicket, about three and a half feet from the ground. Outwardly this was composed exclusively of the soft inner bark of the cottonwood, resting on a slight platform of small sticks and dry weed stalks. Inside the nest was lined with finer material of the same kind, and a few horse-hairs. This first nest was a rather flimsy affair; most of those found subsequently were much better constructed, principally dry weed stalks, the soft inner bark of dry cottonwood logs, swamp grasses, fibres of wild hemp, an occasional leaf, and fine roots, entering into the composition of the nests. A few only were lined with horse-hair, a material probably furnished by my herd which grazed in the vicinity and was daily driven into the creek bottom to water. The measurements of a nest taken by myself are  $5\frac{1}{2}$  inches across externally by 4 inches in depth. Inner diameter, 3 inches; depth,  $2\frac{1}{2}$ . The inner cavity is very small for the size of this bird, scarcely large enough to accommodate the body. Its long tail sticks up out of the nest, when sitting on its eggs, at a perfect right angle, and it certainly must be an uncomfortable position for the bird to stay in for any length of time.

All the nests I have found, about eighty in number, were placed in the densest thickets in the creek bottom proper, with but one single exception. This I found in the forks of a mesquite bush about four feet from the ground, on the open plain fully four hundred yards from its customary breeding places, and as this nest contained the only set of four eggs I found of this species, I made certain of the perfect identity of the parent by shooting it finally, after a tedious wait of over an hour. Fully sixty of these nests were placed in willow thickets, or on willow stumps around the tops of which young green sprouts had grown out again, the top of the stump itself making an excellent base for the nest. I found many such stumps in the creek bottom, cut off about three or three and a half feet from the ground. With the characteristic laziness of the native Arizonian, I presume, they found it easier to cut them at that height, as it obviated bending their backs to a certain extent. These young willow trees were from five to six inches in diameter, and were used for stringers or rafters on their adobe huts, to support the heavy dirt-covered roofs. I did not find a single nest directly on the ground; usually they were from two and a half to three and a half feet above it, and seldom more than five

feet up. After willows, a species of ash was the next favorite, and I found one nest in such a tree fully twenty-five feet from the ground, placed in a fork in its topmost branches. Now and then a nest was placed in a bushy mesquite tree, and a couple of nests I found in wild currant bushes.

The usual number of eggs laid by Abert's Towhee is three, sets of only two are by no means unusual, however; in but a single instance, already mentioned, I found four. Their ground color is a pale clay-blue, paler than in the eggs of *Pipilo fuscus crissalis* and *P. f. albigula*. The markings, as in those, are sparse, sharp, and well defined, generally heaviest about the larger end, in color very dark brown, almost black in some, in others these dark spots are less intense and margined with vinaceous and rufous about the edges. In some specimens these spots are connected with each other by fine hair-like lines and tracings of different shades of brown or vinaceous, giving a very pretty effect. There are also some paler shell markings of lavender and purple to be found on some specimens, but in a majority of eggs these are wanting. The shape of most of the eggs is ovate, a few are elliptical, others elongate ovate. The average size of eighty-three specimens, all but six collected by myself, is  $.94 \times .70$  inch. The largest egg measures  $1.08 \times .70$ , the smallest  $.82 \times .69$  inch.

I believe fully three broods are raised during the season, as I found a perfectly fresh set of eggs on Sept. 10. Several other species also were laying then. Abert's Towhee has many enemies to contend against during the breeding season, and it is questionable after all, if they ever succeed in raising more than a couple of full broods. Small parties of Arizona Jays, from the mountains in the vicinity, were more than once met with by me, evidently bent on an egg-hunting expedition themselves, and no doubt some of the numerous species of Hawks, Owls, squirrels, and snakes, especially some of the latter, destroy a good many of their young as well as the eggs. The shrill cry of alarm uttered by these birds when in distress, was more than once heard by me, when still quite a distance from the nest, due no doubt to the presence of some other intruder than myself. I frequently found broken eggshells lying at the foot of the empty nest, where a day or two previously I had seen a single egg and had left it for the set to be completed.