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| 1. <i>Larus philadelphia.</i> | 31. <i>Scolecophagus carolinus.</i> |
| 2. <i>Sterna paradisæa.</i> | 32. <i>Carpodacus purpureus.</i> |
| 3. <i>Ardea herodias.</i> | 33. <i>Spinus tristis.</i> |
| 4. <i>Rallus virginianus?</i> | 34. <i>Ammodramus sandwichensis</i>
<i>savanna.</i> |
| 5. <i>Gallinago delicata.</i> | 35. <i>Zonotrichia albicollis.</i> |
| 6. <i>Tringa minutilla.</i> | 36. <i>Spizella socialis.</i> |
| 7. <i>Ereunetes pusillus.</i> | 37. <i>Junco hyemalis.</i> |
| 8. <i>Totanus flavipes.</i> | 38. <i>Melospiza fasciata.</i> |
| 9. <i>Actitis macularia.</i> | 39. <i>M. georgiana.</i> |
| 10. <i>Arenaria interpres.</i> | 40. <i>Habia ludoviciana.</i> |
| 11. <i>Dendragapus canadensis.</i> | 41. <i>Petrochelidon lunifrons.</i> |
| 12. <i>Bonasa umbellus togata.</i> | 42. <i>Chelidon erythrogaster.</i> |
| 13. <i>Circus hudsonius.</i> | 43. <i>Tachycineta bicolor.</i> |
| 14. <i>Haliaeetus leucocephalus.</i> | 44. <i>Clivicola riparia.</i> |
| 15. <i>Falco sparverius.</i> | 45. <i>Ampelis cedrorum.</i> |
| 16. <i>Coccyzus sp?</i> | 46. <i>Vireo olivaceus.</i> |
| 17. <i>Ceryle alcyon.</i> | 47. <i>Mniotilta varia.</i> |
| 18. <i>Dryobates villosus.</i> | 48. <i>Dendroica æstiva.</i> |
| 19. <i>D. pubescens</i> | 49. <i>D. coronata.</i> |
| 20. <i>Sphyrapicus varius.</i> | 50. <i>D. maculosa.</i> |
| 21. <i>Colaptes auratus.</i> | 51. <i>D. virens.</i> |
| 22. <i>Chordeiles virginianus.</i> | 52. <i>Geothlypis trichas.</i> |
| 23. <i>Chætura pelagica.</i> | 53. <i>Sylvania pusilla.</i> |
| 24. <i>Tyrannus tyrannus.</i> | 54. <i>Setophaga ruticilla.</i> |
| 25. <i>Empidonax flaviventris.</i> | 55. <i>Parus atricapillus.</i> |
| 26. <i>E. pusillus traillii.</i> | 56. <i>P. hudsonicus.</i> |
| 27. <i>Cyanocitta cristata.</i> | 57. <i>Regulus satrapa.</i> |
| 28. <i>Corvus corax sinuatus.</i> | 58. <i>Turdus aonalaschkæ pallasii.</i> |
| 29. <i>C. americanus.</i> | 59. <i>Merula migratoria.</i> |
| 30. <i>Dolichonyx oryzivorus.</i> | |

ON THE AVI-FAUNA OF PINAL COUNTY, WITH REMARKS ON SOME BIRDS OF PIMA AND GILA COUNTIES, ARIZONA.

BY W. E. D. SCOTT.

With annotations by F. A. Allen.

(Continued from Volume III, p. 432.)

106. *Tyrannus verticalis.* ARKANSAS KINGBIRD. — One of the commonest and most conspicuous birds of the plains about Tucson, Florence, and Riverside, from early springtime until late in autumn. I have found that it arrives in the Catalinas about the last of March (the 28th is the

earliest record), and becomes common during the ensuing week. The latest record I have of it in the foothills proper (altitude, 400 feet) is September 5; but even by the 20th of August they begin to be uncommon at this elevation. I found them late in April (April 19-24, 1885) rather common up to about 9000 feet, but did not find them in the pine forests. Two broods of from three to five young are generally raised each season, the altitude of the nest from the ground varying greatly with the surroundings, and the kind of tree is seemingly a matter of indifference.

107. *Tyrannus vociferans*. CASSIN'S KINGBIRD.—Though doubtless occurring as a migrant on the plains, I have records of this species only from the foothills about Riverside and from the Catalina Mountains. It does not, so far as I am aware, breed at so low altitudes as *T. verticalis*, nor is it as abundant or so generally distributed in the breeding season as that species. It arrives in the Catalina foothills late in March, my first record, and that of but a single bird, being March 28th, 1885, at an altitude of 3500. The general arrival for the same year and locality was April 7. Pairing and mating was first noticed April 16, 1885. At the higher limits of its range in the breeding season—about 9000 feet—it is much more common than *T. verticalis*, though the reverse is true as regards the lower limit of its range—about 3500 feet—in the breeding season. Though arriving about the same time of year as *T. verticalis*, all my observations lead me to believe that its stay in the mountains and foothills is very much longer than that of its congener. At an altitude of 3500 feet, which is the extreme lower limit of the evergreen oaks, I found *T. vociferans* not at all uncommon on October 9, 1884, and my note book bears constant record of its occurrence up to that time, while I find nothing about *T. verticalis* later than early September in the same region; all these notes being made in the Catalina Mountains.

Two broods of from three to five young are usually reared each season; and the position of many nests I have examined shows a decided preference for the evergreen oaks over other trees. The nest, which is commonly from twenty to twenty-five feet from the ground, is most always placed near the extremity of a branch, and is sheltered and hidden by the thick leaves.

108. *Myiarchus mexicanus magister*. ARIZONA CRESTED FLY-CATCHER.—This species I have found to be common in spring and summer about Tucson, Florence, Riverside, and in the foothills of the Catalina Mountains up to about 4500 feet, which is the extreme limit in altitude indicated by my notes. It is as common at all these points as is *M. crinitus* at any point where I have met with that species, and just about Tucson, in the mesquite and giant-cactus groves, it is much more abundant than is *M. crinitus* at any point in its habitat which I have visited. In the Catalinas, altitude 4000, the species arrives about April 20, and remains until late in August or early in September. I found a nest at this point built in a deserted Woodpecker hole in a dead sycamore stub. It was entirely similar in construction to that of *M. crinitus*, even to the traditional snake skins, and contained five eggs nearly ready

to be hatched, very similar to those of *M. crinitus*, save that they are a little larger. But one brood is reared in the Catalina region. About Tucson they nest commonly in deserted Woodpecker holes in the giant cactus.

109. *Myiarchus cinerascens*. ASH-THROATED FLYCATCHER.—An abundant migrant and summer resident, breeding throughout the region in suitable localities. It arrives in the Catalinas about the 20th of March, and on the plains somewhat earlier; a few probably spend the winter at the lower altitudes in the extreme southern portion of the Territory. I have no records that indicate a later stay in the Catalina or Pinal Mountains than about the last of September. The nests are placed in deserted Woodpecker holes and in natural cavities in almost any kind of tree, and also in the giant cactus. Two broods are reared at the lower elevations, and from three to five eggs are laid.

[A half-fledged nestling is much darker in color above, and less gray on the throat and breast, than are the adults. The head in the young bird is decidedly *blackish* brown; the rest of the dorsal plumage dark brown. The wing-coverts and inner secondaries are edged with reddish brown instead of white, and the rectrices are broadly edged externally with rufous, without white edging on outer pair. The dusky area is much narrower and blacker than in adults.—J. A. A.]

110. *Myiarchus lawrencei olivaceus*. OLIVACEOUS FLYCATCHER.—My personal experience with this species is limited to the capture and record of but a single individual. It was taken in a cañon in the Catalina Mountains, at an altitude of 5000 feet, and is catalogued as "No. 66, ♂, 13th June, 1884." Mr. F. Stephens found the species commonly in the Santa Rita Mountains.

111. *Sayornis saya*. SAY'S PHOEBE.—Common winter resident, and a regular though not very common migrant and summer resident, breeding sparingly, in the Catalina Mountains. My earliest records of it, near my residence, are about the first of March, and it remains till the approach of cold weather. My latest notes of it in fall are 20th and 21st of December, 1885, when I saw one each day; altitude, 4000 feet. It winters commonly on the San Pedro River, about twelve miles from the point indicated in the Catalinas.

112. *Sayornis nigricans*. BLACK PHOEBE.—Not so common as the last. A regular resident in the valleys about water courses, and a migrant and summer resident in the Catalina Mountains. I first noted its arrival (altitude, 4000 feet) on March 25, 1885, and it remains at this point till cold weather comes on. A number of young birds in the collection were taken in the Catalinas about the middle of July. I noted the bird on the San Pedro River, January 28-30, 1886, when only a few were seen.

113. *Contopus borealis*. OLIVE-SIDED FLYCATCHER.—A rather common spring and fall migrant in the Catalina Mountains, and also noticed once in early August in the Pinal Mountains. I have been unable to ascertain whether it breeds in the Catalinas. In spring in the Catalinas (altitude, 4500 feet), it appears for a few days late in April, and the earliest

fall record is September 2, from which time until about October 1 I constantly met with it. In the pine forests of the Catalinas, though *C. pertinax* was common late in April, I made no record of *C. borealis*.

114. *Contopus pertinax*. COUES'S FLYCATCHER.—Twice during my long stay in the Catalinas I noticed or took this species near my house, and this is the lowest altitude at which I am aware of its occurrence. My records are "837. ♂ juv., 7 September, 1884."; "April 27, 1885, one seen, altitude 4000 feet."

For detailed notes as to the occurrence of this species in the pine forests of the Catalina Mountains, see my paper in 'The Auk' (Vol. II, No. 4, October, 1885, p. 356), entitled "Early Spring Notes from the Mountains of Southern Arizona."

115. *Contopus richardsoni*. WESTERN WOOD PEWEE.—The following notes in regard to this species are all from the Santa Catalina Mountains, though the bird doubtless occurs throughout the region under consideration. The first noted in spring was April 27, 1885, when two were seen and one other taken, at an altitude of 4500 feet. Became common May 10, 1885. The first nest was noted June 9, 1885; parent sitting on three fresh eggs.

In the fall I found it common in September up to the 29th, in 1884, when it was last seen. Two and occasionally three broods of from one to three young are reared in this locality during the summer.

116. *Empidonax difficilis*. BAIRD'S FLYCATCHER.—I have taken this species in the Catalina Mountains from June 2 to October 28. Most of the specimens taken, however, were collected in September and October, when it is not uncommon.

117. *Empidonax pusillus*. LITTLE FLYCATCHER.—The only specimens of this species obtained are two, taken August 15, 1884, in the Catalina Mountains; one is an adult male, the other a young male.

118. *Empidonax hammondi*. HAMMOND'S FLYCATCHER.—A spring and fall migrant in the Catalina Mountains where all the specimens here recorded were taken. The earliest notes of spring arrival which I have are a single bird (No. 2024) taken March 31, 1885, at an altitude of 4000 feet. The arrival of the birds was general on the 7th of April, and the last seen in spring were taken May 5 and 10, 1885. In fall I have taken the birds at the same point from early in October until the 25th of that month.

119. *Empidonax obscurus*. WRIGHT'S FLYCATCHER.—Of the four specimens of this species taken in the Catalina Mountains (altitude 3500 to 4500 feet) three were taken in May and the other on August 15. I have no data on the distribution of this bird in other parts of Pinal County.

120. *Pyrocephalus rubineus mexicanus*. VERMILION FLYCATCHER.—This was one of the more conspicuous and common species at Riverside during the month of April, 1882, and was also noted there throughout the summer. It is resident about Tucson, and also at Florence, and though it is not common at either point during the winter, I have records of its

occurrence for every month in the year. The representatives at both places during the colder months seem to be large young birds of the year, and generally young males. On the foothills of the Catalina Mountains it is a common migrant, many breeding at the lower altitudes, and a few ranging up to and breeding at an altitude of 4500 feet, which seems to be about the limit of the vertical range. The earliest record of arrival that I have in this region is February 28, 1885, when I took a male in full plumage, at an altitude of a little over 3000 feet. I did not meet with another until March 7 of the same year. On the 12th of March I took a male, the third of the season, and saw another male and the first female of the year. By the 20th of March the arrival seemed to be general, and the birds soon began nesting. On May 1, 1885, they had generally begun building, and a nest examined contained two fresh eggs. On the 4th of May of the same year another nest examined contained three perfectly fresh eggs; and this is the maximum number I have found.

I met with this species at Mineral Creek, in the Pinal Mountains (altitude about 4000 feet), in May, and again in August, but I have not observed it in winter on any of my visits to the valley of the San Pedro River, which is in elevation about the same as Tucson, though further north. The species leaves the foothills of the Catalina Mountains by October 1-10.

121. *Otocoris alpestris chrysolæma*. MEXICAN HORNED LARK.—In the parts of Arizona under consideration I have not met with any Horned Lark very commonly. Mr. Brown found this form about Tucson, particularly in the fall and winter months.

All the Larks that have come under my observation were on the dry mesas, and I have met with them only in the fall and winter, and then sparingly.

122. *Cyanocitta stelleri*. LONG-CRESTED JAY.—The data in regard to this species already presented to the readers of this journal (see Auk Vol. II, 1885, pp. 174, 355) give all that is available as to its permanent residence in the Catalinas. Generally with cold weather many representatives leave the pine woods and descend as low on the foothills as an elevation of 3500 feet. I noticed the birds as generally not uncommon during the winters of 1884-85 and 1885-86 in the oak region, in late December and January. At other seasons they are confined to the pine forests. I saw them commonly in the pines of the Pinal Mountains in October, 1883.

123. *Aphelocoma woodhousei*. WOODHOUSE'S JAY.—A common and resident species at the headwaters of Mineral Creek. Also common in the foothills of the Catalinas, where it breeds. It frequently associates with *A. sieberii arizonæ*, but is not so gregarious as that species. Breeds in late April and May, and I think but one brood is reared. As far as I am able to judge, this species does not range below 3000 nor above 5000 feet in the foothills of the Catalina Mountains. I have not met with it at other points than those indicated in the Pinal and Catalina Mountains.

124. *Aphelocoma sieberii arizonæ*. ARIZONA JAY.—Having discussed

this species at some length in a recent number of 'The Auk' (see Vol. III, January, 1886, pp. 81-83) I refer the reader to that paper. The Catalina region is the only point where I have met the species, where it is very abundant, resident, and breeds, ranging almost coincidentally with the evergreen oak forests.

[Mr. Scott's large series (45 specimens) of this interesting species presents some noteworthy variations. In about one-third the bill, for example, is wholly deep black; most of the others have the base of the lower mandible more or less whitish or flesh-color, the light portion varying from a slight trace at the base to a complete yellowish-white under mandible. This light tint also sometimes includes the edges and base of the upper mandible. This light color is frequently varied with a pinkish shade, as is markedly the case in young birds of the year. The light color of the bill occurs apparently only in fall specimens, but is doubtless a feature of immaturity rather than of season, since many of the dark-billed birds are autumnal specimens.

The color of the interscapular region varies from blue, slightly or scarcely tinged with ashy, to a decided ashy brown, regardless, apparently, of sex, age, or season. The anterior lower surface likewise varies from bluish gray to a brownish or buffy gray.

A bird in nestling plumage (No. 507, July 5, 1884) has the interscapular region dark brownish ash; the head gray, with a very slight cast of blue; breast and sides strongly washed with brownish ash; middle of the throat white.

No. 1290, ♀, Oct. 16, 1884, differs from all the others in having a large area of pure white on the throat, probably due to albinism.—J. A. A.]

125. *Corvus corax sinuatus*. AMERICAN RAVEN.—A common species about Tucson and throughout the region, but I do not think it is more abundant than the following species. I have not found it breeding, but it is present all the year.

126. *Corvus cryptoleucus*. WHITE-NECKED RAVEN.—Almost the same remarks apply to this as to the foregoing. It is common at times about Tucson, and I have frequently noticed it at other points.

127. *Corvus americanus*. AMERICAN CROW.—The first Crows I saw in Arizona were at the head of Mineral Creek, where they were uncommon. I have since seen them in spring and fall on the foothills of the Catalina Mountains in very large flocks. I am not aware of their breeding at any point in the region in question, and have never met the species during the summer months.

128. *Cyanocephalus cyanocephalus*. PIÑON JAY.—The only point where I have met with this species is in the Catalina Mountains, and even here I believe that it can not be considered a regular visitor. The first noted was a flock of about forty, which appeared on the hills near American Flag on the 17th of September, 1884. Again a flock of about the same number was noticed on September 24 of the same year, and three other flocks, some of them much larger, appeared the same day. On the 28th of the same month other large flocks, and a few single birds, were

seen. The birds were very shy and restless, constantly uttered a peculiarly harsh cry, and were in almost incessant motion. The only one procured out of all the birds seen was a young female of the year (No. 951), taken September 29. All through the ensuing month of October flocks of from twenty to several hundred individuals were noted almost daily, but after November 1 the birds began to leave, and by the 10th my notes as to their occurrence cease. This is the only season—part of September, all of October, and part of November, 1884—when I have seen the birds in Arizona. Their range seemed to be limited to the lower part of the evergreen oak belt, for they were not noticed lower than 3000 nor higher than 6000 feet.

129. *Molothrus ater obscurus*. DWARF COWBIRD.—A common species at Riverside in April, 1882. Also not uncommon about Tucson and Florence. At times they were rather plenty in the foothills of the Catalinas, particularly in early spring. Their habits appear to be identical with those of the Cowbird of the East. I have found their eggs in the nest of such species as *Amphispiza bilineata*, and also in the nest of *Icterus cucullatus nelsoni*.

130. *Xanthocephalus xanthocephalus*. YELLOW-HEADED BLACKBIRD.—This is a particularly abundant species about Tucson and Florence in fall, winter, and spring, but I have no notes of its occurrence at any of these points in summer. It is also abundant in the valley of the San Pedro River in the winter; I noted very large flocks there in January, 1886. These birds have the habit of passing in enormous companies, morning and evening, presumably between their feeding and roosting places, and at such times, being at an elevation a little above gunshot, the noise made in flight almost exactly resembles the cry of the Sandhill Crane (*Grus mexicana*) when heard at a short distance.

131. *Agelaius gubernator*. BICOLORED BLACKBIRD.—A common resident. Particularly numerous at the lower elevations along water courses, and about towns during the colder months.

131. *Sturnella magna neglecta*. WESTERN MEADOW LARK.—Resident, but perhaps more abundant in the fall and winter months. I have no records of its occurrence above four thousand feet on the mountains.

133. *Icterus parisorum*. SCOTT'S ORIOLE.—The breeding and general habits of this species I have already discussed at some length in this magazine (Auk, Vol. II, Jan. 1885, pp. 1-7). Since writing that paper, however, I have found that the time of arrival, even in the region there considered, is somewhat earlier than my former observations had led me to think, being first noted March 22, 1885, and becoming common within a week. On the 25th of March I heard a number of males in full song, (altitude, 4500 feet). On the 4th of May, 1885, at an altitude of 4500 feet, I found a nest containing two fresh eggs. On the 9th of May a female (No. 2404) was taken which was in remarkably high plumage, resembling very closely the males when a year or more old, having the head and neck fully as dark as it is in such males.

On May 20, 1885, a nest, at an altitude of a little over 3000 feet, contained

three young about ready to fly. I must so far modify my former views as to state that I find fully as many of the birds breed on the arid plains and mesas, at an altitude between 3000 and 8000 feet, as seek a nesting site near water. I have found them with nests at least six miles from the nearest water that I knew of.

Young taken from the nest when about ready to leave it become very tame and familiar, and one that I took in this way began to sing before a year old, and was so tame as to be allowed the run of the house. It was very intelligent and inquisitive, and would frequently alight on my chin or head and strive to open my lips with its bill, or in the same way my eyes if I closed them.

[The young in nestling plumage are scarcely different in color from young birds in fall plumage.

As noted above, a female in the collection has the throat and breast black, and the whole head blackish, as in ordinary yearling males. There is also another female (No. 2414) which has the throat and breast black, but less intensely so than in the last, while the head is as in the ordinary adult female.—J. A. A.]

134. *Icterus cucullatus nelsoni*. ARIZONA HOODED ORIOLE.—The earliest notes I have of the arrival of this species in spring is March 28, 1885, and in a week they were common. This was in the Catalinas at an altitude of 4000 feet. At the same point a few remain till late in September. The birds are common throughout the area under discussion, are absent from the region as a whole only about four months in the colder part of the year, and range in summer up on the mountain sides to nearly 6000 feet. For a discussion of the breeding habits in detail see Auk, Vol. II, April, 1885, pp. 159-165.

[On comparing Mr. Scott's series of 25 adult males of this newly described form (see Proc. U. S. Nat. Mus., VIII. 19 April, 1885) with a similar series of true *cucullatus* from the Lower Rio Grande, Texas, in Mr. Sennett's collection, the difference in color claimed by Mr. Ridgway for these two forms proves to be well sustained. The palest specimen in Mr. Sennett's series is but little more deeply colored than the brightest examples in the Arizona series, but the average difference is striking and well maintained. The difference, however, seems to be mainly limited to intensity of color, although the Arizona form shows a rather broader edging of white on the remiges and wing-coverts.—J. A. A.]

135. *Icterus bullocki*. BULLOCK'S ORIOLE.—This species, though not uncommon about Tucson and Florence, where it probably breeds rarely, is rare in the Catalina Mountains, where I have met with it but twice, as follows: No. 233, Catalina Mountains, alt. 4500, ♀, May 12, 1884; No. 671, Catalina Mountains, alt. 4500, ♂ juv., July 31, 1884. On the strength of this last record is based the conclusion that the bird sometimes breeds in this region.

136. *Scolecophagus cyanocephalus*. BREWER'S BLACKBIRD.—An abundant winter resident at and about Tucson, Florence, and Riverside; in fact almost anywhere in the region below an altitude of 3000 feet, where

there is suitable food and water. It is very familiar about all the towns and houses during the colder months.

I have observed it but once in the Catalina Mountains—on October 2, 1884, when I took a female (No. 1012), the only one seen, at an altitude of 4500 feet.

(To be continued.)

SOME UNDESCRIBED PLUMAGES OF NORTH AMERICAN BIRDS.

BY GEORGE B. SENNETT.

Sterna fuliginosa. SOOTY TERN.

I HAVE been able to find but one attempt at describing the young of this species while yet in the down, and that description must have applied to older specimens than those before me. In 'The Ibis,' 1868, p. 286, Captain Sperling (whose description is referred to in B. B. & R. Water Birds, Vol. II, p. 314) describes the young as follows: "The young were of a very light sooty color, both above and beneath, the ends of most of the feathers having a white spot the size of a pea, which gives to them a speckled appearance." Saunders, in P. Z. S., 1876, p. 667, says: "The young are dark on the underparts." This indicates his reference to a more advanced stage of growth.

Downy Stage:—Underparts white; throat and sides of neck speckled dark gray and white. The whole upper parts are covered thickly with sooty and white downy tufts, the former tipped with black points and the latter with reddish fulvous points, giving to the whole upper surface a mixed speckled appearance of black, white, and fulvous. In one specimen the dark color predominates and in the other the fulvous.

Aythya collaris. RING-NECKED DUCK.

Downy Stage:—Underparts very pale yellow; forehead and sides of head and neck the same, washed with dark fulvous yellow; the same yellow is on underside of wing and, alternating with brown, covers the side of body. The crown, line down back of neck, wings, and line down tibia to tarsus, whole of centre of back, and spaces between the yellow patches, a rich brown.

Colinus virginianus texanus. TEXAN BOB-WHITE.

First Plumage:—Half grown female, taken Aug. 18, in Texas. Throat and lower belly creamy white; postocular stripe same color barred with brown; crown ash brown with broad median line of darker brown; auric-