

owner said that a pair had been about the place for years, season in and season out.

As far as I can conclude, then, two Palmer's Thrashers, having mated for life, select a suitable cholla, and build a nest that shall serve indefinitely with such yearly repair as it requires, for the rearing of young in the breeding season, and for sleeping quarters the rest of the year. That the young return to the parental nest I do not believe, but I should be interested to know what becomes of them. At any rate it is clear that after the young are launched, the old pair, while remaining inseparable, lapse into a condition of conjugal camaraderie, and that the male quietly courts his mate anew each spring in anticipation of nesting.

NOTES ON THE BIRDS OBSERVED ON A TRIP THROUGH THE MOUNTAINS OF WESTERN NORTH CAROLINA.

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THIS paper is the outcome of a trip made by the authors through the mountains of western North Carolina. Our purpose in taking this trip, which was made in the summer of 1911, was to study the birds characteristic of this section and to secure additional information, if possible, concerning their occurrence. Before giving the ornithological records and observations made during this time, a short introduction will serve to give some idea of the character of the country visited and the nature of the trip.

Our route lay through the heart of the Appalachian mountain region and covered a distance of over one hundred miles. Seven counties were visited, one of which was in Tennessee. Only records from North Carolina are included in this paper. The six North Carolina counties traversed were Caldwell, Avery, Mitchell, McDowell, Yancey, and Buncombe. The scenery of this portion of the state is unsurpassed in its beauty and grandeur by any in eastern North America. To give some idea of its superiority to

that of New England, suffice it to say that Mount Mitchell, highest summit east of the Rocky Mountains, stands 426 ft. higher than Mount Washington in New Hampshire, while twenty-three other peaks also surpass the latter in height. Besides these, seventy-nine others tower above 5000 ft. The mountain slopes are covered with unbroken forests of hardwoods, firs, hemlocks, and white pines, except for the "Balds" or natural meadows of the higher summits.

It had for some time been our desire to go to this Switzerland of America to study the birds occurring there, and to get a taste of the simple and strenuous life. We had previously spent a considerable time in the mountains of this region, but had never made any systematic study of bird distribution. The trip was made entirely on foot. We carried no pack-mule nor cook. We had a light camping outfit and carried a 12 gauge single-barrel shotgun and a 303 Savage rifle. We did our own cooking, except for an occasional meal at a native's house. We usually carried with us provisions for several days. Our packs and all belongings weighed thirty-five pounds per man.

Our trip started on June 17 at Edgemont in Caldwell County, which lies upon the flanks of the Blue Ridge. Edgemont is sixteen hundred feet above sea-level and is therefore in the Upper Austral Zone. The immediate vicinity is rather rugged, and is broken by mountain chains whose elevation is about twenty-two hundred feet. Within a few miles of Edgemont on the banks of Wilson's Creek, we made our first camp. Here we remained two days, during which time final preparations were made. In the neighboring region birds were rather abundant. Forty-one species were recorded, of which number the Scarlet Tanager, Mountain Vireo, Song Sparrow, Towhee, and Phoebe were more or less characteristic of the mountains.

From Edgemont we went to Grandfather Mountain, a distance by road of eighteen miles. Our camp was situated on the southwestern side of the mountain in Avery County at an elevation of 4200 ft. Here we stayed one week. This mountain is perhaps the most picturesque in the state. Though not so high as many others — having an elevation of 5964 ft., — it stands far above all the summits immediately around it. Its surface is extremely

rugged. The steep peaks are masses of rock, covered with scanty and stunted vegetation. The lower slopes however are covered with vast hardwood forests and are watered by numerous streams. We visited the several peaks and the surrounding region. In the balsam forests near the summit were recorded such northern forms as the Brown Creeper, Golden-crowned Kinglet, and Winter Wren. In all, forty-nine species were noted. This was a greater number than was recorded at any other locality. Besides the three species above-mentioned, the Northern Raven, Carolina Junco, Song Sparrow, Towhee, Rose-breasted Grosbeak, Scarlet Tanager, Mountain Vireo, Cairns' Warbler, Chestnut-sided Warbler, Blackburnian Warbler, Black-throated Green Warbler, Canadian Warbler, Wilson's Thrush and Ruffed Grouse were more or less characteristic of the mountains. The Lesser Scaup Duck was a rather interesting record made here. The Blackburnian Warbler and Brown Creeper were not noted subsequently.

From Grandfather Mountain we went to Montezuma, five miles west, and rode by rail twenty-five miles to Roan Mountain station in Tennessee. From this place we ascended Roan Mountain (6313 ft.). The distance to the summit from the station was fourteen miles. This mountain lies on the boundary line between North Carolina and Tennessee, and is the highest peak possessed by the latter state. The greater part of the mountain, however, lies on the North Carolina side. Our camp was pitched in the balsam forest at an elevation of 6100 ft. We remained here ten days and explored all the neighboring country. Here as elsewhere on the trip the weather was ideal. Thirty-two species were recorded. Of these the Bald Eagle, Red-breasted Nuthatch, and Least Flycatcher had not been seen at either Edgemont or Grandfather Mountain. All of the characteristic mountain birds seen by us previously were noted here, except, as has been mentioned, the Brown Creeper and Blackburnian Warbler.

On July 9 we left Roan Mountain, which is in the northern part of Mitchell County, and went fifteen miles southeast to Toecane. From here we rode by rail twenty miles to Altapass, Mitchell County. Then we followed the crest of the Blue Ridge,—our course lying in McDowell, Mitchell, and Yancey Counties to Harvard, in Yancey County. We next proceeded up the South

Toe River to the foot of Mount Mitchell (6711 ft.), Yancey County, which was our final goal. We ascended the mountain by way of Steprock Creek, and placed our camp within a hundred yards of the summit. We were on the mountain only two days. It was our desire to remain longer here; but it became necessary for us to end our trip at this time. Twenty-five species were seen on the mountain. One of these, the Black-capped Chickadee, had not been recorded previously on our trip. Other species were the Golden-crowned Kinglet, Wilson's Thrush, Towhee, Scarlet Tanager, Red-breasted Nuthatch, Winter Wren, Carolina Junco, Black-throated Green Warbler, Hairy Woodpecker, Song Sparrow, and Ruffed Grouse.

On leaving Mount Mitchell we went, through Yancey and Buncombe Counties, to Black Mountain station in the latter county. In covering this distance of twenty miles, we crossed the following peaks: Hallback (6403 ft.), Mt. Gibbs (6591 ft.), Clingmans Peak (6611 ft.), Potato Knob (6419 ft.), Pinnacle (5693 ft.), and several other lower summits. All of these peaks except the last-named lie in the Black Mountains, a spur of the Blue Ridge.

We reached Black Mountain Station on July 17, after having been exactly one month in the field and here concluded our observations.

The total number of species recorded was seventy-eight, not including a Spotted Sandpiper (*Actitis macularia*) seen in Carter County, Tennessee, a few miles from the North Carolina line (elevation 2800 ft.). Of this number only about twenty could be considered peculiar to the mountain region, the other fifty-nine being found as summer residents to a greater or less extent over the entire state. The following is an annotated list of twenty-three of the more interesting species observed.

1. **Marila affinis.** LESSER SCAUP DUCK.—On June 23 a male and two females of this species were seen on Kawana Lake near Linville in Avery County. The elevation of this lake is about 3700 ft. above sea-level. The time and locality would suggest that these were breeding birds although there are no breeding records for North Carolina. This duck has, however, been seen during the summer in the coastal region and is supposed by some to breed there.

2. **Bonasa umbellus umbellus.** RUFFED GROUSE.—This well known game bird was noted on only two occasions, on Grandfather Moun-

tain at an altitude of about 4000 ft. (an adult with a brood of half grown young) and on the south side of Mt. Mitchell at an altitude of 6500 ft.

The "Pheasant" is found in this state only in the mountains, where it is fast diminishing in numbers, due largely to the fact that it is in most places hunted at all seasons of the year.

3. ***Haliaeetus leucocephalus***. BALD EAGLE.—A Bald Eagle was observed several times soaring above the higher points of the Roan Mountain in Mitchell County. We were informed that Eagles were not uncommon in that section and that several had been killed on the mountain.

4. ***Sayornis phoebe***. PHOEBE.—This bird was recorded in Caldwell, Avery, Mitchell, McDowell and Yancey Counties. Although the Phoebe sometimes nests in the central portions of the state, it is a characteristic summer resident only in the mountains, where it is rather common below 5000 ft.

5. ***Empidonax minimus***. LEAST FLYCATCHER.—On the south side of Roan Mountain at an altitude of about 4500 ft. this bird seemed to be rather common, especially along Little Rock Creek (where two specimens, an adult and an immature, were secured on July 6). We did not observe it elsewhere.

6. ***Corvus corax principalis***. NORTHERN RAVEN.—Two or three of these strange birds were observed on nearly every day of our stay on Grandfather Mountain. A single pair seemed to be residents on Roan Mountain. They were nearly always seen hovering about the highest peaks. The mountaineers informed us that these birds feed largely on carrion, but that they sometimes attack and devour young lambs. (Large flocks of sheep are kept on both Grandfather and Roan Mountains.)

The Raven is fast becoming one of the state's rarest birds and is now nearly if not entirely confined to the highest mountains.

7. ***Junco hyemalis carolinensis***. CAROLINA JUNCO.—This Junco was found rather commonly in Avery, Mitchell, and Yancey Counties at altitudes ranging from about 3000 to 6700 ft. on the summit of Mt. Mitchell. It was one of the few birds which was at all numerous on the summits of the highest mountains.

Several nests were found, as follows:

Date	Locality	Altitude	Contents
June 21	Grandfather Mt.	4200 ft.	3 young well-feathered.
26	Grandfather Mt.	4000 ft.	3 eggs.
July 2	Roan Mt.	5300 ft.	3 young just hatched.
2	Roan Mt.	5750 ft.	2 eggs.
2	Roan Mt.	6000 ft.	4 young fairly well feathered.
3	Roan Mt.	6100 ft.	4 eggs.
4	Roan Mt.	5800 ft.	Nest just completed.

8. ***Melospiza cinerea melodia***. SONG SPARROW.—Probably no other bird was met with in so many places and at so many different elevations.

We found it common in six counties and at points ranging from 1600 ft. at Edgemont to 6700 ft. on the summit of Mount Mitchell.

9. **Zamelodia ludoviciana.** ROSE-BREADED GROSBEAK.— Only two individuals of this northern species were noted during the trip, one in Avery County on the Linville River (elevation 3800 ft.) and the other on Grassy Ridge, Mitchell County (elevation 6000 ft.).

10. **Piranga erythromelas.** SCARLET Tanager.— The Scarlet Tanager was fairly common throughout most of the country visited below 5000 ft. It was recorded in Caldwell, Avery, Mitchell, McDowell, and Yancey Counties.

11. **Bombycilla cedrorum.** CEDAR WAXWING.— Noted in the Transition and Canadian Zones in Avery, Mitchell, Yancey, and Buncombe Counties, but was nowhere common. Several were seen on Roan Mountain at an altitude of 6100 ft.

12. **Lanivireo solitarius alticola.** MOUNTAIN VIREO.— This subspecies of the Blue-headed Vireo was observed only in Caldwell, Avery, and Mitchell Counties, but it is probably tolerably common throughout the mountains.

13. **Dendroica caerulescens cairnsi.** CAIRNS' WARBLER.— On Grandfather Mountain this was the commonest warbler present. A nest containing three eggs was found on June 22. It was a very neat affair, constructed of strips of bark and rootlets, lined with fine rootlets and hair, and placed about one foot from the ground in a cinnamon fern (*Osmunda*).

After leaving Grandfather Mt. Cairns' Warbler was seen on only two occasions, once on the south side of Roan Mountain and again in the South Toe River valley in Yancey County.

14. **Dendroica pensylvanica.** CHESTNUT-SIDED WARBLER.— Noted rather frequently in portions of Avery and Mitchell Counties. It was most numerous in the valleys near cleared land at altitudes between 3000 and 4000 ft.

15. **Dendroica fusca.** BLACKBURNIAN WARBLER.— The Blackburnian Warbler was tolerably common in the large deciduous forests on the northwest side of Grandfather Mountain. Although diligent search was made we did not find it elsewhere.

16. **Dendroica virens.** BLACK-THROATED GREEN WARBLER.— This warbler was found to be fairly common on Mount Mitchell, Roan, and Grandfather Mountains at altitudes ranging from about 3000 ft. to 6600 ft.

17. **Wilsonia canadensis.** CANADIAN WARBLER.— On Grandfather Mountain Canadian Warblers were rather common, being almost as abundant as Cairns' Warbler. They were quite noisy and not at all shy. On Roan Mountain they were much less numerous, being seen on only one or two occasions on the southern slope. After leaving this mountain they were not again observed.

18. **Nannus hiemalis hiemalis.** WINTER WREN.— Was rather common on all the high mountains visited above 4000 ft. On Mount Mitchell it was observed within a few feet of the summit. The bird's

characteristic loud, bubbling song made its presence known in a great many places where otherwise it would have undoubtedly been entirely overlooked.

19. ***Certhia familiaris americana***. BROWN CREEPER.—Brown Creepers were noted by us only on Grandfather Mountain where they were tolerably common above 4000 ft. An immature specimen barely able to fly was captured on June 24 at an altitude of 5600 ft. This is the first breeding record for this mountain.

20. ***Sitta canadensis***. RED-BREASTED NUTHATCH.—Was observed only on Roan Mountain and Mount Mitchell, at which places it was fairly common. This Nuthatch together with the Black-capped Chickadee and Golden-crowned Kinglet were the only birds which seemed entirely characteristic of the Canadian zone, and were found at no time below 5000 ft.

21. ***Penthestes atricapillus atricapillus***. BLACK-CAPPED CHICKADEE.—This bird was only seen on Mount Mitchell and the adjoining peaks. It is probably rather common throughout the higher portions of the Black Mountains. Two specimens were taken on Potato Knob, July 16.

22. ***Regulus satrapa satrapa***. GOLDEN-CROWNED KINGLET.—Was noted on Mount Mitchell, Roan and Grandfather Mountains. It was the most abundant bird found on Mount Mitchell, the balsams being fairly alive with both adults and birds of the year. A well feathered young was taken on Grandfather Mountain, June 24.

23. ***Hylocichla fuscescens fuscescens***. WILSON'S THRUSH, VEERY.—This bird seemed to occur in reasonably large numbers throughout the mountains, above about 4000 ft., but was more abundant on Grandfather Mt. than elsewhere. Here we had the good fortune to hear it sing in company with the Wood Thrush and to compare their songs. We both were of the opinion that the Veery's song is not to be compared with that of the Wood Thrush for clear musical expression; but that there is something about the song of the former which makes it singularly impressive.

As it is desirable to classify the different species according to the elevation at which they were seen, we give below the result of such a grouping. Each bird necessarily falls into one of six groups, as follows:

1. Species (4) observed only in the Canadian Zone (above 5000 ft.).
2. Species (13) observed only in the Canadian and Transition Zones (2000 ft. to 5000 ft. and above).
3. Species (19) observed only in the Transition Zone (2000 ft. to 5000 ft.).
4. Species (10) observed in the Canadian, Transition, and Upper Austral Zones (from below 2000 ft. to above 5000 ft.).

5. Species (28) observed only in the Transition and Upper Austral Zones (from below 2000 ft. to 5000 ft.).

6. Species (4) not observed above the Upper Austral Zone (not above 2000 ft.).

The lists that follow give a fairly good idea of the elevation at which the species may be expected. They are a record of our observations during the trip. We are aware of the fact that some of the observations are incomplete. For instance, the American Crow is placed in the second group, "Species observed only in the Canadian and Transition Zones." The Crow is known to occur from Mexico to Canada, and is evidently met with at all elevations.

1. Species observed only in the Canadian Zone (above 5000 ft.):

- BALD EAGLE (*Haliaeetus leucocephalus leucocephalus*).
- RED-BREASTED NUTHATCH (*Sitta canadensis*).
- BLACK-CAPPED CHICKADEE (*Penthestes atricapillus atricapillus*).
- GOLDEN-CROWNED KINGLET (*Regulus satrapa satrapa*).

2. Species observed only in the Canadian and Transition Zones (2000 to 5000 ft. and above):

- RUFFED GROUSE (*Bonasa umbellus umbellus*).
- HAIRY WOODPECKER (*Dryobates villosus villosus*).
- NORTHERN RAVEN (*Corvus corax principalis*).
- CROW (*Corvus brachyrhynchos brachyrhynchos*).
- CAROLINA JUNCO (*Junco hyemalis carolinensis*).
- ROSE-BREASTED GROSBEAK (*Zamelodia ludoviciana*).
- CEDAR WAXWING (*Bombycilla cedrorum*).
- BLACK-THROATED GREEN WARBLER (*Dendroica virens*).
- WINTER WREN (*Nannus hiemalis hiemalis*).
- BROWN CREEPER (*Certhia familiaris americana*).
- WHITE-BREASTED NUTHATCH (*Sitta carolinensis carolinensis*).
- WILSON'S THRUSH (*Hylocichla fuscescens fuscescens*).
- ROBIN (*Planesticus migratorius migratorius*).

3. Species observed only in the Transition Zone (2000 ft. to 5000 ft.):

- LESSER SCAUP DUCK (*Marila affinis*).
- GREAT BLUE HERON (*Ardea herodias herodias*).
- COOPER'S HAWK (*Accipiter cooperi*).
- RED-SHOULDERED HAWK (*Buteo lineatus lineatus*).

SPARROW HAWK (*Falco sparverius sparverius*).
 BARRED OWL (*Strix varia varia*).
 SCREECH OWL (*Otus asio asio*).
 KINGBIRD (*Tyrannus tyrannus*).
 LEAST FLYCATCHER (*Empidonax minimus*).
 MEADOWLARK (*Sturnella magna magna*).
 BACHMAN'S SPARROW (*Peuceea aestivalis bachmani*).
 ROUGH-WINGED SWALLOW (*Stelgidopteryx serripennis*).
 YELLOW WARBLER (*Dendroica aestiva aestiva*).
 CAIRNS' WARBLER (*Dendroica caerulescens cairnsi*).
 CHESTNUT-SIDED WARBLER (*Dendroica pensylvanica*).
 BLACKBURNIAN WARBLER (*Dendroica fusca*).
 MARYLAND YELLOW-THROAT (*Geothlypis trichas trichas*).
 CANADIAN WARBLER (*Wilsonia canadensis*).
 TUFTED TITMOUSE (*Bæolophus bicolor*).

4. Species observed in the Canadian, Transition, and Upper Austral Zones (from below 2000 ft. to above 5000 ft.):

TURKEY VULTURE (*Cathartes aura septentrionalis*).
 RED-TAILED HAWK (*Buteo borealis borealis*).
 FLICKER (*Colaptes auratus luteus*).
 CHIMNEY SWIFT (*Chætura pelagica*).
 SONG SPARROW (*Melospiza melodia melodia*).
 TOWHEE (*Pipilo erythrophthalmus erythrophthalmus*).
 RED-EYED VIREO (*Vireosylva olivacea*).
 MOUNTAIN VIREO (*Lanivireo solitarius alticola*).
 CATBIRD (*Dumetella carolinensis*).
 BLUEBIRD (*Sialia sialis sialis*).

5. Species observed only in the Transition and Upper Austral Zones (from below 2000 ft. to 5000 ft.):

BOBWHITE (*Colinus virginianus virginianus*).
 MOURNING DOVE (*Zenaidura macroura carolinensis*).
 BELTED KINGFISHER (*Ceryle alcyon alcyon*).
 DOWNY WOODPECKER (*Dryobates pubescens medianus*).
 WHIP-POOR-WILL (*Antrostomus vociferus vociferus*).
 RUBY-THROATED HUMMINGBIRD (*Archilochus colubris*).
 PHEBE (*Sayornis phæbe*).
 WOOD PEWEE (*Myiochanes virens*).
 ACADIAN FLYCATCHER (*Empidonax virescens*).

BLUE JAY (*Cyanocitta cristata cristata*).
ENGLISH SPARROW (*Passer domesticus*).
GOLDFINCH (*Astragalinus tristis tristis*).
CHIPPING SPARROW (*Spizella passerina passerina*).
FIELD SPARROW (*Spizella pusilla pusilla*).
CARDINAL (*Cardinalis cardinalis cardinalis*).
INDIGO BUNTING (*Passerina cyanea*).
SCARLET TANAGER (*Piranga erythromelas*).
WHITE-EYED VIREO (*Vireo griseus griseus*).
BLACK AND WHITE WARBLER (*Mniotilta varia*).
PARULA WARBLER (*Comsothlypis americana americana*).
OVEN-BIRD (*Seiurus aurocapillus*).
LOUISIANA WATER-THRUSH (*Seiurus motacilla*).
YELLOW-BREASTED CHAT (*Icteria virens virens*).
HOODED WARBLER (*Wilsonia citrina*).
BROWN THRASHER (*Toxostoma rufum*).
CAROLINA WREN (*Thryothorus ludovicianus ludovicianus*).
CAROLINA CHICKADEE (*Penthestes carolinensis carolinensis*).
WOOD THRUSH (*Hylocichla mustelina*).

6. Species not observed above the Upper Austral Zone (not above 2000 ft.):

GREEN HERON (*Butorides virescens virescens*).
CRESTED FLYCATCHER (*Myiarchus crinitus*).
PRAIRIE WARBLER (*Dendroica discolor*).
KENTUCKY WARBLER (*Oporornis formosus*).

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