BREEDING SEASON HABITAT AND DISTRIBUTION OF THE RED-BREASTED NUTHATCH IN THE SOUTHERN BLUE RIDGE MOUNTAIN PROVINCE

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According to the A.O.U. *Check-list* (1957) the Red-breasted Nuthatch (*Sitta canadensis*) nests widely through Canada, the northern United States, and down the Appalachian highlands to its southern breeding limit in eastern Tennessee and western North Carolina. Pearson et al. (1959) state that the species breeds on "some of the higher mountains" but give no details of habitat selection. Despite evidence to the contrary, it is commonly believed that the bird is strictly confined during the breeding season to forests of red spruce (*Picea rubens*) and Fraser fir (*Abies fraseri*) in the mountain region. This paper reviews data indicating that the Red-breasted Nuthatch utilizes at least three distinct forest types in the southern Blue Ridge Province during the spring and summer months.

HABITAT TYPES

1. *Spruce-fir Forests.* The so-called Canadian zone or boreal forests of red spruce and Fraser fir are the major habitat used by the Red-breasted Nuthatch in the southern Appalachians, and the bird has been reported during the breeding season from every known stand of this community-type in the region. Briefly, the nuthatch has been thoroughly documented as a common summer resident in spruce-fir forests of the Great Smoky Mountains (Stupka 1963); northern Great Balsam Mountains, Plott Balsam Mountains, southern Great Balsam Mountains, Pisgah Ridge, Shining Rock Ledge, Blue Ridge Mountains, Nantahala Mountains, and Long Hope Creek in Watauga County (Simpson, present study); Black Mountains (Brewster 1886, Cairns 1889, Simpson 1972); Grandfather Mountain (Alexander 1973; Simpson, present study); Roan Mountain (Ganier 1936; Fred Behrend, pers. com.); and the Mt. Rogers-Whitetop area of Virginia (J.J. Murray 1952; Simpson, present study). Breeding densities have been reported from the Smokies by Alsop (1970) and the Black Mountains by Adams (1959), while documented nestings have been described in the Smokies (Stupka 1963), Black Mountains (Burleigh 1941, Cairns 1889), and Roan Mountain (Ganier 1936).

2. *Hemlock Forests.* The eastern hemlock (*Tsuga canadensis*) is a fairly common forest tree through most of the southern Appalachians, where it may occur locally in fairly dense stands as a major canopy dominant. There are four known localities in the southern Blue Ridge where Red-breasted Nuthatches have been seen in this forest type during the breeding season. At Highlands, Macon County, N.C., the bird has been observed in hemlock forests since Brewster (1886) first noted a pair in an "extensive 'laurel swamp' shaded by giant hemlocks" at an elevation of 1220 m (4000 feet) in late May 1885. There are many subsequent records of the species from the Highlands Plateau, particularly in the vast hemlock stand known as the Primeval Forest or Ravenel's Woods. The observations have been summarized by Stevenson (1941) and Johnston (1964), while additional records are found in the biota files of the Highlands Biological Station. These sightings have been at elevations from 1130 m (3700 feet) to 1220 m (4000 feet). In the Unicoi Mountains along the state line between North Carolina and Tennessee, Ganier and Clebsch (1946) found two Red-breasted Nuthatches in a grove of virgin hemlock at 1341 m (4400 feet) in Graham County, N.C. during their exploration of the range in June 1944. In the Great Craggy Mountains, Buncombe County, N.C., I have found three to five pairs of Red-breasted Nuthatches during June 1970 and 1971 in the magnificent hemlock stand at Craggy Mountain Scenic Area in the headwaters of Carter Creek at an elevation of 1220 m (4000 feet). Finally, I have

seen one to three pairs of the nuthatch on numerous occasions during the summer months in the hemlock woods bordering Sim's Creek at 1097 m (3600 feet) along the Blue Ridge Parkway in Watauga County, N.C. Although hemlock occurs at all elevations in the mountains, the nuthatch has been reported only from sites between 1097 m (3600 feet) and 1341 m (4400 feet). I am not aware of any nesting records or population density studies from this habitat type.

3. *White Pine Forests.* The white pine (*Pinus strobus*) is a common forest tree in western North Carolina, and in some locales it may form almost solid stands, a notable example occurring near the Highlands Biological Station, Macon County, N.C. At this site, Red-breasted Nuthatches have been seen on many occasions during June and July by Henry Stevenson, Thelma Howell, J. Cheek, and Toliver Crunkleton (pers. com.; biota cards, Highlands Biological Station). I noted a pair of these nuthatches in the white pines at the Biological Station throughout the month of June 1969, although no evidence of nesting was found. The elevation of this site is 1170 m (3840 feet).

SUMMARY

The Red-breasted Nuthatch is a permanent resident in the southern Blue Ridge Mountains where it occurs during the breeding season in three distinct types of coniferous woodlands. The majority of the birds utilize the high elevation forests of spruce and fir above 1372 m (4500 feet), but the species also inhabits hemlock stands between 1097 m (3600 feet) and 1341 m (4400 feet) in at least four widely separated locales. At Highlands the nuthatch has been reported in white pine stands at 1170 m (3840 feet).

Bent (1948) mentions nesting in spruce, fir, hemlock, pine, and a variety of hardwood forests; so the occurrence of the species in these forest types in the southern Appalachians is consistent with its selections elsewhere.

The southern breeding limit of the bird in the eastern United States is on the Highlands Plateau, Macon County, N.C. Observers should be alert to document additional sites where this bird occurs as a summer resident so that its breeding range can be completely mapped out in western North Carolina.

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BOOK REVIEW

AUTUMN HAWK FLIGHTS. Donald S. Heintzelman, Rutgers University Press, 30 College Avenue, New Brunswick, N.J. 08903, 1975. 399 p. Illus. Index. $30.00.

Hawks, unlike most birds, migrate during the day; consequently their sometimes spectacular flights south in the fall are witnessed and enjoyed by thousands of enthusiastic birdwatchers. An interest in migration, and a general fascination with birds of prey, have for many years brought uncounted numbers of people to key points in the eastern United States where the southern passage of hawks can be observed and their numbers counted.

Much has been learned about the timing of these flights, the navigational principles involved, and the weather systems that influence them. In fact, more is known about the migratory patterns of North American hawks than about those of most birds. This knowledge spawns more questions, and the answers to some of them could have far reaching merit. Perhaps I am just trying to justify the hours which many of us have squandered watching hawks, but somehow the data gathered should provide information on hawk population trends. Then, because of the hawks' role as a top predator in complex food webs, this information could be used to help assess the status of entire communities.

If you are interested in any of these problems, or are simply captivated by soaring hawks, you will find *Autumn Hawk Flights* an interesting reference. The author has assembled a great deal of information, much of which comes from reports and other sources which could otherwise be difficult to obtain. The text has six parts: (1) an introduction describing methods of observation and identification; (2) a survey of the known eastern hawk lookouts; (3) "Raptor Morphology, Anatomy, and Flight"; (4) and (5) discussions of migration and weather and of migration routes; and (6) on the evolution of the Broad-winged Hawk. The book contains 40 figures, 60 tables, 48 maps, 88 black-and-white photographs, and an extensive bibliography.

Despite containing a wealth of useful information, many of the 18 chapters do not live up to their ambitious titles. (Part 6 is particularly weak.) The tables, figures, and maps vary considerably in value. Most of the pictures are good shots of hawks in flight, and much can be learned from them. Others, mostly of various lookouts and people peering through binoculars, contribute little, except possibly to the cost of the book. This already is unnecessarily high and could have been held down by more judicious editing. Much of the material in the book stems from Heintzelman's own observations on Bake Oven Knob in Pennsylvania, and most of the rest is from a relatively confined area of the central Atlantic states. Some of the author's opinions and speculations do not seem justified in view of scant data.

Hopefully, future editions will show improvement, for in all fairness the book is a useful one that, judging from the crowds at Hawk Mountain, should have a large audience. Perhaps CBC members will be inspired by the lack of data on hawk movements in the Carolinas and will not be influenced by Heintzelman's belief that only those observations from places receiving large volumes of hawk traffic are significant. —DAVID LEE, 1 September 1975.