

TABLE 1
COUNTS OF RING-NECKED DUCKS

	At McCormack	At Judique ponds
Earliest	23 June 1960 (61 ♂ ♂)	27 June 1963 (12 ♂ ♂)
Peak counts	20 July 1965 (90+)	28 June 1961 (26 ♂ ♂)
	30 July 1962 (130)	4 August 1963 (24)
	14 August 1961 (90+)	14 August 1962 (28)
Latest	6 September 1968 (25 ♂ ♂)	8 September 1970 (21 ♂ ♂)

early October were presumably migrants. At that season flocks often occurred in areas where only females and broods had been seen in July and August.

I believe that the birds in these postbreeding flocks are mostly from nearby locales. My spring counts on six waterfowl breeding grounds within 25 miles of these molting areas in 1961–1963 averaged 44 pairs and 21 extra drakes, while the summer average was 27 broods, including those from renests. If all adults except the successful brood females joined postbreeding flocks by mid-July, these six breeding grounds could have supplied on average 65 drakes and 17 females each year, when the flocks averaged about 125 birds (100 at McCormack, 25 at Judique ponds). As these breeding grounds made up only a small fraction, albeit a productive one, of the potential Ring-necked Duck habitat in eastern Nova Scotia, only local birds may have been present in the flocks.

Although the McCormack bays are somewhat similar to the habitat of Musquash Island, the use of the bog pond upstream and of the barrier beach ponds at Judique indicates that molting Ring-necked Ducks may occupy widely different types of habitat, so long as seclusion and adequate food are assured.—ANTHONY J. ERSKINE, *Canadian Wildlife Service, Ottawa, Ontario, Canada*. Accepted 14 May 71.

Nest-entrance modification in the nuthatches.—The extremely interesting note by Kilham (Auk, 88: 175, 1971) on the wiping of the nest entrance with crushed insects by the White-breasted Nuthatch (*Sitta carolinensis*) provides another example of the nest-entrance modification by New World nuthatches. This behavior of the White-breasted Nuthatch is evidently rare (or overlooked?) for I have seen but a single other note on comparable behavior by this species in the literature. F. H. Allen (in Bent, U. S. Natl. Mus. Bull. 195: 3, 1948) records both sexes of a pair about birdhouse spending much time wiping the bill from side to side. A second American species, the Red-breasted Nuthatch (*S. canadensis*) regularly puts pitch about its nest entrance (Bent, op. cit., pp. 23–25), while in the other two American species (forming a superspecies) the nest is “caulked or weather-stripped”; more extensively by the Pygmy Nuthatch (*S. pygmaea*) than by the Brown-headed Nuthatch (*S. pusilla*) (Norris, Univ. California Publ. Zool., 56: 205, 1958). The White-breasted Nuthatch generally uses a preexisting cavity for its nest; the other species usually excavate their own nest cavity.

The function of the nest-entrance modification in the American species has been related to protection against enemies, competitors, and the weather. In the White-breasted Nuthatch the vesicant secretion of some of the insects used has been suggested as a repellent (Kilham, loc. cit.). In the Red-breasted Nuthatch the sticky pitch used as has been suggested may serve as a barrier to ants, and the

shining drops of pitch resembling eyes may frighten away predators, but these views have attracted little support (Rand, Audubon Mag., 61: 270, 1959). A disadvantage has been indicated, that the pitch may soil the bird's feathers. To lessen this the nuthatch may dive on the wing directly into the nest without so much as touching the feet to the edge of the hole (Bent, op. cit., p. 29). In the Pygmy and the Brown-headed Nuthatches, the nest cavity modification has been considered a protection against the weather (Norris, loc. cit.). It is also possible that it may simply add to the seclusion of the nest contents.

While behavior can be interpreted in terms of the immediate environment, as in the above, another appreciation is given by viewing the behavior from an evolutionary, physiogenetic point of view, in this case considering the related nuthatch behavior of the other 16 species in the genus, all of the Eurasian area. This I have done earlier for the Red-breasted nuthatch's pitch-plastering (Rand, op. cit.), and to which the White-breasted Nuthatch's behavior is comparable.

All nuthatches build nests in cavities in trees or among rocks. In addition some species variously caulk cracks, line the natural cavity extensively with mud, reduce the size of the entrance with masonry of mud, and may even stick feathers about the mud-covered entrance. Only a few species excavate their own nest cavity, and of these the Red-breasted Nuthatch adds pitch "decoration."

Presumably nuthatches are secondary hole nesters that originally occupied "natural" cavities. Unlike primary hole nesters such as woodpeckers, nuthatches construct a nest within the cavity, lay spotted eggs, and have natal down. Presumably early in the hole-nesting nuthatch ancestral line the modification of the entrance hole and caulking became established. The basic function may have been to add to the seclusion that many birds seek for the eggs and young. But so deeply entrenched in nuthatch phylogeny is the tendency to modify the cavity that it has been carried beyond the strictly utilitarian, and in the White-breasted and the Red-breasted Nuthatch we see nonfunctional, evolutionary relics or frills.—A. L. RAND, *Archbold Biological Station, Lake Placid, Florida 33852*. Accepted 18 Jun. 71.

Death of Red-breasted Nuthatch from pitch around nest hole.—Red-breasted Nuthatches (*Sitta canadensis*) dab pitch around entrances to their nest holes and continue to bring fresh globules throughout incubation and nestling periods until the pitch may become thick enough to stream downward (Bent, U. S. Natl. Mus., Bull. 195, 1948; personal observation). That the pitch can be a hazard to the nuthatches themselves has not been previously recorded so far as I am aware.

On 2 May 1965 I found a female Red-breasted Nuthatch carrying strips of inner bark from an oak into a nest hole 11 m above the ground in the dead stub of a paper birch (*Betula papyrifera*). I did not visit this nest again until 6 June, when I noticed the body of a nuthatch stuck to the entrance. When I pushed, the top of the stub broke off. The segment containing the nest remained intact as did the body of the adherent nuthatch. The nest was empty.

Pitch, as continually applied fresh from balsams (*Abies balsamea*) and other conifers, can become as sticky and tenacious as bird lime. It may be of importance in the present context that the female enters a nest more than her mate, for she not only spends the night there but also does all the incubating and early brooding, the male feeding her from the outside. Females are remarkably adept at entering their sticky entranceways. They may fly directly in like a bullet, or first hover, then pop in; a difficult feat in either case considering that the pitch often coats the bottom of the passage as well as forming a rim above. That females do brush against the pitch occa-