colony would not attack ducklings on the ground, but moved aside to allow them to pass. Gulls never attacked ducklings swimming near a Common Tern, *Sterna hirundo*, nesting area. Gulls avoided walking, swimming, or flying low into tern nesting territory. Terns attacked intruding gulls vigorously but ignored waterfowl or waterfowl broods.

Of 14 duck broods totaling 77 ducklings seen leaving in 1969, the only brood that escaped destruction left in mid-August after the gulls had finished nesting and departed. This suggests that late nesting or renesting ducks may suffer little brood mortality from gulls.

We saw mass attacks only on broods of very young ducklings and only close to the active gull colony. We noted four other cases of gull predation on ducklings elsewhere on Chip Lake, but at no time were entire broods affected, nor were large numbers of gulls involved in an attack. A single gull attacked a young brood in a part of the lake away from the gull colony. The gull took two ducklings, but could catch no more when the female moved the brood into the cover of dense bulrushes, *Scirpus acutus*. We saw older broods attacked by single gulls, but the ducklings survived by diving repeatedly. In one case the attack ceased when the brood moved into heavy emergent cover. In two cases the gulls gave up their attack after about 5 min of trying.—GERRY M. LYNCH, *Alberta Fish and Wildlife Division, P.O. Box 1390, Edson, Alberta, TOE OPO, Canada,* and JOHN E. TOEPFER, *University of Wisconsin, Stevens Point, Wisconsin 54481.* Accepted 21 Jan. 74.

Association of Red-breasted Nuthatches with chickadees in a hemlock cone year.—This note describes the behavior of Red-breasted Nuthatches (*Sitta canadensis*) as they associated with Black-capped Chickadees (*Parus atricapillus*) in feeding on the seeds of hemlock (*Tsuga canadensis*) in the winter of 1972–73, a maximum cone year in Lyme, New Hampshire. The feeding of these species was strikingly affected by weather conditions because (Hough 1960) hemlock cones are hydroscopic, opening in dry, cold, and windy periods, and closing on warmer and more humid days.

Nearly all observations were made in three places, two on hillsides and one in a swamp, all of which contained good stands of hemlocks with varying mixtures of hardwoods. Each of these sites was visited once or twice on weekdays, and all of them more extensively on weekends from late September 1972 through February 1973 when the supply of hemlock seeds was exhausted. The total number of flocks seen was 82, but actually the same individual nuthatches and chickadees were doubtless encountered many times over on different days. The numbers of chickadees averaged from about four to eight with a range of from one to 25, but I never found more than one pair of Red-breasted Nuthatches with them.

Hemlock cones mature in October (Hough 1960) and it was not until 18 October that I found nuthatches associated with chickadees. The two species differed in methods of storing the seeds. It might take a nuthatch 2–12 sec to extract a seed from a cone, then 12–15 sec to store it in some hardwood close to the hemlock, or sometimes in the rough bark of the trunk or larger limbs of the hemlock itself.

When storing seeds a Red-breasted Nuthatch might hold its head flat and low while poking a seed under a flake of bark, then work with it for a few moments. Hemlock seeds are so small that it was difficult to see exactly what was happening. An occasional nuthatch made several quick jabs to the side, then back to the storage place. Only once was I able to see clearly that the bird was covering its stores with a small fragment of bark, a process seen more clearly under other conditions in a previous year (Kilham 1974).

The chickadees, in contrast to the nuthatches, usually flew 12 to 20 m to poke seeds into small crevices in outer twigs and small branches of various hardwoods, as is also described by Odum (1942). Neither Odum nor I noted storing to any degree after October.

The winter of 1972–73 was unusually mild. On days and weeks of mild weather the hydroscopic scales of the hemlock cones closed and the chickadees visited them infrequently. The nuthatches were difficult to locate and seldom seen.

A light snowfall on 5 November covered all twigs and branches. I found no birds until I came to a grove of hemlocks whose flat branches had kept the ground free of snow. There were 20 or more chickadees, possibly two flocks combined, a pair of Red-breasted and one White-breasted (*Sitta carolinensis*) Nuthatch as well as a number of Golden-crowned Kinglets (*Regulus satrapa*). These latter two species were rarely associated when chickadees were feeding on hemlocks on other days. It seemed, therefore, that the snow, or some factor associated with it, had the effect of bringing these various species together.

The chickadees and Red-breasted Nuthatches appeared to be foraging on hemlock seeds that had fallen to the ground. This type of foraging became more pronounced as the season progressed, especially after snow had lain on the ground for some days and seeds, shaken loose by wind or other agencies, had time to accumulate. The nuthatches seemed more efficient in feeding than the chickadees, for they often picked up a number of seeds at a time before flying to an anvil to pound them.

Weeks of desultory feeding on hemlocks in November and December ended, almost dramatically, with the onset of temperatures near −20°C in the second week of January. Cone scales opened in the drier air associated with low temperatures, wind, and sun. The chickadees and Red-breasted Nuthatches were again associated, sometimes concentrating on just a few hemlocks where I was able to watch them for as long as 2 h at a time. I encountered two females and a male Red-breasted Nuthatch in one flock, the only time I ever saw more than a pair. While the chickadees and nuthatches foraged mainly on the cones, they also foraged for seeds shaken loose by the wind, both species going to the snow at the same time as though one copied the movements of the other.

These optimal feeding conditions dwindled in less than a week. With a return of milder weather, association of nuthatches and chickadees became infrequent. Intensely cold weather returned on 1 and 11 February, but the supply of hemlock seeds had become exhausted in the January cold spell, and I found no more birds of either species visiting the hemlocks.

It should be noted that red squirrels (*Sciurus hudsonicus*) were abundant and had continued to feed on cones regardless of weather in the late fall and early winter. They and the Pine Siskins (*Spinus pinus*) that had come to the hemlocks in flocks of 50 or more were probably by far the heaviest users of this unusually large crop of seeds.

The normal activities of species living in natural habitats have survival value if engaged in for any length of time, but the benefits of the association of *S. canadensis* with *P. atricapillus* were not immediately apparent. With hemlocks widespread and covered with cones, one would suppose either species could have found the same abundance of seeds without need of the other. But the cones were actually a crop of limited duration that would probably have become exhausted by January, even without the activities of the nuthatches and chickadees, from consumption by the red squirrels and Pine Siskins as well as from the dispersal effects of winter winds (Hough 1960). From the point of view of a winter's food supply, therefore, it may have

been of benefit to the nuthatches and chickadees to store and feed upon as much of the seed as possible while the crop was still available. Time was important. By working in association, individuals of each species may have foraged more actively and continuously than they would have alone.

A question raised by Levins (1968) is how precise an adaptation can be to a resource that is patchy in time and space. But what is involved here is a strategy (Levins' term) of opportunism, one whereby Red-breasted Nuthatches take advantage of the seed crop of one conifer or another, whenever such are available, and migrate elsewhere when they are not. This latter was the situation in the winter of 1973–74. I was unable to locate a single Red-breasted Nuthatch in Lyme in months of searching. The hemlocks were covered with nearly as many cones as in the year previously, but all were old cones, no longer attractive to animals of any kind.

Morse (1970) and Krebs et al. (1972), among others, have reviewed reasons for the formation of mixed flocks. None of the theories presented have appeared to fit the situation encountered in the hemlock cone year exactly. The association of *S. canadensis* and *P. atricapillus* with the hemlocks was indeed something of a model system, ecologically speaking, one that might well repay further study in other localities.

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First Oregon specimen of *Icterus galbula galbula*.—The eastern subspecies of the Northern Oriole, nominate *galbula*, occurs regularly in small numbers in the southwest, especially southern California (sight records in Audubon Field Notes and Amer. Birds 16–27, 1962–1973) and has been collected in San Diego County, California (McCaskie and Banks 1966). The eastern subspecies occurs only rarely in northwestern North America. A female collected at Logan (ca. 14 km east-southeast of Oregon City) in the Willamette Valley, Clackamas County, Oregon on 4 June 1907 is in the University of Utah Museum of Zoology (No. 239a). The specimen is quite worn in the primaries and secondaries but less so in the rectrices and appears to be in first-year adult plumage (*sensu* Amadon 1966). The original label does not indicate collector or additional information. The poor condition of this specimen precludes determination of the presence of an incubation patch.

Phenotypically the specimen is "pure" nominate *galbula* according to indices of Sibley and Short (1964) and Rising (1970) and to characters given by Hubbard