

LONG-TERM BIRD POPULATION STUDIES--A REWARDING EXPERIENCE

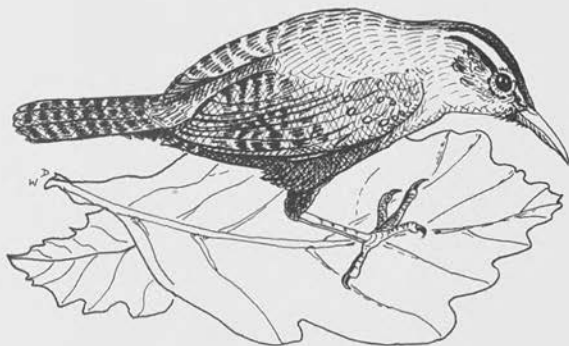
by William E. Davis., Jr., Foxboro

Several years ago, when I decided to expand my interest in birds, participation in the Breeding Bird Census and Winter Bird-Population Study (both sponsored by American Birds) seemed a likely first step. I have just completed my third year of involvement, and this article describes aspects of these studies that I have found interesting and provocative.

For the Breeding Bird Census I attempt to locate every nesting pair of birds in an approximately 30-acre area in the town conservation land near my home in Foxboro. At the same site the Winter Bird-Population Study requires a periodic sampling of winter birds. My area is primarily a maple, pine, and oak second-growth forest, quite swampy in places, which is typical of many parts of the northeast that have been preserved from development because of their perennial wetness.

The purpose of both types of surveys is to provide long-term baseline data on breeding and wintering bird populations in a wide variety of habitats in North America and to provide data for the analysis of any changes in these populations that may occur. Data has been published by the National Audubon Society for some 32 years for the winter study and 43 years for the breeding bird study.

Long-term censuses provide an opportunity to monitor fluctuations in nesting or winter feeding populations, and in my case to correlate any changes with several environmental factors. For example, for a number of years up to the spring of 1976, the Norfolk County Mosquito Control Project had sprayed my area by helicopter with the larvicide Baytex (fenthion); they sprayed nothing in the spring of 1977; and then resumed spraying in the spring of 1978 with the considerably less toxic compound ABATE. It will be interesting to look for any correlations between nesting bird populations and the application of these pesticides. Similarly, the study area has been infested for the past several years with a defoliating density of Gypsy Moths, and nesting Black-billed and Yellow-billed Cuckoos feed heavily on them. Last year the moths showed definite signs of a population crash; if this downward trend continues, it will be interesting to see if any changes occur in the nesting cuckoo population.



Over the years I can also follow the population vagaries of each of the species that nest in the census area (see Table I). An increase in one species nesting population that correlates with a decline in another may offer insight into competition for food or nesting sites, or differential resistance to other environmental factors such as pesticides. It is too early in the study to consider any trends significant, but my general impression of the breeding bird population is one of stability--in marked contrast to the winter bird population, which seems to fluctuate widely in species composition and numbers, reflecting in part the influence of irruptive species such as the winter finches.

The Winter Bird-Population Study, perhaps surprisingly, has been the more exciting and more interesting of the two projects. Part of this stems from occasional exciting events, some of which are described later, but more importantly because the study has raised additional questions and problems. The number of birds encountered on the winter sampling trips (averaging about 100 minutes each over the same route from early December through February) has varied widely, from a maximum of 27 to zero. Of the 40 trips taken over the past three winters, five or fewer birds were recorded on 17 trips and more than 20 in six. Preliminary graphs plotting bird sightings per hour against inches of snow cover, clear or cloudy sky, calm or windy conditions, and temperature indicate that the number of birds encountered is probably not significantly related to any of these variables alone. (In the future, more sophisticated statistical techniques will be employed.)

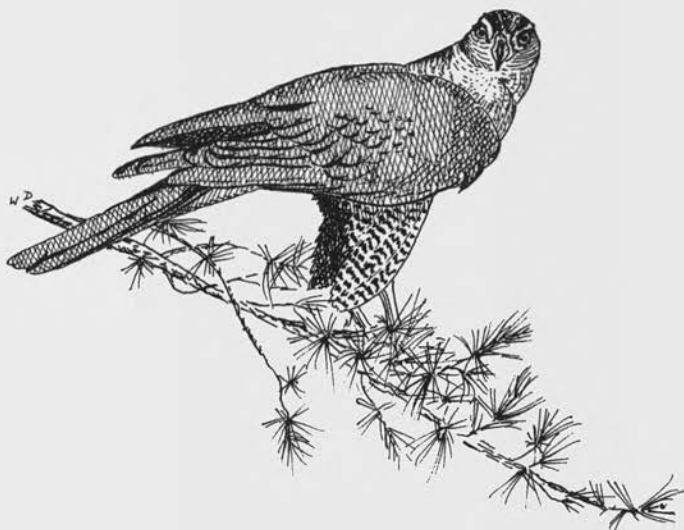
TABLE I

Breeding Bird Census Data

	1976	1977	1978
Total Breeding Pairs	55	60	44
Number of Breeding Species	29	28	26

This suggests that random factors, such as chance encounters with a mixed foraging flock, may strongly influence both the numbers of birds and species encountered. On 16 sampling trips in the winter of 1977-78, nine of the 18 species were recorded only once. This may again indicate the importance of chance encounters in assessing species diversity when birds are widely scattered and low in numbers. Nonetheless, it may be possible to pick out the "bad" and "good" winters on the basis of these sampling techniques. For example, the number of sightings per hour dropped from 7.7 in 1977-78 to 4.3 in 1978-79, and the latter winter was generally regarded as a "bad" one for birds. Any statistical evaluation of these figures awaits further data.

The banding of winter feeder birds will give me an opportunity this spring to test the supposition that the birds that winter in your yard are generally not the same ones that nest there. It is generally believed that even reasonably sedentary birds, such as chickadees, migrate short distances at least.



Another problem associated with the winter bird study concerns the impact of bird feeders in the immediate vicinity of the area. There are at least five active feeding stations (one of which is at my home) within 200 yards of the study area, and their proximity raises a number of questions. How large a bird population is supported in winter by the feeders? Are the mixed foraging flocks encountered in the deep woods part of this feeder-supported population or are they entirely separate populations? Or, do the birds procure their food both by foraging and from feeders? If the latter is the case, what effect do the feeders have on the number of birds found foraging in the woods? If there were no feeders available, would the winter bird population in the woods be larger, smaller, or remain the same?

In order to answer some of these questions, I have, over the past two winters, attempted in several ways to determine the size and structure of the feeder population, I have recorded the number of species and individuals at the five feeding stations at the end of each trip through the study area. Secondly, I have recorded the largest total number of individuals of each species that I have seen at any one time during the winter at any of the stations.

The first method, for the winter of 1977-78, produced an average count of 60 birds at feeders after each census trip; this year I saw an average of 40. These figures are undoubtedly low estimates because most birds do not stay at the feeders all the time. The total of the largest counts for each species yielded 229 birds for the winter of 1977-78 and 179 for 1978-79.

To determine if feeder-frequenting birds also forage in the woods, as well as to try more accurately to estimate the feeder population, John Kricher and I began banding birds at my feeder this winter. Of 192 birds banded (15 species) 44 were subsequently recaptured. The recapture per-

centages varied markedly among species, reflecting probably greater stability in the feeder population of some. The Black-capped Chickadees, with a 50 percent recapture rate, were the real "stay-at-homes." Though the numbers of each species banded and retrapped are too small to warrant statistical examination at this time, my general impression is that feeder populations are less static and involve many more birds than I first thought. Of the 39 birds seen well enough on sampling trips to determine positively if they wore bands, three were banded. Since I had never before seen a banded bird in my area, the three birds were in all probability ones which I had banded. Thus, it appears that the feeder and deep woods populations are not totally distinct. Expanding the banding effort in future years to include other feeders in the area and better trapping methods will, I hope, provide some insight into many of the questions that are yet unanswered.

Occasionally an opportunity arises to document a dramatic population change. During the 1976-77 winter I recorded Golden-crowned Kinglets on the first six sampling trips through January 12th. On the seventh run, January 14th, no kinglets were observed, nor on the additional three runs that winter. In fact, I have not encountered a kinglet on the subsequent 30 runs during the last two winters. It seems probable that the widespread Golden-crowned Kinglet crash of that winter also occurred in my area near the middle of January.

Involvement in these projects has, of course, cost me a few mornings at Mount Auburn or Plum Island, but it certainly has not been devoid of excellent birding experiences. In fact, I have been pleasantly surprised by the number of "good" birds that crop up during the multiple trips to a very ordinary block of swampy woodland. I have recorded a



total of 80 species in the woods on the census runs, not including birds flying over. Among the "good" birds were such gems as Golden-winged and Mourning (male) Warblers, and a Carolina Wren which perched and sang within twenty feet of me. On one winter sampling trip two Goshawks responded to my "psh-psh-psh" call by flying from a nearby stand of White Pine toward me, the adult bird flying directly over my head at tree-top level, and the immature bird alighting in a tree not 20 feet away from me. On another winter run (February 12th) I watched an adult Northern Shrike for some time from a distance of about 50 feet and was treated to 12 minutes of almost uninterrupted song, catbird-like nasal squawks interspersed with weeps and warbles, reminding me of a mockingbird or thrasher. It terminated its song by regurgitating a pellet which proved to be mostly small bird bones and feathers.

The breeding bird census trips have also produced a wide variety of other experiences. There is something very special about discovering the four blue eggs in a Veery nest next to a pine bough on the ground or a bright blue egg and two tiny grey and white Black-billed Cuckoos with their eyes still closed. More impressive still was the frantic distraction display of the female Black-and-White Warbler, both wings flapping wildly as she led me away from her leaf-capped nest with three young. A similar display by a Nashville Warbler succeeded; I never found the nest. On another occasion I saw the entire mating ritual of a pair of Black-billed Cuckoos. Some of the interactions among different species were not so pleasant to watch. On three occasions, over an 11 day period, I saw a pair of Blue-gray Gnatcatchers engage Blue Jays; they never succeeded in raising a brood.

One of the enchanting qualities of these studies arises from the fact that they provide a constant opportunity to be alone while studying the ecology of birds. I thoroughly enjoy a day of bird watching with friends, but there is something special about a quiet interaction with nature alone. With the ominous threat of gasoline rationing looming on the horizon, local birding projects like these will provide worthwhile alternative birding opportunities.

Patricia Ledlie - bookseller Box 46 Buckfield, Maine 04220
(207) 336-2969

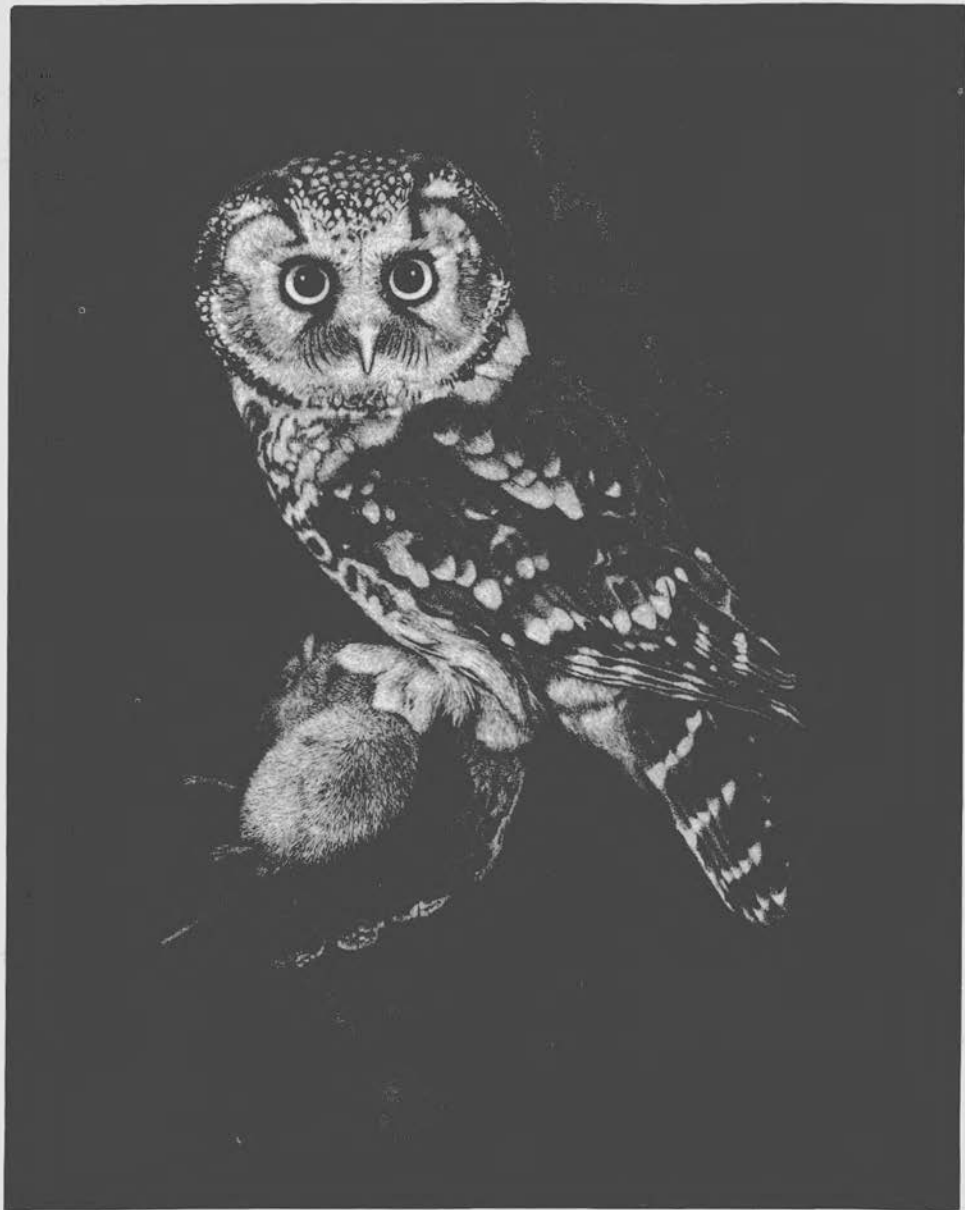


Out of Print, Rare

Bird Books

Annotated Catalogues: \$1.00

By Appointment



On December 31, 1978, Fred Atwood discovered a Boreal Owl in Salisbury, the first recorded sighting in the state since December 20, 1942. Drawn in the scratchboard technique by Alison Webber, this representation of a Boreal Owl will invoke fond memories for some birders, and bittersweet ones for others.