

However most resident Blue-wing males arrived about a week earlier than Golden-wing males and were already paired with Blue-wing females before Golden-wing females returned.

The Blue-winged Warbler has been relatively rare in Wisconsin until the last few decades. The Blue-winged Warbler in the course of its northward range expansion has increasingly come into contact with the Golden-winged Warbler. Although we found no interspecific pairing between Blue-wings and Golden-wings in our study this spring, interbreeding probably occurred to a limited extent when the two species first came into contact in the Kettle Moraine. The natural processes that normally keep different species from interbreeding are imperfect in the case of Blue-wings and Golden-wings. These species are at a critical point; if pairing of the parental species with hybrids does not cease soon, there will no longer be two species but one more variable species. In fact, since more than 75% of the birds we studied showed some hybrid traits, it appears the species' borders have already blurred in the Kettle Moraine.

Although we learned something about the relationships of Blue-wings and Golden-wings this spring, many interesting problems will take a long time to solve. Will the degree of gene flow decrease, increase or remain stable over the next ten years? The study of banded birds should provide some insight into this question. Will Blue-wings eventually outnumber Golden-wings in the Kettle Moraine as has happened in some areas in the East? Presently the two species are present in approximately equal numbers.

It would be helpful to our study to know something about the history of the Kettle Moraine populations of Blue-wings and Golden-wings. How long have both species been breeding there? Any information that readers of this Bulletin might have concerning this problem would be much appreciated.

I wish to thank John Meyer and Bernard Brouchoud for their help with this study.

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IN QUEST OF THE ELUSIVE OVENBIRD

THE OVENBIRD *Seiurus aurocapillus* is a common and familiar bird. During migration it is abundant and easily observed in thickets, woods, parks and gardens, and is one of the most numerous casualties in the autumn kills at TV transmitter towers. During the breeding season it is closely restricted to upland deciduous or mixed forests, and by virtue of its loud conspicuous song, can easily be perceived as one of the most numerous and characteristic birds of those communities. On the other hand, as every birdwatcher knows, the Ovenbird on its breeding grounds is notoriously wary and secretive. To actually see an Ovenbird at this season, or to find its nest, or to observe and study its behavior, is something that requires considerable time, persistence, patience and even hardship. Harry Hann who studied this bird in detail in the 1930's, (*Wilson Bulletin* 49:145-237, 1937) described one of the hardships: "The absence of intruders (in the woods) was due in no small degree to the mosqui-

toes which infested the woods. As a protection against these pests the writer wore thick clothing, leather gloves and a covering over the back of the head and neck, even in the hottest weather."

Despite such difficulties, the Ovenbird was selected for intensive study at the UWM Field Station for a variety of reasons. First, it is closely adapted in all respects—morphological, physiological, behavioral—to the upland forest environment, reaching maximum numbers in climax forests, such as the maple-beech forest which is under special investigation at the station. Second, because of its song it can be accurately censused and annual variations in numbers can be detected. Third, unlike most of the hard-wood forest birds, which spend most of their time in the tree canopy, the Ovenbird both nests and feeds on the ground, thus making it more susceptible to capture by mist nets or other trapping techniques. Although the nests are very hard to find, the breeding biology, such as egg-laying dates, clutch size, incubation periods, nesting success, etc., is potentially more conveniently studied than in tree nesting species. Fourth, its annual cycle of physiology is of special interest. It is a long-distance migrant with a pronounced fat cycle; the members of the population are very highly synchronized physiologically, e.g. all females begin their first nests within a few days of each other; the schedule of physiological events—spring arrival, fat depletion, breeding, gonadal regression and molting—is short and compressed in comparison with the sparrows and other birds whose cycles have been previously studied. Fifth, there are still some mysteries in the life history of the Ovenbird, the most notable being: where do the adults go at the end of the nesting period while they are molting? True, one can find Ovenbirds in the woods in late July and August, but on close examination virtually all of them turn out to be the young of the year. Hann thought the adults left the woods and began their southward migration in July, but analyses of birds killed at TV towers in September and October, and aging by skull examination of birds trapped in autumn, show conclusively that most adults migrate then, at the same time as the immatures.

Our study of the Ovenbird was begun in late June, 1965 after the main part of the nesting period. In 1966 and 1968 we were able to work one or two days a week during essentially the entire May-October period of residency, but in 1967 only during May and September. During this study we have attempted to trap, band and color-band all the breeding adults each year on a 30 acre portion of the forest. In this we have succeeded pretty well with males but not with females. The only way we have been able to trap females effectively has been by finding the nests and trapping the birds with a specially designed net as they enter or leave. Anyone who has ever tried to find an Ovenbird's nest can appreciate the inadequacy of this technique.

By means of sight identification of the color-banded males we have obtained much information on their movements, territory size and territorial behavior, and we have made population estimates for each of the four years. These are: 1965-8 territories, therefore presumably 16 adults on our 30 acre tract; 1966-10 territories, but one of the males was apparently unmated, there-

fore 19 adults; 1967-8 to 10 territories, based on a few late May observations; 1968-6 territories, presumably 12 adults, although in several cases we were unable to determine which females were mated with which males. The reason for the low population in 1968 is not known. Perhaps if we had been able to study the birds more thoroughly in 1967, with observations on nesting success, we would have some clue. Since 7 of the 12 adults in 1968 were returns from previous years it seems certain that adult mortality during migration or winter was not a factor.

In fact survival rates among our banded adult Ovenbirds are surprisingly high for so small an animal, in the neighborhood of 50% or more. This is in agreement with those found by Hann. In other words, about half the birds that nested in the area in one season lived long enough to return and nest the next year. As has been found in most songbirds the males showed remarkable faithfulness to territory site. Two of the 1968 males have now been observed for four breeding seasons and each has had almost the same territory each year. Two others have occupied the same territories during three breeding seasons.

We have accumulated some reasonably good data on the schedule of physiological events in the early part of the breeding season, e.g. depletion of fat after spring arrival, development and regression of the cloacal protuberance, development of incubation patch and time of egg-laying. But in respect to the later events, especially molting, we have failed miserably. We simply have not been able to solve the problem of where the adults go (and how to catch them) in the late summer. Our latest summer capture of an adult was July 27, 1968 and in all years very few were captured after July 10. On the other hand, we have recaptured four of our breeding adults in the month of September, confirming the TV tower evidence that the adults do not leave the general area until fall. Where do they go during the molting period? Is there a molt-migration such as occurs in some European ducks? Do they stay hidden in the tree canopy, forsaking their usual habits of ground feeding? It is hard for us to believe that they can become so wary and secretive as to elude us entirely during the many hours of hard and painstaking search that we have put in during the late summer.

Incidental to the Ovenbird study we have captured, banded and examined many other species of forest birds. In 1968 our captures of breeding birds (counting recaptures of the same individuals but omitting transient migrants) consisted of: Ovenbird 47, Wood Thrush 39, Blue Jay 29, Robin 23, Crested Flycatcher 21, Red-eyed Vireo 15, White-breasted Nuthatch 15, Scarlet Tanager 13, Downy Woodpecker 12, Hairy Woodpecker 10, Rose-breasted Grosbeak 10, Cowbird 9, Chickadee 9, Wood Pewee 5, Flicker 4, Cardinal 4, Ruby-throated Hummingbird 3, Acadian Flycatcher 1, Red-bellied Woodpecker 1. It should be noted that these figures do not reflect the population densities of these species, since the relative efficiency of mist nets for capturing them is extremely variable.

In addition to these, many migrants were caught in May and in September and October. Of particular interest was a female Summer Tanager caught on May 22, 1968. This southern species is only rarely recorded in Wisconsin.

Also of interest was the surprisingly early appearance this summer of several fall migrants. Swainson's Thrushes were trapped as early as July 19, and Purple Finches, August 3.

Students and others who have helped with this study are: John Barker, Don Morzenti, Paul Matthiae, Wallace MacBriar, Tom Pleyte, James Janke, and Dr. Robert Ficken.

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STAFF MEMBERS ATTEND PRAIRIE SYMPOSIUM

DR. SALAMUN AND DR. WHITFORD of the UWM Field Stations Committee and Botany Department, along with Arthur Ode of Boerner Botanical Gardens, who helped in the experimental seeding of prairie plants at the Cedar-Sauk unit, attended the Symposium on Prairie Research and Prairie Re-establishment at Knox College, Galesburg, Illinois, September 14 and 15. Dr. Whitford presented a paper on "Edaphic Factors in the Prairie-Forest Border," and Mr. Ode reported on his experimental establishment of prairie species at the Botanical Gardens, the subject of his thesis for his M.S. in Botany, UWM, January, 1968. The seeding at the Botanical Gardens was begun in the fall of 1965 and this year, in its third growing season, it had a truly impressive bloom of a number of species, indicating a good potential for direct seeding as a way of re-establishing or introducing prairie wildflowers and grasses for roadside beautification, state and local park areas, etc. Our seeding at the Field Station, in the field which slopes south and east toward the bog, was a year later and, since seed bed and weather conditions were not the same as in Mr. Ode's trial, we are not sure yet how successful ours will be. We plan a controlled burning of the Field Station prairie area early next April to discourage weed competition and hasten flowering of the prairie species.

The meeting at Knox College was attended by about 100 persons, including Dave Archbald, Managing Director of the UW Arboretum at Madison, who gave an excellent keynote address. Arrangements for food, lodging, field trip, and informal discussion were excellent; about 25 papers were presented on various aspects and methods of prairie species establishment and research in prairie biota, and the discussion and exchange of ideas were spirited and stimulating.

Copies of the Bulletin for those who are not already receiving it, may be obtained by writing to Dr. Millicent S. Ficken, UWM Field Station, Route 1, Box 216, Saukville, Wisconsin 53080.

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