

BIRD BANDING—IN PROGRESS AND PROSPECT.¹

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BIRD banding, as a method in ornithology has come to stay. Occupying a position with the shotgun, the field glass and the scalpel, it bids fair to become the court of last appeal in the determination of many facts concerned with the migration and life histories of birds. Under the direction of an internationally known Government scientific bureau, the banding of birds in America promises the detailed solution of many ornithological problems, and contributions of the utmost importance will be forthcoming to those interested in learning the complete life histories of the birds around them.

It is nearly six years since the American Bird Banding Association passed into history and its activities were taken over by the Biological Survey. During that time a wave of interest in this so-called "new" form of study has swept across the United States and Canada and has resulted in the organization of four separate associations, each having as its reason for existence, the betterment of the cooperation of exponents of bird banding who are operating within the limits of its territory. Two of these associations have begun the issue of bulletins, while the others have established banding departments in two of the leading ornithological journals.

In any consideration of what is being accomplished, it must be first remembered that this method differs from all others in that it approaches the problems from the individual aspect, that is, it begins its researches with individual birds, and works from them and through them to the solution of the general problems. It is axiomatic therefore, that the accumulation of useful data must progress slowly and much time must elapse before conclusive reports can be issued. Such caution is likewise demanded because of the very positive character of the data involved, the full sig-

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nificance of which can only be evaluated when additional data of like nature are secured. It is possible, however, at this time to present briefly a sketch of the work in progress and it is highly desirable that ways and means be found for extending these activities to the end that additional species may be brought within the scope of the banding method.

In outlining some of the results that have been made available, it seems expedient to treat first a few species of migratory waterfowl, for it is obvious that the first detailed reports will be based upon the returns from banded birds of this group. Last year, in the United States alone, over two and a quarter million hunting licenses were issued by State game departments. A large number of these hunters (unknown to themselves) are potential factors in collecting records from banded game birds and occasionally also from banded birds of other classes. The possibilities of returns of non-game species are limited by the fact that only about one thousand persons hold non-game bird banding permits and unfortunately not all of these are actually engaged in the operation of banding stations. It is true that occasionally a banded non-game bird of one of the smaller kinds is accidentally caught or killed and the facts reported, but it is apparent that the number of workers is greatly disproportionate in these two groups, and that station operators, potentially in the minority, are entitled to special commendation for the excellent results they already have obtained.

At the Cambridge meeting of the A. O. U. in 1923, the author presented a paper dealing with the migration of the Mallard, based on returns of banded birds received up to that time. Data since accumulated necessitate a thorough revision of the outline then made. The material to be incorporated consists of about 1,150 returns from a total of about 5,800 birds, banded chiefly in Illinois, Missouri, Louisiana, and Canada within a period of three years.

The banding work done in the vicinity of the mouth of the Yukon River, Alaska, in the summer of 1924, has yielded information of the greatest importance. About forty returns have been received from about 250 Cackling Geese clearly indicating a southward migration by way of Nelson Island, across the Alaska peninsula, through the Queen Charlotte Islands, to the coasts

of Washington and Oregon and thence to the interior and on southward to winter quarters in California at Tule Lake and in the Sacramento and San Joaquin Valleys. The greatly restricted winter range of this species as revealed by banding returns is a matter for serious thought by ornithologists and sportsmen.

Another species of waterfowl that has been banded in fair numbers at widely separated points, so that returns may be evaluated along more general lines, is the Blue-winged Teal. Over eleven hundred of these birds have been banded and there are at hand over 160 return records.

The study of the Black-crowned Night Heron that has been carried on for three years under the auspices of the Northeastern Bird Banding Association likewise is proving a fruitful investigation. Close to 4,000 young birds have been banded and about 100 good return records obtained. Many of these are from points far to the north of the breeding colony, showing the wandering that is indulged in by many Herons after the breeding season. In addition, there are recoveries from southern points including Florida, Cuba and Jamaica.

Other Herons also have been banded in fair numbers and are yielding returns, some of particular interest. A Snowy Egret banded at the Salt Lake marshes, Utah, during the past summer was recently killed on the Rio Grande near El Paso, Texas, while Reddish Egrets banded at Green Island near Brownsville, Texas, have been taken as far south in Mexico as the mouth of the Chumpan River, in the State of Campeche.

Cormorants, usually known in the duck country as "nigger geese," are supplying a surprising number of returns. The data at hand are all from birds of the double-crested species which had been banded in the Canadian provinces of Quebec and Saskatchewan. Only one return has thus far been received for a Quebec bird, and that one was killed on Long Island, New York, but four records of birds banded in Saskatchewan have been received within the last year. These birds were killed in Missouri, Texas, Louisiana, and Mississippi. A species that furnishes such indications of a large percentage of returns should receive further attention and this, it is hoped, can be given in another season. There also is an economic aspect to these data because the fish-eating habits of

Cormorants have brought them into disrepute in many parts of the country.

The work with Gulls and Terns has similarly been gratifyingly successful. Prior to July 1, 1925, over 1,800 Herring Gulls had been banded chiefly in the Great Lakes and on the North Atlantic coast, a number that was almost doubled by the campaign during the past season, through the auspices of the Inland Bird Banding Association. The number of returns is only 75 to 100, principally because these birds are non-game species protected by law and are therefore not frequently killed. These are obviously insufficient to warrant any general deductions, but they do nevertheless reveal certain features of decided interest, one of which is the entire lack of consistency in migration. Gulls are notoriously nomadic in habit, but it has been shown that certain European species, while wanderers to a considerable degree, do maintain more or less general lines of flight. As yet we have not been able to work out such lines for the Herring Gull in America.

The Caspian Tern seems to follow flyways that admit of accurate definition. Up to July 1 of this year, 1,049 birds had been banded, yielding forty-five returns. The figures of banding have been more than doubled by the past season's activities and the number of returns will accordingly be proportionately increased. Two southerly highways have been indicated by the returns received, one down the Mississippi Valley and the other down the Atlantic coast from Chesapeake Bay. These two routes may possibly unite in southern Florida and then continue to winter quarters in northern South America.

The case of the Common Tern is very different. Despite the fact that between 7,000 and 8,000 of these birds have been banded, only about twenty usable returns have been received, indicating that it will be necessary for coöperators to make special efforts to effect returns of these birds.

The Mourning Dove is of particular interest because of its peculiar position under the Migratory Bird Treaty Act. Its status as a migratory bird has been challenged on several occasions and it is therefore a matter of much import to state that there are now available in the bird banding files many records showing the extent of the migration of this bird. Many more should be banded

and it is particularly desirable that banding be carried out at the northern limits of its range, in southern Canada. Birds marked in Illinois have been taken in Louisiana, Florida, and Georgia.

Indications at this time point to early reports dealing with the different species of Grackles. Coöperators have been able to band about 2,000 of these birds, chiefly in Illinois, Indiana, Ohio, and Pennsylvania, from which about 200 returns have been received. In certain regions these birds constitute economic problems of no small importance and when present in large numbers, farmers frequently take drastic means for their control. This, of course, increases the probability of returns and also suggests a practical application of bird banding information that will be of the highest character. Among other interesting recoveries, mention may be made of a bird banded at Auburn, Alabama, on March 6, 1925, by Prof. Henry G. Good, and recaptured on May 2, 1925, at Pawnee City, in southeastern Nebraska.

The Flicker, while not yet productive of a large number of returns, usually yields data of more than passing interest. More than 1,200 have been banded, while the returns number 25, a little more than two per cent. There have, however, been returns of birds banded in Saskatchewan and recovered in Texas, indicating a migratory highway that will be of much interest when it is possible to fill in the gaps.

Among the Fringillidae there are four or five species that merit special attention because of their quick response to the trapping methods generally employed. Of these, the Song Sparrow stands first, the total number of individuals banded coming close to 10,000 and which have yielded about 500 returns or six per cent. Most of these data are from the Eastern United States, where this species has been a favorite at almost every station. The great bulk of the returns obtained are from the original station of banding, and, while there are certain migration indications, the extent of the movement has not yet been ascertained.

The migration of the White-throated Sparrow will doubtless supply many unusual features when sufficient data are available. About 6,500 of these birds have been banded, but many coöperators who annually trap large numbers of White-throats report no returns from bandings of previous seasons. This in itself may

be considered as an indication of an exceptional migration and one that should cause station operators to make special efforts to capture these birds in still larger numbers.

In California, studies of the movements of the White-crowned Sparrow and its races, the Gambel's and Nuttall's Sparrows, are receiving attention at many points. One coöperator, while doing field work recently in Modoc County, witnessed a heavy southward movement of these birds and was able to band three or four hundred. As these birds were apparently moving toward the region in the southern part of the state where many active stations are located, it would appear that there is an excellent possibility of obtaining valuable return records.

Two other fringilline species, the Purple Finch and the House Finch, are receiving attention in a manner that promises information of exceptional interest. These closely related birds have responded quickly to the inducements of the trapping station, and as a result over 8,000 Purple Finches have been marked, principally in Michigan and New England, and 2,500 House Finches have been banded around Los Angeles, Calif., which have yielded 470 and 121 returns, or six and five per cent respectively. Early in the development of the trapping station method, studies of plumage were strongly advocated by Dr. Charles W. Richmond, of the U. S. National Museum. These species seem to offer the best material for initial investigations of this character and it is a pleasure to report that the possibilities of such activities are being realized by several cooperators. A Michigan cooperator, recently reported that he had banded over 4,000 Purple Finches which have yielded 250 returns. Of these birds he has the most detailed notes which trace the transition of plumage from the first season on to the three or four year old adult. His work is being checked at stations in the New England states, principally by one at Peterboro, N. H. In California similar studies of the House Finch are well under way and we may look forward with assurance to the appearance of reports on the plumage of these birds that would not be possible were the investigations confined to the older methods.

Turning now to the work in prospect all subsequent remarks may be prefaced by the statement that it would be of the greatest importance if all those interested in these investigations would give

consideration to ways and means of bringing additional species within the scope of the banding method, and to methods of banding much larger numbers of individuals of the species selected. In the final analysis, bird banding depends for its results upon quantity production. In other words, in order to accumulate data more rapidly pertaining to a certain species, efforts must be so concentrated that great numbers of that species will be banded. This accumulation also will be in direct ratio to the ability of operators to retrap those banded or to other factors that bring about return information. The special investigations already begun should be continued and extended as far as possible, while steps should be considered for similar investigations with other species.

Other species of Gulls may yield data entirely different in character from those from Herring Gulls. European studies indicate that this may be confidently expected. The Laughing Gull has already received some attention, but there are large colonies on the south Atlantic and Gulf coasts that have not been touched. The same is true of the large colonies of Royal and Cabot's Terns of those regions. The Franklin's Gull of the interior also may be expected to yield interesting results and it is a pleasure to report that coöperators of the University of Alberta are making plans for extensive work next year with this species.

On the Pacific coast we already have had banded some Glaucous-winged Gulls, but there is opportunity for extensive operations with this species as well as with the California and Western Gulls. The Cormorants of that region should likewise receive attention.

Shore-birds, particularly the larger species, offer exceptional opportunities. The Biological Survey has been in communication with interested persons in Argentina, who will be on the lookout for banded Golden Plover or Yellow-legs, if they can be assured that a large number have been banded. These birds do not present a problem impossible of solution, as it is entirely a question of experimentation and an application of our boasted American ingenuity. It may be considered as a challenge, but one that can be accepted with confidence of ultimate success.

Another species for which information is badly needed is the Woodcock. This bird is not easy to secure and the coöperator

who can devise a successful method of capture will make a contribution of the utmost importance.

The Rails and the Diving Ducks likewise offer problems to the ingenious worker and they constitute important groups for which fuller information is greatly desired.

The Chimney Swift should by all means receive attention. During the fall migration of 1925, large numbers of these birds were banded demonstrating that it is entirely possible, for every cooperator living within the range of the species, to capture many of those breeding in the vicinity of his station. Since it has been found that in the migratory season whole flocks may be taken, there is great probability of numerous returns.

This applies likewise to the Purple Martin which can be taken and banded in large numbers if cooperators will give them adequate attention. It is a relatively simple matter to arrange Martin houses so that they may be raised and lowered on their standards and when equipped with nest box trap doors, which are now familiar to everyone, it should be possible to organize this phase of the work so that the members of many colonies will be wearing bands before the fall migration of 1926.

The Blue Jay and the Crow are species to which special efforts should be directed. Two or three years ago the Biological Survey urged the desirability of banding Blue Jays, as the facts concerned with their migrations are very imperfectly known. Many Jays have been banded and some valuable data are available, but not nearly enough to warrant the preparation of a report. The case of the Crows is one of economics, for they constitute a problem in some localities that is decidedly serious. But with all our knowledge, we still lack important facts that would be of the utmost importance in taking intelligent action with reference to their proper control.

The species mentioned are suggested for special study because of their importance economically or because a start has already been made in that direction. And it is highly desirable that everyone interested in bird banding give this matter serious attention, and offer suggestions for the further development of our activities.

In conclusion, it is pertinent to direct attention to the important

contributions to knowledge that may be made at every bird banding station through intensive effort with one or more species. The researches of Mr. S. Prentiss Baldwin with the House Wren are excellent examples of this character and should be followed up by similar work at other points. This field, which is more directly concerned with life histories, is practically unexplored and can be depended upon to furnish a wealth of new and valuable information.

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