

SOME FEDERAL CONTRIBUTIONS TO BIRD
CONSERVATION DURING THE
PERIOD 1885 TO 1960

DANIEL L. LEEDY

THE year 1960 may be regarded as the 75th anniversary of the entry of the government of the United States of America into the field of bird conservation. Since the first appropriation of \$5,000 for fiscal year 1885 and the original federal unit to carry out a program of ornithological research were due, in large measure, to the influence of the American Ornithologists' Union, it seems fitting to review some of the contributions made to bird conservation by the federal government in the intervening 75 years.

It will be recalled that the Union was organized as an offshoot of the Nuttall Ornithological Club on 26 September 1883. Three committees were formed at its first "Congress" (Cameron, 1929). These committees dealt with the English sparrow, faunal areas, and bird migration. The latter two committees were merged to form an active committee on the migration and geographical distribution of North American birds. It was this committee under the chairmanship of Dr. C. Hart Merriam that prepared a memorial to Congress advocating the establishment of a division of economic ornithology under the U.S. Department of Agriculture; and it was Dr. Merriam, together with his assistant, Dr. A. K. Fisher, who initiated the government's program in bird conservation.

Although the initial studies of food habits and migration in relation to insects and plants were of direct concern to the Division of Entomology, where the work was conducted, the economic status of mammals also was recognized as being important. Accordingly, independent divisional status was given to the investigations of birds and mammals by creation of a Division of Economic Ornithology and Mammalogy on 1 July 1886. During these early years of federal participation in studies of wildlife conservation, members of the American Ornithologists' Union contributed many important observations.

The first bulletin of the new Division was *The English Sparrow (Passer domesticus) in North America*. This 405-page, illustrated work by Walter B. Barrows was published in 1889. In the words of Dr. E. R. Kalmbach, who himself later reported on the analysis of 8,004 English sparrow stomachs (Kalmbach, 1940), Barrows' bulletin ". . . long has been looked upon as a classic among contributions to economic ornithology. Its pages chronicle a history and appraisal of

the economic worth of the English sparrow that can be found nowhere else in the literature of American ornithology."

This publication by Barrows proved to be the forerunner of many well-known publications on investigations of food habits that constituted an important and valuable part of the federal wildlife research program until 1942, when appropriations for this activity were terminated.

Although the food habits of some of the birds, especially adult English Sparrows, were found to be detrimental to man's interests, others were judged to be beneficial. Thus, in transmitting Bulletin No. 15 of the Biological Survey to the Secretary of Agriculture on 3 July 1901, Dr. Merriam stated, "Sparrows are notorious seed eaters, but the precise nature of their food and its effect on agriculture have not hitherto been known with any degree of accuracy. This report, based on extended field observations and an examination of 4,273 stomachs of sparrows, brings out clearly the extent to which several native species feed on seeds of noxious weeds, and shows the value of these birds as weed destroyers." He was speaking of Dr. Sylvester D. Judd's (1901) manuscript on "The Relation of Sparrows to Agriculture," in which the food habits of native sparrows were compared with those of English Sparrows.

Other examples of reports dealing with birds' food habits or with the identification and management of plants utilized as food by birds are publications by Aldous (1942), Beal (1933 and 1936), Cottam (1939), Jones (1940), Judd (1902), Kalmbach (1920 and 1940), Martin, Zim, and Nelson (1951), Martin and Uhler (1939), McAtee (1931 and 1939), Metcalf (1931), and Sperry (1940).

In the later years of food-habits investigations by the Bureau, increased emphasis was given to correlation of food consumed with food available in a given area. Also, increased attention was placed on studies designed to provide information basic to the better management of desirable game species.

In conducting these investigations of food habits, extensive collections of vertebrates, invertebrates, plants, and seeds were assembled and filed systematically for identifying food items. These collections are still intact and available for use when circumstances warrant additional investigations.

During the period 1896 to 1906 extensive biological explorations assumed increasing importance. Subsequent to the initiation by Dr. Merriam of his "biological survey" in northern Arizona, out of which developed his life-zone concept, the Division of Ornithology and Mammalogy became the Bureau of Biological Survey on 1 July 1905. In 1940 the Bureau of Fisheries, whose origin dates to the founding of

the U.S. Fish Commission in 1871, and the Bureau of Biological Survey were merged as the Fish and Wildlife Service in the Department of the Interior. The Fish and Wildlife Act of 1956 provided for an Assistant Secretary of this Department for Fish and Wildlife, an Office of the Commissioner of Fish and Wildlife, and two Bureaus, the Bureau of Commercial Fisheries and the Bureau of Sport Fisheries and Wildlife. The latter Bureau encompasses the current wildlife activities described in this paper.

The principal interest of the A.O.U. in the work of the Biological Survey has been in the field of bird distribution and migration. A *Report on Bird Migration in the Mississippi Valley in the Years 1884 and 1885* by Professor Wells W. Cooke was issued as Biological Survey Bulletin No. 2 in 1888. Professor Cooke joined the staff of the Division 1 July 1901, and was responsible for beginning the card file on the distribution and migration of North American birds that continues to be the "court of last appeal" for students in this field. Until his death in 1916 Professor Cooke was a prolific writer on the distribution and migration of North American birds, a long list of publications in the Department of Agriculture series attesting to this fact. All five editions of the A.O.U. *Check-list of North American Birds* draw extensively from this file, which also has been the primary source of data for the distribution and migration sections of the well-known bulletins of the U.S. National Museum by Arthur C. Bent on the *Life Histories of North American Birds*. The file now contains nearly three million cards. Results of the biological surveys and exploratory trips, which have extended from Argentina and Chile to Canada and Alaska, have been published in the North American Fauna series started in 1889, and in technical bulletins. In connection with the life-zone mapping and field explorations, which have taken into account animals in relation to vegetation and climate, considerable attention also has been given to taxonomic studies on birds and mammals. The identification and loan of specimens continue to constitute valuable services to ornithologists throughout the country.

Requests for assistance in reducing or preventing crop depredations by injurious birds and mammals resulted in research for the development and demonstration of damage-control techniques. These activities became an important part of the Bureau program and remain so until this day.

Early in the century the protection and management of migratory birds became an important function of the Bureau and one of profound interest to many citizens, including nature lovers, sportsmen, and conservationists. Laws regulating wildlife came into being, and new pro-

grams of law enforcement and migratory bird research were started. The concept of protecting wildlife through establishment of Federal Wildlife Refuges became a reality. The Lacey Act of 25 May 1900, as amended, outlawed the commercialization of game and excluded the importation of certain birds and mammals that would be injurious to agriculture or horticulture. Although the execution of that part of the Act dealing with importations was given to the Treasury Department, the Bureau of Sport Fisheries and Wildlife frequently is called upon to identify or provide information regarding proposed imports. The Bureau also has enforcement responsibilities for that section of the Lacey Act regulating the interstate shipment of game, for the migratory bird treaty acts, and for the Bald Eagle Act of 1940. Currently, the Bureau has 138 game-management agents whose major responsibility is the enforcement of federal migratory bird laws and regulations. Also, these agents make valuable contributions to bird management and conservation by conducting annual population surveys of migratory game birds and by aiding in bird-banding programs, thus helping to provide information useful in establishing the annual hunting regulations.

Work in bird banding, which, previously, had been conducted by the American Bird Banding Association, was taken over by the Bureau in 1920. Issuance of bands and the maintenance, processing, and analysis of banding records are handled by the Bureau's Branch of Wildlife Research. This clearing house for bird-banding activities has been important in standardizing and facilitating the gathering of valuable data on longevity, migration routes, effects of hunting, and other factors on migratory birds. Records of 11 million banded birds are on file at the international bird-banding laboratory located at the Patuxent Wildlife Research Center, Laurel, Maryland. Ornithologists throughout North America contribute to the banding efforts and, in turn, receive information from the laboratory. A fire on 13 June 1959 destroyed many of the card files but fortunately not the original banding records. The IBM cards are being reconstructed, and soon they will be recorded on magnetic tapes for ease in reproducing them in the future as need arises. This should facilitate materially the problem of analyzing the data now in the band-recovery records.

An important step made possible by bird-banding records and observations of birds during migration was the development of the flyway concept of waterfowl management. The four great flyways, Atlantic, Mississippi, Central, and Pacific, described by Lincoln (1935a, 1935b, and 1950), have served, since 1948, as the basis for the formulation and administration of annual hunting regulations. More recently, banding data have indicated the feasibility of establishing three geographic

management units, Eastern, Central, and Western, for the Mourning Dove (Kiel, 1959). Also, band recoveries are being used increasingly to make annual and shooting mortality estimates for waterfowl. Thus, Geis (1959) calculated that the annual rate of mortality of immature Canvasbacks during the first year was 77 per cent. Annual mortality rates of adults of this species ranged from 35 to 50 per cent. Hunting was estimated to account each year for more than one-half the deaths of Canvasbacks of flying age. His comparison of band-recovery rates in years of different hunting regulations showed that both season length and daily bag limit affected the hunting kill.

The Bureau has made important contributions to bird conservation through its system of National Wildlife Refuges and its wetland management program.

Just as the American Ornithologists' Union had urged the initiation of a federal unit in bird conservation work, so, also, did it support the establishment of the first National Wildlife Refuge, that of Pelican Island off the Florida coast on 14 March 1903. This bird reservation, as it was then called, was especially valuable in reducing the heavy plume traffic that existed in that area. With the help of refuges and the protection of migratory-bird treaty regulations, the egrets and herons have made a remarkable comeback. Additional refuges both for birds and big game have been established since then, until now the Bureau has 275 refuges totaling about 17,500,000 acres of land and water. The 1958 amendment to the Migratory Bird Hunting Stamp Act assures that the net proceeds from the sale of the duck stamps will be used for the acquisition of additional land.

Refuges have been especially valuable in providing critical wintering and/or breeding habitat for such endangered species as the Whooping Crane and the Trumpeter Swan. The story of the Bureau's successful efforts in protecting and managing the few Trumpeter Swans that remained in the United States in 1930, so that today the species appears to be well on its way to recovery, is told by Winston E. Banko (1960). Although recovery of the rare Whooping Crane has not been so successful, the species has responded to the protection afforded it, and as of 1959-1960 there were 33 wild birds compared with 14 when the Aransas National Wildlife Refuge on the coast of Texas was established in December 1937.

Two other programs within the Bureau have made important contributions to bird conservation since the 1930's: the Federal Aid in Wildlife Restoration program established through an act (50 Stat. 917: 16 U.S.C. 669) approved 2 September 1937, and the Cooperative Wildlife Research Unit Program initiated in 1935. Under the Federal Aid

program, expenditures and/or obligations for waterfowl research and land acquisition, and for development, operation, and maintenance costs related to these waterfowl projects from 1 July 1938 to 30 June 1959 amounted to \$66,593,039. The federal share for these activities amounted to \$49,944,779. In addition, much research has been done on resident game birds through this program.

The Cooperative Wildlife Research Units, of which there are 16 located at land-grant colleges, are supported by the Bureau of Sport Fisheries and Wildlife and the Wildlife Management Institute in conjunction with the Fish and Game Departments and state colleges or universities of 16 states. These Units have facilitated the training of wildlife biologists and have conducted a great deal of research on birds and other wildlife resources. Publications resulting from this research now total more than 3,000. Many of the Unit School graduates, now more than 3,200, hold responsible positions in state, federal, and private conservation organizations.

Mention should be made here, also, of some of the Bureau's research on bird diseases and the effects of pesticides on bird populations. Alexander Wetmore (1918) was one of the early workers to report on "The duck sickness in Utah." Wetmore's work was followed by intensive studies by C. C. Sperry (1947) and Kalmbach and Gunderson (1934), who definitely established that "duck sickness" is a form of botulism caused by *Clostridium botulinum* type C. From these and later studies, remedial measures, including water-level manipulation, "hospitalization," and antitoxin therapy, were developed. These management techniques have been of considerable value to bird conservation. Current botulism studies by the Bureau indicate a possible relationship between populations of invertebrate bottom fauna of marshes and the severity of botulism outbreaks. Other current disease studies by the Bureau are concerned with aspergillosis (Herman and Sladen, 1958), fowl cholera, and other diseases of waterfowl, and with trichomoniasis and fowl pox in doves.

With the increased use of chemical pesticides throughout the country and by direction of Public Law 85-582 passed in 1958, the Bureau has stepped up its research on the effects of pesticides on wildlife. One of the objectives of this research is to aid in the development of materials and application techniques that will minimize losses of birds due to the use of pesticides.

It is beyond the objective and scope of this paper to summarize the research findings or to compile a complete list of publications resulting from Bureau research on birds and related subjects. The two volumes of *Wildlife Abstracts* and 97 issues of *Wildlife Review*, which have

been published since this abstracting service for wildlife management was initiated in 1935, list most of the works by Bureau personnel during the last 25 years, including nongovernment publications. It suffices to state here that many thousands of pages of printed material based upon Bureau studies or cooperative projects have appeared on bird conservation. A large proportion of the briefer, technical articles have been published in professional journals such as *The Auk*, *Bird-Banding*, *Journal of Wildlife Management*, *Condor*, and *Wilson Bulletin*. Among the larger works dealing with birds are at least 19 books and eight numbers of the North American Fauna series of publications.

CONCLUSIONS

Much has been accomplished for bird conservation in the 75 years since Dr. Merriam reported for duty as Economic Ornithologist in the federal service. We can take a measure of satisfaction in knowing that we have good migratory bird conservation laws, as well as both federal and state organizations to enforce those laws. We can take pride in our system of National Wildlife Refuges and in our far-reaching Federal Aid in Wildlife Restoration program, which enables the states to develop and maintain effective programs of wildlife management and conservation. We can take satisfaction in the fact that the needs of fish and wildlife are being considered today through a Branch of River Basin Studies in developing our major river basins for power, flood control, and recreation. It is encouraging, also, to realize that our national appreciation for the values of birdlife, and, indeed, wildlife in general, has progressed to a level whereby these animal resources are regarded today as important assets on National Forests, National Grasslands, and National Parks. Last, but surely not least, we can bolster our confidence to some extent in the knowledge that we are continuing the fine example set in Merriam's time of relying on research to contribute needed new information to our store of knowledge about birdlife. This is vital if we are to do a better job of bird conservation in the future.

Gratifying as the foregoing developments and accomplishments are, it must be emphasized that we cannot afford to rest on the gains of the past. The task of maintaining these gains, and the challenge of meeting the new bird conservation problems that will arise in the future will require our best continuing efforts. It is well to realize that we are a rapidly expanding nation and that our human population may double by the turn of the century. Such expansion will bring many new problems for bird conservationists. Will we be prepared to meet and solve them?

The voice of the A.O.U. was prominent in the inauguration of bird conservation as a necessary federal activity, and the continuing active interest and concern of the A.O.U. membership in federal bird conservation affairs will help in building and sustaining the kind of programs that will be needed to meet the migratory bird conservation problems of tomorrow.

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Branch of Wildlife Research, Bureau of Sport Fisheries and Wildlife, U.S. Fish and Wildlife Service, Department of the Interior, Washington 25, D. C.