REPORT OF THE COMMITTEE ON BIRD PROTECTION, 1963*

OUR environment is almost completely dominated by man. We once accepted human dominance of fertile lands with the thought that the cultured landscape was still rich in wildlife. Now vast areas are being sterilized by asphalt and the remaining lands are intensively managed. If wildlife is to have a place under such a system, then the needs of wildlife must be recognized in both the planning and the execution. Proper assessment of these needs requires an omnipresent ecological eye. We are confronted with such cases as the wetland reported from one urban plan, marked "bird sanctuary, to be cleared, levelled and filled with clear fill"!

In the face of this attitude, bird protection must continue to adapt and take new forms, both of aggressiveness and vigilance.

PRESERVATION OF THE EVERGLADES AVIFAUNA

Because the A.O.U. met in 1963 in a region of special ornithological interest, it is appropriate to review the Everglades preservation problem and the status of rare and local species in south Florida.

Nature lovers may assume that national park status assures that the Everglades will be a permanent sanctuary for birds. Regrettably, shooting has been superseded by a hazard which is far more dangerous to the avifauna and more difficult for administrators—the destruction of habitat.

Preservation of the wetland habitat of herons, ibises, and other marsh birds in southern Florida is undoubtedly the major problem. Everglades National Park shares control of these marsh lands with the State of Florida, the U. S. Fish and Wildlife Service, and the National Audubon Society. The common concern of these agencies is to maintain enough fresh water against the competing water demands of the rapidly increasing human population and booming industrial and agricultural developments. So-called flood control works being built by the U. S. Army Corps of Engineers are designed ultimately to control the movement of water in the entire Kissimmee River—Lake Okeechobee-Everglades watershed. These works have been under construction for some 15 years, and new projects have proliferated to meet new demands of expanding urban areas.

In over-all planning, wild marsh lands have been regarded as convenient places to dump surplus water and generally have been ignored when water was in short supply. To some extent the various wildland areas are themselves in competition for water. The problem is most acute in Everglades National Park because the area lies at the seaward end of the drainage. Since the completion of levees along the Tamiami Trail early in 1963, the flow of surface water into the Park from the north has been

* An abridged version of the report rendered to Council.

virtually eliminated. Structures permitting release of water into the Park exist, but to date no agreement has been reached on a schedule of water releases.

The National Park Service currently is supporting studies by the U. S. Geological Survey and the University of Miami Marine Laboratory that are designed to define more precisely the amount and seasonal distribution of fresh-water inflow needed for ecological maintenance of the area.

There is some reason to doubt that agreement will be possible even if the Park Service is able to present realistic requests. This is due in part to a reluctance to consider the needs of wild lands, but in part also to wide rainfall fluctuations and the difficulty of impounding water in the Everglades because of rapid losses through evaporation, transpiration, and seepage. It is also becoming apparent that any agreement reached today may not be binding a few years hence. If south Florida population projections are approximately correct (and so far population increase has tended to run *ahead* of projections), within a period of 20 to 30 years the water demands of the human population will begin to press the limits of the readily available supply. It seems possible that in the long run Everglades Park may be compelled to make do with local rainfall alone, and that the Park Service will be forced to undertake large-scale water management measures.

Given ample water the Everglades system has great power of recovery. The period of 1958–1960 was marked by generally high water levels in the southern 'glades. The effects upon marsh bird populations were revealed in dramatic fashion when severe drought followed in 1961–1962, bringing unprecedented concentrations of some species, such as up to 800 Limpkins (*Aramus guarauna*) gathered in a small area of marsh. The Wood Ibis (*Mycteria americana*) population, reduced to the danger level in the mid-1950's by repeated nesting failures, also recovered substantially during 1958–1960. The future course of marsh bird populations in southern Florida is likely to be characterized by even wider fluctuations as the birds are forced to depend upon more restricted feeding areas.

Rare Species in Southern Florida and Vicinity

Great White Heron (*Ardea occidentalis*).—Studies have included frequent aerial counts of the two major populations in Florida Bay and on the Lower Florida Keys. The stable population in these areas is about 1,500 individuals (900 are in Florida Bay). No evidence exists to suggest that the population was ever larger. Threatened only 25 years ago, the species today is thoroughly secure. Virtually all the range is protected from hunting and major ecological threats. Hurricanes are the only natural catastrophe to which the population is exposed.

Reddish Egret (*Dichromanassa rufescens*).—The Florida population is largely limited to Everglades National Park and for many years no nesting has been reported in

Florida except from the Florida Bay section of the Park. The population there has been slow to respond to protection and now numbers no more than 250 individuals. Factors limiting its increase are not known. Careful study of the biology of the species in Florida Bay is needed.

Roseate Spoonbill (*Ajaia ajaja*).—As with the Reddish Egret, the only known breeding population of the Roseate Spoonbill in Florida is in Florida Bay. This group of spoonbills apparently migrates into the area in late fall to nest (November–March) and then returns to the West Indies, but its movements are not well understood. The flock has increased slowly to a peak of possibly 350 breeding pairs in the 1962–1963 season. These birds formerly fed to a large extent along the main Florida Keys, areas now threatened by real estate development. In recent years, the population center has shifted northward and westward in Florida Bay and it seems likely that spoonbills can persist entirely within Everglades National Park.

Although nearly 30 years have passed since the last known nesting of spoonbills in the lower Gulf Coast of Florida, recent winter observations of up to 250 adult birds in the Cape Sable region suggest that the species has survived and increased in some unknown nesting locale. Re-study of the Florida populations to supplement Robert P. Allen's classic work of a generation ago is badly needed.

American Flamingo (*Phoenicopterus ruber*).—This species has enjoyed a number of favorable breeding seasons under careful protection. Three populations remain: one in the southern Bahamas, one in Yucatan, and one in the southern Caribbean centered on the island of Bonaire. The Bahama flock nesting on Great Inagua had 6,149 nest mounds in 1963. The Yucatan flock consists of about 3,000 nesting pairs, and the southern Caribbean group of at least 1,500 pairs.

Everglade Kite (*Rostrhamus sociabilis*).—A tiny remnant has survived, principally in the marshes within Lake Okeechobee. A nest located in the western part of the lake in March, 1963, failed, apparently because of Boat-tailed Grackle (*Cassidix mexicanus*) predation on the eggs. Loxahatchee National Wildlife Refuge Manager William Julian saw at least seven kites—two pairs of adults on 18 April 1963 and three adult males, one adult female, and two immature males on 25 April. Five nests in various stages of construction were found; later, two of them contained eggs or young. However, the one apparently successful nesting resulted in a single fledgling last seen in mid-July at two weeks of age. Survival of the Everglade Kite in Florida depends on an adequate area of permanently flooded marsh but the birds seem to be able to move relatively long distances between areas of favorable habitat. Introduction to Florida of Everglade Kites from some of the still abundant populations of tropical America has been proposed. Inasmuch as the present difficulty is inadequate habitat in Florida, such measures seem to be ill-advised.

Bald Eagle (*Haliaeetus leucocephalus*).—The continent-wide survey of Bald Eagles by the National Audubon Society indicates that a decline of this species, as well as the Golden Eagle (*Aquila chrysaetos*) and perhaps most large raptores, is continuing. Reduced nesting success is evident over most of the range of the Bald Eagle, ranging from an almost normal 57 per cent success in Florida to a disastrous 16 per cent in New Jersey and the Middle Atlantic states. (A five-year study by one of us [Robertson] revealed that, in south Florida, young were fledged from approximately 45 to 60 per cent of the active nests and the average production of young per successful nest was 1.4 to 1.6.) The reasons for reduced nesting success are not well understood, but pesticides may be involved. In 1962, the U. S. Fish and Wildlife Service analyzed 27 eagle carcasses and found measurable amounts of DDT or its metabolites in all but one. Three eagle eggs from New Jersey which failed to hatch also contained DDT

residues. In 1963, two unhatched eggs from Missouri showed traces of DDT. Winter surveys indicate that probably 5,000 Bald Eagles are present during January in the contiguous 48 states. The Alaskan population has not been censused.

Sooty Tern (*Sterna fuscata*).—Banding at Dry Tortugas, undertaken by the National Park Service with the Florida State Museum and the Florida Audubon Society, has begun to shed light on the movement and demography of this population.

Continental Avifauna

Waterfowl.—On the whole, prospects for waterfowl are more cheerful than in mid-1962. Surface moisture conditions are better in the Dakotas, Manitoba, and the northern part of the breeding grounds in Alberta and western Saskatchewan, although the southern areas of the latter two provinces are still dry. Rather good rains have fallen over much of the northern plains and water levels are holding up.

According to the U. S. Fish and Wildlife Service, breeding population surveys show slight to moderate increases from last year in most areas in which there is appreciable water. North Dakota, South Dakota, and western Minnesota are in the best shape, from the water standpoint, that they have been in for several years, and the duck population shows a substantial increase over the five-year period 1958–1963. However, breeding populations of all species are still below the 10-year average for the prairies.

Rare Species

Whooping Crane (*Grus americana*).—Little information can be added to that which has been rather widely disseminated. In December, 1962, 32 birds were counted on the wintering grounds in the Aransas-Matagorda Island area. Subsequently, four cranes were either lost or wandered away from the normal range. To date, no information has been received on nesting success in Canada.

The arrangement whereby the first eggs laid by the captive pair of whoopers in the New Orleans Zoo were to be turned over to the U. S. Fish and Wildlife Service for incubation has not met with success. The parent birds destroyed the first three eggs laid and only one was rescued for incubation, but it failed to hatch.

Ivory-billed Woodpecker (*Campephilus principalis*).—Reports persist of recent occurrences of Ivory-billed Woodpeckers in the Big Thicket area of east Texas, near Ocala, Florida, and in western Louisiana. Attempts to verify a sight record of an Ivory-billed in South Carolina failed, but the circumstances seemed to warrant an attempt to secure protection for the area.

Trumpeter Swan (*Olor buccinator*).—It is currently estimated that between 1,000 and 1,500 Trumpeter Swans breed in Alaska and about 600 in the other 48 continental states. The former includes the group on the Kenai Peninsula, a population at the headwaters of the Kuskokwim River, and one in the Copper River area. A population on the Grand Prairie of Alberta is estimated at more than 100 birds, and there are scattered pairs in Saskatchewan. A total of 513 swans was counted last autumn (1962) in the Red Rocks Lakes—Yellowstone area. Trumpeter Swans that have been moved to Malheur in Oregon, Ruby Lakes of Nevada, and the National Elk Refuge in Wyoming have all produced young. Three pairs nested at Malheur in 1963, and pairs have been nesting at Ruby Lakes and the National Elk Refuge. Two pairs nested

at the LaCreek Refuge in South Dakota; one pair produced four young and incubation was still in progress at the other nest at last report. This is the first time in more than half a century that wild Trumpeter Swans have been hatched anywhere in the United States east of the Rockies. With small breeding populations established at several points in the United States, and particularly in the former major nesting area of the prairies, it appears that a significant step in providing additional safeguards for the species has been taken.

Nene or Hawaiian Goose (*Branta sandvicensis*), and Hawaiian Duck (*Anas wyvilliana*).—An introduction of 35 of the former to the Hawaiian Volcanoes National Park on Maui included 30 birds donated by the Wildfowl Trust of Slimbridge, England (with transportation financed by the World Wildlife Fund) plus five birds from the propagation station of the Hawaii Fish and Game Department. The birds were doing well according to last report. A similar attempt to increase the population of the Hawaiian Duck has been started with the aid of the World Wildlife Fund.

Wetlands

The Canadian Government has begun a program of management to preserve and improve waterfowl habitat. Easements are being taken on wetlands, and a public information project is under way. Valuable wetlands are also included in initial purchases being implemented jointly with the provinces, under the Agricultural Rehabilitation and Development Act.

The wetlands acquisition program was accelerated in the United States during 1963, although only Duck Stamp money was available.

In 1962, 16,649 acres were secured, either outright or by easement, in North Dakota, South Dakota, and Minnesota, and total purchases for the year included 35,564 acres. Up to 31 May 1963, some 22,000 acres of wetlands had been obtained in North Dakota, South Dakota, Minnesota, and Nebraska, and another 5,800 will be added by 30 June. In this same year the total land acquisition outside of this north-central area has been 43,675 acres, with approximately 14,500 additional acres to be optioned before 1 July. This makes a 1963 total, either acquired or under option, of 66,111 acres plus an estimated 20,300 acres to be under purchase agreement by 1 July. Acquisition in the critical region of North and South Dakota will continue at a slow pace until some method of at least partially compensating for lands taken off the tax rolls can be worked out.

The Pesticide Problem

We think that the most urgent single, contemporary problem in bird protection is that posed by the high susceptibility of hawks and eagles to modern insecticides. We consider that the late Rachel Carson's statement of the poisonous character of these substances, and the dangers inherent in their persistence in the soil and accumulation in animal tissue, is not exaggerated.

There is evidence that hawks and eagles are highly susceptible and less

resistant than most other species. At the same time we are confronted with alarming declines in the numbers of raptores simultaneously in various parts of the world. It is the belief of your committee that much evidence indicates that certain, if not all, raptors are faced with a menace that could bring about their extermination.

During the past year we have witnessed some encouraging improvements in the pesticide situation, as well as discouraging continuations of past destructive methods. The Federal Pest Control Review Board, with representatives from the departments of Agriculture, Defense, Interior, and Public Health, has, after a slow start, reviewed some of the large-scale federal programs (e.g., fire ant control) and recommended modifications that take wildlife and human health into consideration. The President's Science Advisory Committee has taken an even stronger stand, demanding more careful review of existing programs, more research, and stricter controls over the use of all dangerous pesticides. In addition, several states, notably Massachusetts, Illinois, and Wisconsin, have set up coordination committees, with wildlife and/or natural areas interests represented, to discuss pesticide problems within their respective boundaries.

Following are specific comments on some pesticide programs.

Fire ant program.—The Federal Pest Control Review Board deliberated on the controversial fire ant program. After much criticism, heavy aerial application of heptachlor and dieldrin (2 lb/acre) was largely abandoned in favor of lighter dosage (¼ lb/acre in two applications). Now a new technique, the use of poison baits containing mirex, which is relatively nontoxic to birds and mammals, is being employed. At this point, however, we have little information on the efficacy of the newer methods.

Dutch elm disease.—The continued spread of Dutch elm disease in the Great Lakes and Mississippi Valley states has been accompanied by increased attempts at control. The usual method (spraying of the elms with high dosages of DDT) has been exceedingly destructive to Robins (*Turdus migratorius*) and other ground feeders, and to some extent to other types of birds, even including predatory birds which die of secondary poisoning. Reports of heavy mortality including at least 80 different species of birds have now been well substantiated. More and more communities are reporting losses of birds following use of DDT.

Some changes in programs have been suggested as a means of reducing bird losses, but most have been relatively ineffective. Foliar sprays, probably of little use in control of the disease, have been largely discontinued in favor of dormant sprays; these may spare birds such as foliage gleaners (warblers, vireos, orioles) if applied in the fall or early spring. Unfortunately, the frequent overlap of late spraying and spring migration which is delayed by inclement weather continues to affect many late April or

May migrants in the northern states. The present trend toward fall spraying is a further safeguard for birds, but it affects bark foragers (woodpeckers, nuthatches, and chickadees) and results in sufficient accumulations in the soil and in earthworms to be toxic to ground feeders the next spring. Conversion from hydraulic sprayers to mist blowers has not prevented high mortality to birds.

An increasing number of communities are changing to methoxychlor, which is relatively non-toxic to birds. Several communities in Illinois and Wisconsin are already using methoxychlor, and committees have been formed at the Illinois Natural History Survey, University of Wisconsin, and Michigan State University to study further use of methoxychlor. However, the widespread presence of DDT from previous applications in the environment and in the livers of birds, where the methoxychlor is supposed to be detoxified, may largely nullify this advantage. How long mortality will persist after use of DDT ceases is unknown. Although DDT and/or methoxychlor apparently give some immunity to thoroughly sprayed trees, they do not control bark beetles and may even encourage the spread of the beetles by destroying natural control agencies such as birds. To date the most effective control seems to be thorough sanitation. If sanitation really works, many millions of dollars have been spent in largely useless spraying programs with high losses of valuable wildlife.

Japanese beetles.—Control programs for Japanese beetles with aldrin, dieldrin, or heptachlor, initiated in Illinois in 1954, have been continued in that state and in Indiana and Michigan, in spite of the proven losses of wildlife in the original Illinois program. The application of aldrin over some 31,000 acres in southeastern and southwestern Michigan in the fall of 1959 caused a loss of 20,000 vertebrates according to estimates by biologists of the Michigan Department of Conservation. In addition, aldrin toxicity in the soil was inadequate for killing the larvae.

Failure of the 1959 Michigan program to control the beetles precipitated further sprayings. In the fall of 1962, another 80,000 acres, including considerable overlap of earlier sprayings, were treated with dieldrin. To date (July, 1963) about 500 dead vertebrates, mostly fall kills but some from winter and spring, have been found and samples are being analyzed.

Gypsy moth.—The gypsy moth has been the target of various control measures in this country for about 75 years. The ambitious "eradication" program carried out in the eastern states in the late fifties failed to accomplish its mission and most subsequent programs have reverted to the spot treatments of "pre-eradication" days. Work on critical outbreaks, using one-half lb of DDT/acre (half the dosage used in the large-scale operation in the late fifties) has not been known to be destructive to bird life. Although Sevin is fatal to bees and some other invertebrates, it is

much less toxic to warm-blooded vertebrates than DDT, and is being used in some areas. It has a depressive effect on reproduction in birds, but apparently only at dosages higher than those used in the field.

Perhaps the largest-scale treatment of the year (with DDT for gypsy moths) was the 125,000-acre coverage of parts of the Connecticut Valley in Massachusetts. Attempts to promote another large-scale "eradication" program in New York State apparently failed.

Mosquito.—Large-scale aerial treatments, often severely criticized after a few trials, have been partly replaced by ground programs including sanitation of potential mosquito breeding sites and spot treatment of catch basins and other trouble spots. Probably such localized treatments have little immediate effect on higher vertebrates, but habitat and food-chain changes and other ecological relationships are little known.

Cereal leaf beetle.—A new pest-control problem is posed by the introduction of the cereal leaf beetle in southwestern Michigan and Indiana, probably through the St. Lawrence Seaway. In Michigan sevin and malathion are being sprayed by planes over considerable acreages of grain fields and grassland. A team of research entomologists and wildlife biologists is assessing the results, but unfortunately these are post-mortem studies. There seems little hope of eradicating the pest.

Direct Control of Birds

Airports and flyways.—Increasing air traffic and the spread of jet planes aggravate the problem of collisions between birds and aircraft. Even more serious is the matter of birds congregating on or over airport runways. Several Federal agencies and many communities with airports are studying methods of eliminating or reducing these hazards. Making airports unattractive generally to birds may be more effective than slaughter.

Grain-feeding birds.—Perhaps the most serious current control problems concern grain-feeding birds. At least six roosts along the east coast, and others in the interior, each contain more than a million Red-winged Blackbirds (*Agelaius phoeniceus*); some larger aggregations number 10 million or more of these birds. The U. S. Fish and Wildlife Service estimates that some 252 major winter roosts of blackbirds and Starlings (*Sturnus vulgaris*) in this country total about 214 million individuals, and these are not the entire continental population.

The Fish and Wildlife Service and many state agricultural experiment stations have research projects in progress to test various control methods. In general they are of two types: (1) projects to provide protection without affecting the population, such as scaring devices and repellents, and (2) projects that reduce the numbers of birds. The latter include (1) direct lethal control by chemicals, (2) removal of birds by mechanical

means, (3) gametocides that affect reproduction, and (4) other biological or ecological mechanisms. We lack space to describe these many projects and the progress being made, but some of them are discussed below.

Scaring devices are still popular because they are humane and do not destroy birds. Carbide exploders have been improved. In one test a cornfield protected by exploders suffered only 1 per cent damage whereas the unprotected control area had 43 per cent damage. Simulated land mines have been used with even greater effect than carbide exploders. Rope firecrackers also serve a similar function effectively and at low cost.

More efficient chemical poisons are continually being developed, but many are too dangerous for general use. Some chemicals show considerable selectivity when used on artificial perches. One chemical is approximately 100 times more toxic to birds than to mammals. A further modification of poison chemicals is used in sprinkler systems where birds can be flushed after dark into a lethal spray. Another device merely utilizes detergent solutions as a roost spray. Birds exposed to such sprays for a few seconds at low temperatures died within 24 hours.

Giant traps, though costly, are capable of catching large numbers of birds and have been used for banding species in scientific studies of movements and behavior. With lights at night, roosting birds can be flushed into the traps. As many as 120,000 birds have been caught in one haul by this method and 200,000 in two nights. Your committee is *not* recommending the device for control purposes. Another field of endeavor showing great promise is the use of sterility chemicals which affect reproduction without killing the birds. These chemicals should prove useful for House Sparrows about buildings, pigeons in parks and villages, and blackbirds in grainfields, provided a sufficiently selective means of contact between the birds and the gametocide can be devised.

Still other approaches involve ecological consideration of timing and spacing of crops, or planting of even more resistant crops, to reduce or avert damage. In the cases of ducks and the "lesser" Sandhill Crane (*Grus canadensis canadensis*), experimental hunting seasons have been tried, though sometimes with dubious results.

All in all the many modern approaches to bird control problems show considerable promise, but many aggravating problems are still only partially solved.

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