THE FUTURE OF WATERFOWL

What can be done to brighten it?

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Mr. Chairman, Fellow Panelists, Ladies and Gentlemen:

When considering the future of waterfowl, it is essential to recognize that this group of birds includes 30 or more species. Habitat requirements and preferences as well as reproduction, distribution, and mortality patterns differ with the various species. Because of these differences in habitat and population characteristics, many opportunities for intensive management exist for the future.

With the exception of the far-northern coniferous forest and Artic tundra areas, the environment within which waterfowl management is being attempted and practiced is dominated by man. Habitat destruction and hunting pressure are expanding due to the enlarging human population.

In spite of the increased pressure on the land and water resources within the range of waterfowl, some important advances have been made in recent years in applying knowledge and funds to meet the more complex waterfowl management problems in the man-dominated environment.

PAST AND PRESENT ACTIONS

One of the outstanding examples of achievement involves the Canada geese of the Mississippi Valley, particularly those that winter primarily in southern Illinois and adjacent areas. This population is well known for the excessive kills it suffered in the mid-1940's. In 1946, a closed season was maintained in the entire Mississippi Flyway. History revealed that if the future of the Canada goose population of the Mississippi Flyway had been predicted on the basis of winter population figures from 1936 to 1946, the population size and recreational opportunities now furnished by the birds would never have been achieved. By using only numbers of Canada geese present in January, two basic facts would have been overlooked:

1. As the nesting grounds existed in 1946, they could have accommodated more breeding Canada geese than were alive to utilize them.
2. The conventional method of using season length and bag limit for controlling hunting mortality of geese at major harvest areas was not refined enough to hold the annual kill within the yearly reproduction.

Since the 1946 closed season on Canada geese of the Mississippi Flyway, more knowledge about the population has accumulated (Hanson and Smith, 1950), wintering grounds and migration areas have been expanded, and hunting mortality is more closely regulated. The Mississippi Valley flock in Illinois and Wisconsin and the Eastern Prairie flock in Missouri are now managed on a state quota basis to maintain maximum sustained public recreational opportunities. To insure a stable or increasing flock, a kill quota was initiated in 1960 for certain counties where a large portion of the annual harvest takes place. This action recognizes the fact that the size of a flyway or species population depends upon the sum of the birds in each manageable unit or flock.

Today—only 15 years after the closed season—technicians and administrators actively discuss the possibility of applying additional technology and capital to control mortality and provide more wintering habitat to encourage existing nuclei of Canada geese to expand further. Current studies by the Illinois Natural History Survey and the Ontario Department of Lands and Forests are aimed at developing an estimate of how many breeding Canada geese can be accommodated on the nesting grounds in Ontario. Intensive management has changed the distribution of the geese within the Flyway, and the quality of hunting. But management also has illustrated rather dramatically that a larger Flyway goose population can be a reality if each manageable flock making up the Flyway population is managed intensively.

Ducks offer a drastically different challenge to management. At this time, preservation of the pothole-type breeding habitat existing in a matrix of agricultural lands is crucial.

The importance of the prairie pothole area is indicated by waterfowl population figures secured between 1950-57. Approximately one-half (53 percent) of the continental duck supply was produced in the 217,000-square-mile Prairie Pothole Region of North America (Hawkins, et. al., 1958). What is most important to recognize is that approximately one-half (47 percent) of the continental breeding duck population was produced in non-pothole type habitat located largely in Canada. This non-pothole type habitat, as far as is known, is relatively stable, except for fire and climatic disturbances and aging occurring through natural successional changes. In other words, with approximately one-half of the duck population using relatively stable breeding habitat, managers are not faced with the possibility of extinction of species from the loss of nesting grounds. Rather, they face the problem of maintaining the prairie potholes in order to produce a sufficient volume of ducks to meet an enlarging demand.

Efforts to preserve the important pothole habitat in the United States have advanced significantly in recent weeks with authorization granted for an advance loan to acquire (purchase and lease) more habitat. Plans to preserve pothole habitat in Canada are in the making. A joint United States-Canada Waterfowl Study Committee, established in May of this year, is studying habitat preservation, crop depredations, and other problems involved in maintaining optimum waterfowl population levels. With approximately 75 percent of the Prairie Pothole Region of North America located in Canada (Alberta, Saskatchewan, and Manitoba), development of an action program to maintain the natural potholes that exist in a matrix of intensively utilized agricultural lands is of vital necessity.

One essential point must be recognized. If the potholes are to be maintained, it will be necessary to stop federal drainage subsidies, both in cash payments and technical assistance, and perhaps compensate individual landowners for the service they render in producing a public owned crop of waterfowl that benefits many people over a broad geographic area. Most of the potholes could be drained or filled (inferred from Morgan, 1960:8).

In addition to the need for preserving breeding habitat, both migration and wintering habitat requires attention. Losses occur as suitable waterfowl habitat is converted to non-waterfowl uses by man. Some habitat is being preserved and restored under various government programs and by interested private groups. Whether or not the acres now preserved or planned for preservation, as they exist or under full development, will be adequate to meet the ecological requirements of the 30 or more species of waterfowl is subject to speculation.

NEEDS FOR THE FUTURE

To develop the intensive management apparently needed to manage waterfowl effectively in an environment dominated by man, action is needed on many phases of the total program. Some of the items of most importance include the following:

1. Identify manageable units or flocks of populations of individual species.
2. For each flock, determine the major factors limiting its size.
3. Apply technology and capital to counter the limiting factors.

History of the two major flocks of Canada geese occupying the Mississippi Flyway has revealed how successful intensive management can be in encouraging production and survival of larger numbers of geese. Similar results could no doubt be achieved with other manageable flocks. The greater snow goose is believed to have room to increase on its breeding ground (Lemieux, 1959). Blue and snow geese consist of populations that breed, migrate and winter as discrete units (Cooch, 1961). These characteristics suggest that more intensive management is possible with these species. Many management possibilities probably exist with other goose flocks. However, far northern nesting flocks, such as the blue and snow geese (Cooch, 1961), are subject to having adverse spring weather conditions drastically reduce breeding success in some

years. Hence, the annual harvestable surplus produced by far-northern breeding species can be expected to vary widely between years.

To what degree individual species of ducks can be managed on a flock basis remains largely unknown. Black duck populations have certain characteristics that suggest that they may be managed more intensively (Addy, 1953; Martin, 1960). However, additional work is needed to decide whether or not flock management is practical with any duck species.

In addition to new approaches featuring such things as species and flock management, there is an absolute need to effectively carry on the existing waterfowl management program to (1) determine the waterfowl population status, (2) provide protection to the birds through adequate regulations and enforcement, (3) preserve and develop key habitat, (4) conduct essential investigations, and (5) carry out an effective public educational program.

With the effective basic waterfowl management program now existing, I doubt if the future for waterfowl is as bleak as some people believe. In time, some species may decline as habitat changes or is lost. Other species probably can be increased as knowledge is developed and applied through intensive management. But in spite of the total management effort, populations and manageable flocks will continue to fluctuate periodically. Climatic factors are the trump card. Drought will drastically curtail reproduction of the prairie nesters. Arctic breeders will produce few young when adverse spring weather lowers breeding success. Coniferous-forest breeders, such as the Canada goose, do not appear to have such wide fluctuations in their annual reproductive gains due to weather. The portion of the flock of geese of breeding age can apparently affect the production substantially in any one year. Therefore, it is essential to limit mortality of geese each year to permit recruitment and survival of young to breeding age.

Whether or not the *volume* of the duck flight is maintained or increased will depend upon (1) the extent to which the prairie potholes are preserved, largely in Canada, and (2) whether or not ways can be found to produce two ducks where only one is produced now. To attempt the latter, a more refined understanding of habitat requirements, preferences, and tolerances of individual species is needed. Effects of farming practices on pothole breeding habitat and the ability of the habitat to meet the food and cover preferences of various species of waterfowl must also be understood better. If sufficient knowledge on these items were available and were applied, it might be possible to maintain a high volume duck flight by managing aquatic habitat for greater duck production per unit area.

On the basis of findings from investigations and management experiences, it seems justified to conclude that what the future holds for waterfowl is pretty much in the hands of waterfowl managers—represented by a team composed of the interested public, and conservation administrators and technicians.

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WATERFOWL MANAGEMENT—WHAT OF THE FUTURE?

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Most of us here are painfully aware of the extent to which our duck populations have declined the last few years. Many species are at or below their lowest level of the past 10 to 15 years. It is obvious, of course, that a major cause of this decline is the deterioration of the prairie breeding grounds where over half the continental duck population has been produced. Loss of production from this formerly prime area is amply documented from breeding ground surveys (Crissey, 1960) and age composition studies (Geis and Carney, 1961; Bellrose, Scott, Hawkins and Low, 1961). Not to be discounted, however, is the effect of the gun. Unfortunately, we haven't analyzed fully the wealth of banding, kill and population data which would give us much-needed information on the effect of the kill on populations. However, analysis of data on the canvasback (Geis, 1959), indicates that hunting is taking close to the maximum allowable, if not more, in some years. The black duck, so important to the Atlantic Flyway, has declined drastically in spite of the fact that its nesting grounds have not been seriously affected by drought and drainage and age ratios in the kill do not suggest poor production. The evidence here is that the hunting kill could well be the primary factor suppressing the black duck population.

PROBABLE TRENDS

History shows that waterfowl populations in the past have increased and decreased in response to precipitation cycles of the United States and Canadian prairies. It is expected that this pattern will continue in the future and that present populations can build up again. Conditions today, however, are different from the distant past and will be in the future, in that man's activities will likely continue to cause major changes in quantity and distribution of waterfowl habitat.

The human population of the United States alone may reach 300 million by the year 2000 if present trends continue. Undoubtedly Canada also will experience a continued population expansion. There will be a continuing pressure for more land for homesites, factories and roads. More food will have to be produced and more land will be required for the growing of crops. Under such a situation we can expect a continuing loss of waterfowl habitat.

Furthermore, with a major increase in the human population and the continuing loss of habitat, we will have on the one hand an expanding demand for hunting opportunity and on the other an ever-dwindling area in which hunting can be done. The reservoir of potential waterfowl hunters will continue to grow and the latent hunting pressure will be ever ready to express itself if and when the opportunity develops. Competition for quality hunting space will become ever greater.

To me this can add up to an increasing shortage of ducks, of duck habitat and space for the hunter. Duck populations will continue to rise and fall but probably subsequent population peaks and depressions will be of a different magnitude and character than formerly.

WHAT CAN WE DO ABOUT IT?

Management goals have been set up by the Bureau and Flyway Councils which aim at maintaining populations within the range experienced during the period 1948-57. This is a worthy objective, but its attainment will not be easy nor simple. It is reasonable to believe, however, that