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1956 STATUS REPORT OF WATERFOWL

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This information has been hurriedly compiled both in the field and in Washington. Also, the report has not had the benefit of proof-reading or editing and should be regarded as subject to correction. The information contained in this report is for administrative use and is not for publication without permission of the contributing agency.

INTRODUCTION

A convention between the United States and Great Britain for the protection of migratory birds was signed in 1916, and a similar convention between the United States and Mexico became law in 1936. The treaty with Mexico includes the phrase ".by means of adequate methods which will permit, insofar as the respective high contracting parties sees fit, the utilization of said birds rationally for the purpose of sport, food, commerce, and industry". The Act which implements the treaties in the United States contains the following directive: ".to determine when, to what extent, if at all, and by what means, it is compatible with the terms of the conventions to allow hunting.".

The problem of determining when, and to what extent, waterfowl can be used rationally for sport and food is a complex one and demands that considerable information be available concerning migration patterns, current population status of the various species, and the effect of hunting on the population. In order to meet their obligations in this respect, the Governments of Canada and the United States have conducted surveys and investigations for a number of years. The first successful survey of waterfowl population status was initiated during the winter of 1935, when most of the wintering areas in the United States were censused. This survey was gradually expanded into Canada, Alaska, and Mexico so that the survey during recent years has covered the majority of the wintering areas in North America. Surveys of the breeding grounds were begun on an experimental scale in 1947. By 1952, these surveys had expanded until virtually all of the continental breeding areas producing important numbers of ducks were being censused. At first the breeding ground surveys were designed to measure changes in the size and distribution of the breeding population only, but more recently they have included a measure of changes in production as well. During the same period, an extensive banding program was being carried out in some of the more important portions of the breeding grounds. Although this program is still underway, preliminary findings have established approximate relationships between various portions of the breeding grounds and the four management Flyways into which the United States is divided. These data have provided a basis for accumulating the breeding ground survey data into a forecast of expected changes in the relative size of the fall flight of waterfowl in each of the Flyways.

In addition to the two population surveys, the Fish and Wildlife Service has conducted a survey among waterfowl hunters for the past several years for the purpose of determining the kill of waterfowl and the effect that changing shooting regulations has on the activities of the hunters.

This report is a summary of the results of the winter survey, the breeding ground survey, and the kill survey. These data are brought together for the purpose of supplying administrators with all factual information available

concerning current waterfowl population status, and is intended for use primarily as a guide for setting the 1956-57 shooting regulations.

Inasmuch as waterfowl management within the United States is on the basis of four Flyways, this report is organized accordingly. In doing this, the Flyways have arbitrarily been extended beyond the limits of the United States to include the breeding and wintering areas most closely associated with each Flyway. Thus, for winter surveys, Alaska, British Columbia, Alberta and western Mexico have been considered with the Pacific Flyway States; Saskatchewan, eastern and central Mexico with the Central Flyway; Manitoba and Ontario with the Mississippi Flyway; and Quebec, Newfoundland and the Maritimes with the Atlantic Flyway. Similarly, in summarizing data from the breeding grounds, it has been assumed that birds from Alaska, Northwest Territories, British Columbia, Alberta, and Saskatchewan are important to the Pacific Flyway hunters; that these same areas excepting Alaska and British Columbia supply birds to the Central Flyway; that birds from northern Alberta, Northwest Territories, Saskatchewan, Manitoba, and western Ontario move through the Mississippi Flyway; and that Alaska, northern Canada, and southern Canada from Saskatchewan to Newfoundland supply waterfowl to the Atlantic Flyway.

SCOPE OF INVESTIGATIONS AND METHODS USED

Waterfowl Kill

During the 1952-53 waterfowl shooting season the Fish and Wildlife Service inaugurated a new method of measuring the waterfowl kill. The method functions through the cooperation of the Post Office Department and provides for a sampling of the hunters in each Flyway in proportion to their occurrence in the various States. The objectives of the kill survey are to determine for each Flyway (1) the number of birds taken by hunters with an error not to exceed five percent; (2) the size of the average daily bag; and (3) the average number of times a hunter went afield during the season.

The mailing addresses for the questionnaire survey are obtained at the time Duck Stamps are purchased at Post Offices. The questionnaires are mailed out on the closing date of the shooting season in each State. Three weeks later, a follow-up questionnaire is mailed to those who have not answered the first questionnaire. The number of questionnaires mailed out and the number returned in each Flyway is shown in the following table:

| Flyway | Questionnaires Sent Out | | Questionnaires Returned | | Percent Returned | |
|--------------|-------------------------|---------------|-------------------------|---------------|------------------|-------------|
| | 1955-56 | 1954-55 | 1955-56 | 1954-55 | 1955-56 | 1954-55 |
| Atlantic | 10,539 | 8,274 | 6,917 | 5,758 | 65.6 | 69.6 |
| Mississippi | 10,820 | 14,133 | 7,017 | 10,168 | 64.9 | 71.9 |
| Central | 7,525 | 8,081 | 4,976 | 5,795 | 66.1 | 71.7 |
| Pacific | 7,316 | 13,227 | 4,859 | 9,794 | 66.4 | 74.1 |
| Total | 36,200 | 43,715 | 23,769 | 31,515 | 65.7 | 72.1 |

A review of the kill survey data collected during the past three hunting seasons has revealed an additional refinement in the method of measuring kill. Previously, the total kill was calculated by expanding the average seasonal kill per hunter of ducks, geese, and coot by the total number of waterfowl hunters as determined by adjusted Duck Stamp sales. A study has indicated, however, that although 96 to 98 percent of all waterfowl shooters hunt for ducks during the season, that only 60 to 69 percent of the total hunt for geese, and only 52 to 56 percent hunt for coot. Greater accuracy in determining total kill of the three types of waterfowl (ducks, geese and coot) is attained

if average kill is first measured for only the shooters who hunt birds of the particular type, and then is expanded by the number of shooters involved. This method has been used in the analysis of kill data collected during the past two shooting seasons. It will be found, therefore, that the 1954-55 estimate of kill as presented in this report is somewhat less than the estimate published in the 1955 Status Report of Waterfowl.

The identification of the three respective hunter populations is considered to be an important achievement. Its application to Service waterfowl hunter surveys, plus previously developed procedures for removal of the effect of response bias errors, provide the basis for estimates of true shooting kill of waterfowl by individual Flyways with a minimum of error.

Winter Survey of Waterfowl Distribution and Conditions

The annual waterfowl survey to obtain information on wintering conditions and distribution covered the major wintering grounds of known importance in Alaska, Canada, the United States, and Mexico. The cooperative survey was conducted mostly during January. In Alaska and Mexico, the Fish and Wildlife Service organized and conducted the surveys. In the United States the Service organized the survey but most of the field work was performed by personnel of the 48 State Conservation Departments. In Canada the survey was organized by the Canadian Wildlife Service and the field work was conducted by the Service and the Provinces.

The wintering areas were surveyed by use of boats, cars, and aircraft with the important areas being given aerial coverage whenever possible. Available information on number of men, aircraft involved, and distance covered in the survey is presented in the following table:

| Location | No. Observers | No. Planes | No. Miles Flown |
|--------------------------------|------------------|---------------|--------------------|
| Pacific Flyway | 339 | 30 | 19,250 |
| Central Flyway | 420 | 35 | 21,875 |
| Mississippi Flyway | 969 | 54 | 21,464 |
| Atlantic Flyway | 242 | 32 | 21,475 |
| Total for United States | 1,970 | 151 | 84,064 |
| Alaska | 7 | 3 | 2,000* |
| Mexico | 6 | 2 | 13,000 |
| Grand Total | 1,983 | 156 | 99,064 |

* Estimated

Breeding Population and Production Surveys

The extensive breeding ground surveys of the past few years have been continued. These surveys now include two coverages of most of the important waterfowl breeding areas, the first coverage occurring in May for the purpose of measuring the distribution and relative size of the breeding population, and the second being made during July for the purpose of measuring the production of broods. A combination of data from important breeding areas forms the primary basis for forecasting changes in the relative size of the fall flight in each of the four Flyways.

The survey methods vary from statistically designed sampling techniques using aerial transects, to ground censuses of selected sample areas. Aerial crews cover the bulk of the breeding range with the various crews sampling in the neighborhood of 2, 375, 000 square miles of prime waterfowl habitat. For the most part, the results of the surveys are presented as "indices to breeding population or number of broods." The determination of an "index" figure representing estimated breeding population or number of broods has been done for the purpose of establishing a basis upon which the results of surveys in one place can be added to the results from others. When considering the "index" figures, however, it is emphasized that they do not constitute an estimate of total population. The "indices" are based on birds seen, and it is known that when making aerial observations a portion of the birds are missed. Even though the "index" figures are not a measure of total populations, it is believed that they are representative of relative population levels to the extent that data from one location can be accumulated with those from another, and that year to year changes can be detected. Although a measure of total population would have certain advantages, a determination of relative changes seems adequate for the purpose of practical management.

Needless to say, the breeding ground surveys are cooperative in nature. The Fish and Wildlife Service, the Canadian Wildlife Service, the Provincial Game Branches, and Ducks Unlimited, combine their manpower and equipment to cover all of the important waterfowl breeding areas in Canada. Service Biologists cover the important areas in Alaska, while the State Conservation Agencies, with some help from the Service, carry on surveys in about 25 States.

Pacific Flyway Data

Waterfowl Kill Information

The following table presents the estimated kill of waterfowl during the 1954-55 and 1955-56 shooting seasons as determined by the Waterfowl Hunter Mail Survey:

Total Kill*

| Species | Total Kill* | | Percent Change 1954-55 to 1955-56 |
|---------------------|------------------|------------------|---|
| | 1955-56 | 1954-55 | |
| Mallard | 1,324,328 | 1,341,802 | - 1.30 |
| Pintail | 650,438 | 709,026 | - 8.26 |
| American Widgeon | 464,454 | 516,062 | - 10.00 |
| Green-winged Teal | 297,539 | 379,117 | - 21.52 |
| Shoveler | 185,000 | 367,228 | - 49.62 |
| Canvasback | 91,719 | 128,885 | - 28.84 |
| Blue-winged Teal | 90,883 | 121,670 | - 25.30 |
| Ruddy Duck | 78,537 | 108,331 | - 27.50 |
| Scaup | 61,368 | 72,261 | - 15.07 |
| Redhead | 58,139 | 27,002 | +115.31 |
| Bufflehead | 42,847 | 28,614 | + 49.74 |
| Gadwall | 41,695 | 67,425 | - 38.16 |
| Goldeneye | 39,339 | 47,395 | - 17.00 |
| Cinnamon Teal | 33,745 | 48,443 | - 30.34 |
| Merganser | 31,588 | 28,735 | + 9.93 |
| Scoter | 26,702 | 7,335 | +264.04 |
| Wood Duck | 20,956 | 20,917 | N. C. |
| Ringneck | 16,125 | 9,269 | + 73.97 |
| Others | 638 | 653 | -- |
| Total Ducks | 3,556,040 | 4,030,160 | - 11.76 |
| Snow Goose | 100,165 | 104,851 | - 4.47 |
| Canada Goose | 92,842 | 112,140 | - 17.21 |
| Cackling Goose | 67,686 | 99,914 | - 32.26 |
| White-fronted Goose | 63,223 | 104,842 | - 39.70 |
| Brant | 22,405 | 19,224 | + 16.55 |
| Other Geese | 128 | 1,869 | - 93.15 |
| Total Geese | 346,449 | 442,840 | - 21.766 |
| Coot | 188,657 | 266,019 | - 29.08 |

* Includes both retrieved and unretrieved birds.

Pacific Flyway Data

Number of Hunters, Daily Kill, Seasonal Kill, and Average Times Hunted, as
Determined by the Waterfowl Hunter Mail Survey

| | | 1955-56 | 1954-55 | Percent Change 1954-55 to 1955-56 |
|-------------------------------------|-------|---------|---------|---|
| Number of Potential Hunters: | | | | |
| Over 16 | | 380,653 | 414,877 | - 8.25 |
| Under 16 | | 37,299 | -- | -- |
| Number of Active Hunters** | | | | |
| Over 16 | | 318,538 | 359,391 | - 11.37 |
| Under 16 | | 28,078 | 15,143 | + 85.42 |
| Average Daily Kill** | | | | |
| <u>Over 16</u> | Ducks | 2.47 | 2.80 | - 11.79 |
| | Geese | .32 | .43 | - 25.58 |
| | Coot | .26 | .33 | - 26.92 |
| <u>Under 16</u> | Ducks | 1.44 | 1.37 | + 5.11 |
| | Geese | .19 | .20 | + 5.00 |
| | Coot | .43 | .41 | + 4.89 |
| Average Seasonal Kill** | | | | |
| <u>Over 16</u> | Ducks | 10.881 | 11.374 | - 4.33 |
| | Geese | 1.419 | 1.746 | - 18.73 |
| | Coot | 1.165 | 1.358 | - 14.21 |
| <u>Under 16</u> | Ducks | 6.336 | 5.562 | + 13.92 |
| | Geese | .824 | .816 | N.C. |
| | Coot | 1.896 | 1.669 | + 13.60 |
| Average Times Hunted** | | | | |
| | | 4.412 | 4.064 | + 8.56 |

* Individuals who purchased a Duck Stamp with the intent to hunt.

** Individuals who hunted at least once.

Winter Trend Data - Pacific Flyway

In the PACIFIC FLYWAY, conditions during the winter survey period were generally good with the exception of the Central Valley in California. In this area there was extensive flooding of agricultural lands which rendered ground counts impossible. The bulk of this portion of the survey, therefore, was conducted by airplane using aerial photographic methods. It is believed, however, that data regarding total numbers of ducks is comparable to previous years.

Percent Change in Pacific Flyway (Continental) Population Index Figures for Ducks, Geese, Brant, Swan, and Coot - January 1955 to January 1956 (Comparable Coverage)

| Area | Ducks | Geese | Brant | Swan | Coot | Total |
|--------------------------|-------|-------|-------|------|------|-------|
| Alaska | -45 | -51 | - | -84 | - | -45 |
| Canada* | -35 | -44 | -32 | -11 | +21 | -34 |
| Pacific Flyway States | +19 | +11 | - 2 | +33 | +21 | +18 |
| Mexico, West Coast | -18 | +41 | -31 | | +53 | -16 |
| Total | + 9 | +10 | -19 | +31 | +23 | +10 |

* British Columbia and Alberta

Species Composition - Pacific Flyway (Continental) 1955 and 1956

(Comparable Coverage)

| Species | Percent of Birds Identified | | Percent Change |
|---------------------|-----------------------------|-------|----------------|
| | 1955 | 1956 | |
| Pintail | 31.2 | 28.6 | N.C. |
| Mallard | 17.5 | 17.8 | + 10.6 |
| Baldpate | 11.8 | 15.0 | + 37.7 |
| Coot | 8.2 | 9.4 | + 23.5 |
| Shoveler | 5.1 | 4.9 | + 2.8 |
| Green-winged Teal | 4.4 | 4.1 | N.C. |
| Snow Goose | 3.7 | 4.3 | + 29.0 |
| Scaup | 3.5 | 3.0 | - 6.4 |
| Cackling Goose | 2.6 | 1.8 | - 21.2 |
| White-fronted Goose | 2.3 | 2.1 | N.C. |
| Black Brant | 1.6 | 1.2 | - 18.8 |
| Canada Goose | 1.4 | 1.8 | + 32.7 |
| Scoter & Eider | 1.4 | .9 | - 29.1 |
| Ruddy Duck | .9 | 1.2 | + 42.2 |
| Gadwall | .9 | .6 | - 21.8 |
| Canvasback | .9 | .6 | - 20.8 |
| Goldeneye | .7 | .5 | - 20.6 |
| Bufflehead | .5 | .2 | - 43.6 |
| Whistling Swan | .4 | .5 | + 32.8 |
| Redhead | .4 | .4 | + 27.5 |
| B-w. & Cinn. Teal | .2 | .4 | + 80.8 |
| Merganser | .2 | .3 | + 35.1 |
| Tree Duck | .2 | .3 | + 55.6 |
| Ringneck | Tr. | Tr. | - 14.0 |
| Ross' Goose | Tr. | .1 | + 88.6 |
| Old Squaw | Tr. | Tr. | - 10.1 |
| Wood Duck | Tr. | Tr. | - 11.6 |
| Trumpeter Swan | Tr. | Tr. | - 6.8 |
| Emperor Goose | Tr. | | - |
| Total | 100.0 | 100.0 | + 9.8 |

Summary of Pacific Flyway Waterfowl Indices

During the past several years there has been a general trend upward in the wintering population of waterfowl in the Pacific Flyway.

Waterfowl - The 1956 index for waterfowl is 8 percent above the average level for the seven-year period 1950-1956 and compared to individual years is:

8 percent above 1955
2 percent below 1954
6 percent above 1953
16 percent above 1952
10 percent above 1951
24 percent above 1950

Ducks - The 1956 index for the Pacific Flyway is 10 percent above the average level for the past seven years and compared to individual years is:

7 percent above 1955
equal to 1954
6 percent above 1953
14 percent above 1952
28 percent above 1951
19 percent above 1950

Among the ducks, the indices are:

1. About the same for: pintail, mallard, shoveler, green-winged teal and scaup.
2. Noticeably up for: baldpate and ruddy.
3. Noticeably down for: gadwall, canvasback and goldeneye.

Geese - The 1956 goose index is 6 percent below the average level for the seven-year period 1950-1956 and compared to individual years is:

10 percent above 1955
8 percent above 1954
equal to 1953
4 percent above 1952
48 percent below 1951
29 percent above 1950

Among the geese, the Canada and snow are noticeably up, while the cackling goose was down.

Brant - The black brant index is 20 percent below the average for the seven-year period 1950-1956 and compared to individual years is:

19 percent below 1955
17 percent below 1954
29 percent below 1953
35 percent below 1952
equal to 1951
27 percent below 1950

Coot - The 1956 coot index is 16 percent above the average level for the seven-year period 1950-1956 and compared to individual years is:

23 percent above 1955
24 percent below 1954
11 percent above 1953
61 percent above 1952
9 percent above 1951
100 percent above 1950

Breeding Ground Surveys

NORTHERN ALBERTA AND NORTHWEST TERRITORIES

Weather and Water Conditions -

Phenologically the season was about two weeks late and although ice was present on much of the water area there was still enough open water to hold a breeding population of waterfowl at the time of our survey. Ice in the rivers went out in a very quiet and orderly manner, consequently there was no flooding of the delta areas. Temperatures during the survey period were above normal and although a late start was indicated nesting conditions should have been satisfactory once started.

The amount of surface water in the north is, in our opinion, a constant factor that varies little from year to year. Water levels may fluctuate considerably but effect the quality rather than the amount of surface water--high levels being detrimental in reducing the extent of marshy borders. This year levels were about normal and were ideal for nesting waterfowl.

Breeding Population Indices -

An examination of the table will reveal the numerical status of each species and the changes percentagewise from 1955. Due to changes in size of the strata and re-distribution of the base, it was necessary to correct the data collected to be comparable with that obtained in 1955. The data are also corrected for missing hens.

The lone drake factor for 1956 is 41.6 percent as compared with 45.5 percent for last year, a reduction of approximately 4 percent. This probably has little significance since the nesting success throughout most of the north is predicated on a "one try" basis anyway. However, it may be indicative of the late season.

This is the first time in several years that we have recorded an increase in the waterfowl breeding population in the north, and while the increase in ducks in general may not be significant since we are only attempting to measure changes within a 20 percent error, it nevertheless indicates a leveling out of the downward trend due probably to the deflection of the northern breeding population to the prairies.

Game ducks as a group increased 16 percent in the survey area, while all ducks increased 18 percent. This slight indicated increase, with the late season being taken into consideration, should probably be interpreted as "no change". As mentioned previously, however, mallards, pintails, green-winged teal and geese did show substantial gains and can be counted upon to contribute in greater measure to the flyways than in the past several years.

Total Breeding Population Indices - 1955 and 1956 - Northern Alberta and Northwest Territories

| Species | 1955 | 1956 | Percent Change |
|----------------------------|------------------|------------------|----------------|
| Scaup | 1,150,100 | 1,219,100 | + 6 |
| Pintail | 105,600 | 277,700 | +163 |
| Mallard | 293,100 | 466,000 | + 59 |
| Baldpate | 228,500 | 201,100 | - 12 |
| Shoveler | 21,750 | 41,800 | + 92 |
| Green-winged Teal | 79,100 | 107,600 | + 36 |
| Canvasback | 29,700 | 20,800 | - 30 |
| Goldeneye | 86,600 | 32,900 | - 62 |
| Bufflehead | 160,950 | 120,700 | - 25 |
| Ringneck | 18,050 | 54,800 | +204 |
| Redhead | 28,950 | 22,000 | - 24 |
| Blue-winged Teal | 11,100 | 9,000 | - 19 |
| Total Favored Ducks | 2,213,500 | 2,573,500 | + 16 |
| Scoter | 706,250 | 812,200 | + 15 |
| Merganser | 93,600 | 130,100 | + 39 |
| Old Squaw | 106,750 | 169,700 | + 59 |
| Total Ducks | 3,120,100 | 3,685,500 | + 18 |
| Canada Goose | 22,700 | 63,300 | +179 |
| White-fronted Goose | 2,800 | 7,800 | +178 |
| Swan | 11,750 | 15,050 | + 28 |

Conclusions -

It is estimated that the fall flight from this area will be at least equal to 1955, and there is a possibility that it will be somewhat larger.

SOUTHERN ALBERTAWeather and Water Conditions -

Water conditions varied considerably from southern to northern portions of Alberta. Southern districts show the effects of a poor run-off, northeastern areas are well-nigh flooded from a heavy run-off. Some regions of the prairie

are very dry, while others, even in the more arid eastern prairies, are well-watered. The month of May has been dry throughout the Province and water areas were rapidly disappearing in the southern prairies and southeastern parklands as the aerial breeding pair survey came to an end.

In the survey area as a whole, the May pond index for 1956 was 1,054,700 as compared to 1,242,900 in 1955, a decrease of 15 percent.

In mid-June general rains fell throughout the Province, saving the farmers from an imminent drought, but in no way improving the water conditions in most of Stratum A and all of C, except as it raised water levels in permanent lakes. In the parkland, especially in the northeastern areas, water levels not only improved in permanent lakes, but temporary ponds were filled again. By the end of June, the parklands were in as good a condition as in early May. However, rains continued to fall in the northeastern parklands, until the land was literally flooded. Water levels in some lakes and ponds where water gauges have been established rose from 12 to 14 inches. This factor has had a noticeable effect on production due to nest flooding and the wide dispersal of broods already hatched.

The July water index for the three stratum combined was one percent better than in 1955.

Breeding Population Indices -

Following are the breeding population indices obtained during the May aerial survey:

Comparison of Aerial Waterfowl Population Indices - 1955 - 1956.

| | Stratum A | | Stratum B | |
|----------------------------|-----------|-----------|-----------|-----------|
| | 1955 | 1956 | 1955 | 1956 |
| Total Area Square Miles | 22,088 | 22,088 | 26,100 | 26,100 |
| Sample Square Miles | 526.5 | 526.5 | 382.5 | 382.5 |
| Total Ducks Seen | 28,914 | 26,316 | 17,442 | 16,980 |
| Total Ducks Per Square Mi. | 54.9 | 50.0 | 45.6 | 44.4 |
| Index in Total Ducks | 1,212,942 | 1,103,956 | 1,204,194 | 1,165,395 |
| Percent Change | | - 9.0% | | - 3.2% |

| | Stratum C | | Province | |
|----------------------------|-----------|---------|-----------|-----------|
| | 1955 | 1956 | 1955 | 1956 |
| Total Area Square Miles | 16,112 | 16,112 | 64,300 | 64,300 |
| Sample Square Miles | 171.0 | 171.0 | 1080.0 | 1080.0 |
| Total Ducks Seen | 4,390 | 3,596 | 60,746 | 46,892 |
| Total Ducks Per Square Mi. | 25.4 | 21.0 | 46.9 | 43.4 |
| Index in Total Ducks | 413,625 | 338,815 | 2,830,761 | 2,608,166 |
| Percent Change | | - 18.1% | | - 7.9% |

Percent Lone Males - Early Nesting Species - 1955 and 1956

| | <u>1955</u> | <u>1956</u> |
|-----------|-------------|-------------|
| Stratum A | 77.5% | 86.4% |
| Stratum B | 82.1% | 86.6% |
| Stratum C | 72.7% | 71.1% |
| Province | 78.6% | 84.2% |

Breeding Population Indices by Species:

| | <u>PROVINCE</u> | | |
|-------------------|------------------|------------------|-----------------------|
| | <u>1955</u> | <u>1956</u> | <u>Percent Change</u> |
| Pintail | 783,570 | 692,406 | - 11.6 |
| Mallard | 969,549 | 892,599 | - 7.9 |
| Baldpate | 177,456 | 154,828 | - 12.7 |
| Shoveler | 172,218 | 168,118 | - 2.4 |
| Gadwall | 61,519 | 84,225 | + 36.9 |
| Blue-winged Teal | 216,864 | 126,054 | - 41.9 |
| Green-winged Teal | 54,640 | 26,612 | - 51.3 |
| Scaup | 249,042 | 265,002 | + 6.4 |
| Canvasback | 47,602 | 53,310 | + 12.0 |
| Redhead | 59,848 | 58,312 | - 2.6 |
| Ruddy Duck | 20,814 | 19,505 | - 6.3 |
| Bufflehead | 12,550 | 16,271 | + 29.6 |
| Goldeneye | 4,675 | 6,496 | + 38.9 |
| Ringneck | 414 | 3,547 | +757.0 |
| Scoter | - | 40,881 | - |
| Total | 2,830,761 | 2,608,166 | - 7.9 |

Intensive ground studies indicate that aerial visibility conditions may have been considerably worse than in 1955, resulting in a lesser portion of the breeding population being seen. It is concluded, therefore, that the breeding population was at least equal to 1955, and may have been larger.

Production Indices -

The brood index for Stratum C nearly doubled this year despite the poor water conditions. Brood sizes were also larger but there seems to be little evidence of a late hatch, and, as a result, the total production is slightly below that of 1955.

The brood index of both Strata A and B fell appreciably in 1956 as did the average brood size and the evidence of a late hatch. The decrease in quantity of this hatch reduced the Provincial index by slightly over 31 percent.

The available evidence of potential later broods as indicated by the presence of pairs and/or lone males or females in July is much reduced over the 1955 figure. In fact, the re-nesting effort was about 57 percent less this summer than that noted last year. As the brood index was lower also, there is no available evidence that the lower brood index in July will be augmented sufficiently by a later hatch to bring our total brood index to that of 1955. Drought conditions in late May and early June were responsible to no small degree for a reduced first hatch and a weak second attempt on the prairies.

In spite of the decrease in production in 1956 (forecast index 135) over that of 1955 (forecast index 165), we must bear in mind that in 1955 we recorded the highest breeding population and highest production in the history of these surveys. Actually our present production is more closely related to that of 1953 and 1954 which were above average.

Aerial Production Data - 1955-1956

| | Strata A | | Strata B | |
|------------------------------|----------|---------|-----------|----------|
| | 1955 | 1956 | 1955 | 1956 |
| Area Square Miles | 22,088 | 22,088 | 26,100 | 26,100 |
| Sample Square Miles | 263.25 | 263.25 | 189.0* | 168.75** |
| Total Broods Seen | 1,592 | 1,194 | 1,030 | 775 |
| Birds Per Square Mile Seen | 6.05 | 4.53 | 5.45 | 4.59 |
| Estimated Number Broods | 133,632 | 100,059 | 142,245 | 119,799 |
| Potential Later Broods | 212 | 148 | 353 | 110 |
| Potential Broods Per Sq. Mi. | 0.81 | 0.56 | 1.87 | 0.65 |
| No. Potential Later Broods | 17,891 | 12,369 | 48,807 | 16,965 |
| Total Index Broods | 151,523 | 112,428 | 191,052 | 136,764 |
| Broods Per Sq. Mi. Index | 6.86 | 5.09 | 7.32 | 5.24 |
| Average Brood Size | 5.68 | 6.11 | 6.42 | 6.03 |
| Estimated No. Young | 860,656 | 686,935 | 1,226,553 | 824,687 |

* Based on 10 parkland transects in 1955.

** Based on 9 parkland transects in 1956.

Continued --

Aerial Production Data - 1955-1956 - Continued -

| | Strata C | | Province | |
|------------------------------|----------|---------|-----------|-----------|
| | 1955 | 1956 | 1955 | 1956 |
| Area Square Miles | 16,112 | 16,112 | 64,300 | 64,300 |
| Sample Square Miles | 85.5 | 85.5 | 537.75 | 517.5 |
| Total Broods Seen | 46 | 78 | 2,668 | 2,047 |
| Broods Per Square Mile Seen | 0.54 | 0.91 | 4.96 | 3.95 |
| Estimated No. Broods | 8,700 | 14,662 | 284,577 | 234,520 |
| Potential Later Broods | 72 | 22 | 637 | 280 |
| Potential Broods Per Sq. Mi. | 0.84 | 0.25 | 1.18 | 0.54 |
| No. Potential Later Broods | 13,534 | 4,028 | 80,232 | 33,362 |
| Total Index Broods | 22,234 | 18,690 | 364,811 | 267,882 |
| Broods Per Sq. Mi. Index | 1.38 | 1.17 | 6.11 | 4.16 |
| Average Brood Size | 5.00 | 5.20 | 5.94 | 6.03 |
| Estimated No. Young | 111,175 | 107,188 | 2,198,384 | 1,618,810 |

Conclusions -

In summarizing all aspects of our aerial survey this year, we would state that with a breeding population at least equal to that of 1955 (an all-time high for the past six years), we can expect a production about 30 percent below that of last year.

WASHINGTONWeather and Water Conditions -

Water conditions in the Yakima Valley and in western Washington have been excellent. Conditions in the potholes have improved considerably but do not equal the water levels of the 1948-1952 period.

A cool, wet June appears to have had some effect in reducing brood sizes in the early nesting species, although Class III broods are averaging 6.0 young at the present time. During April, May and July, to date, the weather has been very favorable for waterfowl production.

Production Indices -

Preliminary estimates of duck production in Washington indicate the largest crop since 1952. An increase of approximately 18 percent over 1955 is expected in the production index (Table I).

Table I - Comparison of Waterfowl Production of Previous Years with that Anticipated for 1956

| Region | 1952 | 1953 | 1954 | 1955 | Anticipated 1956 |
|--------------------|----------------|----------------|----------------|----------------|---------------------|
| Eastern Washington | 617,400 | 287,000 | 285,000 | 275,000 | 316,000 |
| Central Washington | 66,900 | 77,500 | 92,500 | 91,500 | 115,000 |
| Western Washington | 31,000 | 38,000 | 35,000 | 25,300 | 33,000 |
| Total | 715,300 | 402,500 | 412,500 | 391,800 | 464,000 |

Although brood studies have not been completed on all transects, it appears that for eastern and central Washington mallard production will be considerably above that of last year. Pintails and the diving species will be up about 40 percent, while baldpate production will be at about the same level as for last year. Gadwall and green-winged teal will probably be down somewhat, and the trend has not been determined for blue-winged and cinnamon teal and for the shoveler. Coot production should be up about 50 percent.

In western Washington, mallards will be up about 25 percent, and wood ducks 15 percent from last year. Blue-winged and cinnamon teal have also shown an increase. Fewer coots have been seen on the transects.

Canada goose production on the Snake and Columbia Rivers will approximate that of last year, in spite of a 12 percent nesting loss on the Columbia due to an early flood crest.

Conclusions -

It is concluded that the fall flight of ducks from Washington will be somewhat above that of last year, while the coot flight will be considerably greater. The Canada goose flight will be about the same as 1955.

CALIFORNIA

Weather and Water Conditions -

The spring was warm and dry and migration began early. Precipitation in northeastern California was above normal, breaking the drought conditions that had existed for the past two years. Horse Lake, Honey Lake, and many reservoirs that had been dry were again filled to capacity.

Breeding Population Indices -

A comparative summary of nesting pairs of waterfowl for a five-year period is shown in the following table.

Estimated total nesting pairs:

| Species | 1952 | 1953 | 1954 | 1955 | 1956 |
|---------------------|--------|--------|--------|--------|--------|
| Canada Goose | 3,200 | 2,850 | 3,305 | 2,870 | 3,190 |
| Mallard | 51,580 | 40,380 | 35,695 | 34,500 | 28,400 |
| Pintail | 3,280 | 2,100 | 2,375 | 1,260 | 2,010 |
| Gadwall | 5,800 | 6,040 | 5,450 | 3,150 | 2,290 |
| Cinnamon Teal | 4,790 | 3,435 | 3,695 | 4,560 | 2,100 |
| Redhead | 3,380 | 3,760 | 6,405 | 4,220 | 2,000 |
| Ruddy Duck | 1,510 | 1,950 | 3,420 | 2,990 | 1,630 |
| Shoveler | 1,120 | 925 | 910 | 530 | 450 |
| Scaup | 290 | 235 | 150 | 180 | 520 |
| Others | 610 | 545 | 490 | 190 | 350 |
| Total Pairs (Ducks) | 72,369 | 59,370 | 58,590 | 51,580 | 40,190 |
| Total Pairs (Coot) | 13,790 | 25,150 | 19,585 | 16,500 | 16,160 |

The accumulated data indicates:

- (1) An 11 percent increase in nesting pairs of Canada geese and very good production for this species.
- (2) An over-all decrease of 24 percent in breeding pairs of ducks.
- (3) A decrease of two percent in the nesting coot population.

Conclusions -

In view of the better than average water conditions, it is estimated that increased production will balance the decrease in breeding population and that the fall flight of ducks from California will be similar to 1955. The fall flight of coots and Canada geese should be somewhat larger.

IDAHOWeather and Water Conditions -

The 1956 spring weather showed the usual extremes. Nesting activity was earlier this year than in 1955, which was unusually late.

Flooding occurred in many areas of the State during March, April and May. It is not believed that any of the floods had much effect on waterfowl production. The prospects were excellent that all reservoirs would have ample water supplies during the summer months.

Production Indices -

Canada goose nesting surveys were continued in several areas of the State. In some areas this is the fifth year of such work. A comparison of the estimated goose production from the areas checked is given in Table I. These figures do not indicate total estimated production. They show population trends based on the number and hatching success of nests found on the same areas covered in the same manner each year. On this basis, the estimated production on four areas with trend data for five years is 12 percent above last year and 4-1/2 percent below the five-year average. The estimated production on six areas with trend data for three years is up 15 percent over last year and is the same as the three-year average. Most of the rise this year can be explained by the exceptional nesting success recorded for the Island Park and North Fork, Snake River units.

A series of duck brood trend routes have been run in eastern Idaho for four years. These are standardized by counting all broods during the first count in early July and recording only Class I broods on the second count in late July. The results of this year's work and a comparison with previous years is given in Table II. The total counts are up 22 percent over last year and are identical with the four-year average. These figures would be higher except for the low count on Camas Creek this year. This creek was opened to fishing on June 4 after being closed last year due to a stream rehabilitation (rotenone) program. The large number of fishermen using the stream undoubtedly had an adverse effect on the number of waterfowl using it for nesting and/or brooding. It is felt that the count on the Camas National Wildlife Refuge, which lies adjacent to the creek, more accurately reflects the waterfowl production in the area.

In District Four, brood trend routes have been run on four areas for three years. The results of this year's work and a comparison with previous years is given in Table III. The routes were down 52 percent from last year and 41 percent from the three-year average. There is no ready explanation for this decline in brood production. Groups of unsuccessful hens were observed on each of the trend routes.

Table I - Comparison of Goose Production on Idaho Study Areas, 1952-1956

| | Glenns Ferry | Homedale | Blackfoot Reservoir | Island Park Reservoir | North Fork Snake River | North Lake | Total* |
|-----------------------------|-----------------|----------|------------------------|--------------------------|---------------------------|---------------|--------------|
| No. Nests Found | | | | | | | |
| 1952 | 24 | 208 | 103 | 16 | - | - | 351 |
| 1953 | 24 | 250 | 121 | 44 | - | - | 439 |
| 1954 | 34 | 216 | 132 | 42 | 39 | 24 | 424 (487)* |
| 1955 | 16 | 189 | 117 | 34 | 32 | 31 | 356 (419)* |
| 1956 | 15 | 214 | 86 | 38 | 32 | 40 | 353 (425)* |
| No. Nests Hatched | | | | | | | |
| 1952 | 16 | 103 | 75 | 12 | - | - | 206 |
| 1953 | 11 | 180 | 74 | 36 | - | - | 301 |
| 1954 | 9 | 169 | 78 | 36 | 34 | 19 | 292 (345)* |
| 1955 | 1 | 125 | 81 | 19 | 21 | 26 | 226 (273)* |
| 1956 | 6 | 123 | 61 | 34 | 31 | 34 | 224 (289)* |
| Average Hatch | | | | | | | |
| 1952 | 5.1 | 4.7 | 4.7 | 4.0 | - | - | 4.7 |
| 1953 | 5.4 | 5.0 | 4.8 | 4.6 | - | - | 4.9 |
| 1954 | 4.6 | 5.5 | 4.5 | 4.1 | 4.8 | 4.4 | 5.1 (5.0)* |
| 1955 | 4.0 | 4.8 | 4.8 | 2.7 | 4.5 | 5.2 | 4.6 (4.7)* |
| 1956 | 6.0 | 5.1 | 5.3 | 5.4 | 4.9 | 5.1 | 5.5 (5.5)* |
| Estimated Production | | | | | | | |
| 1952 | 82 | 484 | 352 | 48 | - | - | 966 |
| 1953 | 60 | 900 | 355 | 166 | - | - | 1481 |
| 1954 | 41 | 930 | 351 | 148 | 154 | 80 | 1470 (1704)* |
| 1955 | 4 | 601 | 387 | 52 | 94 | 130 | 1044 (1268)* |
| 1956 | 36 | 627 | 323 | 185 | 152 | 173 | 1171 (1496)* |

* Excluding North Fork and North Lake
 ()* Including North Fork and North Lake

Table II - Duck Brood Production Trend Routes, 1953-1956 - District Five - Idaho

| | | Number of Broods by Species | | | | | | | | | | | | Total Broods All Species |
|------------------------|------|-----------------------------|---------|----------|---------|----------|----------|---------------------|---------|---------|-------|----------|----------|--------------------------------|
| Trend Route | Year | Mallard | Pintail | Baldpate | Gadwall | Shoveler | G. W. T. | B. W. / Cinn. T. | Canvas. | Redhead | Ruddy | Scaup L. | Unident. | |
| Camas NWR | 1953 | 9 | 4 | 1 | 7 | 1 | 1 | 1 | - | 17 | 9 | 4 | 9 | 63 |
| | 1954 | 22 | 4 | - | 9 | - | 1 | 2 | 1 | 4 | 3 | 8 | 10 | 64 |
| | 1955 | 6 | 2 | - | 8 | 2 | - | 3 | - | 3 | - | 5 | 9 | 38 |
| | 1956 | 19 | 4 | 3 | 7 | 1 | - | 1 | - | 14 | 4 | 6 | 30 | 89 |
| Camas Creek | 1953 | 11 | 16 | 9 | 3 | 3 | 1 | - | - | 13 | - | 2 | 3 | 61 |
| | 1954 | 11 | 6 | 5 | 4 | 1 | 2 | 1 | - | 2 | - | 3 | 1 | 36 |
| | 1955 | 5 | 5 | 13 | 5 | 1 | 1 | 4 | - | 1 | - | 5 | 2 | 42 |
| | 1956 | 3 | 1 | - | 2 | - | - | - | - | - | - | 7 | 1 | 14 |
| Teton River | 1953 | 7 | - | 7 | 1 | - | 1 | 2 | - | 6 | - | - | 2 | 26 |
| | 1954 | 2 | - | 1 | 6 | - | - | - | - | 7 | - | - | 2 | 18 |
| | 1955 | 1 | - | 1 | 3 | - | - | 2 | - | 5 | - | - | 1 | 13 |
| | 1956 | 2 | - | - | 3 | - | - | - | - | 2 | - | - | 4 | 11 |
| Blackfoot Reservoir | 1953 | 14 | 6 | 4 | 28 | - | 1 | - | - | - | - | 12 | 13 | 78 |
| | 1954 | 14 | 4 | 4 | 33 | - | 1 | 5 | - | 5 | - | 8 | 4 | 78 |
| | 1955 | 12 | 2 | 6 | 23 | - | 1 | 7 | - | 3 | - | 6 | 5 | 65 |
| | 1956 | 8 | - | 11 | 41 | - | - | 3 | - | - | - | 12 | 4 | 79 |
| Total All Routes | 1953 | 41 | 26 | 21 | 39 | 4 | 4 | 3 | - | 36 | 9 | 18 | 27 | 228 |
| | 1954 | 49 | 14 | 10 | 52 | 1 | 4 | 8 | 1 | 18 | 3 | 19 | 17 | 196 |
| | 1955 | 24 | 9 | 20 | 39 | 3 | 2 | 16 | - | 12 | - | 16 | 17 | 158 |
| | 1956 | 32 | 5 | 14 | 53 | 1 | - | 4 | - | 16 | 4 | 25 | 39 | 193 |

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Table III - Duck Brood Production Trend Routes, District Four, 1954-1956.

| Trend Route | Year | Number of Broods by Species | | | | | Total Brds. All Species | |
|-------------------|------|-----------------------------|---------|---------|------------------|------------|-------------------------|----------|
| | | Mallard | Redhead | Gadwall | B. W. / Cinn. T. | G. W. Teal | | Baldpate |
| Milner Canal | 1954 | 18 | 1 | - | - | - | - | 19 |
| | 1955 | 25 | 1 | - | - | 1 | - | 27 |
| | 1956 | 18 | - | - | - | - | - | 18 |
| Minidoka Burley | 1954 | 4 | 9 | 8 | - | - | - | 21 |
| | 1955 | 14 | 4 | 8 | - | 4 | - | 30 |
| | 1956 | 5 | 2 | 2 | - | - | - | 9 |
| Richfield Canal | 1954 | 16 | - | 1 | - | - | 3 | 20 |
| | 1955 | 14 | - | - | 2 | - | 7 | 23 |
| | 1956 | 6 | - | - | - | - | 5 | 11 |
| Bypass Canal | 1954 | 18 | - | 1 | - | - | 5 | 24 |
| | 1955 | 9 | - | 1 | - | - | 6 | 16 |
| | 1956 | 4 | - | - | - | - | 4 | 8 |
| Total | 1954 | 56 | 10 | 10 | - | - | 8 | 84 |
| All Routes | 1955 | 62 | 5 | 9 | 2 | 5 | 13 | 96 |
| | 1956 | 33 | 2 | 2 | - | - | 9 | 46 |

Conclusions -

In view of the fact that there were both increases and decreases in brood production, it is estimated that the fall duck flight from Idaho will be about the same as in 1955. It is estimated that there will be a small increase in the flight of Canada geese.

UTAH

Weather and Water Conditions -

The spring run-off was normal for all of Utah except some limited water-fowl breeding areas in southern Utah. Most of Utah's reservoirs, ponds, and marshes had a good supply of water. Temperatures were slightly above normal, which probably started nesting earlier than usual. Water and weather conditions were ideal during the nesting and brood season.

Breeding Population Indices -

The aerial survey of 1956 covered the same routes and distance as the 1955 survey. Water conditions were good along all aerial routes. The following table gives a comparative summary of the results of the 1955 and 1956 surveys:

Table I - Total Ducks Counted by Area and Square Mile as Determined from Aerial Surveys - 1955 and 1956

| Route | Sq. Mi. Sampled | | Total Ducks Counted | | Ducks/Sq. Mile | |
|--------------------|-----------------|-------|---------------------|-------|----------------|-------|
| | 1955 | 1956 | 1955 | 1956 | 1955 | 1956 |
| Box Elder County | 48.0 | 48.0 | 3,958 | 2,971 | 82.5 | 61.9 |
| Weber County | 15.5 | 15.5 | 1,390 | 1,119 | 89.6 | 77.2 |
| Davis County | 14.2 | 14.2 | 409 | 1,742 | 28.1 | 122.6 |
| Jordan River Clubs | 6.2 | 6.2 | 584 | 1,971 | 94.2 | 317.9 |
| Salt Lake County | 6.7 | 6.7 | 91 | 201 | 13.6 | 30.0 |
| Utah County | 18.0 | 18.0 | 380 | 474 | 21.2 | 26.3 |
| Total | 108.6 | 108.6 | 6,812 | 9,478 | 62.7 | 78.1 |

There was a 24 percent increase in the population of ducks along the aerial transect routes of northern Utah which cover the bulk of the waterfowl breeding grounds. The count in Box Elder County showed a marked decline, but this was offset by a large increase in the population of Davis County and the Jordan River clubs.

Ground Census

Ground counts on State waterfowl refuges indicated a slight increase in the breeding population of these areas. The population of the Public Shooting Grounds had the largest increase. The population of redheads again increased on all areas, but the population of cinnamon teal decreased.

Table II - Estimate of Total Breeding Pairs on Three State Refuges from Dike Line Census - 1955 and 1956

| Species | Ogden Bay | | Farmington Bay | | Public Shooting Grounds | |
|---------------|-----------|------|----------------|------|-------------------------|------|
| | 1955 | 1956 | 1955 | 1956 | 1955 | 1956 |
| Canada Geese | 63 | 87 | 43 | 36 | 8 | 12 |
| Mallard | 395 | 415 | 26 | 30 | 48 | 61 |
| Gadwall | 189 | 210 | 28 | 34 | 15 | 18 |
| Pintail | 214 | 170 | 42 | 41 | 8 | 18 |
| Cinnamon Teal | 515 | 490 | 105 | 102 | 75 | 79 |

Table II - Continued -

| Species | Ogden Bay | | Farmington Bay | | Public Shooting Grounds | |
|-------------------|--------------|--------------|----------------|------------|-------------------------|------------|
| | 1955 | 1956 | 1955 | 1956 | 1955 | 1956 |
| Redhead | 426 | 475 | 126 | 132 | 114 | 151 |
| Shoveler | 157 | 135 | 38 | 27 | 12 | 18 |
| Green-winged Teal | 12 | 15 | 1 | 2 | 2 | 1 |
| Blue-winged Teal | 26 | 30 | 1 | 2 | 1 | 1 |
| Ruddy Duck | 74 | 85 | 25 | 16 | 6 | 8 |
| Total | 2,071 | 2,112 | 435 | 423 | 289 | 367 |

In the census of Canada geese on State waterfowl areas, birds which were paired were counted as breeding pairs even though they might not nest.

Ground counts were started on several new areas in 1955. Many of these areas were again counted this year. Table III gives a comparison of the birds counted on these areas.

Table III - Ground Counts of Breeding Populations in Selected Areas of Cache and Central Utah Counties - 1955 and 1956

| Area | 1955 | | | | 1956 | | | |
|------------------|------------|------------|-------------|--------------|------------|------------|-------------|--------------|
| | Prs. | Lone Male | Lone Female | Ind. Pop. | Prs. | Lone Male | Lone Female | Ind. Pop. |
| Cutler Resv. | 116 | 96 | | 424 | 121 | 92 | | 426 |
| Clearlake Ref. | 98 | 44 | 18 | 320 | 303 | 78 | 5 | 772 |
| Lower Sevier L. | 159 | 29 | 4 | 384 | 85 | 35 | 4 | 248 |
| Gunnison Resv. | 28 | 6 | | 68 | 12 | 2 | 2 | 34 |
| Scipio Lake | 24 | 7 | 2 | 66 | 13 | 8 | | 42 |
| Fool's Cr. Resv. | 19 | 2 | | 42 | 3 | 6 | | 18 |
| Redmond Lake | 32 | 4 | | 72 | 17 | 1 | | 36 |
| Olsen's Clough | 24 | 2 | | 52 | 38 | 11 | 6 | 110 |
| Rocky Ford Resv. | 13 | | | 26 | 2 | 10 | | 24 |
| Topaz Marsh | 76 | 23 | 2 | 202 | 47 | 23 | 6 | 152 |
| Total | 589 | 213 | 26 | 1,656 | 521 | 174 | 23 | 1,436 |

Most of the areas in southern Utah showed a slight decrease in breeding population. This could be attributed to the drought conditions in this section of the State. Clearlake Refuge was an exception in this area with a large increase in breeding population. Habitat conditions have been recently improved on this area.

Table IV - Species Composition of Waterfowl Breeding Populations in Southern and Northern Utah - 1955 and 1956

| Species | Northern Utah | | Southern Utah | |
|-------------------|---------------|---------------|---------------|---------------|
| | 1955 | 1956 | 1955 | 1956 |
| Redhead | 26.1 | 39.1 | 20.4 | 9.8 |
| Mallard | 20.4 | 18.0 | 33.5 | 31.4 |
| Cinnamon Teal | 21.8 | 15.6 | 22.1 | 20.6 |
| Gadwall | 11.5 | 8.5 | 8.6 | 8.7 |
| Ruddy Duck | 3.4 | 7.9 | 6.7 | 11.5 |
| Pintail | 8.8 | 5.0 | 4.7 | 8.1 |
| Shoveler | 6.2 | 4.9 | 3.1 | 4.9 |
| Blue-winged Teal | 1.1 | 0.6 | 0.2 | 2.8 |
| Green-winged Teal | 0.6 | 0.4 | 0.5 | 1.9 |
| Total | 100.0% | 100.0% | 100.0% | 100.0% |

Production Indices -

An effort was made to count goose broods over most of the State. However, only those areas which were counted in both 1955 and 1956 are listed in the following table. There were probably more broods on some of the areas listed, but only birds actually seen were listed.

Table V - Counts of Canada Goose Broods - 1955 and 1956

| Area | Broods | | Young | | Percent Change of Total Young |
|------------------------------|------------|------------|--------------|--------------|-------------------------------|
| | 1955 | 1956 | 1955 | 1956 | |
| Round Valley | 8 | 5 | 40 | 28 | - 30 |
| Cutler Reservoir | 16 | 14 | 82 | 80 | - 2 |
| Public Shooting Grounds | 7 | 10 | 29 | 35 | + 21 |
| Bear River Refuge & Vicinity | 230 | 320 | 1,150 | 1,600 | + 39 |
| Ogden Bay Refuge | 56 | 54 | 240 | 248 | + 3 |
| Farmington Bay Refuge | 36 | 28 | 162 | 140 | - 14 |
| Scipio Lake | 1 | 6 | 8 | 25 | +213 |
| Fool's Creek Reservoir | 2 | 8 | 12 | 48 | +300 |
| Redmond Lake | 5 | 10 | 30 | 56 | + 87 |
| Gunnison Reservoir | 23 | 17 | 102 | 92 | - 10 |
| Clear Lake Refuge | 4 | 4 | 17 | 19 | + 12 |
| Total | 388 | 476 | 1,872 | 2,371 | + 27 |

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Most of the major goose producing areas of the State showed a marked increase over the 1955 production. However, the production was about equal to 1954, which would indicate that the population had only recovered from the serious decline of 1955.

Conclusions -

It is estimated that the fall flight of both ducks and Canada geese from Utah will be somewhat larger than in 1955.

NEVADA

Weather and Water Conditions -

Weather conditions through the early months of the nesting season were comparatively mild throughout west-central Nevada. Winds and occasional rain storms were common but did not effect any delay in the nesting season in this part of the State. Most reservoirs and important marsh areas were well supplied with water at the start of the breeding season. This being a desirable condition from the standpoint of nest lost due to flooding.

Water conditions in the reservoir trend areas of northeastern Nevada are excellent with all reservoirs near maximum capacity due to a heavy spring run-off. Weather conditions in this area were such as to delay duck nesting approximately two weeks. The Humboldt-Toulon Sink was of no value this year for production. All available run-off was held in the supply reservoir to insure enough water for later irrigation practices. Water conditions are excellent in the Franklin Lake area of northeastern Nevada and at Ruby Lake National Wildlife Refuge.

Production Data -

Ducks: Despite a late hatch in northern Nevada, brood surveys taken in this area to date indicate an increase in production of 75 percent over last year. It is anticipated that later brood counts will show production back up to that of the base year of 1950.

In west-central Nevada production appears to be up about 10 percent over last year. Food and water conditions are better than they have been for the past two years. Increases in production of redheads and cinnamon teal are again in evidence for this year. Pintail and ruddy ducks show a slight increase whereas gadwall and mallard have declined slightly.

Geese: Canada geese production at the Stillwater Wildlife Management Area is down 50 percent from last year. Other areas of the State

show a slight increase in goose production. Production at Washoe Lake, the most important goose nesting area in the State is up 143 percent over last year. The molting goose population at Pyramid Lake was down 12 percent.

Conclusions -

It is estimated that the fall flight of both ducks and Canada geese from Nevada will be somewhat larger this year as compared to 1955.

BRITISH COLUMBIA

Weather and Water Conditions -

During most of April and the first three weeks in May the survey area was blanketed by a high pressure cell resulting in clear warm weather and an early season. At the time of our survey the season was approximately two to three weeks ahead of the previous year. There was no ice, and run-off from above average snowfall the previous winter had raised water levels throughout the district. No flooding had yet occurred in the Rocky Mountain Trench, but the water was rising rapidly in Columbia and Kootenay Rivers and flooding could be expected in a reasonably short time. At the time of our survey Canada goose broods were just appearing in the Trench. If flooding did not materialize for another 10 days it is probable that a successful hatch of geese can be expected.

Breeding Population Indices -

Table I - Birds Observed in Rocky Mountain Trench

| <u>Species</u> | <u>1955</u> | <u>1956</u> |
|-------------------|-------------|-------------|
| Canada Goose | 1,445 | 1,435 |
| Snow Goose | - | 1 |
| Swan | 64 | 77 |
| Mallard | 412 | 590 |
| Baldpate | 152 | 119 |
| Green-winged Teal | 12 | 23 |
| Blue-winged Teal | - | 3 |
| Canvasback | - | 22 |

Continued --

Table I - Birds Observed in Rocky Mountain Trench - Continued -

| Species | 1955 | 1956 |
|-------------------------|--------------|--------------|
| Scaup | 70 | 127 |
| Goldeneye | 42 | 129 |
| Bufflehead | 10 | 37 |
| Others | 48 | 48 |
| Unidentified | 476 | 245 |
| Total Game Ducks | 1,217 | 1,145 |

Table II - Population Indices by Species for the Cariboo, Chilcotin, and Prince George Areas

| Species | 1955 | 1956 |
|-------------------------|----------------|---------------|
| Mallard | 32,400 | 17,116 |
| Pintail | 7,400 | 4,408 |
| Baldpate | 12,650 | 1,500 |
| Green-winged Teal | 1,350 | 388 |
| Shoveler | 300 | 230 |
| Ringneck | 200 | 2,410 |
| Canvasback | 800 | - |
| Redhead | - | 1,210 |
| Scaup | 16,600 | 21,440 |
| Goldeneye | 14,200 | 9,165 |
| Bufflehead | 26,600 | 4,835 |
| Ruddy Duck | - | 400 |
| Total Game Ducks | 112,500 | 63,102 |

Table III - Population Indices by Stratum

| Stratum | 1955 | 1956 |
|---------------|--------|--------|
| Cariboo | 56,000 | 22,345 |
| Chilcotin | 48,900 | 37,360 |
| Prince George | 7,000 | 3,397 |

In view of a change in sampling procedure this year, the 1955 data were reviewed and portions were selected which were thought to be reasonably comparable with 1956. A re-calculation of the 1955 indices using these data resulted in a revised population index of 79,787 birds for the Cariboo, Chilcotin, and Prince George areas. On this basis, a decrease of 21 per cent between 1955 and 1956 is indicated. Since it is doubtful that our sampling is intensive enough to measure changes as small as 20 percent, we are of the opinion that a "no change" status exists throughout the areas surveyed.

Production Indices -

Midsummer counts on sample lakes in Cariboo and Kamloops regions show waterfowl numbers to compare favorably with those of last year. Water conditions are good and production is forecast to be equal to past several years.

Conclusions -

The fall flight from British Columbia should be about the same as last year.

OREGION

Weather and Water Conditions -

An abundance of rain and snow fell throughout the State during the winter. This along with an unusually large amount of rain early in the spring left all marshes and potholes full and in excellent condition for waterfowl production.

Production Data -

Canada goose production in Oregon is about the same as for 1955. Samples at Summer Lake and in the Klamath Basin were nearly the same. In Warner Valley rising waters flooded many nests, leaving production about 60 percent of normal.

Comparison of Canada Goose Broods

| K L A M A T H B A S I N | | | |
|---------------------------|------------------|-------------|-------------------------|
| Year | Number of Broods | Total Young | Average Young Per Brood |
| 1955 | 206 | 950 | 4.6 |
| 1956 | 198 | 931 | 4.7 |
| S U M M E R L A K E | | | |
| 1955 | 48 | 213 | 4.4 |
| 1956 | 54 | 236 | 4.4 |

Duck broods are coming off on normal dates. Preliminary surveys indicate an above normal production. Ideal weather and water conditions during the nesting season and during early development stages should lead to an above normal crop at harvest time.

Conclusions -

It is estimated that the fall flight of ducks from Oregon will be somewhat larger than last year, while the flight of Canada geese will be about the same.

ALASKA

Weather and Water Conditions -

The season was exceptionally early in Alaska this year and conditions were favorable for production.

Breeding Population Indices -

Based upon 185 16-mile transects covering all the major nesting areas in Alaska it appears that the over-all waterfowl breeding population may be as much as 20 percent below the population of 1955. The season phenologically was earlier by two weeks or more than in 1955 and extremely rapid following the early break-up. By the time the major nesting grounds in western Alaska (Yukon Delta, Kotzebue Sound, Innoko, Koyukuk, etc.) were censused, large flocks of deserter male pintails and other early nesters were encountered with relatively fewer pairs and lone males. Thus, with a breeding population based primarily upon a pair and lone male count, the progression of incubation undoubtedly tended to depress the breeding population figure. To this extent the reduction in brood stock of 20 percent may be more apparent than real.

Production Data -

Late reports from the field are optimistic concerning Alaska's waterfowl production in comparison with 1955.

From three widely separated and diverse habitats (Fort Yukon, Minto and Selawik) study crews report an increase of both brood stock and broods. As of July 28, much of the scaup hatch has yet to materialize, but prospects are excellent for a substantial increase in the interior breeding areas, possibly as much as 30 percent. From the Selawik study area, the prospect is for no increase in scaup production and possibly a small decrease unless an exceptional late hatch occurs.

Over-all production of puddle ducks is good from all areas under observation with the possible exception of the Copper River Delta which experienced severe ice conditions up to June 1. As much as 25 to 30 percent increase in puddle ducks production is anticipated, especially among pintails and baldpates.

Conclusions -

It is estimated that the possible reduction in breeding population will be balanced by increased production and that the fall flight from Alaska will be about the same as last year.

Central Flyway DataWaterfowl Kill Information

The following table presents the estimated kill of waterfowl during the 1954-55 and 1955-56 shooting seasons as determined by the Waterfowl Hunter Mail Survey:

Total Kill*

Percent Change
1954-55 to
1955-56

| Species | 1955-56 | 1954-55 | Percent Change 1954-55 to 1955-56 |
|---------------------|------------------|------------------|---|
| Mallard | 1,948,932 | 1,532,214 | + 27.20 |
| Pintail | 399,106 | 426,165 | - 6.35 |
| Green-winged Teal | 388,113 | 404,532 | - 4.06 |
| Blue-winged Teal | 296,384 | 345,367 | - 14.18 |
| Redhead | 134,761 | 104,989 | + 28.36 |
| Shoveler | 112,701 | 122,117 | - 7.71 |
| Canvasback | 112,213 | 93,217 | + 19.00 |
| Scaup | 90,341 | 66,978 | + 34.88 |
| Gadwall | 64,154 | 88,270 | - 27.32 |
| Ringneck | 59,239 | 8,383 | +531.13 |
| Ruddy Duck | 38,755 | 46,847 | - 17.27 |
| American Widgeon | 31,027 | 87,178 | - 64.41 |
| Cinnamon Teal | 23,298 | 14,638 | + 59.16 |
| Merganser | 14,857 | 11,499 | + 29.20 |
| Goldeneye | 11,818 | 5,118 | +130.91 |
| Bufflehead | 10,730 | 13,205 | - 18.74 |
| Wood Duck | 10,130 | 36,952 | - 72.59 |
| Black Duck | 3,114 | 1,433 | +117.31 |
| Scoter | 525 | 1,945 | - 73.01 |
| Others | 1,501 | 0 | -- |
| Total Ducks | 3,751,699 | 3,412,047 | + 9.95 |
| Canada Goose | 114,192 | 69,312 | + 64.75 |
| Snow Goose | 49,174 | 52,152 | - 5.71 |
| Blue Goose | 26,616 | 15,193 | + 75.19 |
| White-fronted Goose | 30,858 | 41,670 | - 25.95 |
| Total Geese | 220,840 | 178,327 | + 23.84 |
| Goat | 125,457 | 79,248 | + 58.31 |

* Includes both retrieved and unretrieved birds.

Central Flyway Data

Number of Hunters, Daily Kill, Seasonal Kill, and Average Times Hunted, as
Determined by the Waterfowl Hunter Mail Survey

| | | 1955-56 | 1954-55 | Percent Change 1954-55 to 1955-56 |
|-------------------------------------|-------|---------|---------|---|
| Number of Potential Hunters* | | | | |
| Over 16 | | 519,134 | 476,580 | + 8.93 |
| Under 16 | | 49,128 | -- | -- |
| Number of Active Hunters** | | | | |
| Over 16 | | 442,749 | 409,816 | + 8.04 |
| Under 16 | | 37,194 | 35,991 | + 3.34 |
| Average Daily Kill** | | | | |
| <u>Over 16</u> | Ducks | 1.88 | 2.10 | - 10.48 |
| | Geese | .16 | .16 | N.C. |
| | Coot | .11 | .08 | - 37.50 |
| <u>Under 16</u> | Ducks | .84 | .99 | - 15.15 |
| | Geese | .05 | .10 | - 50.00 |
| | Coot | .11 | .14 | - 21.43 |
| Average Seasonal Kill** | | | | |
| <u>Over 16</u> | Ducks | 8.397 | 8.174 | + 2.73 |
| | Geese | .730 | .625 | + 16.80 |
| | Coot | .477 | .315 | + 51.43 |
| <u>Under 16</u> | Ducks | 3.748 | 3.862 | N.C. |
| | Geese | .241 | .375 | - 35.73 |
| | Coot | .489 | .557 | - 12.21 |
| Average Times Hunted** | | 4.467 | 3.900 | + 14.54 |

* Individuals who purchased a Duck Stamp with the intent to hunt.

** Individuals who hunted at least once.

Winter Trend Data - Central Flyway

Weather conditions during the January survey period were uniformly good throughout the Central Flyway. It is believed that the data obtained are generally comparable to previous years.

Percent Change in Central Flyway (Continental) Populations Index Figures for
Ducks, Geese, Swan and Coot from January 1955 to January 1956
(Comparable Coverage)

| Area | Ducks | Geese | Swan | Coot | Total |
|-----------------------|-------|-------|------|------|-------|
| Central Flyway States | +36 | +37 | -62 | +55 | +36 |
| Mexico, East Coast | +44 | -52 | - | +68 | +52 |
| Mexico, Central | +26 | -12 | - | +233 | +33 |
| Total | +36 | +33 | -62 | +72 | +39 |

Species Composition - Central Flyway (Continental) 1955 and 1956
 (Comparable Coverage)

| Species | Percent of Birds Identified | | Percent Change |
|---------------------|-----------------------------|--------------|----------------|
| | 1955 | 1956 | |
| Mallard | 30.2 | 21.6 | - 1.7 |
| Pintail | 27.1 | 26.0 | + 32.0 |
| Redhead | 9.2 | 12.8 | + 92.1 |
| Coot | 8.8 | 11.0 | + 72.5 |
| Snow Goose | 4.4 | 4.9 | + 51.6 |
| Scaup | 4.2 | 6.3 | +107.8 |
| Blue-winged Teal | 3.2 | 2.6 | + 12.8 |
| Shoveler | 2.6 | 1.4 | - 22.2 |
| Green-winged Teal | 2.3 | 1.4 | - 15.3 |
| Canada Goose | 1.9 | 1.9 | + 31.8 |
| Baldpate | 1.7 | 6.6 | +419.1 |
| Gadwall | 1.3 | 1.2 | + 27.4 |
| White-fronted Goose | .7 | .3 | - 45.1 |
| Merganser | .7 | .5 | - 1.1 |
| Blue Goose | .6 | .4 | - 2.6 |
| Canvasback | .4 | .6 | +117.9 |
| Goldeneye | .3 | .1 | - 42.2 |
| Tree Duck | .2 | .3 | +118.0 |
| Ringneck | .1 | Tr. | - 60.7 |
| Ruddy Duck | .1 | .1 | +188.8 |
| Bufflehead | Tr. | Tr. | - 10.1 |
| Wood Duck | Tr. | Tr. | - 65.3 |
| Mottled Duck | Tr. | Tr. | - 14.9 |
| Trumpeter Swan | Tr. | Tr. | - 69.4 |
| Black Duck | Tr. | - | - |
| Whistling Swan | Tr. | Tr. | - |
| Total | 100.0 | 100.0 | + 39.0 |

Summary of Central Flyway Waterfowl Indices

Wintering waterfowl in the CENTRAL FLYWAY increased this year to the highest point they have reached during the past several years.

Waterfowl - The 1956 index is 30 percent above the average for the seven-year period 1950-1956 and compared to individual years is:

39 percent above 1955
 12 percent above 1954
 43 percent above 1953
 28 percent above 1952
 70 percent above 1951
 45 percent above 1950

Ducks - The 1956 duck index is 32 percent above the average for the seven-year period 1950-1956 and compared to individual years is:

36 percent above 1955
 21 percent above 1954
 40 percent above 1953
 30 percent above 1952
 66 percent above 1951
 51 percent above 1950

Among the ducks, the indices are:

1. About the same for: mallard and blue-winged teal.
2. Noticeably up for: pintail, redhead, scaup, baldpate, gadwall, and canvasback.
3. Noticeably down for: shoveler.

Geese - The population index for geese for 1956 is 16 percent above the average for the past seven years and compared to individual years is:

33 percent above 1955
 4 percent below 1954
 35 percent above 1953
 69 percent above 1952
 37 percent above 1951
 14 percent below 1950

Among the geese, there were noticeable increases in snows and Canadas. White-fronts decreased, while blues remained about the same.

Coot - The coot index for 1956 is 30 percent above the seven-year average and compared to individual years is:

72 percent above 1955
22 percent below 1954
77 percent above 1953
1 percent above 1952
168 percent above 1951
76 percent above 1950

Breeding Ground Surveys

NEBRASKAWeather and Water Conditions -

Weather conditions remained unfavorable for waterfowl breeding activities until very late in the spring. The entire winter and spring were quite cold with sharp freezing temperatures being recorded as late as the first week of May. Near record ice more than two feet thick resulting from the prolonged cold caused many drought depleted lakes to freeze solid.

Water conditions were very similar to those of 1955. Only a few of the large lakes remained in the eastern sandhills and these had generally low water levels. Rainfall just prior to the breeding ground survey caused some temporary water areas which were used by migrants but not available as breeding areas. Precipitation in this area has been below normal through the summer resulting in the dry-up of several of the remaining lakes.

Lake levels in the central sandhills were somewhat lower than in 1955, but still remained generally good. Water levels in the western sandhills were very good except for the west central alkaline areas which were low and in some cases, completely dry; however, these latter have little effect on waterfowl production.

Breeding Population Indices -Table I - Waterfowl Breeding Population Indices

| | Eastern | Central | Western | Over-all |
|-------------------------|---------|---------|---------|----------|
| Sq. miles in study area | | | | |
| Scarce duck habitat* | 734 | 1,815 | 2,814 | |
| Abundant duck habitat | 3,859 | 2,824 | 4,186 | |
| Ducks per square mile | | | | |
| Scarce duck habitat | .00 | .00 | .00 | |
| Abundant duck habitat | 6.50 | 13.39 | 14.51 | |
| Aerial Index | 25,083 | 37,813 | 60,739 | 123,639 |
| Percent non-breeders | 45.3 | 32.0 | 36.8 | |
| Resident ducks | 13,720 | 25,713 | 38,387 | |
| Percent lone males | 23.2 | 24.4 | 20.0 | |
| Hens-on-nest | 3,183 | 6,274 | 7,677 | |
| Corrected Indices | 16,903 | 31,987 | 46,064 | 94,954 |

* Each area was divided by all the possible flight paths that were more than one-half and those that were less than one-half within relatively abundant duck habitat areas as determined from the 1954 survey.

Table II - Waterfowl Breeding Population Trends

| | | |
|--|----------|------------------------------|
| 1956 aerial index including non-breeders. . . | 123,639 | |
| 1955 aerial index including non-breeders . . . | 92,204, | change - 1955 to 1955 +34.1% |
| Average, 1954-55 aerial index | 123,166, | change to 1956 -10.4% |
| 1956 breeding duck index | 94,949 | |
| 1955 breeding duck index | 101,864, | change - 1955 to 1956 - 6.8% |

Table III - Species Composition and Trends*

| Species | Eastern | Central | Western U | Over-all | % of '56 Index | 1955 Index | % Change to 1956 |
|---------------|---------------|---------------|---------------|---------------|-------------------|----------------|---------------------|
| Mallard | 3,887 | 10,493 | 11,455 | 25,835 | 27.2 | 31,998 | - 19.2 |
| Gadwall | 412 | 2,229 | 4,995 | 7,636 | 8.0 | 10,743 | - 28.9 |
| Baldpate | 930 | 631 | 182 | 1,743 | 1.8 | 1,733 | + 0.6 |
| Pintail | 1,812 | 3,644 | 6,402 | 11,858 | 12.5 | 10,866 | + 9.1 |
| G. W. Teal | 552 | 151 | | 703 | 0.7 | 918 | - 23.4 |
| B. W. Teal | 7,347 | 11,156 | 11,647 | 30,150 | 31.8 | 92,989 | - 8.6 |
| Shoveler | 1,662 | 634 | 2,905 | 5,201 | 5.5 | 5,410 | - 3.8 |
| Redhead | | 1,427 | 2,915 | 4,342 | 4.6 | 4,841 | - 10.3 |
| Canvasback | | | 1,701 | 1,701 | 1.8 | 526 | +223.4 |
| Scaup | 140 | 1,115 | 2,267 | 3,522 | 3.7 | 1,023 | +244.3 |
| Ruddy Duck | 135 | 319 | 1,653 | 2,107 | 2.2 | 442 | +376.7 |
| Cinnamon Teal | | 151 | | 151 | 0.2 | | |
| Goldeneye | | | | | | 59 | |
| Bufflehead | | | | | | 316 | |
| Total | 16,877 | 31,950 | 46,122 | 94,949 | 100.0 | 101,864 | - 6.8 |

* The species composition was determined by ground counts made immediately following the aerial counts. Species Indices are corrected for non-breeding ducks and for nesting hens as represented by lone males on territory.

Production Indices -

Ground counts were made July 15 and 16 over routes in the eastern and western sandhill areas. Fifty-four broods were observed on 169 miles of routes indicating 1.3 broods per square mile. This represents a decrease of only seven percent from the 1955 index of 1.4 broods per square mile and a decrease of 38 percent from the average index of 2.1 for the eight-years prior.

Conclusions -

Indications are that production success is down significantly in total ducklings due mostly to a decrease in brood size.

It is concluded that there will be a significant decrease in the fall flight from Nebraska as compared to 1955.

MONTANAWeather and Water Conditions -

In contrast to the last two years, the water conditions in 1956 throughout the northern and eastern breeding ground areas in Montana have suffered a severe setback. (See Table I.) At the time of the aerial survey in late May, only the more permanent type of pothole or reservoir held water. Conditions have become steadily worse through May and June, which were marked by hot, dry weather and high winds. The total number of water areas in the northeastern prairie pothole region decreased 38 percent from May 9 to July 2.

Table I - Comparative Numbers of Water Areas Observed Over the Same Routes During the 1954, 1955 and 1956 Aerial Breeding Ground Survey - Part I. & II

| Physiographic Area | Reservoirs Per Square Mi. | | | Potholes Per Square Mi. | | | Percentage Change 1955 to 1956 |
|----------------------|------------------------------|------|------|----------------------------|------|------|-----------------------------------|
| | 1954 | 1955 | 1956 | 1954 | 1955 | 1956 | |
| Eastern Hi-Line | .29 | .33 | .42 | 1.05 | 1.41 | .33 | |
| Central Hi-Line | .55 | .76 | .85 | 3.18 | 3.75 | .55 | |
| Great Falls Piedmont | .81 | .84 | .76 | .94 | 1.69 | .47 | |
| Physiographic Area | Other Per Square Mi. | | | Total Per Square Mi. | | | Percentage Change 1955 to 1956 |
| | 1954 | 1955 | 1956 | 1954 | 1955 | 1956 | |
| Eastern Hi-Line | .68 | .51 | .67 | 2.03 | 2.25 | 1.42 | - 37 |
| Central Hi-Line | .48 | .96 | .53 | 4.21 | 5.48 | 1.94 | - 65 |
| Great Falls Piedmont | .38 | .49 | .65 | 2.12 | 3.02 | 1.88 | - 38 |

Breeding Population Indices -

The very poor water conditions prevailing throughout the period of migration and nesting is clearly reflected by the drastic decrease in numbers of ducks in the glaciated areas. (See Table II.) This is particularly significant when compared with the high populations of 1955, although it also represents a serious decline from the seven-year average.

Results from the Flathead Valley Trend Area west of the Divide, where water conditions were excellent, indicated a 73 percent increase over 1955 in the number of breeding ducks.

In the Southern unglaciated prairie, a complete count was again made on one trend area. Here the bulk of available water is contained in stock water reservoirs, and waterfowl density is low. This type of water area was little affected by the lack of precipitation in the early nesting season and there was a 58 percent increase in duck numbers over 1955 and a 22 percent increase over the four-year average.

Table II - Waterfowl Populations as Determined from Aerial Census Routes

| Physiographic Area | Approximate Size of Area (Square Miles) | Number of Square Miles Sampled | |
|----------------------|---|-----------------------------------|------|
| | | 1955 | 1956 |
| Sheridan County | 1,440 | 39 | 39 |
| Eastern Hi-Line | 7,926 | 172 | 172 |
| Central Hi-Line | 9,468 | 101 | 101 |
| Great Falls Piedmont | 7,020 | 61 | 143 |

| Physiographic Area | Number of Ducks Per Square Mile | | | Population Estimate | |
|----------------------|------------------------------------|------|------|---------------------|---------|
| | 7-Yr. Ave. | 1955 | 1956 | 1955 | 1956 |
| Sheridan County | 29.5 | 41.4 | 26.6 | 59,616 | 38,304 |
| Eastern Hi-Line | 5.3 | 6.4 | 4.6 | 50,688 | 36,432 |
| Central Hi-Line | 11.3 | 15.0 | 7.5 | 142,020 | 71,010 |
| Great Falls Piedmont | 9.7 | 5.2 | 4.6 | 36,504 | 32,292 |
| Totals | | | | 288,828 | 178,038 |

CENTRAL FLYWAY

The Canada goose population trend census during the early nesting season (See Table III.) suggests no significant change in total birds or population composition between 1955 and 1956. The 1956 nesting season began a week to two weeks earlier than in 1955.

Table III - Canada Goose Population Trend During Early Nesting Season, Hi-Line Unit

| Area | 1955 | | | | 1956 | | | |
|-----------------------|------------|------------|-----------|------------|------------|------------|------------|-------------|
| | Pr | S | G | T | Pr | S | G | T |
| Bowdoin Lake | 89 | 62 | 17 | 257 | 109 | 60 | 23 | 301 |
| Lakeside Marsh | 41 | 6 | 8 | 96 | 29 | 10 | 6 | 74 |
| Dry Lake | 82 | 11 | 3 | 178 | 55 | 31 | 3 | 144 |
| Nelson Reservoir | 74 | 16 | 40 | 204 | 64 | 22 | 18 | 168 |
| Hewitt Lake | 5 | 5 | 0 | 15 | 9 | 1 | 0 | 19 |
| Horseshoe Lake | 2 | 0 | 0 | 4 | 3 | 1 | 3 | 10 |
| Martin's Lake | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 2 |
| Whitewater Reservoir | 27 | 17 | 5 | 76 | 41 | 23 | 12 | 117 |
| Pea Lake | 14 | 3 | 0 | 31 | 14 | 4 | 0 | 32 |
| Reservoir 95 | 0 | 0 | 3 | 3 | 2 | 0 | 3 | 7 |
| West Alkali Reservoir | 9 | 5 | 0 | 23 | 9 | 10 | 4 | 32 |
| Reservoir 161 | 4 | 4 | 0 | 12 | 3 | 0 | 7 | 13 |
| Wildhorse Overflow | 5 | 9 | 0 | 19 | 9 | 1 | 0 | 19 |
| Wildhorse Reservoir | 7 | 1 | 0 | 15 | 13 | 1 | 0 | 27 |
| Ester Lake | 10 | 2 | 0 | 22 | 13 | 3 | 19 | 48 |
| Little Warm Reservoir | 16 | 0 | 0 | 32 | 11 | 8 | 10 | 40 |
| Veseth's Reservoir | 3 | 3 | 0 | 9 | 8 | 4 | 6 | 26 |
| Total | 388 | 145 | 76 | 997 | 392 | 181 | 114 | 1079 |

Production Indices -

A brood census to determine production was taken in early July on trend areas in the prairie pothole region and the Flathead Valley. In the pothole region, drought conditions prevented a strong initial nesting effort by the early nesting pintail and mallard. A continuation of these conditions through early July discouraged reneating and at that time there was little evidence (such as lone drakes, pairs, late broods) of a substantial reneating effort. Later nesting gadwall and blue-winged teal encountered much the same conditions. The early July census of the Seridan County Trend Route produced an average of only 1.1 broods per square mile. On this basis, a poor crop can be forecast for most of the glaciated Hi-Line, where poor water conditions have prevailed into July.

The production trend survey in this area showed about the same number of young produced in the trend area. (See Table IV.) The non-breeding and unsuccessful breeding segments of the population reacted a little differently this year. They did not use the trend area for molting in 1956; hence the lower number of adults was seen in the production trend survey. Some areas had poor water conditions in 1956 which was reflected by poor production, particularly on Hewitt Lake and Wild Horse Reservoir.

Table IV - Canada Goose Production Trend Survey, Hi-Line Unit

| Area | 1955 | | | 1956 | | |
|-------------------------|------------|-------------|-------------|------------|-------------|-------------|
| | Adult | Young | Total | Adult | Young | Total |
| Bowdoin Lake | 243 | 378 | 621 | 122 | 243 | 365 |
| Lakeside Marsh | 49 | 63 | 112 | 68 | 130 | 198 |
| Dry Lake | 124 | 138 | 262 | 100 | 186 | 286 |
| Nelson Reservoir | 64 | 121 | 185 | 54 | 127 | 181 |
| Hewitt Lake | 20 | 38 | 58 | 0 | 0 | 0 |
| Horseshoe Lake | 0 | 0 | 0 | 0 | 0 | 0 |
| Martin's Lake | 0 | 0 | 0 | 0 | 0 | 0 |
| Whitewater Reservoir | 47 | 116 | 163 | 47 | 125 | 172 |
| Pea Lake | 40 | 32 | 72 | 11 | 40 | 51 |
| Reservoir 95 | 0 | 0 | 0 | 0 | 0 | 0 |
| West Alkali Reservoir | 12 | 26 | 38 | 4 | 12 | 16 |
| Wildhorse Reservoir | 39 | 50 | 89 | 4 | 4 | 8 |
| Ester Lake | 2 | 5 | 7 | 3 | 13 | 16 |
| Little Warm Reservoir | 2 | 5 | 7 | 6 | 8 | 14 |
| Veseth's Reservoir | 12 | 33 | 45 | 15 | 20 | 35 |
| Weigand's Reservoir | 30 | 75 | 105 | 9 | 25 | 34 |
| Reservoir 161 | 11 | 13 | 24 | 2 | 3 | 5 |
| North Chinook Reservoir | 50 | 22 | 72 | 32 | 75 | 107 |
| B. R. 12 | 10 | 12 | 22 | 8 | 24 | 32 |
| Total | 755 | 1127 | 1882 | 485 | 1035 | 1520 |

The results of the production surveys in the Flathead Valley Unit are shown in the following summary. The decrease in goose production was probably due to a combination of the heavy out-of-State kill on the local goose population and exceptionally late spring in 1956.

| <u>Year</u> | <u>Number of Nests</u> | <u>Number of Goslings</u> |
|-------------|------------------------|---------------------------|
| 1954 | 254 | 594 |
| 1955 | 296 | 834 |
| 1956 | 160 | 557 |

Conclusions -

Unfavorable drought conditions throughout the Hi-Line have curtailed production and the forecast is for a poor crop of ducks.

The goose population and production census in the Hi-Line Unit indicated no significant change over 1955. The spring population in the Yellowstone River Unit also showed no change. Fewer nests and a smaller total production characterized the Flathead Valley Goose Unit.

COLORADOWeather and Water Conditions -

Because of the abundance of winter snows, and early spring rains, all of the important breeding areas in Colorado had good to excellent water conditions this year. It is believed that these conditions approach normal, and in some areas above normal. The one exception was Brown's Park where sloughs and marshes remained dry, similar to last year.

Breeding Population Indices -

Table I - Summary of Colorado Breeding Ground Conditions, 1956

| Area | Total Estimated Breeding Pairs | | | | |
|------------------------|--------------------------------|------------|---------------|---------------|---------------|
| | 1952 | 1953 | 1954 | 1955 | 1956 |
| | Ducks | | | | |
| San Luis Valley | - | - | 6744 | 7504 | 6576 |
| North Park | - | 5676 | 3808 | 2881 | 3844 |
| South Platte Valley | - | - | 2188 | 1072 | 1803 |
| Cache la Poudre Valley | 1029 | 1619 | 1320 | 1164 | 1518 |
| Yampa Valley | 1790 | 1500 | 1540 | 2260 | 4126 |
| Brown's Park | 291 | 372 | 217 | 48 | 15 |
| White River Plateau* | 580 | 480 | - | - | - |
| South Park* | - | 431 | 195 | 145 | - |
| Totals | | | 16,012 | 15,074 | 17,882 |
| | Geese | | | | |
| Yampa Valley | 120 | 130 | 110 | 20 | 84 |
| Brown's Park | 21 | 12 | 8 | 15 | 6 |
| Totals | 141 | 142 | 118 | 35 | 90 |

* White River Plateau not run because much snow remained in the area at the time of the count. South Park not covered due to insignificance of area and weather conditions at the time of the flight.

Table II - Species Composition of the Colorado Breeding Population, 1956*

| Species | Number | | | Species Composition % | | |
|--------------------|--------|--------|--------|-----------------------|-------|-------|
| | 1954 | 1955 | 1956 | 1954 | 1955 | 1956 |
| Mallard | 11,295 | 9,633 | 11,027 | 70.4 | 63.9 | 61.7 |
| Blue-winged Teal | 886 | 600 | 1,010 | 5.5 | 4.0 | 5.6 |
| Pintail | 873 | 750 | 710 | 5.5 | 5.0 | 4.0 |
| Gadwall | 852 | 1,874 | 1,495 | 5.3 | 12.4 | 8.3 |
| Baldpate | 552 | 211 | 376 | 3.4 | 1.5 | 2.1 |
| Shoveler | 542 | 220 | 387 | 3.4 | 1.5 | 2.2 |
| Cinnamon Teal | 442 | 509 | 862 | 2.8 | 3.4 | 4.8 |
| Green-winged Teal | 220 | 407 | 406 | 1.4 | 2.7 | 2.3 |
| Redhead | 109 | 352 | 807 | 0.7 | 2.3 | 4.5 |
| Scaup | 99 | 369 | 556 | 0.6 | 2.4 | 3.1 |
| Ruddy Duck | 48 | 44 | 12 | 0.3 | 0.3 | 0.1 |
| Bufflehead | - | - | 12 | - | - | 0.1 |
| American Merganser | 114 | 105 | 222 | 0.7 | 0.7 | 1.2 |
| Totals | 16,012 | 15,074 | 17,882 | 100.0 | 100.0 | 100.0 |

* Data derived from permanent transect records for the 1956 season. Data are corrected for unidentified pairs.

Species composition of the duck breeding population was very similar to past years (Table II). Mallards still make up the bulk of the breeding birds (41.7 percent) and no other species make up more than 10 percent of the total number.

Considering all areas, 1956 duck breeding populations show an increase of 18.6 percent over 1955, and 11.0 percent over 1954.

The Yampa Valley--Brown's Park goose flock showed a good increase in population this year over last, but still under the previous years of 1952, 1953, and 1954.

Conclusions -

In view of the increase in breeding population in Colorado this year, and the favorable water conditions, it is estimated that the fall flight from Colorado will be somewhat larger than in 1955.

SOUTHERN SASKATCHEWANWeather and Water Conditions -

Although there was a great deal of snow in southern Saskatchewan during the past winter the ground underneath was dry and spring run-off was low in many places. During early May there was considerable rain, but toward the middle of the month, high winds and low humidity dried up many areas. These conditions persisted until mid-June, when general rains again replenished the potholes. By then, however, considerable damage had already been done in some places, particularly in the southwestern and westcentral portions of the Province.

Our July, 1956 Pond Index is down to 15.3 per square mile. This is quite a reduction from the robust July 1955 Index of 41.1 per square mile, but it does not signify that Saskatchewan's nesting grounds, have gone dry. Our most productive habitats still have a fine supply of surface water, one that will be fully adequate to mature the big hatch now developing in these regions.

Rainfall in the summer of 1955 was so ideal for waterfowl production that all the other waterfowl seasons in our records are apt to suffer by comparison. The present 1956 season started out with a fine supply of surface water, but this water was dissipated in many regions by poor run-off, and by the drying periods that prevailed between the spells of wet weather. To put it another way, 1956 rainfall in Saskatchewan has been adequate in amount, but inopportune as to frequency, which is an altogether normal situation in the Canadian Prairies.

These drying periods undoubtedly affected the 1956 Duck Crop in two ways. First, they put some of our intensively-farmed grassland habitats (already marginal insofar as waterfowl are concerned) out of production altogether. Secondly, the drying period that set in during the first part of June came at a most unfortunate time, for many hens that had lost first nests had to decide during that period whether they should make one more try at motherhood, or give up the idea in favor of a leisurely sojourn at the molting lakes. In 1955, these frustrated hens tried again, in 1956, they didn't.

Breeding Population Indices -

Following are the breeding population indices gathered during the May aerial survey.

Species Indices (Aerial) - May, 1956 Waterfowl Population, Southern Saskatchewan.

| Species | S T R A T A | | | | | Province Totals |
|-------------------|-------------|-----------|-----------|---------|---------|-----------------|
| | A-East | A-West | B-East | B-West | C | |
| Pintail | 192,100 | 905,000 | 493,400 | 190,000 | 189,000 | 1,969,500 |
| Mallard | 423,100 | 852,100 | 725,700 | 295,100 | 177,200 | 2,473,200 |
| Baldpate | 36,900 | 92,700 | 115,100 | 36,200 | 20,200 | 301,100 |
| Shoveler | 33,700 | 175,400 | 104,800 | 26,600 | 49,300 | 389,800 |
| Gadwall | 8,400 | 55,100 | 24,700 | 11,800 | 11,100 | 111,100 |
| Blue-winged Teal | 66,600 | 130,300 | 133,600 | 31,800 | 22,300 | 384,600 |
| Green-winged Teal | 2,600 | 25,000 | 20,600 | 6,700 | 6,900 | 61,800 |
| Cinnamon Teal | Trace | | | | | Trace |
| <hr/> | | | | | | |
| Subtotal Surface | | | | | | |
| Ducks | 763,400 | 2,235,600 | 1,617,900 | 598,200 | 476,000 | 5,691,100 |
| <hr/> | | | | | | |
| 48 Scaup | 68,200 | 150,400 | 230,200 | 82,000 | 30,800 | 551,600 |
| Canvasback | 33,900 | 55,100 | 98,700 | 17,000 | 18,600 | 223,300 |
| Redhead | 13,000 | 40,100 | 76,000 | 20,000 | 4,200 | 153,300 |
| Ringneck | 4,200 | 2,500 | 2,000 | | 500 | 9,200 |
| Ruddy Duck | 8,700 | 20,000 | 16,000 | 1,500 | 500 | 46,700 |
| Goldeneye | | 2,500 | 10,300 | 3,000 | | 15,800 |
| Bufflehead | 800 | | 4,100 | 2,200 | | 7,100 |
| Scoter | | | 500 | 15,500 | | 16,000 |
| <hr/> | | | | | | |
| Subtotal Divers | 118,800 | 270,600 | 437,800 | 141,200 | 54,600 | 1,023,000 |
| <hr/> | | | | | | |
| Grand Total | | | | | | |
| Ducks | 882,200 | 2,506,200 | 2,055,700 | 739,400 | 530,600 | 6,714,100 |
| <hr/> | | | | | | |
| Coots | 46,700 | 96,700 | 140,000 | 18,600 | 4,500 | 306,500 |
| <hr/> | | | | | | |
| Ponds | 754,800 | 270,000 | 644,400 | 283,600 | 106,100 | 2,488,900 |
| <hr/> | | | | | | |

Comparative Indices - May Waterfowl Population (Aerial) - Southern Saskatchewan

| Species | Average | | | |
|-------------------------------|-------------------|------------------|------------------|------------------|
| | 1949 through 1953 | 1954 | 1955 | 1956 |
| Pintail | 923,900 | 1,275,000 | 1,774,100 | 1,969,500 |
| Mallard | 1,186,400 | 1,912,100 | 2,032,600 | 2,473,200 |
| Baldpate | 183,100 | 182,100 | 235,800 | 301,100 |
| Shoveler | 200,600 | 288,400 | 351,500 | 389,800 |
| Gadwall | 79,100 | 85,400 | 108,800 | 111,100 |
| Blue-winged Teal | 161,700 | 263,900 | 375,500 | 384,600 |
| Green-winged Teal | 22,400 | 18,700 | 52,500 | 61,800 |
| Black Duck | Trace | | Trace | |
| Subtotal Surface Ducks | 2,757,200 | 4,025,600 | 4,930,800 | 5,691,100 |
| Scaup | 146,200 | 209,600 | 459,700 | 551,600 |
| Canvasback | 123,200 | 166,600 | 177,600 | 223,300 |
| Redhead | 38,300 | 73,400 | 85,400 | 153,300 |
| Ringneck | 8,600 | 5,600 | 19,800 | 9,200 |
| Ruddy Duck | 21,500 | 15,000 | 47,700 | 46,700 |
| Goldeneye | 8,700 | 7,600 | 4,800 | 15,800 |
| Bufflehead | 10,700 | 4,600 | 8,900 | 7,100 |
| Scoter | 46,000 | 75,500 | 9,400 | 16,000 |
| Merganser | Trace | | | |
| Subtotal Diving Ducks | 403,200 | 557,900 | 813,300 | 1,023,000 |
| Total Ducks | 3,160,400 | 4,583,500 | 5,744,100 | 6,714,100 |
| Coots | 87,500 | 140,200 | 201,500 | 306,500 |
| Ponds | 2,325,000 | 4,264,400 | 4,033,200 | 2,488,900 |

Note: "B"-East and West separated in 1954, 1955 and 1956 computations.

Production Indices -

Aerial Brood and Late Nesting Indices - Southern Saskatchewan - July, 1956.

| | | STRATA | | | | | Province Totals |
|----------------------|-------------------|---------|---------|---------|--------|-----------|-----------------|
| Species | | A-East | A-West | B-East | B-West | C | |
| Broods | Not Speciated | 45,100 | 116,300 | 192,600 | 51,800 | 16,400 | 422,200 |
| | Pintail | 3,500 | 8,700 | 4,100 | 900 | 1,000 | 18,200 |
| Late-Nesting Indices | Mallard | 22,100 | 29,900 | 18,500 | 6,300 | 2,900 | 79,700 |
| | Baldpate | 3,200 | 7,900 | 0 | 900 | 0 | 12,000 |
| | Shoveler | 1,500 | 7,700 | 2,000 | 0 | 800 | 12,000 |
| | Gadwall | 1,200 | 12,500 | 0 | 1,700 | 1,000 | 16,400 |
| | B. W. Teal | 9,200 | 21,300 | 21,700 | 0 | 2,100 | 54,300 |
| | G. W. Teal | 1,300 | 500 | 0 | 0 | 400 | 2,200 |
| | Subtotal Puddlers | 42,000 | 88,500 | 46,300 | 9,800 | 8,200 | 194,800 |
| | Scaup | 2,100 | 9,400 | 8,200 | 4,500 | 2,000 | 26,200 |
| | Canvasback | 400 | 900 | 5,100 | 900 | 0 | 7,300 |
| | Redhead | 1,900 | 2,800 | 4,100 | 1,700 | 0 | 10,500 |
| | Ringneck | 100 | 0 | 0 | 0 | 0 | 100 |
| | Ruddy Duck | 3,100 | 3,800 | 12,300 | 1,700 | 400 | 21,300 |
| | Goldeneye | | 0 | 0 | 0 | | 0 |
| | Bufflehead | | 0 | 0 | 0 | | 0 |
| Scoter | | 0 | 0 | 900 | | 900 | |
| Subtotal Divers | 7,600 | 16,900 | 29,700 | 9,700 | 2,400 | 66,300 | |
| Grand Total Ducks | 49,600 | 105,400 | 76,000 | 19,500 | 10,600 | 261,100 | |
| Coot. Broods | 4,400 | 16,900 | 54,300 | 6,200 | 0 | 81,800 | |
| Pond Index | 362,000 | 502,700 | 598,800 | 223,200 | 66,500 | 1,753,200 | |

Comparative Brood and Late-Nesting Indices (Aerial) - Southern Saskatchewan, July Surveys 1952-1956

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| | Species | 1952 | 1953 | 1954 | 1955 | 1956 |
|----------------------|-------------------|-----------|-----------|-----------|-----------|---------|
| Brd | Not Speciated | 509,200 | 183,600 | 100,400 | 317,400 | 422,200 |
| Late-Nesting Indices | Pintail | 13,800 | 32,900 | 11,500 | 79,400 | 18,200 |
| | Mallard | 44,000 | 107,900 | 82,900 | 180,400 | 79,700 |
| | Baldpate | 18,000 | 21,100 | 17,000 | 21,300 | 12,000 |
| | Shoveler | 11,700 | 13,400 | 5,200 | 22,800 | 12,000 |
| | Gadwall | 12,500 | 14,800 | 13,800 | 28,500 | 16,400 |
| | B. W. Teal | 18,500 | 35,400 | 24,100 | 77,600 | 54,300 |
| | G. W. Teal | 1,900 | 3,500 | 5,500 | 8,000 | 2,200 |
| | Subtotal Puddlers | 120,100 | 229,000 | 160,000 | 418,000 | 194,800 |
| | Scaup | 8,700 | 28,500 | 11,300 | 44,300 | 26,200 |
| | Canvasback | 800 | 15,700 | 2,700 | 15,500 | 7,300 |
| | Redhead | 3,200 | 8,000 | 4,200 | 8,400 | 10,500 |
| | Ringneck | 0 | 3,000 | 4,500 | 3,700 | 100 |
| | Ruddy Duck | 7,100 | 14,000 | 18,000 | 20,000 | 21,300 |
| | Goldeneye | 900 | 0 | 1,800 | 0 | 0 |
| | Bufflehead | 0 | 500 | 0 | 900 | 0 |
| Scoter | 0 | 2,500 | 1,200 | 4,100 | 900 | |
| Grand Total Ducks | 140,800 | 301,200 | 203,700 | 514,900 | 261,100 | |
| Coot Broods | 28,770 | 3,380 | 4,400 | 21,000 | 81,800 | |
| Pond Index | 855,000 | 2,551,400 | 3,037,100 | 3,793,700 | 1,753,200 | |

The 1956 hatch reached a roaring climax during the latter part of July. Despite its comparatively late start, the hatch seemed to move steadily ahead, for there were many more broods on the water at the termination of the July, 1956 air surveys (air index 3.7 per square mile) than there were at a comparable date last year (1955 air index 2.3 broods per square mile). Advanced Class II and III broods (some of the latter almost ready to fly) predominated in the agricultural grasslands. Broods seen in the hilly grazing country represented all age-classes from very small I's to advanced III's. In the Parklands, where the hatch was late, Class I's and early II's were in the majority.

The average number of ducklings per Class III brood was 7.0 in 1955 and 5.6 in 1956, which represents a considerable reduction.

The number of coot broods observed increased markedly as compared to 1955.

Conclusions -

There was a considerable reduction in the number of young produced in Saskatchewan this year. On the other hand, the breeding population index increased about 1,000,000 birds. It is estimated that the increase in breeding population will balance the decrease in production and that the fall flight will be equal to 1955.

WYOMING

Weather and Water Conditions -

Surface water was considerably more abundant this spring as a result of an above normal snowpack in the mountainous areas. Late snows and rain filled stockwater ponds in the plains area of eastern Wyoming and run-off water from the melting snow provided adequate habitat throughout the remainder of the State. The Snake River began flooding early this spring and consequently many goose nests were destroyed. Some water areas in eastern Wyoming are beginning to drop up because of hot, dry July weather but sufficient water remains in most areas to insure the development of the waterfowl broods.

Breeding Population Indices -

Table I presents the summary of duck breeding ground surveys for 1955 and 1956 as prepared by the Statistics Department of the University of Wyoming. Duck breeding pairs are down 9.8 percent from 1955 and average pairs per square mile are down 8 percent. No comparison has been made with a long time average inasmuch as new sample areas and techniques were inaugurated in 1955.

Table II summarizes the species composition of the breeding population for 1955 and 1956. Mallards have remained number one in abundance and comprise nearly the same percentage of the breeding population in 1956 as in 1955.

Table III presents a comparison of the inventories of various goose breeding populations throughout the State. The goose breeding population in Wyoming has been on the decline for the past three years and this year's inventory reveals no change in this trend.

Table I - Summary of Duck Breeding Ground Survey - Wyoming - 1955-1956

| Species | SAMPLE | | | |
|--------------------|----------------|--------------|--------------|--------------|
| | Breeding Pairs | | Total | |
| | 1955 | 1956 | 1955 | 1956 |
| Mallard | 584 | 550 | 1,281 | 1,667 |
| Pintail | 106 | 104 | 231 | 310 |
| Teal | 70 | 146 | 224 | 333 |
| Shoveler | 74 | 56 | 183 | 174 |
| Gadwall | 34 | 72 | 105 | 162 |
| Baldpate | 36 | 39 | 92 | 100 |
| Redhead | 23 | 8 | 46 | 16 |
| Coot | 9 | 13 | 88 | 106 |
| Barrow's Goldeneye | 4 | 1 | 8 | 6 |
| American Merganser | 13 | 10 | 26 | 42 |
| Ruddy Duck | 6 | 0 | 27 | 46 |
| Scaup | 4 | 12 | 8 | 30 |
| Unknown | 136 | 52 | 276 | 1,013 |
| Total | 1,099 | 1,063 | 2,595 | 4,005 |

| Wyoming Area - 97,914 square miles | 1955 | 1956 |
|------------------------------------|--------|--------|
| Total Area Sampled | 54,249 | 54,249 |
| Total Breeding Ground in Sample | 2,239 | 2,367 |
| Average Pairs Per Square Mile | .49 | .45 |
| Average Ducks Per Square Mile | 1.16 | 1.69 |

Table I - Summary of Duck Breeding Ground Survey - Wyoming - 1955-1956

Continued -

ESTIMATED POPULATION

| Species | Breeding Pairs | | | Total | | |
|---------------|----------------|---------------|----------------|----------------|----------------|----------------|
| | 1955 | 1956 | Percent Change | 1955 | 1956 | Percent Change |
| Mallard | 29,558 | 25,471 | - 13.8 | 64,834 | 77,238 | + 19.1 |
| Pintail | 5,365 | 4,813 | - 10.3 | 11,691 | 14,360 | + 22.7 |
| Teal | 3,543 | 7,701 | +117.4 | 11,337 | 15,418 | + 35.9 |
| Shoveler | 3,745 | 2,611 | - 30.3 | 9,262 | 8,052 | - 13.5 |
| Gadwall | 1,721 | 3,319 | + 92.9 | 5,314 | 7,495 | + 41.0 |
| Baldpate | 1,822 | 1,814 | - 00.4 | 4,656 | 4,638 | + 00.2 |
| Redhead | 1,164 | 366 | - 68.5 | 2,328 | 742 | - 68.1 |
| Coot | 456 | 601 | + 31.7 | 4,454 | 4,917 | + 10.4 |
| B. Goldeneye | 202 | 51 | - 74.6 | 405 | 278 | - 31.2 |
| Am. Merganser | 658 | 445 | - 32.3 | 1,316 | 1,948 | + 48.0 |
| Ruddy Duck | 304 | 0 | -100.0 | 1,367 | 2,134 | + 56.1 |
| Scaup | 202 | 550 | +172.1 | 405 | 1,391 | +243.4 |
| Unknown | 6,883 | 2,400 | - 65.0 | 13,969 | 46,921 | +235.8 |
| Total | 55,623 | 50,142 | - 9.8 | 131,339 | 185,532 | + 41.3 |

Table II - Species Composition of Breeding Population, 1955-1956

| Species | Number | | Percent Species Composition | |
|--------------|---------------|---------------|-----------------------------|--------------|
| | 1955 | 1956 | 1955 | 1956 |
| Mallard | 29,558 | 25,471 | 53.0 | 51.0 |
| Pintail | 5,365 | 4,813 | 9.6 | 9.6 |
| Teal | 3,543 | 7,701 | 6.4 | 15.4 |
| Baldpate | 1,822 | 1,814 | 3.3 | 3.6 |
| Shoveler | 3,748 | 2,611 | 6.8 | 5.2 |
| Redhead | 1,164 | 366 | 2.1 | .7 |
| Scaup | 202 | 550 | .4 | 1.1 |
| Goldeneye | 202 | 51 | .4 | .1 |
| Gadwall | 1,721 | 3,319 | 3.1 | 6.6 |
| Merganser | 658 | 445 | 1.2 | .8 |
| Coot | 456 | 601 | .8 | 1.2 |
| Ruddy Duck | 304 | 0 | .5 | 00.0 |
| Unidentified | 6,883 | 2,400 | 12.4 | 4.8 |
| Total | 55,623 | 50,142 | 100.0 | 100.0 |

Table III - Comparison of Canada Goose Breeding Ground Inventories on Identical Areas, 1953 - 1956

| <u>Drainage</u> | <u>1953</u> | <u>1954</u> | <u>1955</u> | <u>1956</u> |
|-----------------|--------------|--------------|--------------|--------------|
| Green | 336 | 204 | 119 | 160 |
| Bear | 369 | 183 | 270 | 264 |
| Wind | 13 | 103 | 97 | 88 |
| North Platte | 509 | 296 | 219 | 147 |
| Snake | 506 | 267 | 437 | 347 |
| Total | 1,733 | 1,053 | 1,142 | 1,006 |

Production Data -

No reliable brood surveys have been made but it is the impression of field personnel that a normal hatch occurred and that average brood size will be large enough to insure normal production.

Conclusions -

It is estimated that Wyoming will produce about the same number of ducks as in 1955 but the fall flight of geese will be reduced.

SOUTH DAKOTA

Weather and Water Conditions -

Drought conditions of 1955 were somewhat relieved this spring by snow and run-off and rainfall. The West-River area and the north-central and north-eastern counties of the East-River area showed substantial improvement in water conditions. The remainder of the State, at least, maintained spring water conditions of 1955 and evidenced no further deterioration as of the mid-May survey.

The annual mid-May survey showed an average, State-wide density of 2.88 water areas (all types) per square mile. This represents a 22 percent increase over the 1955 mid-May density of 2.35 water areas per square mile, and 33 percent below the 1950 - 1955, six-year average of 4.30 water areas per square mile.

Conditions generally deteriorated throughout eastern South Dakota following the breeding population survey in May. The last two weeks of May and the month of June were unusually hot and below normal in rainfall. However, heavy

scattered precipitation during the first two weeks of July was sufficient to improve water conditions at the time of the mid-July brood survey.

Breeding Population Indices -

The improved State-wide water conditions were accompanied by an increase in the number of breeding ducks. The annual May survey indicated an average State-wide observed density of 6.31 ducks per square mile. Correction of the observed duck density for unobserved females on the nest (correction factor, 1.21) indicated the minimum State-wide density index of 7.64 ducks per square mile to be 59 percent above the 1955 index of 4.81 ducks per square mile, and 20 percent below the 1950-1955, six-year average index of 9.58 ducks per square mile.

The physiographic distribution of the breeding population appears in Table I. The increase in the breeding duck population was general over the entire State. The increases for physiographic regions ranged from 37 percent in the James River Valley to 99 percent on the Missouri Plateau. The State-wide population distribution was 2 percent in the Minnesota Valley, 24 percent in the Prairie Hills, 31 percent in the James River Valley, 12 percent in the Missouri Hills, and 31 percent on the Missouri Plateau.

Table I - Physiographic Distribution of the Breeding Waterfowl Population and 1955 - 1956 Trends

| Physiographic Division | Uncorrected Ducks Per Sq. Mi. | | Corrected* Ducks Per Sq. Mi. | | |
|------------------------|-------------------------------|-------|------------------------------|-------|--------|
| | 1955 | 1956 | 1955 | 1956 | Change |
| Minnesota Valley | 5.45 | 8.75 | 6.43 | 10.59 | + 65% |
| Prairie Hills | 9.28 | 13.71 | 10.95 | 15.58 | + 51% |
| James River Valley | 5.89 | 7.89 | 6.95 | 9.55 | + 37% |
| Missouri Hills | 5.16 | 7.27 | 6.09 | 8.80 | + 44% |
| Missouri Plateau | 1.95 | 3.79 | 2.30 | 4.58 | + 99% |
| State-wide | 4.08 | 6.31 | 4.81 | 7.64 | + 59% |

* Corrected from ground transect data (East River) and aerial transect data (West River) to compensate for unobserved females on nests. Corrected by 1.18 in 1955 and 1.21 in 1956.

Continued --

Table I - Physiographic Distribution of the Breeding Waterfowl Population and 1955 - 1956 Trends - Continued -

| Physiographic Division | Estimated Minimum Population | | Percent of State-wide Population | | |
|------------------------|------------------------------|---------|----------------------------------|------|--------|
| | 1955 | 1956 | 1955 | 1956 | Change |
| Minnesota Valley | 8,000 | 13,000 | 2% | 2% | - |
| Prairie Hills | 88,000 | 134,000 | 24% | 24% | - |
| James River Valley | 130,000 | 179,000 | 36% | 31% | - 5% |
| Missouri Hills | 45,000 | 67,000 | 13% | 12% | - 1% |
| Missouri Plateau | 89,000 | 178,000 | 25% | 31% | + 6% |
| State-wide | 360,000 | 571,100 | 100% | 100% | |

Table II - Comparisons of Minimum Species Breeding Populations in South Dakota

| Species | 1955 Minimum Population | 1956 Minimum Population | Change | Percent Change |
|-------------------|-------------------------|-------------------------|-----------|----------------|
| Blue-winged Teal | 171,900 | 275,100 | + 103,200 | + 60% |
| Pintail | 39,600 | 36,600 | - 3,000 | - 8% |
| Mallard | 58,000 | 54,600 | - 3,400 | - 6% |
| Shoveler | 39,400 | 73,300 | + 33,900 | + 86% |
| Gadwall | 16,500 | 35,100 | + 18,600 | +113% |
| Redhead | 6,400 | 19,400 | + 13,000 | +203% |
| Ruddy Duck | 8,900 | 9,700 | + 800 | + 9% |
| Scaup | 13,800 | 38,100 | + 24,300 | +175% |
| Canvasback | 2,300 | 3,000 | + 700 | + 30% |
| Baldpate | 3,100 | 19,400 | + 16,300 | +526% |
| Green-winged Teal | 100 | 8,000 | + 5,900 | +5900% |
| Wood Duck | - | - | - | - |
| Ringneck | - | 800 | + 800 | - |
| Total | 360,000 | 571,100 | + 211,100 | + 59% |

Production Indices -

The 1956 mid-July survey indicated an average observed brood density of 0.336 broods per square mile (Table III). This is 17 percent below the 1955 average of 0.406 broods per square mile, and 44 percent below the 1953-1955, three-year average of 0.599 broods per square mile.

The current hatch appears to be later than that of 1955 for certain species and about the same as last year for others. Since the late hatch primarily concerns blue-winged teal, a normally abundant species, it appears that total production for 1956 may equal that of 1955.

The average 1956 mid-July brood size (all species) for 515 broods was 6.37 young per brood. This is 15 percent smaller than the average 1955 brood size of 7.38 young per brood, and 17 percent smaller than the 1953-1955, three-year average brood size of 7.64 young per brood. The indicated decrease in brood size may reflect the general absence of normally large blue-winged teal broods, as of mid-July.

Table III - Mid-July Indices to Water Areas and Brood Densities and 1955-1956 Trends in Eastern South Dakota

| Physiographic Division | Water Areas Per Sq. Mile* | | | Ducks Broods Per Sq. Mile | | |
|---------------------------|------------------------------|------|--------|------------------------------|-------|--------|
| | 1955 | 1956 | Change | 1955 | 1956 | Change |
| Minnesota Valley | 0.56 | 2.56 | +357% | 0.556 | 0.111 | -80% |
| Prairie Hills | 1.60 | 3.28 | +105% | 0.906 | 0.788 | -13% |
| James River Valley | 0.84 | 1.36 | + 62% | 0.181 | 0.132 | -27% |
| Missouri Hills | 1.77 | 1.99 | + 12% | 0.329 | 0.300 | - 9% |
| East-River Totals | 1.22 | 2.02 | + 66% | 0.406 | 0.336 | -17% |

* Water areas of all types other than streams

Conclusions -

It is estimated that the fall flight of ducks from South Dakota will be about the same as last year.

NORTH DAKOTA

Weather and Water Conditions -

Very good moisture conditions and abundant water areas prevailed throughout most of the State during the early spring. The precipitation for June and July was near normal with a few local areas receiving heavy rains of three to four inches. Hail was reported to have caused crop damage in some areas. At the present time, water conditions appear to be about average or only slightly above average throughout most of North Dakota.

Breeding Population Indices -

The breeding population increased again this year. The breeding population index for the State as a whole was 1,434,500, as compared to 1,199,200 in 1955, and 894,200 in 1954. Increases were apparent in all major species except baldpate.

Production Indices -

A few broods of pintails and mallards were observed the latter part of May, but it appears at this time that the hatching peak will be about two weeks later than it was in 1955. The total number of recently hatched broods is still increasing so it appears that the hatching peak has not yet been reached.

A total of 95 broods have been observed on four transects approximately 30 miles in length. Over 50 percent of these broods were hatched after July 1. The average brood size for the 95 broods is 7.29.

The 1956 waterfowl production appears promising at this time, and it is expected that the total production will be as great as it was in 1955.

Conclusions -

It is estimated that the fall flight from North Dakota will be approximately the same as last year.

Mississippi Flyway Data

Waterfowl Kill Information

The following table presents the estimated kill of waterfowl during the 1954-55 and 1955-56 shooting seasons as determined by the Waterfowl Hunter Mail Survey:

| Species | Total Kill* | | Percent Change 1954-55 to 1955-56 |
|---------------------|------------------|------------------|---|
| | 1955-56 | 1954-55 | |
| Mallard | 3,330,726 | 2,578,470 | + 29.17 |
| Green-winged Teal | 333,750 | 435,531 | - 23.37 |
| Blue-winged Teal | 326,279 | 537,639 | - 39.31 |
| Scaup | 236,508 | 323,657 | - 26.93 |
| Pintail | 179,074 | 319,669 | - 43.98 |
| Black Duck | 309,352 | 201,711 | + 53.36 |
| Canvasback | 204,931 | 117,703 | + 74.11 |
| Redhead | 155,435 | 130,025 | + 19.54 |
| Ring-necked | 80,607 | 177,014 | - 54.46 |
| Gadwall | 133,605 | 66,777 | +100.08 |
| American Widgeon | 73,836 | 48,881 | + 51.05 |
| Wood Duck | 205,164 | 9,510 | ** |
| Shoveler | 44,652 | 46,376 | - 3.72 |
| Ruddy | 71,326 | 40,138 | + 77.70 |
| Bufflehead | 30,702 | 28,633 | + 7.23 |
| Goldeneye | 56,442 | 22,651 | +149.18 |
| Merganser | 55,567 | 25,668 | +116.48 |
| Scoter | 4,903 | 2,710 | + 80.92 |
| Others | 3,969 | 308 | -- |
| Total Ducks | 5,836,825 | 5,113,069 | + 14.16 |
| Canada Goose | 161,949 | 72,298 | +124.00 |
| Blue Goose | 48,111 | 57,392 | - 16.00 |
| Snow Goose | 26,231 | 18,330 | - 43.10 |
| White-fronted Goose | 5,778 | 5,913 | - 2.28 |
| Total Geese | 242,069 | 153,933 | + 57.26 |
| Coot | 492,030 | 531,082 | - 7.35 |

* Includes both retrieved and unretrieved birds.

** No 1954-55 open season on Wood Duck.

Mississippi Flyway Data

Number of Hunters, Daily Kill, Seasonal Kill, and Average Times Hunted, as
Determined by the Waterfowl Hunter Mail Survey

| | 1955-56 | 1954-55 | Percent Change 1954-55 to 1955-56 |
|-------------------------------------|-----------|---------|---|
| Number of Potential Hunters* | | | |
| Over 16 | 1,012,762 | 918,685 | + 10.24 |
| Under 16 | 60,825 | 49,544 | + 22.77 |
| Number of Active Hunters** | | | |
| Over 16 | 879,877 | 805,521 | + 9.23 |
| Under 16 | 60,010 | 49,544 | + 21.12 |
| Average Daily Kill** | | | |
| <u>Over 16</u> Ducks | 1.61 | 1.52 | + 5.92 |
| Geese | .11 | .07 | + 57.14 |
| Coot | .23 | .27 | - 14.81 |
| <u>Under 16</u> Ducks | .92 | .86 | N. C. |
| Geese | .04 | .07 | - 42.85 |
| Coot | .22 | .24 | - 8.33 |
| Average Seasonal Kill** | | | |
| <u>Over 16</u> Ducks | 6.586 | 6.361 | + 3.53 |
| Geese | .437 | .287 | + 52.26 |
| Coot | .934 | 1.112 | - 16.00 |
| <u>Under 16</u> Ducks | 3.763 | 3.611 | + 4.20 |
| Geese | .171 | .284 | - 39.78 |
| Coot | .914 | 1.002 | - 8.78 |
| Average Times Hunted** | 4.090 | 4.176 | N. C. |

* Individuals who purchased a Duck Stamp with the intent to hunt.

** Individuals who hunted at least once.

Winter Trend Data - Mississippi Flyway

In the MISSISSIPPI FLYWAY during the past several years there is little question but that changing conditions at the time of the annual winter survey have affected the population trend data. When the lower Mississippi Valley is dry the birds tend to concentrate on rivers and reservoirs, where they are easily seen. When the river bottoms flood, as they usually do some time during late fall or early winter, ducks, particularly mallards, are attracted into the bottoms to feed. Suitable techniques for censusing the birds when they are in the bottoms have not been developed. In 1951, the bottoms were flooded but frozen during the survey period, a condition which forced the birds into the open where they could be counted. In 1952, the bottoms were flooded, and it is probable that the decrease in mallards observed that year resulted from not being able to find the birds, and not that a decrease in population occurred. In 1953, 1954, 1955 and again in 1956 a drought condition existed and the bottoms were not flooded at the time of the survey. As a result the birds were in the open and could be counted. It is probable that the winter survey data have been roughly comparable for the past three years.

It is of interest to note that in spite of the cold fall and early winter that more mallards wintered north of the Ohio River than south of it in the Mississippi Flyway.

Percent Change in Mississippi Flyway (Continental) Population Index Figures for Ducks, Geese, Swan and Coot from January 1955 to January 1956.

| <u>Area</u> | <u>Ducks</u> | <u>Geese</u> | <u>Coot</u> | <u>Total</u> |
|------------------------------|--------------|--------------|-------------|--------------|
| Ontario | - 8 | +67 | - | - 7 |
| Mississippi Flyway States | +40 | +13 | + 8 | +36 |
| Total | +40 | +13 | + 8 | +36 |

MISSISSIPPI FLYWAY

Species Composition - Mississippi Flyway (Continental) 1955 and 1956
 (Comparable Coverage)

| Species | Percent of Birds Identified | | Percent Change |
|---------------------|-----------------------------|--------------|----------------|
| | 1955 | 1956 | |
| Mallard | 59.3 | 64.1 | + 47.6 |
| Blue Goose | 5.8 | 5.1 | + 22.6 |
| Pintail | 5.5 | 5.6 | + 42.4 |
| Canada Goose | 5.1 | 3.8 | + 1.2 |
| Scaup | 4.6 | 2.0 | - 39.3 |
| Green-winged Teal | 3.8 | 6.1 | +121.4 |
| Black Duck | 3.1 | 2.8 | + 21.9 |
| Coot | 2.1 | 1.7 | + 8.3 |
| Gadwall | 1.8 | 2.2 | + 66.0 |
| Canvasback | 1.8 | .9 | - 30.6 |
| Shoveler | 1.3 | .7 | - 30.5 |
| Merganser | 1.2 | .6 | - 31.6 |
| Goldeneye | 1.1 | .8 | - 5.1 |
| Baldpate | .9 | .8 | + 19.8 |
| Ringneck | .7 | .9 | + 62.0 |
| Snow Goose | .5 | .5 | + 19.2 |
| Redhead | .5 | .2 | - 46.8 |
| Ruddy | .5 | .5 | + 43.2 |
| Wood Duck | .2 | .4 | +110.3 |
| Old Squaw | .1 | .1 | + 47.6 |
| White-fronted Goose | .1 | .1 | + 27.5 |
| Blue-winged Teal | Tr. | Tr. | - 42.1 |
| Bufflehead | Tr. | .1 | - |
| Scoter & Eider | Tr. | Tr. | - |
| Whistling Swan | Tr. | Tr. | - |
| Total | 100.0 | 100.0 | + 35.9 |

Summary of Mississippi Flyway Waterfowl Indices

In view of the weather and water conditions existing during the survey period this year, there seems little question but what the wintering population of waterfowl in the MISSISSIPPI FLYWAY increased considerably over last year, and that the level is now above the average for the past several years.

Waterfowl - The 1956 waterfowl index is 37 percent above the seven-year average level and compared to individual years is:

33 percent above 1955
29 percent above 1954
36 percent above 1953
66 percent above 1952
25 percent above 1951
123 percent above 1950

Ducks - The 1956 duck index is 42 percent above the seven-year average level and compared to individual years is:

36 percent above 1955
34 percent above 1954
38 percent above 1953
83 percent above 1952
29 percent below 1951
155 percent above 1950

Among the ducks, the indices are:

1. Considerably up for: mallard, pintail, green-winged teal, black duck and gadwall.
2. Considerably down for: scaup, canvasback and shoveler.

Geese - The 1956 goose index is 15 percent above the seven-year average level and compared to individual years is:

13 percent above 1955
2 percent below 1954
16 percent above 1953
37 percent above 1952
23 percent above 1951
28 percent above 1950

Among the geese, the Canadas remained about the same, while the blues and snows increased noticeably.

Coot - The 1956 coot index is 29 percent below the seven-year average level and compared to individual years is:

4 percent above 1955

12 percent above 1954

36 percent above 1953

66 percent below 1952

45 percent below 1951

35 percent below 1950

Breeding Ground Surveys

SOUTHERN MANITOBA

Weather and Water Conditions -

Spring break-up this year in Southern Manitoba was from two to three weeks late. Heavy winter snows and previous wet years gave the area a plentiful supply of ponds and water areas. For comparison, the 1955 total pond index was 742,400 in contrast to the 1956 pond index of 1,005,500, an increase of 35.4 percent. The southwestern portion of Manitoba seemed to be rather dry but this was the only area that appeared so. Lack of rainfall in April and May of this year has had an effect on the moisture in the soil and farm crops; however, as near as could be determined from the aerial data, no effect was apparent on waterfowl needs.

June and July were identified by large amounts of rainfall and excellent water conditions for waterfowl. The pond count index was very good; it showed 837,500 as this year's count against 610,200 for a year ago.

In June rainfall records from Rivers and Dauphin showed a marked increase in moisture over the normal, Rivers had 8.75 inches during June compared to a norm. of 3.78 inches, and Dauphin had 8.25 inches compared to 2.70.

Rainfall for July was characterized by afternoon thunder showers day after day. It was not unusual to see a half-dozen showers in one area. Most of the flying was done in the mornings to avoid this steady thunderstorm build up. To date in July, Rivers had 3.0 inches, Dauphin 2.2 inches, and Winnipeg 2.9 inches of rain.

Abundant aquatic growth was noted, both of types submergents and emergents. This decreased the visibility from the air. It may have been an important factor in our lower count of coot broods this year than last. Food conditions appeared to be good. The nesting season as reported previously was late and we noticed what appears to be the peak of the hatch near the 20th of July. Normally the peak would have occurred shortly before the 15th of July.

Breeding Population Indices -

Table I - May Waterfowl Population Indices - Southern Manitoba - Aerial Survey

| Year | Stratum "A" (10,368 Square Miles) | Stratum "B" (28,600 Square Miles) | Stratum "A" & "B" (38,968 Square Mi.) |
|------|--------------------------------------|--------------------------------------|--|
| 1951 | 472,800 | 165,900* | 639,700* |
| 1952 | 343,200 | 143,300* | 486,500* |

Continued ---

Table III - The Progress of Early Nesting (Percentage of Lone Males in Ducks Observed by Air) in Southern Manitoba

| Year | % Males in Stratum "A" | % Males in Stratum "B" | % Males in Stratum "A" & "B" | Total Ducks |
|------|------------------------|------------------------|------------------------------|-------------|
| 1953 | 29.4 | 34.9 | 100 | 1,000 |
| 1954 | 29.2 | 31.5 | 200 | 1,400 |
| 1955 | 29.9 | 31.7 | 5,900 | 1,900 |
| 1956 | 18.3 | 30.5 | 4,200 | 4,500 |
| 1957 | 0.7 | 1.7 | 14,100 | 6,700 |
| 1958 | 0.8 | 2.2 | 1,700 | 7,000 |
| 1959 | 2.3 | 3.3 | 27,600 | 20,900 |
| 1960 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1961 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1962 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1963 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1964 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1965 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1966 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1967 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1968 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1969 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1970 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1971 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1972 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1973 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1974 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1975 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1976 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1977 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1978 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1979 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1980 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1981 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1982 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1983 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1984 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1985 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1986 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1987 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1988 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1989 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1990 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1991 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1992 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1993 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1994 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1995 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1996 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1997 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1998 | 2.3 | 3.3 | 32,200 | 20,900 |
| 1999 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2000 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2001 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2002 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2003 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2004 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2005 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2006 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2007 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2008 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2009 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2010 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2011 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2012 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2013 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2014 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2015 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2016 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2017 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2018 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2019 | 2.3 | 3.3 | 32,200 | 20,900 |
| 2020 | 2.3 | 3.3 | 32,200 | 20,900 |

The brood index is up 2.6 percent over 1955 but this is not a measurable change due to the smaller size of broods this year. Class II and III broods

Species composition of the May 1955 and 1956 waterfowl population in Stratum "A" and "B" was very similar to that of the May 1955 and 1956 waterfowl population in Stratum "A" and "B".

Aerial Brood and Late Nesting Indices - Southern Manitoba, July, 1956. * Data uncorrected for absent hens in these cases.

| Year | Stratum "A" (10,368 Square Miles) | Stratum "B" (28,000 Square Miles) | Provincial Totals |
|---------------------|-----------------------------------|-----------------------------------|-------------------|
| 1953 | 209,400 | 17,300* | 006 |
| 1954 | 325,600 | 22,900 | 005,1 |
| 1955 | 403,900 | 24,200 | 005,1 |
| 1956 | 417,200 | 27,000 | 006,8 |
| Subtotal - Puddlers | 1,096,200 | 100,700 | 34,500 |

Continued ---

MISSISSIPPI FLYWAY

Aerial Brood and Late Nesting Indices - Southern Manitoba, July, 1956.

Continued -

| Broods | Species | Stratum A | Stratum B | Provincial Totals |
|-------------------|------------|-----------|-----------|-------------------|
| | Redhead | 2,100 | 900 | 3,000 |
| | Ringneck | 300 | | 300 |
| | Ruddy Duck | 4,800 | 1,400 | 6,200 |
| <hr/> | | | | |
| Subtotal - Divers | | 10,000 | 2,300 | 12,300 |
| <hr/> | | | | |
| Grand Total | | 35,600 | 11,200 | 46,800 |
| <hr/> | | | | |
| Coot Broods | | 1,200 | 400 | 1,600 |
| <hr/> | | | | |
| Pond Index | | 425,900 | 411,600 | 837,500 |

Comparison of Aerial Brood and Late Nesting Indices - 1955 and 1956

| Broods | Not Speciated | 1955 | 1956 | Percent Change |
|---------------------|-------------------|--------|--------|----------------|
| | | 22,800 | 24,900 | + 9.2 |
| <hr/> | | | | |
| | <u>Species</u> | | | |
| | Pintail | 1,900 | 2,700 | |
| | Mallard | 22,000 | 18,600 | |
| Late | Baldpate | 1,900 | 1,500 | |
| Nesting | Shoveler | 1,000 | 1,500 | |
| Indices | Gadwall | 500 | 900 | |
| | Blue-winged Teal | 6,400 | 7,100 | |
| | Green-winged Teal | - | 2,200 | |
| <hr/> | | | | |
| Subtotal - Puddlers | | 33,700 | 34,500 | + 2.4 |
| <hr/> | | | | |
| | Scaup | 1,200 | 2,200 | |
| | Canvasback | 2,500 | 600 | |
| | Redhead | 1,900 | 3,000 | |
| | Ringneck | 2,300 | 300 | |
| | Ruddy Duck | 7,700 | 6,200 | |
| <hr/> | | | | |
| Subtotal - Divers | | 15,600 | 12,300 | - 21.2 |

Continued --

Comparison of Aerial Brood and Late Nesting Indices - 1955 and 1956

Continued -

| <u>Species</u> | <u>1955</u> | <u>1956</u> | <u>Percent Change</u> |
|----------------|-------------|-------------|-----------------------|
| Grand Total | 49,300 | 46,800 | - 5.1 |
| Coot Broods | 3,100 | 1,600 | - 48.4 |
| Pond Index | 610,200 | 837,500 | + 37.2 |

Conclusions -

The production of young in Southern Manitoba is about the same as in 1955. Although the breeding population increased somewhat (.10 percent) the increase is not sufficient to change the picture much. It is concluded, therefore, that the fall flight from the area will be about the same as 1955.

MICHIGAN

Weather and Water Conditions -

Weather conditions delayed migration in the north country and nesting particularly in the northern half of the State was late.

Although temperatures were more normal for May and June, this period was marked by severe thunderstorms, high winds, and heavy rain squalls. Several destructive tornadoes were experienced and additional tornado alerts were issued, particularly for the southern part of the State.

Sufficient precipitation occurred to assure nesting success on small natural ponds and semi-permanent marshes. We are certain that nesting was late, but the effects of the storms, high winds causing wind tide floodings on Great Lakes marshes, and the effects of hard rain squalls on broods remain a question. Although weather conditions could not be considered favorable for production, the total effect, if damaging to the nesting success, was not apparent in results obtained by our surveys.

Breeding Population Indices -

Surveys made to determine the comparative abundance of breeding pairs indicated a favorable nesting population. On sample check areas scattered throughout the State, the nesting population was found to be similar to that of 1955 and only slightly below that of 1954 and 1953, all of which were good production years.

MISSISSIPPI FLYWAY

The potential breeding population compared to the previous years follows:

| <u>Year</u> | <u>Lineal Miles Censused</u> | <u>Potential Breeders Per Lineal Mile</u> |
|-------------|------------------------------|---|
| 1949 | 85 | 6.80 |
| 1950 | 81 | 7.91 |
| 1951 | 120 | 8.18 |
| 1952 | 82 | 7.13 |
| 1953 | 95.5 | 12.75 |
| 1954 | 93.5 | 12.31 |
| 1955 | 111.2 | 11.00 |
| 1956 | 110.5 | 11.48 |

The species composition of the potential breeding population as determined on these sample check areas follows:

| <u>Species</u> | <u>Percent Species Composition</u> |
|------------------|------------------------------------|
| Mallard | 28.8 |
| Black Duck | 22.5 |
| Blue-winged Teal | 21.9 |
| Wood Duck | 2.4 |
| Ringneck Duck | 5.4 |
| Merganser | 3.7 |
| Pintail | 1.4 |
| Unidentified | 13.9 |

Special efforts were made to determine the status of the wood duck as noticeable decreases in their numbers have been reported in recent years for certain States of the Mississippi Flyway.

The index of change expressed in percent of wood ducks compared to all species observed on census routes of our sample check areas provides some of the best data we have to offer. It is important to emphasize that these census routes were not selected with reference to wood duck habitat, but merely representative of waterfowl habitat found in various parts of the State.

Comparisons for two surveys follow:

| <u>Year</u> | <u>Potential Breeders Per Lineal Mile</u> | <u>Percent Wood Ducks</u> |
|-------------|---|---------------------------|
| 1950 | 7.91 | 2.2 |
| 1951 | 8.18 | 3.9 |
| 1952 | 7.13 | 3.0 |
| 1953 | 12.75 | 6.7 |

Continued --

| <u>Year</u> | <u>Potential Breeders Per Lineal Mile</u> | <u>Percent Wood Ducks</u> |
|-------------|---|-------------------------------|
| 1954 | 12.31 | 4.7 |
| 1955 | 11.00 | 6.4 |
| 1956 | 11.49 | 2.4* |

* Flood conditions at several census areas seriously affected census results as ducks were back in flooded timber off regular census route. As an example, the count on the Kalamazoo River bottom lands was 48 wood ducks in 1955 and only 2 this spring.

Although floods had an effect on census data it is important to note that the average number of breeders of all ducks remained comparable to the past four years while the percent of wood ducks observed decreased.

Production Indices -

Brood censuses were made on the same sample check areas to obtain an index of the success of the productive period.

Comparing the results of this year's brood census with those obtained in previous years, good production is indicated. The number of broods observed per lineal mile has been exceeded only twice in the past seven years. The average size of the broods remained comparable to the past seven-year average. This would indicate that weather had not been a serious influence. Comparisons are shown below:

| <u>Year</u> | <u>Broods Per Lineal Mile</u> | <u>Hens & Yng./ Lineal Mile</u> | <u>Bachelor Ducks Per Lineal Mi.</u> | <u>Average Size of Brds. Observed</u> |
|-------------|-----------------------------------|---|--|---|
| 1949 | .47 | 2.75 | 6.50 | 6.00 |
| 1950 | .34 | 2.32 | 5.50 | 5.87 |
| 1951 | .35 | 2.20 | 3.31 | 5.76 |
| 1952 | .70 | 3.92 | 3.21 | 4.60 |
| 1953 | .51 | 3.63 | 4.32 | 6.10 |
| 1954 | .20 | 1.67 | 4.60 | 6.24 |
| 1955 | .64 | 4.65 | 5.09 | 6.28 |
| 1956 | .53 | 3.67 | 4.40 | 5.86 |

INDIANAWeather and Water Conditions -

Potholes in the northern part were at low water levels through April 27 but have been at satisfactory levels since the heavy rain of April 28. Water conditions were considered good to excellent during the aerial brood survey of June 29.

Many streams have been at flood stage, at different times, since May 1. Three regular brood survey float trips, scheduled for central Indiana during the first week of May, had to be postponed 10 to 30 days because of high water. Nine mallard nests along the Pigeon River in LaGrange County were reported flooded, and mallard eggs were reported seen floating at the Elkhart River in Noble County, early in May.

Breeding Population Indices -

Three of the regular nine stream transects, totaling 47 miles, were floated between April 24 and May 9. Two wood duck broods were noted as in 1955, and again both on the Muscatatuck. This information indicated no need for altering the normal brood survey schedule.

Adult male wood ducks were found to be more abundant this year on one transect, but totals for the three preliminary floats indicated the breeding population would be substantially below the figure for last year and, considerably below the three-year average (Table I). The Maumee transect in northeastern Indiana showed the greatest decline in both male and female wood ducks.

Table I - Adult Wood Duck Population Comparisons, 1956 with 1952, 1953 and 1955 Preliminary Stream Transect Survey - Indiana.

| Transect | Miles | Date Floated | Adults Observed | | Change From 1955 | | Change From Average | |
|----------|-------|--------------|-----------------|----|------------------|-----|---------------------|----|
| | | | M | F | M | F | M | F |
| Maumee | 15 | 5-07-52 | 8 | 6 | | | | |
| | | 5-15-53 | 27 | 9 | | | | |
| | | 5-09-55 | 43 | 11 | | | | |
| | | Average | 26 | 9 | | | | |
| | | 5-09-56 | 17 | 1 | -26 | -10 | -9 | -8 |

Continued --

Table I - Adult Wood Duck Population Comparisons, 1956 with 1952, 1953 and 1955 Preliminary Stream Transect Survey - Indiana. Continued -

| Transect | Miles | Date Floated | Adults Observed | | Change From 1955 | | Change From Average | |
|--------------|-------|--------------|-----------------|----|------------------|----|---------------------|-----|
| | | | M | F | M | F | M | F |
| Mississinewa | 13 | 5-05-52 | 9 | 7 | | | | |
| | | 5-10-53 | 12 | 3 | | | | |
| | | 5-16-55 | 12 | 1 | | | | |
| | | Average | 11 | 4 | | | | |
| | | 5-01-56 | 10 | 3 | -2 | +2 | -1 | -1 |
| Muscatatuck | 19 | 5-02-52 | 31 | 20 | | | | |
| | | 5-01-53 | 46 | 19 | | | | |
| | | 5-03-55 | 6 | 9 | | | | |
| | | Average | 28 | 16 | | | | |
| | | 4-24-56 | 19 | 11 | +13 | +2 | -9 | -5 |
| Totals | 47 | 1952 | 48 | 33 | | | | |
| | | 1953 | 85 | 31 | | | | |
| | | 1955 | 61 | 21 | | | | |
| | | Average | 65 | 28 | | | | |
| | | 1956 | 46 | 15 | -15 | -6 | -19 | -13 |

Production Indices -

Brood counts were conducted on nine transects totaling 143 stream miles between May 22 and July 3. Sixty-six wood duck broods were observed, compared to 56 broods in 1955. Five of these transects showed slight to substantial increases, while four showed slight to moderate decreases. The 1956 figure for wood duck broods per 100 miles of transect, calculated to be 46.2, is the first indication of an increase in the population since the peak of 72.3 broods per 100 miles in 1952. Again we find no correlation, either by transect or by totals, between the number of adult wood ducks observed on the preliminary survey and the number of broods on the subsequent brood-count survey.

Whole counts were recorded for 43 of the 66 broods. Brood size ranged from three to 13, and average 7.3. Young per 100 miles is calculated to be 337; identical to the figure for 1955. Brood size by age class was as follows: Class I, 9.0; Class II, 7.9; and, Class III, 6.0.

Flood waters, as previously stated, forced a postponement in the floating schedules for three transects. Because of this delay more than 50 percent of the total broods observed were at an advanced age, and consequently of smaller size, compared to the data collected in 1955. Last year 43 percent of the broods were in age Class I and four percent in the age Class III, compared to 36 and 12 percent respectively in 1956. This year, broods-per-100-miles is superior to young-per-100-miles for indicating the reproductive success of the wood duck in Indiana.

Table II - Wood Duck Broods Observed, By Transects and Age Classes - 1956 Compared to 1955 and 1953-55 Average.

| Transect | Length in Miles | 1956 Date Floated | Number of Broods by Age Class | | | | | | |
|--------------|--------------------|-------------------------|-------------------------------|---|----|----|----|---|-----|
| | | | I | | | II | | | III |
| | | | a | b | c | a | b | c | |
| Maumee | 15 | 6-14 | | 1 | 1 | | | 2 | |
| Elkhart | 17 | 6-13 | | | | 1 | | | |
| Iroquois | 14 | 6-12 | 1 | 2 | 1 | | | 1 | |
| Mississinewa | 13 | 6-11 | | | | 1 | 2 | | 1 |
| Big Blue | 12 | 6-18 | | | 2 | 6 | 3 | | 1 |
| W.F. White | 25 | 7-03 | | | 2 | 3 | 1 | | 4 8 |
| Muscatatuck | 19 | 5-22 | | 2 | 7 | 4 | | 2 | |
| Salt | 15 | 5-23 | | 2 | 1 | | | | |
| Eel | 13 | 5-24 | | | 1 | 1 | | 1 | |
| Totals | 143 | 5-22/7-03 | 1 | 7 | 16 | 16 | 12 | 6 | 8 |

| Transect | 1956 Total | Change from 1955 | | 1953-55 Average | 1956 Change From Ave | |
|--------------|---------------|------------------|-----|--------------------|----------------------|-----|
| | | No. | % | | No. | % |
| Maumee | 4 | + 2 | | 6.0 | - 2.0 | |
| Elkhart | 2 | - 4 | | 3.7 | - 1.7 | |
| Iroquois | 5 | + 1 | | 3.0 | + 2.0 | |
| Mississinewa | 4 | - 5 | | 7.0 | - 3.0 | |
| Big Blue | 12 | +12 | | 6.7 | + 5.3 | |
| W.F. White | 18 | - 2 | | 19.0 | - 1.0 | |
| Muscatatuck | 15 | + 5 | | 22.6 | - 7.6 | |
| Salt | 3 | - 1 | | 4.3 | - 1.3 | |
| Eel | 3 | + 2 | | 6.3 | - 3.3 | |
| Totals | 66 | +10 | +18 | 78.7 | -12.7 | -16 |

Conclusions -

The fall flight of wood ducks from Indiana will be somewhat better than in 1955, but still below the 1953 to 1953 average.

WISCONSIN

Weather and Water Conditions -

Weather conditions in March were colder than average and exceptionally stormy with heavy snows an outstanding feature over much of the State except in the south. April temperatures were normal or above in the first half of the month but cold weather persisted over most of the State during the last half. Precipitation in April was above normal over the southern third of the State but below normal elsewhere. The cold rainy weather continued for most of the month of May. The spring breakup was about one week later than average.

Of 164 water sites censused twice during this survey, 75 percent showed no change in water levels or more water in late June as compared to the last 20 days of May. Compared to similar material for 1955, there was an increase in water levels in 1956, although the 1956 levels were about the same as the five-year average.

Breeding Population Indices -

Presented in the following table are Wisconsin waterfowl breeding pair trends. As can be seen by the figures, the over-all trend in the breeding population is up somewhat as compared to both the five-year average (1951-1955) and the 1955 data. Of the important breeding waterfowl species which were observed only the wood duck failed to increase or at least hold its previous level. The increase in breeding pairs observed may be due to (1) some spring migrants being tallied because of the one to three week delay in nesting or (2) re-pairing taking place after the first nesting attempts failed. The coot or mud hen population remained the same as in 1955 but was above the five-year average.

| Species | Ave. Index '51-'55 | 1955 | | 1956 | | Percent Change of 1956 Index From | |
|------------|-----------------------|-------|-----------|-------|-----------|--------------------------------------|------|
| | | Index | % Lone M. | Index | % Lone M. | 5-Yr. Ave. | 1955 |
| Mallard | .02 | .03 | 54 | .03 | 36 | + 50 | None |
| B. W. Teal | .05 | .06 | 38 | .08 | 26 | + 60 | + 33 |
| Blk. Duck | .005 | .004 | - | .005 | - | None | + 25 |
| Wood Duck | .007 | .006 | 19 | .005 | 0 | - 29 | - 17 |
| Ringneck | .01 | .01 | 37 | .01 | 23 | None | None |
| Total | .10 | .12 | - | .15 | - | + 50 | + 25 |

Table - Continued -

| | Average of 1951 - 1955 | 1955 | 1956 |
|------------------------------|---------------------------|------|------|
| Adult Coot Observed Per Acre | .05 | .08 | .08 |
| Percent Change of 1956 | + 60 | None | - |

Note: Total estimated pairs based on pairs, lone males, lone females, and unidentified duck pairs and single ducks observed. Index figures are based on the number of pairs per acre sampled.

Production Indices -

The table presented below contains the pertinent figures on the 1956 Wisconsin waterfowl production survey together with similar data from 1951 through 1955 for comparative purposes.

| Year | Of Total Flocked Ducks, Percent F. | Yng. / Breed- ing Pair | Indicated Change | Ave. Brood Size | Indicated Change | Percent Duck Pairs on Brood Surveys* |
|------|--|------------------------------|---------------------|-----------------------|---------------------|--|
| 1951 | 16% | 1.46 | - | 6.5 | - | 43 |
| 1952 | 19% | 2.58 | +77% | 6.6 | + 2% | 42 |
| 1953 | 27% | 2.35 | - 9% | 7.0 | + 6% | 39 |
| 1954 | 35% | 1.51 | -36% | 7.0 | None | 41 |
| 1955 | 18% | 1.85 | +23% | 7.4 | + 6% | 47 |
| 1956 | 26% | 1.53 | -17% | 7.0 | - 5% | 43 |

*Each duck pair is considered to represent a potential brood which may appear after the brood survey is completed. The percentage figure given was computed by dividing the total number of adult ducks observed on the June survey into the total estimated number of pairs on that survey.

Conclusions -

When considering that (1) water levels on the census sites remained high to aid observers in seeing broods (2) duck pairs observed per acre of water censused was about 25 percent greater than in 1955 and 50 percent greater than the five-year average, probably due to the presence of late migrants (3) the number of females observed in flocked ducks increased over 1955 and (4) the average number of young per breeding pair and the average brood size both decreased in 1956, it is concluded that the 1956 waterfowl production will be about the same or slightly below both the 1955 level and the five-year average.

MISSOURI

Weather and Water Conditions -

The spring of 1956 was about 10-days later than average.

Production Indices -

A summary of the results of the 1955 nesting survey is shown in Table I. This year only 2,222 acres of lake and marsh were censused compared with 7,110 acres in 1955. Total mileage of stream surveys was 564 miles compared with 666 miles in 1955. As in other years, the total nesting attempts of wood ducks, mallards, and blue-winged teal are computed as nesting effort per census unit.

Trend data of the wood duck, mallard, and blue-winged teal nesting efforts are shown in Tables II and III. As during the past three years, a downward trend is shown. Small changes in all categories except the average number of ducklings per brood will be noted. It is apparent that the numbers of breeding wood ducks in Missouri is still decreasing, although the significance of the small changes from 1955 has not been adequately tested.

Table I - Nesting Efforts of Wood Duck, Mallard, and Blue-winged Teal -
Waterfowl Nesting Survey - Missouri - May 15 to June 15, 1956.

| 2,222 Acres of Lake & Marsh | Lone Drake | Lone Hen | Lone Pairs | Broods | | Total Nesting Effort | Nesting Effort Per Square Mile. | |
|--------------------------------|---------------|-------------|---------------|--------------|---------------------|----------------------------|---------------------------------------|-----|
| | | | | Total No. | Ave. Yng. / Brd. | | | |
| Wood Duck | 4 | 1 | 3 | 3 | 18 | 6 | 11 | 3.1 |
| Mallard | 1 | 1 | - | 1 | 4 | 4 | 3 | .86 |
| B. W. Teal | 1 | - | 1 | 1 | 8 | 8 | 3 | .86 |
| <hr/> | | | | | | | | |
| Lake & Marsh Totals | 6 | 2 | 4 | 5 | 30 | 6 | 17 | 5.1 |
| <hr/> | | | | | | | | |
| <u>564 Miles of Stream</u> | | | | | | | | |
| Wood Duck | 19 | 10 | 15 | 23 | 142 | 6.1 | 67 | .10 |
| Mallard | 5 | - | 1 | 2 | 12 | 6.0 | 8 | .01 |
| B. W. Teal | 9 | 2 | 8 | 4 | 19 | 4.7 | 23 | .04 |
| <hr/> | | | | | | | | |
| Stream Totals | 33 | 12 | 24 | 29 | 173 | 5.9 | 98 | .17 |
| <hr/> | | | | | | | | |
| Grand Total | 39 | 14 | 28 | 34 | 203 | 6.0 | 115 | - |

MISSISSIPPI FLYWAY

Table II - Trend Data - Wood Duck Nesting Survey - Missouri - 1953 to 1956

| | <u>1953</u> | <u>1954</u> | <u>1955</u> | <u>1956</u> | <u>% Change</u> |
|-----------------------------------|-------------|-------------|-------------|-------------|-----------------|
| Acres of lake and marsh censused | 4976 | 4931 | 7110 | 2222 | - 68 |
| Miles of stream censused | 371 | 581 | 666 | 564 | - 15 |
| Nesting effort per square mile | | | | | |
| lake and marsh | 5.8 | 4.4 | 3.6 | 3.1 | - 11 |
| Nesting effort per mile of stream | .24 | .22 | .13 | .10 | - 23 |
| Number of broods | 42 | 31 | 28 | 23 | - 18 |
| Broods per mile | .09 | .04 | .03 | .04 | - 33 |
| Ave. No. Ducklings Class I | 4.9 | 5.8 | 7.3 | 6.3 | - 18 |
| Ave. No. Ducklings Class II | 4.4 | 7.2 | 6.2 | 5.8 | - 6 |
| Ave. No. Ducklings Class III | 4.6 | | | 7.0 | |
| Ave. No. Ducklings All Classes | 4.5 | 6.5 | 6.7 | 6.4 | + 4 |

Table III - Trend Data - Mallard and Blue-winged Teal Nesting Survey - '53-'56

| | <u>1953</u> | <u>1954</u> | <u>1955</u> | <u>1954</u> | <u>% Change</u> |
|-----------------------------------|-------------|-------------|-------------|-------------|-----------------|
| Acres of lake and marsh censused | 4976 | 4931 | 7110 | 2222 | - 68 |
| Miles of stream censused | 371 | 581 | 666 | 564 | - 15 |
| Nesting effort per square mile | | | | | |
| lake and marsh | 4.0 | 2.7 | 2.5 | 1.8 | - 28 |
| Nesting effort per mile of stream | .19 | .12 | .03 | .06 | +100 |

OHIOWeather and Water Conditions -

This was an exceptionally warm, wet spring with intermittent flooding common on most streams throughout the State. Inland lakes and ponds carried a higher level of water than any spring during the past five years. Many nests and eggs were lost in the Lake Erie marshes during May when the majority of this area was inundated by storms. In general, this was a poor season for nesting of the ground nesting species but a very good year for rearing of all waterfowl.

Breeding Population Indices -

Following are the findings from those areas under observation during the spring of 1956.

Table I - Aerial Breeding Pair Survey - Lake Erie Marshes (80-Linear Miles)

| Species | Pairs | | Prs. Per Sq. Mi. | | Percent Change |
|------------------|------------|------------|------------------|-------------|----------------|
| | 1955 | 1956 | 1955 | 1956 | |
| Mallard | 83 | 96 | 8.3 | 9.6 | + 16 |
| Black Duck | 79 | 82 | 7.9 | 8.2 | + 4 |
| Blue-winged Teal | 10 | 12 | 1.0 | 1.2 | + 20 |
| Wood Duck | 6 | 5 | .6 | .5 | - 16 |
| Total | 178 | 195 | 17.8 | 19.5 | + 10 |

Table II - Waterfowl Breeding Pair Survey - Magee Marsh (1,960 Acres)

| Species | Pairs | | Prs. Per Sq. Mi. | | Percent Change |
|------------------|-----------|-----------|------------------|--------------|----------------|
| | 1955 | 1956 | 1955 | 1956 | |
| Mallard * | 24 | 43 | 7.74 | 13.90 | + 80 |
| Black Duck | 6 | 8 | 1.94 | 2.60 | + 33 |
| Blue-winged Teal | 7 | 11 | 2.26 | 3.55 | + 57 |
| Wood Duck | 21 | 11 | 6.77 | 3.55 | - 46 |
| Canada Goose | 1 | 1 | .32 | .32 | Same |
| Total | 59 | 74 | 19.03 | 23.92 | + 25 |

* Fourteen of the mallard pairs during 1956 were hand-reared mallards, part of a general release made the previous summer.

Table III - Waterfowl Breeding Pair Survey - Streams (160-Linear Miles)**

| Species | Pairs | | Prs. Per Sq. Mi. | | Percent Change |
|------------------|-----------|------------|------------------|-------------|----------------|
| | 1955 | 1956 | 1955 | 1956 | |
| Wood Duck | 64 | 114 | .60 | .71 | + 18 |
| Mallard | 11 | 26 | .10 | .16 | + 60 |
| Black Duck | 1 | 3 | .01 | .02 | +100 |
| Blue-winged Teal | 1 | 1 | .01 | .006 | - 40 |
| Total | 77 | 144 | .72 | .896 | + 25 |

** 107 linear miles surveyed during 1955; 160 linear miles surveyed during 1956. Different areas surveyed during 1955 and 1956.

Production Indices -

Table IV - Waterfowl Brood Survey - Magee Marsh (1,960 Acres)

| Species | No. of Brds. | | Brds./Sq. Mi. | | Percent Change | Yng./Brd. | | Percent Change |
|--------------|--------------|-----------|---------------|-------------|----------------|------------|------------|----------------|
| | 1955 | 1956 | 1955 | 1956 | | 1955 | 1956 | |
| Mallard | 4 | 10* | 1.31 | 3.27 | +150 | 7.1 | 6.4 | - 9 |
| Black Duck | 3 | 5 | .98 | 1.63 | + 66 | 6.1 | 6.2 | + 2 |
| B. W. Teal | 3 | 4 | .98 | 1.31 | + 33 | 6.0 | 5.0 | -17 |
| Wood Duck | 12 | 3 | 3.92 | .98 | - 75 | 6.3 | 9.2 | +46 |
| Total | 22 | 22 | 7.19 | 7.19 | Same | 6.4 | 6.7 | + 5 |

* Four of the broods at Magee Marsh during 1956 were hand-reared mallards.

Table V - Waterfowl Brood Survey - Streams (160-Linear Miles)*

| Species | No. of Brds. | | Brds./Li. Mi. | | Percent Change | Yng./Brd. | | Percent Change |
|--------------|--------------|-----------|---------------|-------------|----------------|------------|------------|----------------|
| | 1955 | 1956 | 1955 | 1956 | | 1955 | 1956 | |
| Wood Duck | 33 | 60 | .336 | .375 | + 12 | 7.3 | 7.3 | Same |
| Mallard | 3 | 4 | .028 | .025 | - 11 | 7.1 | 7.0 | - 1 |
| Black Duck | - | 1 | - | .006 | - | - | 7.0 | - |
| Total | 36 | 65 | .364 | .406 | + 12 | 7.2 | 7.1 | - 1 |

* 107 linear miles surveyed during 1955. 160 Linear miles surveyed during 1956. Different areas surveyed during 1955 and 1956.

Table VI - Waterfowl Brood Survey - Delaware Reservoir Area (42 One-half Acre Ponds) **

| Species | No. of Broods | | Broods Per Acre of Water | | Percent Change |
|------------------|---------------|-----------|--------------------------|-------------|----------------|
| | 1955 | 1956 | 1955 | 1956 | |
| Wood Duck | 22 | 22 | 1.05 | 1.05 | Same |
| Mallard | 12 | 10 | .57 | .48 | - 17 |
| Blue-winged Teal | 2 | 15 | .09 | .71 | +700 |
| Black Duck | 1 | 3 | .05 | .14 | +200 |
| Total | 37 | 50 | 1.76 | 2.38 | +35 |

Continued --

Continued -

** 42 ponds averaging one-half acre in size located near a reservoir of 2,000 acres. Brood survey taken on ponds only.

Table VII - Wood Duck Nest Box Checks (State-wide)

| Area of Inspection | No. Boxes Checked | | No. Boxes Used | | Percent of Utilization | |
|------------------------|-------------------|-------|----------------|------|------------------------|-------|
| | 1955 | 1956 | 1955 | 1956 | 1955 | 1956 |
| District No. 2 | 76 | 86 | 26 | 29 | 34.21 | 33.72 |
| District No. 3 | 113 | 123 | 25 | 29 | 22.12 | 23.58 |
| District No. 4 | 316 | 242 | 32 | 20 | 10.13 | 8.26 |
| District No. 5 | 259 | 237 | 36 | 30 | 13.90 | 12.66 |
| District No. 6 | 152 | 158 | 23 | 29 | 15.13 | 18.36 |
| Magee Marsh (Bednarik) | 185 | 185 | 21 | 11 | 11.35 | 6.00 |
| Delaware Dam (Stewart) | 77 | 87 | 24 | 16 | 31.17 | 18.40 |
| Woodbury Area (Shuy) | 19 | 19 | 14 | 17 | 73.68 | 89.46 |
| Ottawa Co. (Van Camp) | 88 | 151 | 21 | 35 | 23.86 | 23.17 |
| Total | 1,285 | 1,288 | 222 | 216 | 17.28 | 16.75 |

Conclusions -

It would appear that State-wide there is an increase in the number of mallards, black ducks and blue-winged teal produced. Wood duck production was about the same as last year.

MINNESOTA

Weather and Water Conditions -

The season was later than usual in Minnesota this year. Water conditions were improved over 1955, with 4.52 water areas per square mile being recorded as opposed to 3.00 in 1955.

Breeding Population Indices -

Minnesota had an increase of approximately 40 percent in the number of ducks returning to nest in the State this past spring. Actually the aerial transects (Table I) which were flown from May 14 to May 20 showed an increase of 74 percent over the previous year. Ground transects were run slightly later, into the week of May 20 and showed an increase of 36 percent in number of pairs of ducks. Since field checks indicated that some migrants may have been present during the period of this aerial census, it was decided that a conservative figure of 40 percent should be used to indicate our increase.

Over 3,100 miles of aerial transect are flown with transects beginning at the Iowa line and ending at the Canadian border. In addition, nearly 2,000 miles of ground transect are driven as part of the survey.

Mallards increased by 54 percent and blue-winged teal increased 33 percent.

Stream censuses showed only about one-half the number of wood ducks present as last year.

Table I - Aerial Transect Data - Minnesota (Total Ducks Seen*)

| Transect No. | 1951 | 1952 | 1953 | 1955 | 1956 |
|--------------|-------|-------|------|-------|-------|
| 1 | 48 | 23 | | 22 | 154 |
| 2 | 13 | 12 | | 21 | 27 |
| 3 | 29 | 14 | 3 | 6 | 54 |
| 4 | 266 | 85 | | 246 | 135 |
| 5 | 32 | 16 | 23 | 10 | 97 |
| 6 | 41 | 22 | | 9 | 34 |
| 7 | 9 | 7 | | 12 | 9 |
| 8 | 18 | 26 | | 35 | 111 |
| 9 | 70 | 34 | 40 | 42 | 56 |
| 10 | 26 | 28 | | 39 | 56 |
| 11 | 51 | 51 | 41 | 13 | 51 |
| 12 | 67 | 59 | | 21 | 60 |
| 13 | 36 | 46 | 58 | 26 | 68 |
| 14 | 20 | 42 | | 71 | 72 |
| 15 | 24 | 57 | 49 | 34 | 13 |
| 16 | 14 | 26 | | 32 | 23 |
| 17 | 46 | 60 | | 65 | 195 |
| 18 | 87 | 229 | | 34 | 130 |
| 19 | 83 | 164 | 158 | 64 | 132 |
| 20 | 159 | 215 | | 65 | 104 |
| 21 | 299 | 219 | 413 | 90 | 128 |
| 22 | 78 | 268 | | 106 | 102 |
| 23 | 176 | 194 | 217 | 87 | 121 |
| 24 | 111 | 135 | | 111 | 154 |
| 25 | 116 | 108 | 138 | 44 | 121 |
| 26 | 126 | 115 | | 92 | 179 |
| 27 | 174 | 171 | 318 | 87 | 54 |
| 28 | 70 | 74 | | 94 | 117 |
| 29 | 60 | 57 | 68 | 23 | 27 |
| 30 | 83 | 54 | 86 | 80 | 89 |
| 31 | 116 | 58 | 66 | 36 | 89 |
| 32 | 68 | 113 | 167 | 15 | 237 |
| | 2,616 | 2,782 | | 1,732 | 2,999 |
| Lesser Scaup | 169 | 59 | 446 | 102 | 453 |
| | 2,775 | 2,841 | | 1,834 | 3,452 |

* Lesser Scaup are listed only as a total figure.

Table II - Auto Transect Data Summary

| | <u>1951</u> | <u>1952</u> | <u>1953</u> | <u>1954</u> | <u>1955</u> | <u>1956</u> |
|----------------------------------|-------------|-------------|-------------|-----------------|-------------|-------------|
| Number Counties - | 51 | 48 | 48 | 48 | 48 | 48 |
| Total Miles - | 1,945 | 1,853 | 1,891 | 1,866 | 1,874 | 1,864 |
| Square Miles - | 486.3 | 463.3 | 472.8 | 466.5 | 468.5 | 466 |
| Total Water Areas - | 1,693 | 1,451 | 2,150 | 2,421 | 1,421 | 2,107 |
| Areas Occupied - | 340 | 429 | 549 | 506 | 284 | 387 |
| Water Areas Per Square Mile - | 3.5 | 3.1 | 4.6 | 5.2 | 3.0 | 4.52 |
| Percent Occupied - | 20.1 | 29.6 | 25.5 | 20.9 | 20.0 | 18.4 |
| Total Pairs - | 603 | 876 | 1,141 | 1,477 | 776 | 1,074 |
| Pairs Per Square Mile - | 1.24 | 1.89 | 2.41 | 3.17 (2.18)* | 1.66 | 2.31 |
| Total Ducks - | 1,219 | 1,590 | 2,885 | 2,933 | 1,342 | 1,918 |
| Ducks Per Square Mile- | 2.51 | 3.43 | 6.11 | 6.29 | 2.86 | 4.12 |
| Coots - | 145 | 539 | 535 | 967 | 94 | 718 |

* Pairs per square mile figure when adjustments are made for blue-winged teal for Areas X and XI.

Table III - Species Data of Auto Transects - Number of Pairs

| | <u>1951</u> | <u>1952</u> | <u>1953</u> | <u>1954*</u> | <u>1955</u> | <u>1956</u> | <u>% 1956</u> |
|--------------|-------------|-------------|-------------|--------------|-------------|-------------|---------------|
| B. W. Teal | 277 | 386 | 603 | 439 | 399 | 529 | 49.3 |
| Mallard | 135 | 173 | 204 | 165 | 162 | 249 | 23.2 |
| Ringneck | 74 | 133 | 102 | 87 | 93 | 85 | 7.9 |
| Pintail | 44 | 48 | 63 | 51 | 25 | 32 | 3.0 |
| Redhead | 14 | 43 | 39 | 44 | 10 | 32 | 3.0 |
| Shoveler | 18 | 19 | 33 | 56 | 21 | 38 | 3.5 |
| Baldpate | 5 | 12 | 25 | 28 | 17 | 48 | 4.5 |
| Gadwall | 4 | 5 | 7 | 28 | 9 | 6 | .6 |
| Ruddy Duck | 17 | 10 | 7 | 17 | 6 | 7 | .7 |
| Canvasback | - | 1 | 7 | 6 | 4 | 2 | .2 |
| Goldeneye | 3 | 9 | 5 | 12 | 5 | 14 | 1.3 |
| Wood Duck | 2 | 2 | 5 | 7 | 5 | 1 | .1 |
| G. W. Teal | 2 | 4 | 3 | 18 | 8 | 2 | .2 |
| Black Duck | 1 | - | - | - | - | - | |
| Merganser | - | - | 1 | - | - | - | |
| Bufflehead | - | - | 3 | - | 4 | 2 | .2 |
| Lesser Scaup | 5 | 28 | 26 | 52 | 4 | 24 | 2.2 |
| Unidentified | 2 | 3 | 8 | 9 | 4 | 2 | .2 |
| | 603 | 876 | 1,141 | 1,019 | 776 | 1,073 | |

* Pairs per square mile figure when adjustments are made for blue-winged teal for Areas X and XI.

Production Data -

Waterfowl production surveys are still in progress and since part of the State is experiencing a late hatch we can only speculate on the situation.

It does appear that we will have at least average or normal production and maybe better once the facts are known. Northern Minnesota and parts of southern Minnesota have had an excellent hatch. Heavy rains apparently caused some nest loss in other areas, however, a late hatch is coming off at the present time.

Conclusions -

In view of the forecast for at least average production, it is estimated that the increased breeding population is sufficient to insure that the fall flight from Minnesota will be somewhat larger than in 1955.

NORTHERN SASKATCHEWAN, NORTHERN MANITOBA AND ONTARIOWeather and Water Conditions -

This spring was one of the latest the writer has experienced in the past seven years. The spring of 1954 was as late but involved only western Ontario and eastern Manitoba. This year, however, the late season extended over the entire area of Ontario, northern Manitoba, and northern Saskatchewan. The last week in May found all lakes in the area north of a line from Lake Athabasca, Saskatchewan, to Red Lake, Ontario, still frozen. In the flight from Fort Smith east on 60° 10' to Churchill no open water of any kind was observed in the District of Keewatin. Since the break up, however, weather has been normal. No severe blizzards or storms or other weather conditions have adversely affected the area, and therefore it is estimated that the breeding ducks which were present during May should bring off normal production, when judged purely on the basis of breeding population present. Because of the lateness of the season it is likely that many of the ducks normally nesting in the north were forced to set up housekeeping further south.

Breeding Population Indices -Total Duck Index - by Provinces - 1955-1956

| Province | Province | | Percent Change From 1955 |
|--------------|-----------|---------|-----------------------------|
| | 1955 | 1956 | |
| Ontario | 310,839 | 209,663 | - 32.6 |
| Manitoba | 380,429 | 197,291 | - 48.1 |
| Saskatchewan | 658,649 | 262,585 | - 60.1 |
| Total | 1,349,917 | 669,539 | - 50.4 |

Lone Drake Index, 1955-1956

| Stratum | Lone Drake Index 1955 | Lone Drake Index 1956 |
|--------------------|-----------------------|-----------------------|
| Ontario | 126,024 | 33,257 |
| Manitoba D | 18,139 | 15,539 |
| Manitoba C | 42,973 | 14,239 |
| Saskatchewan South | 49,251 | 21,678 |
| Saskatchewan North | 69,404 | 16,938 |
| Total | 308,232 | 101,650 |

Percent Lone Drakes 1955 = 40.9
 Percent Lone Drakes 1956 = 29.5

Total Duck Index - Entire Survey Area, 1955 - 1956

| Species | Species Index | | Percent Change From 1955 |
|---------------------|------------------|----------------|--------------------------|
| | 1955 | 1956 | |
| Mallard | 252,991 | 249,040 | - 1.6 |
| Black Duck | 41,517 | 28,568 | -31.1 |
| Gadwall | 1,165 | - | - |
| Baldpate | 31,354 | 7,877 | -74.9 |
| Pintail | 47,087 | 17,295 | -63.3 |
| Green-winged Teal | 13,486 | 7,199 | -46.6 |
| Blue-winged Teal | 4,208 | 3,273 | -22.2 |
| Shoveler | 1,008 | - | - |
| Merganser | 335,858 | 88,997 | -73.5 |
| Redhead | 10,340 | 3,938 | -61.9 |
| Ringneck | 98,524 | 12,156 | -87.7 |
| Canvasback | 21,525 | 5,952 | -72.3 |
| Lesser Scaup | 390,845 | 201,878 | -48.4 |
| Goldeneye | 31,319 | 17,516 | -44.1 |
| Ruddy Duck | - | - | - |
| Bufflehead | 41,363 | 19,321 | -53.3 |
| Scoter | 27,327 | 6,529 | -76.1 |
| Total Ducks | 1,349,917 | 669,539 | -50.4 |
| Canada Goose | 7,088 | 14,025 | +97.8 |

The survey area as a whole decreased 50 percent in breeding population. All species decreased except mallard, which remained about the same.

Production Indices -

For the area as a whole compared with last year, the number of young decreased 66 percent with an increase of potential later broods of 14 percent. Evidence of the retarded season can be seen by comparing the Class I broods observed between 1955 and 1956 (48 percent in 1955 compared to 66 percent in 1956).

Comparison of Young and Potential Later Broods* - 1955-1956

| Stratum | Number Young | | Number PLB | | Percent Change | |
|---------------|----------------|----------------|---------------|---------------|----------------|---------------|
| | 1955 | 1956 | 1955 | 1956 | Broods | PLB |
| Ontario C | 123,729 | 17,492 | 17,743 | 40,459 | -93.9 | +128.0 |
| Manitoba C | 58,958 | 1,936 | 29,128 | 2,128 | -96.7 | - 92.7 |
| Manitoba D | 29,525 | 7,330 | 10,408 | 7,037 | -75.2 | - 32.4 |
| Sask. C South | 45,820 | 11,026 | 10,530 | 4,794 | -75.9 | - 54.5 |
| Sask. C North | 80,066 | 86,386 | 13,244 | 27,767 | + 7.9 | +109.6 |
| Total | 338,098 | 114,170 | 81,053 | 82,185 | -66.2 | + 13.9 |

* Potential later broods as evidenced by pairs and single adults observed during brood survey.

Comparison of Brood Classification, 1955 - 1956

| Stratum | Class I | | Class II | | Class III | |
|----------------|-------------|-------------|-------------|-------------|-------------|------------|
| | 1955 | 1956 | 1955 | 1956 | 1955 | 1956 |
| Ontario C | 7 | 1 | 21 | 3 | 12 | 1 |
| Manitoba C | 22 | 10 | 15 | 1 | 5 | 0 |
| Manitoba D | 29 | 16 | 14 | 4 | 2 | 0 |
| Sask. C. South | 27 | 4 | 23 | 10 | 4 | 2 |
| Sask. C. North | 10 | 19 | 6 | 5 | 1 | 0 |
| Total | 95 | 50 | 79 | 23 | 24 | 3 |
| Percent | 48.0 | 65.8 | 40.0 | 30.2 | 12.0 | 4.0 |

Conclusions -

On an area basis there seems little doubt that total production for the areas as a whole will be less than last year and the fall flight will be considerably reduced.

IOWA

Weather and Water Conditions -

The dry fall of 1956 followed by very little spring run-off eliminated most of the temporary ponds in the State during 1956. Consequently, many migrants were concentrated along the major rivers, their tributaries, and in the deeper lakes and marshes. Large temporary concentrations were the rule, with a minimum of overland distribution.

Breeding Population Data -

Table I - Wood Duck Stream Survey Data

| Year | Stream Miles Censused | Wood Ducks Counted | | | | | Dates of Census |
|------|--------------------------|--------------------|---------|-------|-------|-------|--------------------|
| | | Males | Females | Pairs | Unid. | Total | |
| 1953 | 66 | 11 | 8 | 10 | 12 | 51 | May 5-14 |
| 1954 | 78 | 9 | 5 | 3 | 8 | 28 | May 5-13 |
| 1955 | 90 | 8 | 1 | 0 | 6 | 15 | Apr. 22-May 16 |
| 1956 | 26* | 0 | 1 | 1 | 12 | 15 | May 3-June 9 |

* Many streams too dry to float in 1956.

Table II - Wood Duck Nesting Box Occupancy at Lake Odessa, Louisa County, Ia.

| Year | No. of Nesting Boxes Checked | | No. of Nesting Boxes Occupied | |
|------|------------------------------|-------|-------------------------------|-----------|
| | Wooden | Metal | Wood Duck | Merganser |
| 1950 | 26 | | 18 | |
| 1951 | 36 | | 13 and 9* | |
| 1952 | 24 | | 18 | |
| 1953 | 30 | | 15 | |
| 1954 | 22 | 50 | 7 | 4 |
| 1955 | 12 | 44 | 5 | 1 |
| 1956 | 6 | 42 | 5 | 3 |

* There were 13 nesting boxes occupied prior to flooding and 9 afterwards.

Production Data -

Practically all temporary ponds were dry during the spring of 1956. Water levels of the deeper permanent marshes likewise declined. Under these dry conditions many nesting areas formerly used by nesting ducks were unattractive to gravid females this spring. Blue-winged teal constituted the

most numerous nesting species, and mallards were not far behind. On-the-spot check counts in the prairie marshes of northwest Iowa each spring and summer since 1949 have provided a studied opinion as to the production trends of these species. Iowa's production of these two species in 1956 has been poorer than production during any year since observations were begun in 1949.

Conclusions -

It is estimated that the fall flight from Iowa will be greatly reduced as compared to last year.

Atlantic Flyway Data

Waterfowl Kill Information

The following table presents the estimated kill of waterfowl during the 1954-55 and 1955-56 shooting seasons as determined by the Waterfowl Hunter Mail Survey:

| Species | Total Kill* | | Percent Change 1954-55 to 1955-56 |
|--------------------|------------------|------------------|---|
| | 1955-56 | 1954-55 | |
| Black Duck | 527,765 | 381,594 | + 38.31 |
| Mallard | 396,065 | 307,800 | + 28.68 |
| Wood Duck | 133,869 | 145,627 | - 8.07 |
| Green-winged Teal | 81,269 | 95,387 | - 8.05 |
| American Widgeon | 75,567 | 48,595 | + 55.50 |
| Pintail | 72,074 | 70,377 | + 2.41 |
| Blue-winged Teal | 62,437 | 60,190 | + 3.73 |
| Shoveler | 13,150 | 8,099 | + 62.37 |
| Gadwall | 10,540 | 4,318 | +144.09 |
| Scaup | 162,839 | 143,048 | + 13.83 |
| Canvasback | 107,308 | 62,958 | + 70.44 |
| Redhead | 82,915 | 27,967 | +196.47 |
| Merganser | 80,345 | 70,963 | + 13.22 |
| Goldeneye | 64,626 | 50,525 | + 27.91 |
| Ringneck | 52,299 | 17,654 | +196.24 |
| Bufflehead | 36,639 | 36,715 | - .21 |
| Ruddy Duck | 28,629 | 23,855 | + 20.01 |
| Scoter | 13,190 | 21,466 | - 38.55 |
| Others | 6,103 | 4,730 | + 29.027 |
| Total Ducks | 2,007,629 | 1,581,868 | + 26.91 |
| Canada Goose | 84,177 | 68,087 | + 23.63 |
| Brant | 11,493 | 6,671 | + 72.28 |
| Other Geese | 1,607 | 1,048 | + 53.34 |
| Total Geese | 97,277 | 75,806 | + 28.32 |
| Coot | 162,529 | 140,580 | + 15.61 |

* Includes both retrieved and unretrieved birds.

Atlantic Flyway Data

Number of Hunters, Daily Kill, Seasonal Kill, and Average Times Hunted, as
Determined by the Waterfowl Hunter Mail Survey

| | | 1955-56 | 1954-55 | Percent Change 1954-55 to 1955-56 |
|--------------------------------------|-------|----------|----------|---|
| Number of Potential Hunters * | | | | |
| Over 16 | | 381,704* | 343,535* | + 11.11 |
| Under 16 | | 19,107* | 15,413* | + 23.97 |
| Number of Active Hunters** | | | | |
| Over 16 | | 320,727 | 297,158 | + 7.93 |
| Under 16 | | 14,119 | 15,413 | - 8.40 |
| Average Daily Kill** | | | | |
| <u>Over 16</u> | Ducks | 1.49 | 1.35 | + 10.37 |
| | Geese | .12 | .10 | + 20.00 |
| | Coot | .20 | .20 | N.C. |
| <u>Under 16</u> | Ducks | 1.119 | .662 | + 69.03 |
| | Geese | .050 | .050 | N.C. |
| | Coot | .284 | .315 | - 9.84 |
| Average Seasonal Kill** | | | | |
| <u>Over 16</u> | Ducks | 6.288 | 5.420 | + 16.01 |
| | Geese | .493 | .402 | + 22.64 |
| | Coot | .865 | .810 | + 6.79 |
| <u>Under 16</u> | Ducks | 4.729 | 2.666 | + 77.38 |
| | Geese | .211 | .203 | - 3.94 |
| | Coot | 1.200 | 1.267 | - 5.29 |
| Average Times Hunted | | 4.226 | 4.026 | N.C. |

* Individuals who purchased a Duck Stamp with the intent to hunt.

** Individuals who hunted at least once.

Winter Trend Data - Atlantic Flyway

Weather conditions during the survey period in 1956 were generally favorable and it is believed that the data are reasonably comparable to previous years.

Percent Change in Atlantic Flyway (Continental) Population Index Figures for
Ducks, Geese, Brant, Swan and Coot from January 1955 to 1956

| Area | Ducks | Geese | Brant | Swan | Coot | Total |
|---------------------------|-------|-------|-------|------|------|-------|
| Canada* | -23 | -45 | - | - | - | -25 |
| Atlantic Flyway States | -10 | + 3 | -11 | -56 | +38 | - 4 |
| Total | -10 | + 2 | -11 | -56 | +38 | - 5 |

* Newfoundland, Quebec and the Maritimes.

Species Composition - Atlantic Flyway (Continental) 1955 and 1956
(Comparable Coverage)

| Species | Percent of Birds Identified | | Percent Change |
|-------------------|-----------------------------|--------------|----------------|
| | 1955 | 1956 | |
| Scaup | 17.0 | 17.0 | - 4.4 |
| Black Duck | 11.7 | 9.2 | - 24.7 |
| Coot | 11.0 | 15.8 | + 38.4 |
| Canada Goose | 9.7 | 10.6 | + 4.5 |
| Pintail | 8.5 | 9.4 | + 6.2 |
| Mallard | 6.1 | 7.7 | + 21.6 |
| Canvasback | 5.8 | 4.7 | - 22.2 |
| Redhead | 4.7 | 3.3 | - 33.4 |
| Baldpate | 4.4 | 3.1 | - 31.9 |
| Scoter & Eider | 3.7 | 3.5 | - 11.1 |
| American Brant | 3.6 | 3.4 | - 10.7 |
| Ruddy | 3.1 | 1.0 | - 69.9 |
| Whistling Swan | 1.7 | .8 | - 56.2 |
| Merganser | 1.7 | .8 | - 53.2 |
| Ringneck | 1.6 | 3.3 | +100.0 |
| Goldeneye | 1.6 | 1.9 | + 19.6 |
| Snow Goose | .9 | .7 | - 23.1 |
| Gadwall | .9 | .8 | - 14.3 |
| Green-winged Teal | .7 | 1.0 | + 43.0 |
| Wood Duck | .6 | .3 | - 56.8 |
| Bufflehead | .4 | .5 | + 5.0 |
| Blue-winged Teal | .3 | .4 | + 13.7 |
| Shoveler | .2 | .5 | +159.4 |
| Old Squaw | .1 | .3 | + 79.9 |
| Blue Goose | Tr. | Tr. | - |
| Total | 100.0 | 100.0 | - 4.6 |

Summary of Atlantic Flyway Waterfowl Indices

Waterfowl - The 1956 index is equal to the seven-year average level and compared to individual years is:

5 percent below 1955
3 percent above 1954
25 percent below 1953
5 percent above 1952
18 percent above 1951
32 percent above 1950

Ducks - The 1956 index figure for ducks is 6 percent below the seven-year average level and compared to individual years is:

10 percent below 1955
10 percent below 1954
24 percent below 1953
8 percent below 1952
8 percent above 1951
29 percent above 1950

Among the ducks, the indices are:

1. About the same for: scaup and pintail.
2. Noticeably up for: mallard and ringneck.
3. Noticeably down for: black duck, canvasback, redhead, baldpate and ruddy.

Geese - The 1956 index for geese is 24 percent above the seven-year average level and compared to individual years is:

2 percent above 1955
38 percent above 1954
1 percent below 1953
60 percent above 1952
64 percent above 1951
57 percent above 1950

Among the geese, the Canada remained about the same, while the snow goose decreased.

Brant - The 1956 index for brant is 10 percent above the seven-year average level and compared to individual years is:

11 percent below 1955
 33 percent below 1954
 6 percent above 1953
 57 percent above 1952
 44 percent above 1951
 112 percent above 1950

Swan - The 1956 swan index is 20 percent below the seven-year average level and compared to individual years is:

57 percent below 1955
 27 percent below 1954
 30 percent below 1953
 7 percent above 1952
 13 percent above 1951
 26 percent above 1950

Coot - The 1956 coot index is 15 percent above the seven-year average level and compared to individual years is:

38 percent above 1955
 139 percent above 1954
 42 percent below 1953
 56 percent above 1952
 45 percent above 1951
 22 percent above 1950

Breeding Ground Surveys

MAINE

Weather and Water Conditions -

From the standpoint of phenology and climatic conditions, the spring and early summer of 1956 have been retarded by nearly a month. Ice-out dates were exceptionally late, being the latest in about two decades on some areas. Temperatures have been generally below average for the entire period from March 1 through mid-July. On the other hand, precipitation has been near normal and has been well spaced so that there have been neither floods nor droughts of any serious consequence. Moreover, the sub-normal temperatures, while slowing down the growing season, have prevented much evaporation with the result that water levels (except where adversely controlled by man) have remained more constant than usual.

Breeding Population Indices -

In spite of a heavy spring migration through Maine this year, resident populations were not as satisfactory as a year ago. All species showed slight to moderate decreases except the wood duck which was virtually unchanged from its low point reached in 1955. Most serious decline was with the ringneck duck which decreased more than it had gained last year. Although the loss in black ducks was so slight as to have little or no statistical significance, nevertheless this was the third consecutive year that a similar, slight decline has been recorded.

Waterfowl Census Data (Number of Breeding Pairs)

| Study Area | Blk. Ducks | | Ringneck D. | | Wood Ducks | |
|-----------------------------|------------|------|-------------|------|------------|------|
| | 1955 | 1956 | 1955 | 1956 | 1955 | 1956 |
| St. John R., Van Buren- | | | | | | |
| Madawaska | 9 | 12 | - | - | 4 | 3 |
| Portage Lake, Portage | 5 | 4 | 16 | 13 | 1 | 1 |
| Meduxnekeag Stream, Hodgdon | 3 | 5 | - | - | 1 | 1 |
| Pocamoonshine-Crawford Lake | 32 | 28 | 45 | 40 | 4 | 3 |
| St. Croix R., Calais-Baring | 9 | 14 | - | - | 1 | 2 |
| Barn Meadow, Calais | 12 | 8 | 4 | 6 | - | - |
| Magurrewock Stream, Calais | 13 | 8 | 2 | 3 | - | - |
| Moosehorn Stream, Baring | 3 | 5 | - | - | - | - |
| Cranberry Lake, Baring | - | - | 3 | 3 | 1 | 1 |
| Boyden Lake, Perry | 3 | 2 | 4 | 2 | 1 | 1 |
| Pennamaquan R., Pembroke | 4 | 4 | 18 | 12 | - | - |
| Great Works Marsh, Edmunds | 6 | 6 | 10 | 9 | 2 | 2 |

Continued ---

ATLANTIC FLYWAY

Waterfowl Census Data (Number of Breeding Pairs) - Continued.

| Study Area | Blk. Ducks | | Ringneck D. | | Wood Ducks | |
|---|---------------------|------------|----------------------|------------|--------------------|-----------|
| | 1955 | 1956 | 1955 | 1956 | 1955 | 1956 |
| Scammon Pond, Eastbrook | 7 | 4 | 6 | 6 | 0 | 3 |
| Penobscot R., Lincoln- Enfield | 16 | 17 | - | - | 6 | 6 |
| Davis-Holbrook Thorough- fare, Eddington | 6 | 5 | 4 | 1 | - | - |
| Snake Pond, Brooksville | - | - | 3 | 2 | - | - |
| Goose River, Belfast- Swanville | 16 | 14 | 23 | 15 | 1 | 2 |
| Ruffingham Meadow, Searsmont- | | - | - | - | 4 | 2 |
| Total of 18 Areas | 144 (-6%) | 136 | 138 (-19%) | 112 | 26 (+4%) | 27 |

Production Indices -

Data from brood counts are inconclusive at this time with only 41 complete counts of aged broods available by the end of the second week of July. However, these figures indicate larger sized broods than a year ago, especially of those beyond the downy stage. This appears to be the result of more stabilized water levels and more favorable rearing cover. Thus, while fewer broods are being produced this year, survival of the ducklings that have hatched is better to date.

Conclusions -

Lowered initial breeding populations and below average nesting success will result in considerably fewer broods than usual. This situation will be only partially offset by increased duckling survival. Thus, insofar as can be judged at this early date, the productivity of waterfowl in northern, eastern, and central Maine can be expected to be less than a year ago.

NORTHEASTERN STATES -Weather and Water Conditions -

Precipitation was above normal in all the northeast during April to mid-May. Temperatures during this period were below normal, resulting in seasonally late snows in the colder portions of the northeast. Due to the low nightly temperatures severe freshets were held to a minimum, although flat agricultural farmlands remained flooded in to mid-May.

Late May saw a recession of waters on flooded farmlands in southern New Jersey, Delaware, and Connecticut. Throughout the remainder of the region water levels remained above normal with temperatures below normal.

Water levels remained normal, or slightly above, over most of the northeast during July with temperatures slightly below normal. On the coastal marshes the spring high tides were not considered detrimental to waterfowl production.

Phenologically the season throughout the northeast is considered late by all observers. They estimate a two to three week retardation in the southern portions and two to four weeks in the north. Low nightly temperatures and lateness of spring run-off maintained low water temperatures until late May. Vegetation appeared near normal by the end of June.

Breeding Population Indices -

Spring migration was delayed by about two weeks throughout most of the northeast. Because of the bird dispersal made possible by the flooded upland, some observers feel little comparison with the breeding populations of previous years is possible. Howard Mendall (Maine) states a heavy flight passed through Maine this spring, although resident populations were down.

Production Indices -

The data presented in Table II below were compiled from 128 comparable areas. The total black duck and wood duck broods produced is down slightly from a year ago. The change may reflect wider dispersion of the breeding stock with a corresponding drop in the total broods produced on the study areas to July 20.

Brood size is much the same for the two important breeding species, the black duck and wood duck.

Table I shows the dispersion of the comparable sample production areas by States and indicates the status of production.

TABLE I - Number of Comparable Areas by States Showing Status of Production

| <u>State</u> | <u>Comparable Areas</u> | <u>Increase</u> | <u>No Change</u> | <u>Decrease</u> |
|---------------|-------------------------|-----------------|------------------|-----------------|
| Connecticut | 41 | 15 | 16 | 10 |
| Delaware | 2 | 0 | 0 | 2 |
| Maine | 50 | 17 | 5 | 28 |
| Massachusetts | 1 | 0 | 1 | 0 |
| New Hampshire | 4 | 1 | 0 | 3 |
| New Jersey | 6 | 5 | 0 | 1 |
| New York | 6 | 2 | 2 | 2 |
| Rhode Island | 12 | 6 | 3 | 3 |
| Vermont | 1 | 0 | 0 | 1 |
| West Virginia | 5 | 2 | 2 | 1 |
| Total | 128 | 48 | 29 | 51 |

TABLE II - Summer Brood Survey in the Northeastern States, 1956 - (128 Comparable Areas, Table I)

| Species | Total Broods | | Young Produced | | Average Brood | | Percent of Change | | | |
|------------------|--------------|------|----------------|--------|---------------|------|-------------------|----------|----------|----------|
| | 1956 | 1955 | 1956 | 1955 | 1956 | 1955 | Young Produced | | Broods | |
| | | | | | | | Increase | Decrease | Increase | Decrease |
| Black Duck | 271 | 316 | 1587.1 | 1845.1 | 5.9 | 5.8 | | 14.0 | | 14.2 |
| Wood Duck | 163 | 194 | 964.5 | 1099.6 | 5.9 | 5.7 | | 12.3 | | 16.0 |
| Ringneck Duck | 41 | 62 | 237.5 | 423.9 | 5.8 | 6.8 | | 44.0 | | 33.9 |
| Mallard | 86 | 75 | 498.0 | 536.2 | 5.8 | 7.1 | | 7.1 | 14.7 | |
| Blue-winged Teal | 26 | 25 | 208.8 | 192.5 | 8.0 | 7.7 | 8.5 | | 4.0 | |

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Conclusions -

No significant change in production at this date is indicated for the two principal breeding species, the black duck and wood duck. The prolonged nesting season may offset early nest losses. It is concluded that the fall flight of ducks from the Northeastern States will be approximately the same as in 1955.

QUEBEC AND LABRADOR

Weather and Water Conditions -

Break-up varied from two weeks later than normal in the southwestern portion of the area to over three weeks late in the area around Knob Lake. The only open lakes of any size seen during the survey north of the 49th parallel were in the region immediately south of James Bay. Lakes north of 52° N. Lat. were still frozen on June 13.

Breeding Population Indices -

Both black duck and scaup show somewhat of an increase in local breeders, while the latter species shows a considerable increase in grouped birds. Goldeneyes, scoters and mergansers show a decrease from 1955 indices. The figure for total ducks shows a slight decrease in local breeders and a considerable increase in grouped birds. The sum of the two is slightly higher than in 1955.

Duck Population Indices, Quebec and Labrador - 1955-1956 - May Survey*

| Species | 1955 | | 1956 | |
|-------------------------|----------------|----------------|----------------|----------------|
| | Pairs | Grouped Birds | Pairs | Grouped Birds |
| Black Duck | 164,400 | 83,000 | 178,800 | 109,900 |
| Scaup | 50,900 | 25,600 | 87,400 | 114,500 |
| Goldeneye | 175,800 | 78,600 | 104,400 | 50,100 |
| Ringneck | | | | 2,900 |
| Mallard | 900 | | 8,500 | 1,000 |
| Green-winged Teal | 900 | | 4,000 | |
| Pintail | 11,400 | | 3,300 | |
| Baldpate | 1,900 | | | |
| Redhead | 900 | | | |
| Bufflehead | | | 4,500 | 17,000 |
| Total Game Ducks | 407,100 | 187,200 | 393,800 | 292,500 |

Continued --

Duck Population Indices, Quebec and Labrador - 1955 - 1956 - May Survey*

Continued -

| Species | 1955 | | 1956 | |
|----------------------|---------|---------------|---------|---------------|
| | Pairs | Grouped Birds | Pairs | Grouped Birds |
| Scoter | 23,100 | 59,500 | 12,200 | 41,500 |
| Merganser | 240,600 | 48,100 | 138,400 | 127,200 |
| Total Non-game Ducks | 263,700 | 107,600 | 150,600 | 168,700 |
| Total Ducks | 670,800 | 294,800 | 544,400 | 461,200 |
| Canada Geese | 60,500 | 4,400 | 39,400 | 69,000 |

* Excluding the Tundra Stratum

Percent Lone Males, Quebec and Labrador, 1955 - 1956

| Stratum | Percent Lone Males | |
|-------------------------------|--------------------|------|
| | 1955 | 1956 |
| Mixed Boreal | 22.2 | 47.1 |
| Main Boreal | 39.1 | 14.5 |
| Open Boreal and Forest Tundra | 27.6 | 15.5 |
| Total | 31.5 | 16.4 |

Production Data -

Although a comparable production survey was not conducted in 1956, it seems likely that the late season will reduce the number of young somewhat.

Conclusions -

It is estimated that a probable reduction in production will balance the small increase in breeding population of ducks and that the fall flight will be about the same as last year.

MARITIME PROVINCES

Weather and Water Conditions -

No information received.

Breeding Population and Production Data -

According to a telegram received August 1, the breeding population and production of black ducks decreased as compared to last year. Ringnecks increased in breeding population but the young are just hatching. Breeding population of teal and goldeneye remained unchanged, but broods are small.

Conclusions -

Over-all, it is estimated that the fall flight of ducks from the Maritimes will remain the same as last year.

SUMMARY OF CONDITIONS

PACIFIC FLYWAY

In January 1956, the wintering population of waterfowl in the Pacific Flyway was slightly higher than in 1955. Increases were recorded for ducks, geese, and coot, while a decrease was shown for brant. It should be noted that brant have been decreasing steadily since 1952, and are now 35 percent below the 1952 level.

In the waterfowl breeding areas supplying the Flyway, increases in breeding population were recorded in Northern Alberta and the Northwest Territories, Southern Saskatchewan, Washington, Oregon, Nevada, and Utah. Decreases were found in Alaska and California, while the breeding population remained about the same in Alberta.

Weather and water conditions varied throughout the breeding range supplying the Flyway. East of the Divide the season was late and somewhat dry during the early part. General rains from mid-June through July in the Canadian Prairies increased water levels, but a partial drought previous to mid-June discouraged re-nesting to some extent. On the other hand, water was plentiful and the season was early in most areas west of the Divide. Conditions there continued to be favorable throughout the breeding season.

Surveys during July have indicated that production in the important areas of Alaska, Northern Alberta and the Northwest Territories, and Southern Saskatchewan will be about the same as last year. Increases were recorded in Washington, Oregon, Nevada, and Utah, while decreases were found in Southern Alberta and Montana.

Over-all, it is estimated that the fall flight of ducks will be about the same as last year in the Flyway.

In view of the increased wintering population of geese and coot in the Flyway it is estimated that populations of these species may be somewhat better than last year.

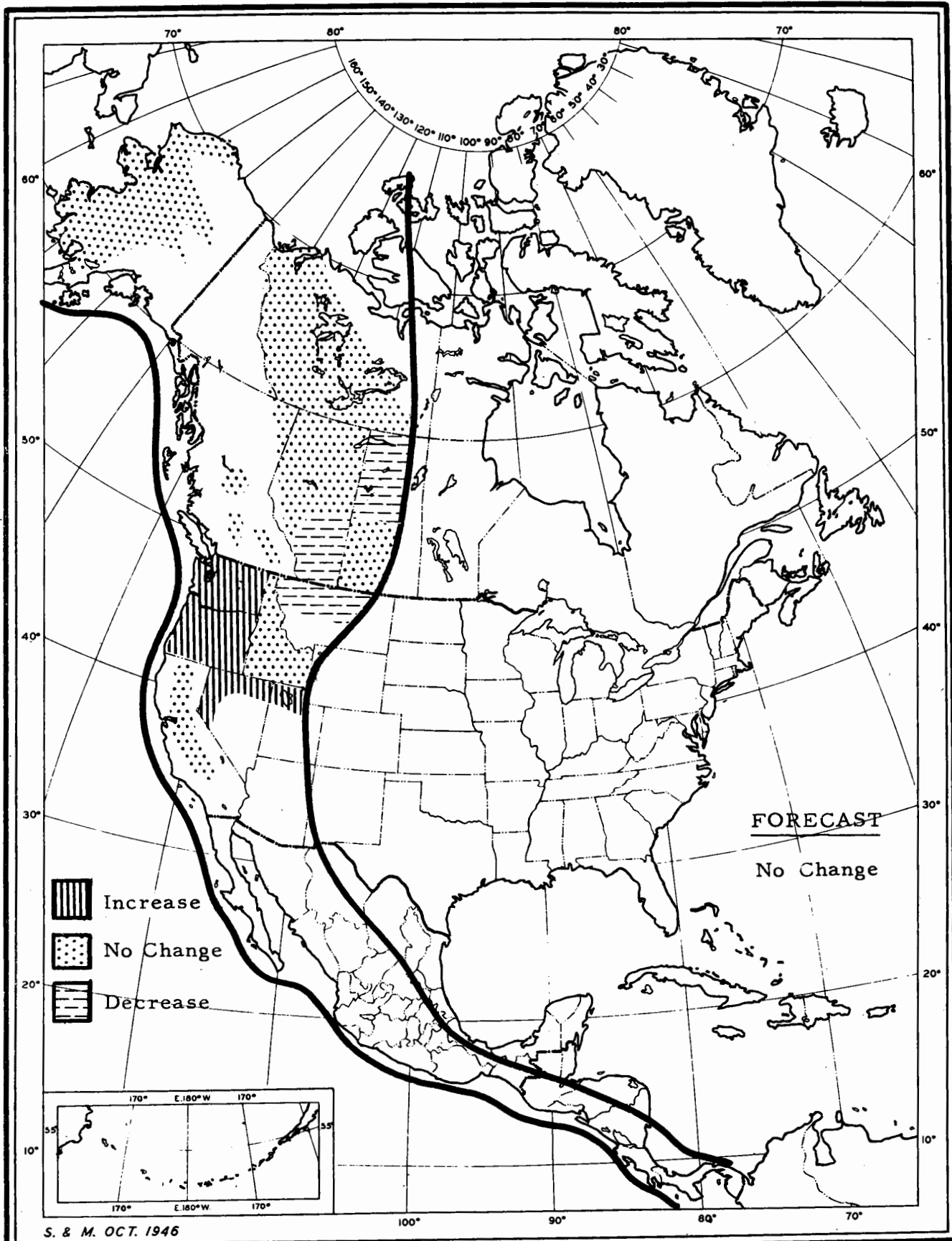
Based on the continuing decrease in the wintering population of brant, it is estimated that there may be a further decrease in number of this species.

1956 FALL FLIGHT FORECAST FOR DUCKS

PACIFIC FLYWAY

U.S. DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE



CENTRAL FLYWAY

As compared to last year, the January 1956 waterfowl survey indicated a considerable increase in the wintering population of waterfowl in the Central Flyway. Substantial increases were recorded among ducks, geese and coot.

As would be expected, increases in population were recorded during the May breeding ground surveys. These increases occurred primarily in Southern Saskatchewan, Southern Manitoba, Northern Alberta and the Northwest Territories, North Dakota, and South Dakota. Breeding populations remained about the same in Southern Alberta and Nebraska, while decreases were recorded in the northern portions of Saskatchewan and Manitoba, and in Montana.

However, the season was late over much of the breeding range supplying the Flyway. In addition, a semi-drought condition developed between mid-May and mid-June in much of the prairie portion of the breeding range. As a result, early nest mortality was rather high, and conditions for renesting were not good.

Therefore, it is estimated that the fall flight of ducks will be about the same as last year from Southern Saskatchewan, Southern Manitoba, Northern Alberta and the Northwest Territories, South Dakota, North Dakota, and Wyoming. Decreases are expected from Northern Saskatchewan, Northern Manitoba, Montana and Nebraska. The fall flight should be somewhat larger from Colorado.

Therefore, in spite of the increases in breeding population, it is expected that the fall flight of ducks in the Central Flyway will be about the same as last year.

Based on winter survey data alone, it is estimated that the Canada and snow goose populations are in healthy condition. The indications are that local flocks of Canadas in Wyoming and Utah are still below average while increases can be expected from Colorado.

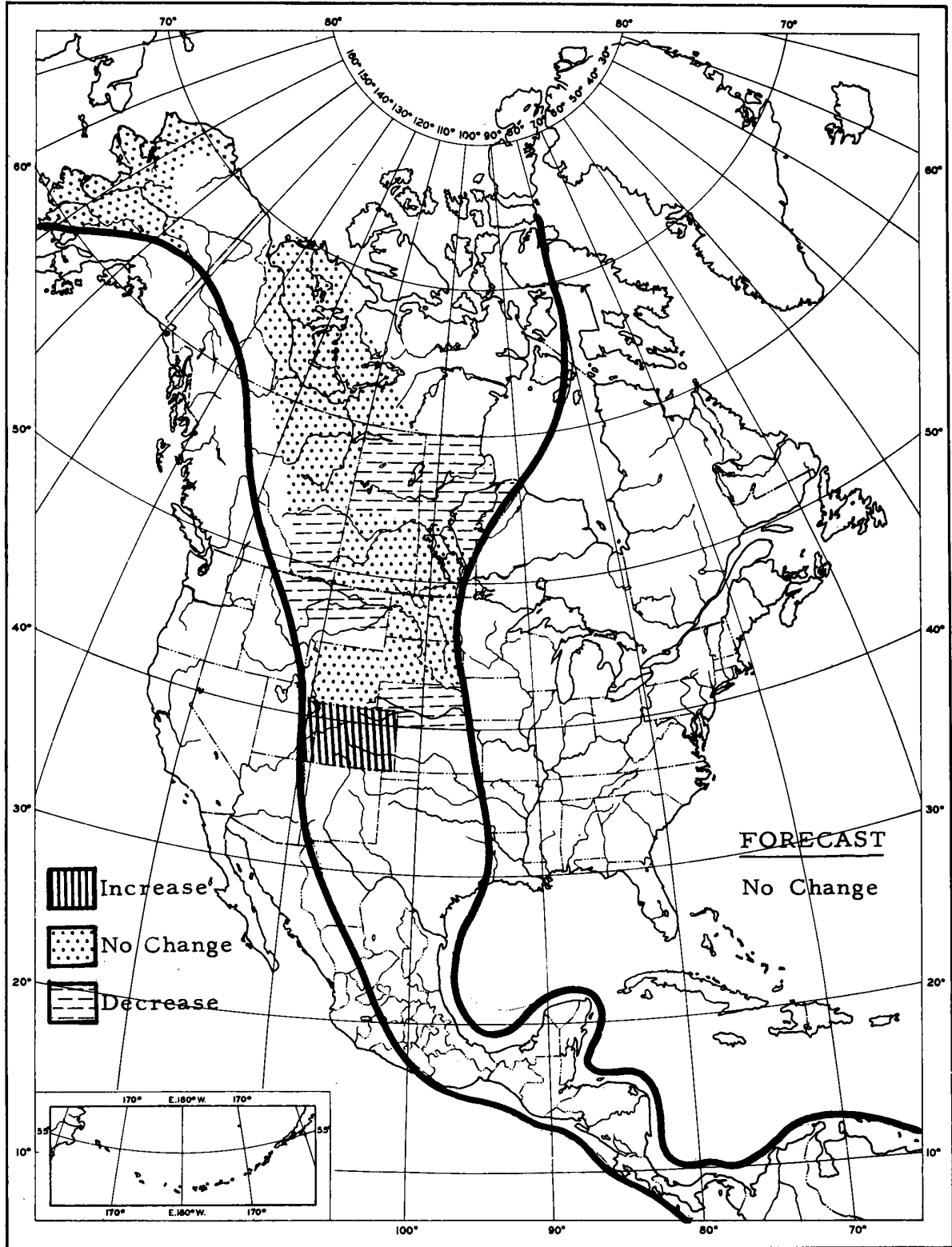
In view of the increased wintering population of coot in the Flyway, and indications of favorable production on the breeding grounds, it is estimated that the fall flight of this species will increase.

1956 FALL FLIGHT FORECAST FOR DUCKS

CENTRAL FLYWAY

U.S. DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE



MISSISSIPPI FLYWAY

The waterfowl population present in the Mississippi Flyway during January 1956 was considerably larger than the year before, and was considerably above the average of the past several years. Increases were recorded for most of the important species except the Canada goose, which remained about the same.

Increases in population were recorded also following the return of the birds to the breeding grounds. Surveys indicated a larger breeding population in Southern Saskatchewan, Manitoba, North Dakota, South Dakota, Minnesota and the Northwest Territories. Decreases were recorded in Northern Saskatchewan, Northern Manitoba, and Ontario.

Throughout most of the breeding range supplying the Flyway the season was from two to three weeks late. There was somewhat less water in parts of the prairies in Saskatchewan and Alberta than there was a year ago. On the other hand, water levels were practically at flood stage in Manitoba. There was little rain throughout the prairies and parklands from mid-May through mid-June, but the drought was broken by general rains during the later part of June. Shower conditions prevailed during July to the extent that water levels have been maintained.

Nest mortality was rather high during the early part of the season and the drying conditions which set in during late May and early June discouraged re-nesting to some extent. In spite of the increased breeding population, therefore, the fall flight will be about the same as last year from Southern Saskatchewan, Southern Manitoba, Northern Alberta and the Northwest Territories, North Dakota, South Dakota, Wisconsin, Michigan, Quebec and Labrador, and Alaska. Decreases are expected from Northern Saskatchewan, Northern Manitoba, Ontario, Southern Alberta, Nebraska, Iowa, and Missouri. It is expected that the only increases in fall flight will come from Minnesota, Indiana, and Ohio.

Over-all, the fall flight forecast for the Mississippi Flyway is for about the same population of ducks as last year.

There is little breeding ground data concerning production of geese other than that the season was late. Since a late season may have an adverse effect on production, it is estimated that the flight this fall of Canada geese and blue geese will be about the same as last year or somewhat less.

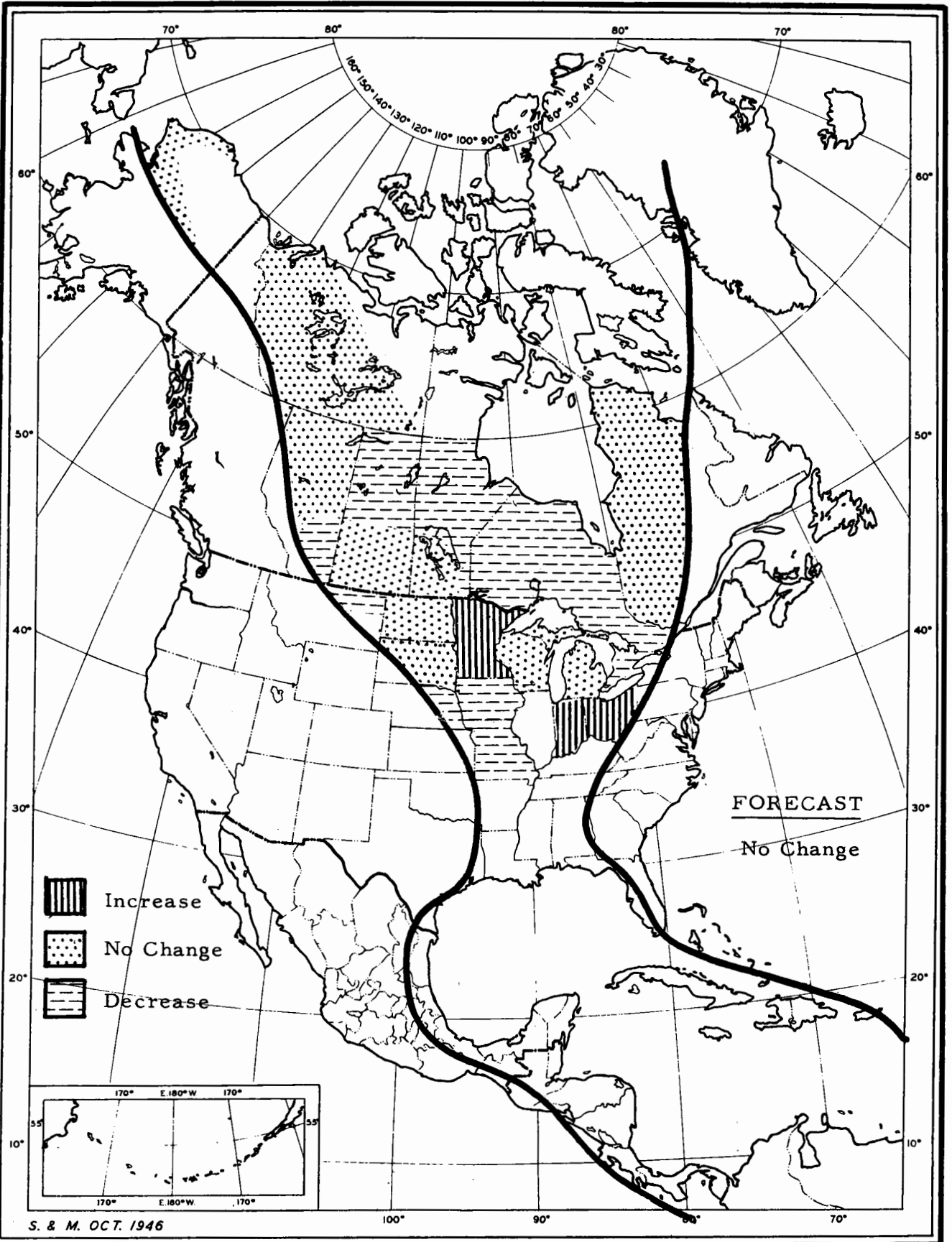
The number of coot broods seen this year was greater in several locations, particularly in Southern Saskatchewan. There, it is estimated that the fall flight of coots will increase this year in the Mississippi Flyway.

1956 FALL FLIGHT FORECAST FOR DUCKS

MISSISSIPPI FLYWAY

U.S. DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE



ATLANTIC FLYWAY

The wintering population of waterfowl, as measured by the January survey, was somewhat below that of a year ago. The decrease occurred primarily with ducks and swan, since the Canada goose and brant populations did not change materially. The population of coot increased somewhat.

In the breeding areas supplying the Flyway there was little change in breeding population in Quebec and Labrador, the Maritimes, and the Northwestern States. Increases were recorded in Minnesota, North Dakota, Southern Manitoba, Southern Saskatchewan, and the Northwest Territories. Decreases were found in Ontario, Northern Manitoba, and Northern Saskatchewan.

Throughout most of the breeding areas supplying the Flyway the season was late. Breeding conditions in the southern portions of the Prairie Provinces were somewhat adverse due to a semi-drought which developed between mid-May and mid-June which adversely affected re-nesting.

It is anticipated that in spite of a larger breeding population in the areas supplying the Flyway, that production of young will be somewhat less than last year. It is estimated that the increased number of adults will balance the decrease in young, and that the fall flight of ducks in the Flyway will be about the same as last year.

In view of the late season on the breeding grounds, which may have an adverse effect on production, it is estimated that the fall flight of Canada geese and brant will be about the same as last year, or somewhat smaller.

Production surveys in the Prairie Provinces indicate a larger production of coot broods than last year. On this basis, it is estimated that the fall flight of coot in the Flyway will increase somewhat.

1956 FALL FLIGHT FORECAST FOR DUCKS

ATLANTIC FLYWAY

U.S. DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

