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UNITED STATES  
DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

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1955 STATUS REPORT OF WATERFOWL

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## TABLE OF CONTENTS

	<u>Page</u>
Introduction . . . . .	1
Scope of Investigations . . . . .	2
 <u>PACIFIC FLYWAY</u>	
Waterfowl Kill Data . . . . .	5
Winter Trend Data . . . . .	7
Breeding Ground Surveys . . . . .	11
 <u>CENTRAL FLYWAY</u>	
Waterfowl Kill Data . . . . .	28
Winter Trend Data . . . . .	30
Breeding Ground Surveys . . . . .	34
 <u>MISSISSIPPI FLYWAY</u>	
Waterfowl Kill Data . . . . .	53
Winter Trend Data . . . . .	55
Breeding Ground Surveys . . . . .	59
 <u>ATLANTIC FLYWAY</u>	
Waterfowl Kill Data . . . . .	83
Winter Trend Data . . . . .	85
Breeding Ground Surveys . . . . .	89
 <u>SUMMARY OF CONDITIONS</u>	
Pacific Flyway. . . . .	98
Central Flyway. . . . .	100
Mississippi Flyway . . . . .	102
Atlantic Flyway . . . . .	104

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## INTRODUCTION

Included in this report are the results of three major surveys to determine current waterfowl conditions. These are (1) a survey during the 1954-55 shooting season to determine the kill of waterfowl and to evaluate the effect of regulations on kill; (2) a survey of waterfowl wintering grounds during January 1955 to determine the distribution and relative number of birds remaining after the shooting season; and (3) a breeding population and production survey conducted during the current spring and summer for the purpose of forecasting any changes which may occur in the relative size of the fall flight in each Flyway. These data are brought together here for the purpose of supplying administrators with a factual basis for setting the shooting regulations for the 1955-56 season, and for other management purposes.

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, The Maritimes, and the West Indies 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.

It will be noticed that most of the breeding areas supply birds to two or more Flyways. Past banding efforts have indicated in a general way the connection between the various breeding areas and the four flyways, and a revised and expanded banding program in its second year of operation is yielding more precise information. In 1954, 11 States supplied 19 men for a cooperative banding program in southern Canada. This year 17 States are supplying 25 men. Once information from this banding program accumulates it should be possible to forecast relative changes in the size of the fall flight in each Flyway with greater accuracy than at present.

## 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		
	52-53	53-54	54-55	52-53	53-54	54-54	52-53	53-54	54-55
Atlantic	3091	6643	8274	2449	4645	5758	79.2	69.9	69.6
Mississippi	3995	11549	14133	3130	8126	10168	78.4	70.4	71.9
Central	2644	7035	8081	1988	4560	5795	75.2	64.8	71.7
Pacific	2828	7903	13227	2334	5601	9794	82.5	70.9	74.1
<b>Total</b>	<b>12558</b>	<b>33130</b>	<b>43715</b>	<b>9901</b>	<b>22932</b>	<b>31515</b>	<b>78.8</b>	<b>69.2</b>	<b>72.1</b>

### 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, Mexico and the West Indies. The cooperative survey was conducted mostly during January. In Alaska, Mexico and the West Indies, 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	382	27	17,535
Central Flyway	262	25	20,060
Mississippi Flyway	1,065	51	70,578
Atlantic Flyway	488	34	30,974
Total for United States	2,197	137	139,147
Alaska	16	6	3,450
Mexico	6	2	9,000
West Indies	2	1	3,000
Grand Total	2,221	146	154,597

#### 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 form 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 and ground transects, to 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 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 could 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 DataWaterfowl Kill Information

The following table presents the estimated kill of waterfowl during the 1952-53, 1953-54 and 1954-55 shooting seasons as determined by the Waterfowl Hunter Mail Survey:

Species	1952-53	Total Kill *		Percent Change
		1953-54	1954-55	1953-54 - 1954-55
Mallard	2,022,670	1,371,510	1,389,039	+ 1.3
Pintail	761,540	993,235	733,987	- 46.1
Am. Widgeon	329,950	376,860	534,229	+ 41.8
G-w. Teal	293,250	488,140	392,463	+ 6.2
Shoveler	130,420	154,525	380,156	+146.0
Redhead	115,970	30,120	27,952	- 7.2
Other Ducks	251,080	313,551	714,215	+127.8
<b>Total Ducks</b>	<b>3,904,770</b>	<b>3,727,941</b>	<b>4,172,041</b>	<b>+ 11.9</b>
Canada Geese**	146,250	90,795	156,146	+ 72.0
Snow Geese	40,500	143,390	145,997	+ 1.5
White-fronts	45,200	67,350	145,984	+116.7
Cackling Geese	-	56,935	139,120	+144.4
Brant	25,350	23,905	26,770	+ 12.0
Other Geese	790	-	2,593	-
<b>Total Geese</b>	<b>247,090</b>	<b>382,375</b>	<b>616,610</b>	<b>+ 61.3</b>
Coot	143,000	161,611	513,297	+217.6

\* Includes both retrieved and unretrieved birds.

\*\* Cackling geese included in "Canada" category in 1952-53 tabulation.



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

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		1952-53	1953-54	1954-55	Percent Change 1953-54 to 1954-55
<b>Number of Hunters</b>					
Over 16		466,039	426,033	414,877	- 2.6
Under 16		32,768	39,984	15,143	- 62.1
<b>Average Daily Bag</b>					
<u>Over 16</u>	Ducks	1.55	1.75	1.97	+ 12.6
	Geese	.10	.17	.28	+ 64.7
	Coot	.04	.06	.21	+250.0
<u>Under 16</u>	Ducks	.43	.58	.96	+ 65.5
	Geese	.08	.05	.16	+220.0
	Coot	.12	.10	.27	+170.0
<b>Average Seasonal Bag</b>					
<u>Over 16</u>	Ducks	6.78	7.16	8.00	+ 11.7
	Geese	.45	.71	1.14	+ 60.5
	Coot	.17	.24	.85	+254.2
<u>Under 16</u>	Ducks	1.88	2.39	3.90	+ 63.2
	Geese	.33	.21	.65	+209.5
	Coot	.52	.43	1.09	+153.4
<b>Average Times Hunted</b>		4.38	4.10	4.06	- 1.0

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Winter Trend Data - Pacific Flyway

In the PACIFIC FLYWAY, survey conditions varied from favorable to unfavorable during the period the January 1955 census was made. Fortunately, unfavorable flying conditions existed only in the States of Utah, Arizona and Idaho, which are relatively unimportant as wintering areas for waterfowl. The survey in Alaska was delayed somewhat by storms, but this is usual for this part of the country during January. Conditions in western Mexico were favorable for making a good count, as they usually are.

Percent Change in Pacific Flyway (Continental) Population Index Figures for  
Ducks, Geese, Brant, Swan, and Coot - January 1954 to January 1955  
(Comparable Coverage)

Area	Ducks	Geese	Brant	Swan	Coot	Total
Alaska	- 34	- 15	-	- 63	-	- 33
Canada*	+ 13	+ 4	+157	- 14	- 14	+ 12
Pacific Flyway States	- 6	- 1	+ 26	+ 32	- 40	- 10
Mexico, West Coast	- 14	- 86	- 11	-	- 22	- 15
Total	- 7	- 1	+ 2	+ 30	- 39	- 10

\* British Columbia and Alberta.

Species Composition - Pacific Flyway (Continental) 1954 and 1955  
(Comparable Coverage)

Species	Percent of Birds Identified		Percent Change 1954-1955
	1954	1955	
Pintail	26.7	30.8	+ 5.1
Mallard	20.1	17.7	- 20.1
Coot	12.1	8.2	- 38.8
Baldpate	11.2	11.7	- 5.3
Shoveler	5.0	5.1	- 8.1
Scaup	4.2	3.5	- 24.8
Snow Goose	3.3	3.6	- 1.4
G-w. Teal	2.9	4.4	+ 37.4
Canada Goose	2.3	1.5	- 40.1
Scoter and Eider	2.1	1.7	- 20.4
Cackling Goose	1.8	2.5	+ 26.3
White-F. Goose	1.7	2.3	+ 18.6
Black Brant	1.4	1.5	+ 2.1
Goldeneye	.8	.7	- 21.9
Ruddy duck	.8	.9	+ .4
Gadwall	.7	.9	+ 8.1
Canvasback	.6	.9	+ 33.8
Bufflehead	.5	.5	- .1
Tree duck	.4	.2	- 58.6
Merganser	.4	.3	- 36.6
Redhead	.4	.4	- 12.8
Whistling Swan	.3	.4	+ 32.8
B-w. & Cinn. Teal	.2	.2	+ 23.3
Old Squaw	.1	.1	- 6.7
Ringneck	tr.	tr.	-
Ross' Goose	tr.	tr.	-
Wood duck	tr.	tr.	-
Trumpeter Swan	tr.	tr.	-
Emperor Goose	tr.	tr.	-
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>- 9.8</b>

Summary of Pacific Flyway Waterfowl Indices

In January 1955 the wintering population of waterfowl in the Pacific Flyway showed a decrease for the first time in several years.

Waterfowl - The 1955 index for waterfowl is one percent above the average level for the 6-year period 1950-55 and compared to individual years is:

10 percent below 1954  
 3 percent below 1953  
 7 percent above 1952  
 2 percent above 1951  
 14 percent above 1950

Ducks - The 1955 index for the Pacific Flyway is 4 percent above the average level for the past 6 years and compared to individual years is:

7 percent below 1954  
 1 percent below 1953  
 7 percent above 1952  
 19 percent above 1951  
 11 percent above 1950

Among the ducks, the indices were:

1. About the same for: pintail, shoveler, baldpate, ruddy, gadwall, redhead, bufflehead and old squaw.
2. Noticeably up for: green-winged teal and canvasback.
3. Noticeably down for: mallard, scaup, scoter and eider, goldeneye and merganser.

Geese - The 1955 goose index is 16 percent below the average for the 6-year period 1950-55 and compared to individual years is:

1 percent below 1954  
 9 percent below 1953  
 5 percent below 1952  
 52 percent below 1951  
 17 percent above 1950

Among the species of geese, the snows remained about the same, Canadas decreased, and cacklers and white-fronts increased.

Brant - The black brant index is 5 percent below the average for the 6-year period 1950-55 and compared to individual years is:

2 percent above 1954  
13 percent below 1953  
20 percent below 1952  
24 percent above 1951  
11 percent below 1950

Coot - The 1955 coot index is 4 percent below the 6-year average and compared to individual years is:

39 percent below 1954  
10 percent below 1953  
30 percent above 1952  
12 percent below 1951  
62 percent above 1950

## Breeding Ground Surveys

ALASKAWeather and Water Conditions -

All of Alaska was considered to have a "retarded" spring although the break-up came at an average date. Water conditions were extremely high in the Minto Lakes area and on the lower Iditarod River, although no adverse effect on production should have been caused by these early floods. Elsewhere, water levels seemed to be adequate to normal.

Breeding Population and Production Trend -

Because of the change in stratification in some areas, a quantitative comparison of the breeding population trend between 1954 and 1955 is not possible there. On the Fort Yukon Flats, however, there seems to be about a 50 percent reduction of the breeding population from a density of 10.0 pair per square mile in 1954 to 5.5 pair per square mile in 1955. In the Minto Lake area there is little or no change. The Copper River Delta shows some reduction in duck brood stock, but no comparative figures are available for Canada geese. The Lake Louise area indicates little or no change from last year. The Innoko-Iditarod River system, Yukon-Kuskokwim Delta, and Koyukuk area show an increase, although no statistically valid comparison is possible.

Table 1 - Breeding Density and Population Index - Game Ducks -  
May 31 to June 10, 1955

Location	Stratum	Area, Sq. Mi.	No. of 16-Mi. Tran.	Square Mi. Sample	Mean Density Pairs Per Square Mile	Population Index, Total Breeding Pairs
Yukon Delta	2	9,380	7	14	8.3	77,895
	3	16,300	28	56	2.6	42,380
Innoko- Iditarod	2	1,050	2	4	10.0	10,000
	3	1,500	12	24	4.3	6,450
	4	520	4	8	.8	416
Alaska Peninsula	3	6,200	7	28	3.2	19,840
Selawik	3	2,700	3	6	4.0	10,800
Buckland River	2	200	1	2	13.5	2,700
Norton Bay	2	400	2	4	8.0	3,200

Table 1 - Continued

Location	Stratum	Area, Sq. Mi.	No. of 16-Mi. Tran.	Square Mi. Sample	Mean Density Pairs Per Square Mile	Population Index, Total Breeding Pair
Lake Louise	3	2,960	20	80	4.5	13,320
	4	1,070	6	24	1.4	1,505
Copper River Delta	1	300	5	20	28.7	8,610
	2	200	1	4	8.1	1,620
Minto Lakes	2	2,050	9	36	9.7	19,865
Koyukuk	3	5,850	7	14	4.7	27,495
Ft. Yukon	2	4,000	34	136	5.5	22,000
Total		54,680	148	460	4.9 weighted	268,596

### Conclusions -

Except for a slight reduction of brood stock for the Territory as a whole, all conditions as of the middle of June indicate a normal waterfowl production from Alaska.

## NORTHERN ALBERTA AND NORTHWEST TERRITORIES

### Weather and Water Conditions -

Water levels were normal throughout the survey area and the season was somewhat advanced, phenologically, as compared to 1954. Conditions were judged to be ideal for brood production.

### Breeding Population Indices -

Within the area surveyed the following changes occurred in breeding population indices:

PACIFIC FLYWAY

<u>Region</u>	<u>Percent Change</u>
Northern Alberta	- 50
Northeastern British Columbia	- 73
Close Forest - Northwest Territories	- 69
Precambrian Forest and Forest Tundra	- 27
Slave River Parklands	- 66
Pre-Cambrian Edge	- 67
Forest Tundra	- 38
MacKenzie Delta	- 18
Upland Tundra	No Change
Old Crow Flats	- 15
<hr/>	
Total Area	- 41

By species the changes from 1954 were as follows:

<u>Species</u>	<u>Change in Status from 1954 in NE B.C.</u>	<u>Change in Status from 1954 in No. Alberta*</u>	<u>Change in Status from 1954 in NWT and Yukon</u>	<u>Over-all Change from 1954</u>
Mallard	-98%	- 35.0%	-82%	-53.3%
Pintail		- 56.8%	-86%	-78.8%
Baldpate		- 8.3%	-54%	-38.0%
Green-winged Teal	-95%	- 23.9%	-70%	-48.1%
Blue-winged Teal**		**136.5%		**60.1%
Shoveler	-89%	- 55.8%	-97%	-67.4%
Gadwall**		- 63.2%		-63.2%
Scaup	-61%	- 55.0%	-60%	-58.6%
Canvasback		- 82.8%	-10%	-67.9%
Redhead**		** 11.9%		**11.9%
Ring-necked Duck	-89%	- 51.6%	-92%	-70.1%
Bufflehead	-54%	- 36.0%	-65%	-44.8%
Golden-eye		**446.0%	-15%	**44.1%
Ruddy Duck**		- 36.2%		-36.3%

\* Including Lake Claire

\*\* These species are not important numerically over the entire area; consequently these figures have little significance.

Conclusions -

In view of the sharp reduction in breeding population it is estimated that the fall flight from Northern Alberta, Northeastern British Columbia and the Northwest Territories will be considerably reduced as compared to 1954.



## BRITISH COLUMBIA

### Weather and Water Conditions -

The spring of 1955 was wet and retarded. Water conditions, however, have been favorable to waterfowl production.

### Production Information -

Brood surveys indicate a successful hatch. Mid-summer counts on sample areas in Cariboo region show increase in waterfowl numbers over 1954.

### Conclusions -

It is estimated that waterfowl production in British Columbia will compare favorably with that of past five years.

## SOUTHERN ALBERTA

### Weather and Water Conditions -

The 1955 waterfowl breeding season began under most excellent conditions as far as both water and waterfowl populations were concerned. The water index was the highest recorded during the years of these surveys. In only one relatively narrow belt in the central prairies was water scarce. A prolonged period of wet weather early in May hampered agricultural activities throughout the Province, cutting normal early nest losses on the prairies to a marked degree. Early nest predation was particularly high again in the parklands, where cold, wet weather delayed vegetative growth and made nesting cover especially poor early in the season.

In mid-May, a heavy, wet snow fell over the southwestern areas of the Province. It became apparent during the brood survey that this storm, coupled with a warm, dry June and July practically wiped out any possibility of a normal hatch in Stratum C. The water present in May, in this area, disappeared rapidly and by early July nothing but the permanent ponds remained. In Strata A and B there were general rains early in July followed by hot dry weather. This has resulted in a gradual deterioration of water areas during the month. Nevertheless, water is present sufficient to assume the success of this year's production.

### Breeding Population Indices -

Comparisons of the breeding populations of 1954 and 1955 are given in Table 1. An over-all provincial gain of four percent in the waterfowl breeding populations index over 1954 is not in itself significant and might be considered as approximately the same population as a year ago.

Table 1 - Comparison of Aerial Waterfowl Population Indices - 1954-1955

	Strata A		Strata B		Strata C		Province	
	1954	1955	1954	1955	1954	1955	1954	1955
Total Area in Square Miles	22088	22088	26100	26100	16112	16112	64300	64300
Sample Area in Square Miles	526.5	526.5	378.0	382.5	162.0	171.0	1066.5	1080.0
Total Ducks Seen	28518	26800	14966	16824	3278	4082	46562	48184
Total Ducks Per Sq. Mile	54.16	50.90	39.56	43.98	20.23	23.93	39.59	40.68
Total Pairs	14259	13400	7483	8412	1539	2041	23381	24092
Total Pairs Per Sq. Mi.	27.08	25.45	19.79	21.99	10.11	11.96	19.87	20.34
Pop. Index in Ducks	1196402	1124279	1033366	1147396	326020	384526	2555788	2656184
Pop. Index In Pairs	598201	562140	516683	573698	163010	192268	1277894	1328092
Percent Change		- 6.0 %		+ 11.0 %		+ 17.9 %		+ 3.9 %

Briefly stated, population index changes in Alberta in 1955 are as follows:

1. The mallard population is approximately the same as in 1954.
2. Though pintails fell off about 12 percent in Stratum A, gains of 38 percent in the parklands and 20 percent in Stratum C result in an over-all gain of 3 percent.
3. Blue-winged teal increased some 30 percent in the parklands and 20 percent in the prairies for a provincial gain of 25 percent.

4. Green-winged teal, a difficult species to observe aerially in the parklands when they are leafed as they were this year, increased 17 percent in Stratum B; but, in prairie areas where observation possibilities were greatly improved, losses appeared to be considerable, down 44 percent in Stratum A, and down 42 percent in Stratum C, for a provincial loss of 15 percent.

5. The gadwall, usually a species whose population remains relatively constant, increased 15 percent, the greatest increases occurring in the parklands (42 percent) and in Stratum C (50 percent).

6. Losses in population of the shoveler in the parklands was offset by gains in the prairies, so that the provincial index declined only 2 percent.

7. Among the divers, redhead, scaup and ruddys all showed appreciable increases with only the canvasback declining somewhat.

8. After a very high coot index in 1954, a return to more normal populations in 1955 make the 41 percent decrease loom large. However, the 1955 index is still about 31 percent above the long-time average.

#### Production Indices -

Phenologically, this waterfowl season has been a normal one, with nesting of pintails and mallards starting in late April. Agricultural disturbances to early nests were minimized by early spring rains. Nest losses due to predation was high in the parklands but was partially offset by a strong and early renesting effort. Much of the production of both the prairies and the parkland was the result of a first hatch. At the time of the aerial brood survey, over 90 percent of all observed broods were either Class II's or III's and a great many fling III's were noted throughout the Province. Of the Class I and small Class II broods identified the bulk are of late nesting puddler and diver species.

Only in Stratum C has a marked reduction in production occurred (13.7 percent below 1954). In Stratum A an increase of 15.6 percent of broods observed was noted, but in the parklands where visibility factors in July are always working against an aerial observer, a tremendous increase in broods was apparent, 73.9 percent above last year's high.

Table 2 - Aerial Production Data - 1954 - 1955

	Stratum A		Stratum B		Stratum C		Province	
	1954	1955	1954	1955	1954	1955	1954	1955
Area Per Sq. Mile	22088	22088	26100	26100	16112	16112	64300	64300
Sample/Sq. Mile	263.25	263.25	184.5	189.0	85.5	85.5	533.25	537.75
Tot. Birds Seen	1349	1592	605	1030	96	46	2050	2668
Brds/Sq. Mi. Seen	5.12	6.05	3.28	5.45	1.12	0.54	3.37	4.96
Est. No. of Birds	113091	133632	85608	142245	18045	8700	216744	284577
Pot. Later Birds	214	212	172	353	41	72	427	637
Pot. Brds/Sq. Mile	0.81	0.81	0.93	1.87	0.48	0.84	0.78	1.18
No. Pot. Later Brds.	17891	17891	24273	48807	7734	13534	49818	80232
Tot. Ind. Broods	1563	1804	777	1383	137	118	2477	3305
Brds/Sq. Mi. Ind.	5.93	6.86	4.21	7.32	1.60	1.38	4.15	6.11
Est. No. Brds. Ind.	130982	151524	109881	191052	25779	22235	266642	364811
Aver. Brd. Size	5.59	5.68	5.78	6.42	5.25	5.00	5.64	5.94
Est. No. Young	732189	860656	634912	1226553	135340	111175	1503861	2198384

## Conclusions -

The fall flight from Southern Alberta will be above the average of the past several years and considerably above 1954.

## WASHINGTON

### Weather and Water Conditions -

The spring of 1955 was cold and late in Washington. As compared to 1954, moisture conditions are quite similar, but as compared to 1951 and 1952, about half of the potholes in the principal nesting areas are dry.

### Breeding Population and Production Indices -

Preliminary estimates of duck production in Washington indicate a four percent decrease from the 1954 production index figure. A comparison of the anticipated duck crop with that of previous years is shown in the following table:

Table 1 - Anticipated Washington Waterfowl Production

REGION	1951	1952	1953	1954	1955*
Eastern Washington	588,000	617,400	287,000	285,000	282,000
Central Washington	63,062	66,910	77,500	92,500	87,500
Western Washington	35,000	31,000	38,000	35,000	25,300
	686,062	715,310	402,000	412,500	394,800

\* Anticipated Waterfowl Production

Mallard, pintail, baldpate and wood duck are the species which, so far, have been observed in fewer numbers. Green-winged teal, gadwall, shoveler, cinnamon teal and the diving species will probably show an increase. Canada goose production on the Snake and Columbia Rivers is approximately the same as for last year. Coot production is up over the entire State.

Conclusions -

In summary, it can be said that, although a cold, late spring retarded the cycle of breeding activities, waterfowl production will approximate the level of the last two years.

CALIFORNIAWeather and Water Conditions -

The over-all rainfall in Central Valley was normal for the 1954-55 season. However, most of the winter was dry, so that it took heavy rains to bring precipitation up to average. Parts of Northeastern California were extremely dry and some waterfowl areas, such as Horse Lake, and Honey Lake were either dry or in critical condition.

Breeding Population Indices -

A comparative summary of nesting pairs of waterfowl for a five-year period is shown in Table 1.

Table 1 - Estimated Total Nesting Pairs

Species	1951	1952	1953	1954	1955
Canada goose	3,500	3,200	2,850	3,350	2,730
Mallard	40,543	51,580	40,380	34,330	35,440
Pintail	2,477	3,280	2,100	2,040	1,300
Gadwall	8,280	5,800	6,040	7,210	3,180
Cinnamon Teal	3,823	4,790	3,435	2,885	2,680
Redhead	5,763	3,380	3,760	3,875	4,960
Ruddy Duck	5,323	1,510	1,950	2,365	2,310
Shoveler	934	1,120	925	705	610
Scaup	1,150	290	235	280	230
Others	820	610	545	395	360
<b>Total Pairs (Ducks)</b>	<b>69,042</b>	<b>72,369</b>	<b>59,370</b>	<b>54,085</b>	<b>51,070</b>
<b>Total Pairs (Coot)</b>	<b>10,154</b>	<b>13,790</b>	<b>25,150</b>	<b>19,185</b>	<b>18,250</b>

## Production Indices -

The breeding grounds survey indicates that Canada goose production will be about 50 percent less than last year. This reduced production was also noted during the Canada goose banding operations in June. From a total catch of 3,169 geese, only 603 were young birds. In 1954 when a similar number of geese (3,163) were trapped, 1,122 were immature birds.

## Conclusions -

In some areas water conditions were not as favorable as they were in 1954, and the resulting waterfowl production will probably be below last year.

## OREGON

### Weather and Water Conditions -

Last year little water fell in eastern Oregon, the region containing the major waterfowl breeding areas. As a result the water supply was dwindling in many of the marsh areas. However, late in the winter and during the spring an ample supply fell, bringing water levels back to near normal. This late spring set back the nesting season approximately three weeks.

### Production Information -

Due to the lateness of the season few ducks had hatched at Summer Lake before the middle of July and few broods could be tallied. Most were in the Class I size. Production throughout eastern Oregon is down considerably except in the Klamath Basin which shows a slight increase in the number of goose broods.

### Comparison of Canada Goose Broods - Klamath Basin

Year	Number of Broods	Total Young	Average Young Per Brood
1952	204	1,021	5.0
1953	248	1,086	4.4
1954	223	997	4.5
1954	256	1,197	4.7

Last year 202 female ducks with broods were tallied at Summer Lake as compared with 38 this year over the identical transects. All but three of the 38 broods were in Class I. Fewer breeding birds and late hatching dates are the factors resulting in the low count. This duck brood census was taken on July 26.

Average Brood Size by Age at Summer Lake

Species	Females Without Broods	Females With Broods	Class I		Class II		Class III	
			No. Brds.	Total Young	No. Brds.	Total Young	No. Brds.	Total Young
Mallard	82	11	9	65	2	13	None	
Pintail	31	0	-	-	-	-		
Cinnamon Teal	13	6	5	40	1	8		
Gadwall	18	7	7	67	-	-		
Redhead	9	14	14	82	-	-		
Shoveler	3	0	-	-	-	-		
Ruddy Duck	41	0	-	-	-	-		
<b>Total Ducks</b>	<b>197</b>	<b>38</b>	<b>35</b>	<b>254</b>	<b>3</b>	<b>21</b>		
Canada Geese	69*	48	11	47	19	89	18	77

\* Pairs without broods. Goose census taken June 9.

The 1954 goose census showed 107 females with broods.

Conclusions -

It is concluded that the 1955 fall flight from Oregon will show a reduction in both ducks and geese compared to 1954.

UTAH

Weather and Water Conditions -

The spring run-off was below normal but above the drought conditions of 1954. Most reservoirs, ponds, and marshes had a fair supply of water. Temperatures were far below normal, which delayed nesting of some species and reduced the hatching success of early nests of Canada geese and mallard.



## Breeding Population Indices -

The aerial survey of 1955 covered the same routes and distance as the 1954 survey. The following table gives a comparative summary of the results of the 1954 and 1955 surveys:

Table 1 - Total Ducks Counted by Area and Square Mile as Determined from Aerial Surveys - 1954 and 1955

Route	Square Miles Sampled		Total Ducks Counted		Ducks Per Square Mile	
	1954	1955	1954	1955	1954	1955
Box Elder County	48.0	48.0	2,752	3,958	57.3	82.5
Weber County	15.5	15.5	1,100	1,390	70.9	89.6
Davis County	14.2	14.2	330	409	23.2	28.1
Jordan River Clubs	6.2	6.2	809	584	130.5	94.2
Salt Lake County	6.7	6.7	36	91	5.4	13.6
Utah County	18.0	18.0	211	380	11.7	21.2
Total	108.6	108.6	5,238	6,812	48.2	62.7

There was a 30 percent increase in the population of ducks along the aerial transect routes. All areas increased except the Jordan River Clubs.

Counts of the species of ducks along the transect routes indicated a large increase in the redhead population of the area. There was also an increase in the numbers of mallard counted. There was a decline in the count of cinnamon teal.

## Production Information -

An effort was made to make counts of goose broods over most of the State. Populations were known to be in several areas but could not be counted. There were also more broods known on some of the areas listed in the following table, but only birds actually seen were listed.

Table 2 - Counts of Canada Goose Broods - 1955.

Area	Broods	Young	Percent Change
Public Shooting Grounds	7	29	-32%
Bear River Refuge and vicinity	230	1,150	-30%
Ogden Bay Refuge	56	240	-42%
Syracuse	2	11	?
Farmington Bay	36	162	-15%
Harrison Gun Club	7	37	?
Cutler Reservoir	16	82	+12%
Round Valley	8	40	?
Strawberry Reservoir	1	5	?
Stewart's Lake	7	38	None
Otter Creek Slough (Rich)	21	112	?
Scipio Lake	1	8	?
Fool's Creek Reservoir	2	12	?
Redmond Lake	5	30	?
Gunnison Reservoir	23	102	?
Clear Lake Refuge	4	17	+100%

Most of the major goose producing area of the State showed a marked decline in the production of birds. Nesting success was apparently good despite inclement weather, but there was a lack of breeding adults.

#### Conclusions -

It is estimated that the fall flight of ducks from Utah will remain about the same as last year while the flight of geese will decrease.

#### IDAHO

##### Weather and Water Conditions -

The average temperatures over the State in March and April were the second lowest on record. May was also a cold month with the largest snowfall average ever recorded.

The snow melt this year is late and there appears to be adequate water reserves for most reservoirs. Some flooding occurred again in the Kootenai Valley but this area is of minor importance to nesting waterfowl.

Nesting in most areas was delayed about two weeks from last year. Inclement weather in the form of snow storms apparently affected goose nesting success on Island Park Reservoir.

### Breeding Population and Production Information -

Canada goose nesting surveys were continued in several areas of the State. In some localities this makes the fourth year in which comparable data has been gathered. Survey methods are similar in all areas and consist of one search to locate nests and one re-check to determine nest success. The degree of coverage varies somewhat in each area but it is believed that from 85 to 100 percent of the nests are located in this manner.

A comparison of the estimated goose production from these areas based on the nesting studies is given in Table 1. These production 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 four years is down approximately 30 percent. The estimated production from six areas with trend data for two years is down approximately 25 percent. The greatest production declines were noted in the Homedale and Island Park areas. The big decline in the Homedale unit was due primarily to fewer nests being found, with a lower nest success than last year also contributing to the reduction. Several snowstorms in late May seriously affected the hatch in Island Park with a corresponding drop in this year's goose crop. The estimated production on the four areas with the longest nesting records was just slightly above that of 1952, the first year of the study.

Table 1 - Comparison of Goose Production on Idaho Study Areas, 1952 - 1955

	Glenns Ferry	Homedale	Blackfoot Reservoir	Island Park Reservoir	North Fork Snake River	North Lake	Total*
<b>No. Nests Found</b>							
1952	24	208	103	16	-	-	351
1953	24	250	121	44	-	-	439
1954	34	216	132	42	39	24	424
1955	16	189	117	34	32	31	356
<b>No. Nests Hatched</b>							
1952	16	103	75	12	-	-	206
1953	11	180	74	36	-	-	301
1954	9	169	78	36	34	19	292
1955	1	125	81	19	21	26	226
<b>Average Hatch</b>							
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
1955	4.0	4.8	4.8	2.7	4.5	5.2	4.6
<b>Estimated Production</b>							
1952	82	484	352	48	-	-	966
1953	60	900	355	166	-	-	1,481
1954	41	930	351	148	154	80	1,470
1955	4	601	387	52	94	130	1,044

\* Excluding North Fork and North Lake

An attempt has been made to set up brood trend routes in some of the important duck producing areas of the State. These routes are run in a standardized manner in that during the first count all broods are recorded and on the second count only Class I broods are counted. The total broods seen are compared on a trend basis.

Only the results from southeastern Idaho are available at this time. These are given in Table 2. It is believed that the results obtained in this area this year are quite misleading. The duck hatch is definitely late and on the second count, 82 percent of all broods encountered were Class I. It is apparent that this count was made while the main hatching period was still in progress. So, although the total number of broods seen was down, it is believed the areas will produce quite a few more birds than is indicated.

Table 2 - Duck Brood Production Trend Routes, District Five, 1953-1955

Number of Broods by Species	TREND ROUTE														
	Camas NWR			Camas Crk.			Teton River			Blackfoot R.			Tot. All Rtes.		
	'53	'54	'55	'53	'54	'55	'53	'54	'55	'53	'54	'55	'53	'54	'55
Mallard	9	22	6	11	11	5	7	2	1	14	14	12	41	49	24
Pintail	4	4	2	16	6	5	-	-	-	6	4	2	26	14	9
Baldpate	1	-	-	9	5	13	7	1	1	4	4	6	21	10	20
Gadwall	7	9	8	3	4	5	1	6	3	28	23	23	39	52	39
Shoveler	1	-	2	3	1	1	-	-	-	-	-	-	4	1	3
G-w. Teal	1	1	-	1	2	1	1	-	-	1	1	1	4	4	2
B-w/Cinn. T	1	2	3	-	1	4	2	-	2	-	5	7	3	8	16
Canvasback	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-
Redhead	17	4	3	13	2	1	6	7	5	-	5	3	36	18	12
Ruddy	9	3	-	-	-	-	-	-	-	-	-	-	9	3	-
Scaup, L.	4	8	5	2	3	5	-	-	-	12	8	6	18	19	16
Unidentified	9	10	9	3	1	2	2	2	1	13	4	5	27	17	17
Total Broods all Species	63	64	38	61	36	42	26	18	13	78	78	65	228	196	158

### Conclusions -

It is estimated that the goose flight from Idaho this year will be less than in 1954, while the duck flight will be about the same.

NEVADAWeather and Water Conditions -

Weather conditions through May and early June remained cold and stormy in the western and northern part of the State. Snow fell throughout this general area as late as June 1. The available water in all production trend areas has been drastically reduced due to a poor winter snow pack and all reservoir trend areas are expected to be completely dry by late summer. The Humboldt-Toulon Sink is almost completely dry and is considered a total loss for waterfowl production this year. This same condition applies to Franklin Lake in the northeastern portion of the State. Water levels in west-central Nevada are considerably lower than last year and has resulted in a marked decrease of waterfowl nesting habitat. This condition was predicted last year, if stored water reserves were greatly reduced, and it certainly appears to be a reality.

Production Information -

Ducks: Production on the reservoir trend areas in northern Nevada appears to be down nearly 60 percent from last year. Drought conditions, during the past two years, have so reduced nesting habitat on these normally high productive areas that this year's production will add very little to the over-all picture in Nevada.

Based on a 20 percent increase in nesting pairs on the Stillwater Wildlife Management Area, production is expected to be somewhat higher this year than in 1954. Brood counts, on this area to date, have shown large increases in the production of redheads and cinnamon teal. Ruddy ducks are showing an increase over last year while gadwall and pintail broods are down 38 and 80 percent respectively. Throughout other trend areas in west-central Nevada, duck production appears to be down about 50 percent from last year. Reports on production for the Ruby Lake National Wildlife Refuge indicate a slight increase over last year.

Geese: Goose production appears to be down about 70 percent in the Washoe Lake area. Low water levels almost completely reduced the attractive nesting islands used in the past and the birds were forced to nest in the less desirable meadow land surrounding the lake. The Canada goose nesting pair count on Stillwater Marsh showed an increase of 62 percent over last year, however, only a slight increase in production was observed in this area. The population of non-breeding, molting geese at Pyramid Lake showed a definite increase compared to last year. This increase was probably due to a decrease in nesting birds at Honey Lake, Washoe Lake and other surrounding nesting areas.

Conclusions -

This year's production will, in all probability, reach a low ebb for Nevada since the initial studies of 1950.

## Central Flyway Data

### Waterfowl Kill Information

The following table presents the estimated kill of waterfowl during the 1952-53, 1953-54 and 1954-55 shooting seasons as determined by the Waterfowl Hunter Mail Survey:

Species	1952-53	Total Kill *		Percent Change
		1953-54	1954-55	1953-54 to 1954-55
Mallard	2,009,345	1,190,925	1,566,790	+ 32
Pintail	497,970	369,980	435,780	+ 18
G-w. Teal	495,585	277,105	413,660	+ 49
B-w. Teal	-	214,240	353,160	+ 65
Scaup	222,775	159,060	68,490	- 57
Canvasback	187,430	126,315	95,320	- 24
Redhead	121,910	115,595	107,360	- 8
Other Ducks	436,022	460,001	448,489	- 2
<hr/>				
Total Ducks	3,971,037	2,913,221	3,489,049	+ 20
Canada Geese	72,500	62,150	104,880	+ 69
Snow Geese	50,520	137,655	78,915	- 43
Blue Geese	24,460	65,490	22,990	- 65
White-fronts	20,970	31,155	63,055	+102
<hr/>				
Total Geese	168,450	296,450	269,840	- 9
Coot	73,260	78,601	149,005	+ 90

\* Includes both retrieved and unretrieved birds.

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

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		1952-53	1953-54	1954-55	Percent Change 1953-54 to 1954-55
<b>Number of Hunters</b>					
Over 16		502,608	510,000	476,580	- 6
Under 16		36,407	33,035	35,991	+ 9
<b>Average Daily Bag</b>					
<u>Over 16</u>	Ducks	1.73	1.11	1.70	+ 53
	Geese	.06	.12	.12	NC
	Coot	.03	.02	.06	+200
<u>Under 16</u>	Ducks	.36	.51	.97	+ 90
	Geese	.01	.05	.10	+100
	Coot	.03	.07	.13	+ 86
<b>Average Seasonal Bag</b>					
<u>Over 16</u>	Ducks	6.19	4.53	5.60	+ 24
	Geese	.23	.47	.40	- 15
	Coot	.10	.10	.20	+100
<u>Under 16</u>	Ducks	1.28	2.08	3.21	+ 54
	Geese	.04	.20	.33	+ 65
	Coot	.10	.27	.42	+ 56
Average Times Hunted		3.58	4.08	3.30	- 19

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The kill of ducks in the Central Flyway increased a moderate amount as compared to the previous year (+ 20 percent), while the kill of geese decreased slightly (-9 percent), and the kill of coot increased considerably (+90 percent). (Coot are relatively unimportant in this Flyway.) Inasmuch as the season and bag limit remained the same between the two years, it is of interest to note that the increased kill was entirely the result of an increased daily kill, since the total hunters decreased somewhat, as did the average number of times each hunter went afield.



## Winter Trend Data - Central Flyway

Survey conditions in the CENTRAL FLYWAY during the annual winter waterfowl survey were generally good. Some trouble was experienced in Oklahoma due to fog and low ceilings, and the survey along the east coast of Mexico was delayed because of rain. On the whole, however, there is no reason to believe that the data obtained were adversely affected by weather, or that they are not comparable to the information obtained during previous surveys.

### Percent Change in Central Flyway (Continental) Populations Index Figures for Ducks, Geese, Swan and Coot from January 1954 to January 1955 (Comparable Coverage)

Area	Ducks	Geese	Swan	Coot	Total
Central Flyway States	- 9	- 30	+ 60	- 52	- 13
Mexico, East Coast	- 33	+ 35		- 56	- 44
Mexico, Central	+ 25	+ 31		- 17	+ 23
<b>Total</b>	<b>- 11</b>	<b>- 28</b>	<b>+ 60</b>	<b>- 55</b>	<b>- 19</b>

Species Composition - Central Flyway (Continental) 1954 and 1955 Based on  
Number of Birds Observed  
(Comparable Coverage)

Species	Percent of Birds Identified		Percent Change 1954-1955
	1954	1955	
Pintail	23.3	27.1	- 3.4
Mallard	21.7	30.2	+15.3
Coot	16.1	8.8	-55.0
Redhead	11.2	9.2	-32.3
Scaup	7.8	4.2	-55.4
Snow Goose	5.4	4.4	-32.0
Baldpate	3.4	1.8	-57.5
Canada Goose	2.3	1.9	-31.2
Cinn. & B-w. Teal	1.7	3.2	+53.6
G-w. Teal	1.4	2.3	+30.1
Gadwall	1.2	1.3	-15.6
Shoveler	1.2	2.6	+82.9
Merganser	.8	.7	-33.1
Blue Goose	.7	.6	-35.2
Canvasback	.6	.4	-49.8
White-fronted Goose	.4	.8	+59.7
Tree duck	.3	.2	-46.2
Goldeneye	.2	.3	+39.5
Ruddy duck	.2	tr.	-61.6
Ring-necked duck	.1	tr.	+ 1.1
Mottled duck	tr.	tr.	-
Bufflehead	tr.	tr.	-
Wood duck	tr.	tr.	-
Trumpeter Swan	tr.	tr.	-
Whistling Swan	tr.	tr.	-
Black duck	tr.	tr.	-
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>-19.1</b>

## Summary of Central Flyway Waterfowl Indices

Waterfowl - The population index has shown no consistent trend up or down in the Central Flyway for the years 1950 through 1955. The 1955 index is 19 percent above the 6-year average and compared to individual years is:

19 percent below 1954  
3 percent above 1953  
8 percent below 1952  
22 percent above 1951  
4 percent above 1950

Ducks - The 1955 duck index is 3 percent above the average for the 6-year period 1950-55 and compared to individual years is:

11 percent below 1954  
3 percent above 1953  
4 percent below 1952  
24 percent above 1951  
11 percent above 1950

Among the ducks, the indices were:

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

Geese - The population index for geese for 1955 is 10 percent below the average for the past 6 years and compared to individual years is:

28 percent below 1954  
2 percent above 1953  
27 percent above 1952  
3 percent above 1951  
35 percent below 1950

Compared to 1954 the snows, blues, and Canadas decreased noticeably and the white-fronted geese increased.

Coot - The coot index for 1955 is 20 percent below the 6-year average and compared to individual years is:

55 percent below 1954  
3 percent above 1953  
41 percent below 1952  
59 percent above 1951  
2 percent above 1950

SOUTHERN SASKATCHEWAN

Weather and Water Conditions -

Spring came unusually early to the grasslands and parklands of southern Saskatchewan in 1955 and the mallards, pintails, and canvasbacks got an early start at nesting.

Water areas available for nesting ducks were approximately twice as numerous this year as in 1954. There is now sufficient surface water in the Province to mature all broods already hatched, or any late broods that might subsequently materialize. Hail has been reported locally but none sufficiently extensive to affect waterfowl production prospects. More flooding has been reported this year, particularly in level lands where soils were waterlogged by the May rains, but these regions were not important to waterfowl production.

Breeding Population Indices -

Following are the breeding population data gathered during the May aerial survey:

Table 1 - Yearly Comparison by Strata - Spring Conditions, Waterfowl Nesting Grounds of  
Southern Saskatchewan (from Air Surveys)

Strata	May, 1952		May, 1953		May, 1954		May, 1955	
	DUCKS	PONDS	DUCKS	PONDS	DUCKS	PONDS	DUCKS	PONDS
A-East (SE Parkland)	402,700	296,400	415,700	508,100	709,600	864,300	809,100	1,335,400
A-West (Grassland)	1,830,700	726,300	1,774,300	974,600	1,388,500	669,800	2,111,800	914,400
B-(N & W Parklands)	1,815,500	1,156,900	1,742,900	2,041,000	1,970,200	2,233,000	2,326,500	1,705,000
C- (Shortgrass)	381,400	126,400	652,500	203,200	470,800	188,500	460,900	204,600
PROVINCIAL TOTALS	4,430,300	2,306,000	4,585,700	3,727,000	4,539,200	3,955,600	5,708,300	4,159,400

Table 2 - Comparative Breeding Population Indices (May Aerial), Southern Saskatchewan

SPECIES	AVERAGE INDEX 1949 - 1953	1953 INDEX	1954 INDEX	1955 INDEX
Pintail	923,925	1,335,000	1,254,100	1,761,900
Mallard	1,186,400	1,958,300	1,915,200	2,019,600
Baldpate	183,075	184,800	178,500	234,100
Shoveler	200,650	255,100	267,700	351,800
Gadwall	79,075	76,900	84,600	109,000
Blue-winged Teal	161,750	133,400	256,900	366,600
Green-winged Teal	22,400	21,200	19,500	52,700
<b>TOTAL SURFACE DUCKS</b>	<b>2,757,275</b>	<b>3,964,700</b>	<b>3,976,500</b>	<b>4,895,700</b>
Scaup	146,250	208,800	215,500	456,700
Canvasback	123,150	253,200	150,400	178,800
Redhead	38,300	84,800	67,200	84,300
Ringneck	8,650	400	5,500	19,300
Ruddy	21,475	17,500	13,500	46,300
Golden-eye	8,700	600	7,900	5,500
Bufflehead	10,725	8,700	4,100	10,100
Scoter	45,975	47,100	98,600	11,600
<b>TOTAL DIVERS</b>	<b>403,225</b>	<b>621,100</b>	<b>562,700</b>	<b>812,600</b>
<b>TOTAL DUCKS</b>	<b>3,160,500</b>	<b>4,585,800</b>	<b>4,539,200</b>	<b>5,708,300</b>
<b>COOTS</b>	<b>87,500</b>	<b>151,500</b>	<b>150,000</b>	<b>150,000</b>

Production Indices

Following are the production data gathered during the July aerial survey:

Comparison by Species - July Brood and "Later Brood" Indices -  
Southern Saskatchewan, 1952-1954

SPECIES	JULY, 1952		JULY, 1953	
	Broods	Potent. Late Brds.	Broods	Potent. Late Brd
Pintail	272,160	13,510	36,250	32,870
Mallard	155,510	44,030	92,130	107,890
Baldpate	10,520	18,000	8,850	21,080
Shoveler	32,380	11,670	18,550	13,390
Gadwall	7,580	12,450	8,120	14,840
B-w. Teal	17,500	18,470	7,890	33,380
G-w. Teal	800	1,860	-	3,460
Scaup	1,530	8,700	3,870	28,450
Canvasback	6,840	830	7,220	15,450
Redhead	420	3,220	-	7,970
Ringneck	420	-	-	2,990
Ruddy	3,150	7,130	750	14,020
Goldeneye	-	920	-	-
Scoter	390	-	-	2,540
Bufflehead	-	-	-	450
TOTAL BROODS	509,200		183,630	
TOTAL LATER BROODS		140,790		202,370
COOT	28,770	84,230	8,380	53,480
PONDS	855,070		2,551,420	



Cont.

SPECIES	JULY, 1954		PROVINCIAL TOTALS	
	Broods	Potent. Later Broods	Broods	Later Broods
Pintail	19,200	10,980	105,205	52,580
Mallard	49,710	81,420	127,155	191,255
Baldpate	2,150	17,260	6,115	20,850
Shoveler	10,750	5,360	25,375	23,200
Gadwall	1,830	13,490	2,540	27,875
B-w. Teal	10,710	23,620	18,275	73,335
G-w. Teal	-	4,770	-	8,370
Scaup	370	12,590	4,100	44,410
Canvasback	2,690	3,240	10,645	14,420
Redhead	-	4,500	200	9,455
Ringneck	-	5,170	200	3,575
Ruddy	870	16,670	2,790	19,720
Goldeneye	-	1,980	-	-
Scoter	-	1,320	-	-
Bufflehead	-	-	-	-
<b>TOTAL BROODS</b>	<b>98,280</b>		<b>302,600</b>	
<b>TOTAL LATER BROODS</b>		<b>202,370</b>		<b>496,150</b>
<b>COOT</b>	<b>4,330</b>	<b>62,830</b>	<b>19,675</b>	<b>156,400</b>
<b>PONDS</b>	<b>2,818,090</b>		<b>3,731,100</b>	

The 1955 brood index of 302,600 is approximately 39 percent less than the 1952 record brood index of 498,765 but is 300 percent better than 1954. The 1955 nesting season got off to an early start and indications are that production has been continuous with a high proportion of successful re-nestings. Field reports indicate a substantial early hatch of pintails and mallards with many reaching the flying stage before July 1.

Except for Stratum B (Parklands-NW) there is good reason to believe that all other strata in Saskatchewan will produce an excellent hatch of late broods. The species involved in these late nesting attempts are

mallard, gadwall, baldpate, blue-winged teal, scaup, ruddy and coot.

Southern Saskatchewan broods this year are larger than last year's with the 1955 brood size (Class III) averaging 6.0 ducklings. Approximately 26 percent of the broods observed were Class I, 47 percent Class II and 27 percent Class III.

#### Conclusions -

All data indicate that the 1955 waterfowl rearing season has been the best experienced in southern Saskatchewan in the last five years, even surpassing the outstanding 1952 season.

### SOUTH DAKOTA

#### Weather and Water Conditions -

The trend toward poorer water conditions which began in South Dakota in 1954 has continued into 1955. Light snowfall during the winter with a resulting very light spring runoff coupled with below-normal rainfall during the early spring resulted in extremely dry conditions at the start of the current waterfowl breeding season.

These extremely poor conditions are reflected in the number of water areas of all types observed during the annual survey of the breeding waterfowl population in May. The average, state-wide, density of water areas of all types was only 2.35 areas per square mile. This is 49 percent below the 1954 average of 4.64 water areas per square mile, and is 59 percent below the 1950-1954, five-year average of 5.71 water areas per square mile. Current water conditions are by far the poorest on record since extensive surveys were begun in 1950.

In spite of above-normal rainfall in parts of South Dakota following the survey of the breeding population in May, water conditions for waterfowl continued to deteriorate. At the time of the brood density survey in mid-July there were only 1.22 water areas (other than streams) per square mile in eastern South Dakota. This is 45 percent below the 1954 average of 2.23 water areas per square mile, and is 59 percent below the 1953-1954, two-year average of 2.98 water areas per square mile in mid-July.

#### Breeding Population Indices -

The physiographic distribution of the breeding population appears in Table 1. The decrease in the breeding duck population was general over the entire State, ranging from 34 percent on the Missouri Plateau to 66 percent in the James River Valley.

Table 1 - Physiographic Distribution of the Breeding Waterfowl Population and  
1954 - 1955 Trends

Physiographic Division	Uncorrected Ducks Per Square Mile		Corrected* Ducks Per Square Mile		Estimated Minimum Population		
	1954	1955	1954	1955	1954	1955	Change
Minnesota Valley	10.14	5.45	12.37	6.43	15,000	8,000	- 47 %
Prairie Hills	18.31	9.28	22.34	10.95	181,000	88,000	- 51 %
James River Valley	16.87	5.89	20.58	6.95	387,000	130,000	- 66 %
Missouri Hills	11.71	5.16	14.29	6.09	108,000	45,000	- 58 %
Missouri Plateau	2.83	1.95	3.45	2.30	135,000	89,000	- 34 %
State-wide**	8.89	4.08	10.85	4.81	826,000	360,000	- 56 %

\* Corrected from ground transect data to compensate for unobserved females on nests. Corrected by 1.22 in 1954 and 1.18 in 1955.

\*\* Based on twice the number of ducks observed and twice the number of square miles of the reduced Missouri Plateau coverage.

Production Indices -

The duck brood density survey in mid-July measures the production of duck broods through mid-July. It cannot measure or predict the amount of brood production for the entire breeding season, but it should serve to predict any large-scale increase or decrease in brood production.

The current mid-July survey indicated an observed brood density in eastern South Dakota of 0.406 brood per square mile. This is 40 percent below the 1954 density of 0.677 brood per square mile, and 42 percent below the 1953-1954, two-year average of 0.695 brood per square mile in mid-July. Since the current hatch appears to be considerably earlier than that of 1954, it would appear that total brood production for the current season will be at least 50 percent below that of 1954.

Conclusions -

The fall flight of ducks from South Dakota will be much reduced as compared to 1954.

NEBRASKAWeather and Water Conditions -

Drought conditions prevailed over the Nebraska sandhills during late 1954 and until June, 1955. Very warm temperatures accompanied by high winds were general during the spring and several severe dust storms occurred over the area.

A cool rainy period during early June brought the rainfall total to near average and relieved the drought conditions at that time. During mid-June to late-July, heavy rains have occurred in small localized areas while drought conditions returned to the rest of the sandhills.

These weather conditions resulted in a very severe dry-up in the eastern sandhills. While no water area data was recorded on the aerial transects, it was estimated that about 80 percent of the water and 90 percent of the water areas present in 1954 were gone at the time of the 1955 survey. This loss included nearly all the potholes and small lakes and even some of the larger lakes of 100 acres or more.

The dry-up in the central and western areas was much less severe with only some small pothole areas gone that had been present in 1954. Water levels in the larger lakes controlled mostly by ground water were generally good.

## Breeding Population Indices -

Table 1 presents the data from the aerial breeding ground survey. This survey was made over a random transect sample of the major portion of the Nebraska breeding grounds. Table 2 presents the population indices as computed from the aerial surveys using species composition, breeding duck to non-breeding duck ratio and lone male to pair ratio obtained on ground counts as correction factors.

It must be noted that some changes in the study areas and a change from a systematic to a random transect system may have affected the validity of comparison between 1954 and 1955 data.

Table 1 - Aerial Count Trends

Area	Ducks/Sq. Mi. 1954	Ducks/Sq. Mi. 1955	Percent Change 1954 - 1955
Eastern	13.51	2.25	- 83.3
Central Western	9.00*	7.02	- 21.9
Total	10.30*	5.68	- 44.9

\* The 1954 aerial count did not separate the Central and Western. It was not made until one month later than the Eastern and 1955 counts. The figures given here have been adjusted to compensate for this later date by ground counts which showed a loss of 31 percent in observed ducks for the corresponding period.

Table 2 - Summary of Species Indices \*

SPECIES	Eastern	Central	Western	Over-all	Percent of Breeders
Mallard	4,259	11,360	16,379	31,998	31.4
Gadwall	300	2,182	8,261	10,743	10.6
Baldpate	310	431	992	1,733	1.7
Pintail	1,213	3,345	6,308	10,866	10.7
G-w. Teal	310	292	316	918	.9
B-w. Teal	7,001	13,035	12,953	32,989	32.4
Shoveler	600	1,307	3,503	5,410	5.3
Redhead	155	1,302	3,384	4,841	4.7
Canvasback	-	-	526	526	.5
Scaup	-	602	421	1,023	1.0
Bufflehead	-	-	316	316	.3
Goldeneye	-	59	-	59	.1
Ruddy	-	144	298	442	.4
Total Breeding Ducks	14,148	34,059	53,657	101,864	
Total Non-Breeding Ducks		3,148	9,679	12,827	
Total Ducks	14,148	37,207	63,336	114,691	

\* Species composition determined from ground counts made immediately following aerial counts. Species indices for each area corrected for non-breeding ducks and for hens nesting not observed, but represented by lone males.

### Production Indices -

Table 3 presents the only data available on production trends. As no breeding pair counts were made in mid-June, no brood per pair comparison is available. However, observations indicate very good nesting success for most species.

When compared to the average hatching date for the four prior years, it appears that the early nesting pintails and some mallards were nearly two weeks earlier during 1955. However, the second hatching peak is later with newly hatched brood common the third week in July. 55 percent of 53 broods observed July 23 were Class I downy young.

Table 3 - Sandhill Brood Counts - Mid-July

	Western Routes	Eastern Routes	Total Routes
Broods Observed	13,552	7,001	20,553
Total Ducklings	354	443	797
Ducklings Per Brood	25.8	63.0	38.8
Square Miles Sampled	33.8	8.3	42.1
Broods Per Square Mile -			
1955	6.1	7.0	6.5
1954	5.1	9.0	7.1
Change, 1954 to 1955	+ 7 %	- 22 %	Same
Average Broods Per Sq. Mi.			
1948-1954	2.1	2.9	2.2
Change, Average to 1955	- 29 %	- 69 %	75 %

**Conclusions** \* Species composition determined from ground counts immediately following aerial counts. Species composition of broods determined from ground counts. A 45 percent loss in the breeding duck index for the Nebraska sandhills occurred during 1955 as compared to 1954. Production, however, appears to be very good. It is assumed that some of the loss in breeding ducks will be offset by increased production per breeding pair, therefore, Nebraska's fall flight should be one-half to two-thirds as great as that of 1954.

Table 3 presents the only data available on production trends. As no breeding pair counts were made in mid-June, no brood per pair comparison is available. However, observations indicate a 75 percent loss in production for most species.

WYOMINGWeather and Water Conditions -

Wyoming experienced a late spring this year, delaying the breeding season to some extent throughout the State, and as much as three to four weeks in some areas. The prolonged cold weather may have had an adverse effect upon early nesting birds.

Water conditions have remained sub-normal in the western two-thirds of the State. Despite early spring snows and late rains, the water content in the snow pack was below average, run-off was reduced and water levels in reservoirs and stock ponds sub-normal.

The eastern third of Wyoming, with few local exceptions, had an abundance of water areas this spring as a result of timely snow falls. Later rains have maintained a majority of the water areas in good condition. This portion of the State has received more moisture during the first six months of the year than has been recorded since the commencement of the current drouth, and Sheridan, Johnson and Goshen Counties have had near record snow and rainfall during the spring and early summer.

Breeding Population Indices -

Table 1 presents a summary of the duck breeding ground survey prepared by the Statistics Department of the University of Wyoming. Figures given represent corrected totals.

No comparison of results can be made with previous years' surveys, but use of essentially the same sample areas in the future should provide a basis for comparison. General impressions, however, indicate that there were a great many more breeding ducks in the stock pond area in the eastern third of Wyoming than in 1954, whereas it is believed the remainder of the State held fewer birds.



Table 1 - Summary of Duck Breeding Ground Survey - Wyoming, May, 1955

Species	Sample		Estimated Population	
	Pairs	Total	Pairs	Total
Mallard	584	1,281	29,558	64,834
Pintail	106	231	5,365	11,691
B-w & G-w Teal	70	224	3,543	11,337
Shoveler	74	183	3,745	9,262
Gadwall	34	105	1,721	5,314
Baldpate	36	92	1,822	4,656
Redhead	23	46	1,164	2,328
Coot	9	88	456	4,454
Barrow's Goldeneye	4	8	202	405
Am. Merganser	13	26	658	1,316
Ruddy Duck	6	27	304	1,367
Scaup	4	8	202	405
Unknown	136	276	6,883	13,969
<b>Total</b>	<b>1,099</b>	<b>2,595</b>	<b>55,623</b>	<b>131,339</b>

Wyoming Area 97,914 square miles  
 Total Area Sampled 54,249 square miles  
 Total Breeding Ground in Sample 2,239 square miles  
 Average Pairs per Square Mile .49  
 Average Ducks per Square Mile 1.16

With exception of the Snake and Wind River populations which have held their own, or increased, geese in the remainder of the State have registered a sharp decrease over the past three year period.

Table 2 - Comparison of Canada Goose Breeding Ground Surveys on Identical Areas, 1953 - 1955

Drainage	Number of Total Geese		
	1953	1954	1955
Green	336	204	119
Bear	369	183	270
Snake	506	267	437
Wind	13	103	97
North Platte	509	296	219
<b>Total</b>	<b>1,733</b>	<b>1,053</b>	<b>1,142</b>

Production Data -

Although no organized brood survey has been taken, the brood banding crew in the eastern third of the State has found far fewer ducks and broods in mid-July than was anticipated as a result of the high breeding population encountered in late May. Many of the birds may have moved into Canada for the actual breeding period.

Conclusions -

It is estimated that Wyoming will produce about the same number of ducks and geese as in 1954.

MONTANAWeather and Water Conditions -

Spring precipitation in Montana increased surface water throughout the State. In the Eastern Hi-Line area the increase was 11 percent, in the Central Hi-Line +30 percent, and in the Great Falls Piedmont +42 percent. The season was somewhat late in the Hi-Line Areas.

Breeding Population Indices -

Aerial transects established in 1949 were again flown to obtain the breeding population trend. These data are compared with last year's and the average for the last six year. Results indicate a 15 percent decrease from the 1954 level and a 15 percent increase over the six year average.

Waterfowl Populations as Determined from Aerial Census Routes

Physiographic Area	No. Ducks/Square Mile			Average	Population Estimate	
	6-yr. Ave.	1954	1955		1954	1955
Sheridan County	27.4	48.2	39.3	38456	69408	56592
Eastern Hi-Line	5.1	6.7	6.4	40392	53064	50688
Central Hi-Line	10.9	16.7	15.0	103201	158115	142020
Gr. Falls Piedmont	10.0	8.0	5.2	70200	56160	36504
Total				253249	336747	285804
				Percent Change		- 15%

Production Indices -

Weather and water conditions have been excellent in the Hi-Line area since the start of the nesting season.

Conclusions -

It is estimated that the fall flight from Montana will be the same as last year.

# COLORADO

## Weather and Water Conditions -

Current Colorado conditions reflect the effect of a severe and sustained drouth during the past several years. Some regions, especially in the eastern portion of the State, were almost devoid of suitable water areas for ducks at the onset of the breeding season. Late spring precipitation has alleviated this situation somewhat; too late, however, to accommodate normal populations of ducks, but early enough to afford existing populations adequate waters for the remainder of the year. Western slope water supplies appear adequate this year with normal amounts of precipitation falling, and a near-normal snow pack carried in the mountains. It is believed that state-wide water conditions are definitely improved over last year.

## Breeding Population Indices -

The western slope breeding areas, in general, had adequate waters accompanied by an increase in breeding pair numbers. In contrast, the eastern slope including North Park did not have satisfactory water conditions at the beginning of the breeding season, and populations were well below the past several years.

Considering the entire State, duck breeding pair totals were down 5.9 percent from 1954; down 32.3 percent from 1953 on the basis of five areas; and up 11.6 percent from 1952 on the basis of three areas. Geese are drastically reduced in numbers this year being 73.4 percent under the three year average 1952 to 1954. It should be understood that the goose data is concerned with populations of only about 150 birds, and therefore, these figures will not have a great deal of effect on the flyway population unless such trends hold for other breeding areas.

Table 1 - Summary of Colorado Breeding Ground Conditions, 1955

Area	Total Sq. Mi. of Waterfowl Habitat	No. Sq. Mi. in Sample	Total Estimated Breeding Pairs			
			1952	1953	1954	1955
		<u>Ducks</u>				
San Luis Valley	1,494	143.5	-	-	6744	7504
North Park	611	55.0	-	5676	3808	2881
South Platte Valley	1,422	129.0	-	-	2188	1072
Cache la Poudre Valley	343	36.0	1029	1619	1320	1164
Yampa Valley	200	22.0	1790	1500	1340	2260
Browns Park	15	15.0	291	372	217	48
White River Plateau	360	18.0	580	480	-	-
South Park	- *	-	-	431	195	145
<b>Total</b>					<b>16012</b>	<b>15074</b>

Continued

## CENTRAL FLYWAY

Continued Area	Total Sq. Mi. of Waterfowl Habitat	No. Sq. Mi. in Sample	Total Estimated Breeding Pairs			
			1952	1953	1954	1955
		<u>Geese</u>				
Yampa Valley	200	22.0	120	130	110	20
Browns Park	15	15.0	21	12	8	15
Total			141	142	118	35

\* Total square miles of habitat not known for this area.

Table 2 - Species Composition of Colorado Breeding Population, 1955 \*

Species	Number		Species Composition %	
	1954	1955	1954	1955
Mallard	11,295	9,633	70.4	63.9
B-w. Teal	886	600	5.5	4.0
Pintail	873	750	5.5	5.0
Gadwall	852	1,874	5.3	12.4
Baldpate	552	211	3.4	1.4
Shoveler	542	220	3.4	1.5
Cinnamon Teal	442	509	2.8	3.4
G-w. Teal	220	407	1.4	2.7
Amer. Merganser	114	105	0.7	0.7
Redhead	109	352	0.7	2.3
Scaup	99	369	0.6	2.4
Ruddy Duck	48	44	0.3	0.3
Total	16,012	15,074	100.0	100.0

\* Data derived from permanent transects in all Colorado breeding areas listed in Table 1 with the exception of the White River Plateau. Data are corrected for unidentified pairs.

### Conclusions -

On the basis of a breeding population similar in size to that of 1954 and the somewhat improved water conditions during the brood period it is estimated that the fall flight from Colorado will be about the same as in 1954.

## NORTH DAKOTA

### Weather and Water Conditions -

Although the winter of 1954-55 was considered to be a relatively open one over much of the State, sufficient precipitation occurred in the form of snow to begin filling the water areas when the break-up took place during the first week in April. Precipitation during March was well below normal, however, and the scant rains of April and the fore-part of May barely maintained water levels throughout most of the State. Only in the north-central portion of North Dakota, where heavy rains of the previous fall and the late spring snows created near-flood conditions, did the water levels remain stable. It is in the northern one-half of the State where the breeding waterfowl inventory disclosed the significant increase in our waterfowl population. The southern one-half of North Dakota experienced moderate drought conditions and did not attract and hold the usual number of breeding waterfowl in 1955.

July was hot and dry. Water areas began disappearing rapidly but sufficient water remains throughout the waterfowl producing region of the State to ensure the successful development of the waterfowl broods.

### Breeding Population Indices -

The 1955 breeding waterfowl inventory in North Dakota disclosed an increase of 35.7 percent from that of 1954. The population still remains 14.3 percent less than the breeding population established for the previous five-year average, however.

Table 1 will indicate the trends in North Dakota's breeding waterfowl populations.

The apparent increase in the 1955 breeding population must be tempered somewhat due to an obvious error in the scaup index. At no time since investigations were begun in North Dakota has the scaup population approached, much less exceeded, that of the mallard. The census work in 1955 was conducted too early chronologically. During the census period the scaup migration was still underway and this species was therefore represented in numbers well beyond that of the actual population which remained to breed in this State.

If the scaup population index is removed from the 1955 and previous years' census data, the change of the 1955 index from the previous five-year average is -24.1 percent and +18.7 percent from 1954. These figures are believed to be a more accurate representation of the population changes which actually occurred.

Table 1 - Summary of Waterfowl Breeding Ground Trends in North Dakota - 1950-1955

INDICES TO TOTAL BREEDING DUCKS

Species	Average Index Inclusive 1950 to 1954	1954 Index	1955 Index	Percent of Change of 1955 Index From:	
				Average	1954
Mallard	195,593	152,542	159,252	- 18.6	+ 4.4
Pintail	351,530	186,788	192,829	- 45.1	+ 3.2
B-w. Teal	466,800	275,666	361,314	- 22.6	+ 31.1
Gadwall	84,018	73,946	71,951	- 14.4	+ 2.7
Baldpate	30,434	27,182	31,179	+ 2.4	+ 14.7
Shoveler	129,535	73,410	98,573	- 23.9	+ 34.3
Redhead	40,311	42,919	48,447	+ 20.2	+ 12.9
Canvasback	34,344	15,737	38,374	+ 11.7	+143.8
Scaup	41,257	25,126	167,766*	+306.6*	+567.7*
Ruddy	20,160	12,697	19,667	- 2.4	+ 54.9
Others	5,935	8,136	9,833	+ 65.7	+ 20.9
Total Ducks		894,149	1,199,185	- 14.3	+ 34.1
Coot	1,009	518	703	- 30.3	+ 35.7

Index to Water Conditions: Equals number of water areas per sq. mi. x sq. mi. in area sampled.

Average Index 1950-1954	1954 Index	1955 Index	Percent Change 1955 from:	
			Average	1954
456,309	239,874	343,432	- 24.7	+ 43.2

\* These indices are considered to be an erroneous indication of actual size of Scaup population.

## Production Indices -

Waterfowl production in 1955 experienced a very satisfactory beginning. First broods observed were pintails and these made their initial appearance immediately after mid-May. Broods of almost all species were becoming relatively common in late June.

It is apparent that average brood size will be excellent this season. Broods of all species are frequently seen as Class II, with ten to twelve ducklings per brood. Canvasback reproduction appears to be exceptionally satisfactory, both in the number and size of the broods.

Brood inventories conducted along transects distributed throughout the Coteau Region of the State indicate that waterfowl production in 1955 is still increasing in late July and if the peak is not reached until mid-August, as occurred in 1953 and 1954.

## Conclusion -

In view of the increased breeding population and evidence of good brood production it is estimated that the fall flight from North Dakota will be larger than in 1954, although still below average as compared to the past five years.

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

		1952-53	1953-54	1954-55	Percent Change 1953-54 to 1954-55
<b>Number of Hunters</b>					
Over 16		980,665	936,150	918,685	- 1.9
Under 16		75,556	54,530	49,544	- 9.1
<b>Average Daily Bag</b>					
<u>Over 16</u>	Ducks	1.15	1.06	1.06	N. C.
	Geese	.03	.05	.05	N. C.
	Coot	.16	.16	.18	+ 12.5
<u>Under 16</u>	Ducks	.32	.52	.64	+ 23.1
	Geese	.01	.03	.06	+100.0
	Coot	.08	.13	.17	+ 30.8
<b>Average Seasonal Bag</b>					
<u>Over 16</u>	Ducks	5.02	4.25	4.24	- 0.2
	Geese	.12	.21	.19	- 9.5
	Coot	.70	.65	.74	+ 13.8
<u>Under 16</u>	Ducks	1.41	2.11	2.57	+ 21.8
	Geese	.02	.12	.22	+ 83.3
	Coot	.34	.51	.68	+ 33.3
<b>Average Times Hunted</b>		4.35	4.02	3.99	- 0.8



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 and 1955 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.

During the survey period, field crews met with generally favorable conditions for making the survey. Only in Louisiana were conditions described as being average.

Percent Change in Mississippi Flyway (Continental) Population Index Figures for Ducks, Geese, Swan and Coot from January 1954 to January 1955

Area	Ducks	Geese	Swan	Coot	Total
Ontario	- 13	-	-	- 96	- 12
Mississippi Flyway States	- 1	- 13	- 99	+ 8	- 2
Total	- 1	- 13	- 99	+ 7	- 2

Species Composition - Mississippi Flyway (Continental) 1954 and 1955

Species	Percent of Birds Identified		Percent Change 1954-1955
	1954	1955	
Mallard	59.7	58.7	- 3.6
Pintail	7.7	5.3	- 32.7
Blue Goose	7.6	5.5	- 28.9
Canada Goose	4.3	5.0	+ 14.5
G-w. Teal	3.4	3.7	+ 4.9
Black duck	3.1	3.1	- .5
Scaup	3.1	4.5	+ 45.3
Coot	2.0	2.2	+ 7.5
Gadwall	1.6	1.9	+ 13.8
Canvasback	1.5	1.8	+ 17.9
Wood duck	1.0	1.0	- 1.0
Merganser	1.0	1.3	+ 19.9
Ringneck	.9	.8	- 13.3
Snow Goose	.7	.5	- 23.6
Goldeneye	.9	1.2	+ 28.3
Ruddy duck	.5	.5	- 15.6
Baldpate	.4	.9	+102.4
Shoveler	.3	1.3	+267.4
Redhead	.2	.5	+169.6
White-fronted Goose	tr.	.1	+245.7
Cinn. & B-w. Teal	tr.	.1	+ 74.0
Bufflehead	tr.	tr.	- 8.5
Whistling Swan	tr.	-	-
Scoter & Eider	tr.	tr.	-
Old Squaw	.1	.1	- 5.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>- 2.5</b>

Summary of Mississippi Flyway Waterfowl Indices

Waterfowl - The 1955 waterfowl index is 10 percent above the 6-year average level and compared to individual years is:

2 percent below 1954  
2 percent above 1953  
25 percent above 1952  
6 percent below 1951  
68 percent above 1950

Ducks - This year the index is 13 percent above the average for the past 6 years and compared to individual years is:

1 percent below 1954  
2 percent above 1953  
35 percent above 1952  
5 percent below 1951  
88 percent above 1950

Among the ducks, the indices were:

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

Geese - The goose index is 4 percent above the average for the past 6 years and compared to individual years is:

13 percent below 1954  
2 percent above 1953  
22 percent above 1952  
9 percent above 1951  
13 percent above 1950

Among the species, the Canadas increased somewhat while the blue and snow geese decreased noticeably.

Coot - The coot index in the Mississippi Flyway is 35 percent below the average for the past 6 years and compared to individual years is:

7 percent above 1954  
31 percent below 1953  
67 percent below 1952  
47 percent below 1951  
37 percent below 1950

## Breeding Ground Surveys

SOUTHERN MANITOBAWeather and Water Conditions -

Water was more abundant in southern Manitoba during the spring of 1955 than during any year since the surveys began. Precipitation during May was normal, but with the already wet ground it was enough to retard agriculture but not duck production. Precipitation continued during June and July sufficient to maintain the high water conditions which prevailed during May.

Breeding Population Indices -

Table 1 shows the May population indices for the past five years. The indices for 1954 and 1955 have been corrected for scaup in flocks that were considered to be non-breeders and may or may not have been migrating farther north.

Table 1 - May Waterfowl Population Indices - Southern Manitoba -  
Aerial Survey

Year	Stratum "A" (10,368 Sq. Mi.)	Stratum "B" (28,600 Sq. Mi.)	Stratum "A" & "B" (38,968 Sq. Mi.)
1951	472,800	165,900*	639,700*
1952	343,200	143,300*	486,500*
1953	209,400	117,300*	326,700*
1954	325,600	225,900	551,500
1955	403,900	424,200	828,100
% Change 1954-55	+ 24%	+ 88%	+ 50%

\* Data uncorrected for absent hens in these cases

The species composition of the May population for 1954 and 1955 is shown in Table 2.

Table 2 - Species Composition of the May 1954 and 1955 Waterfowl  
Population of Southern Manitoba

Species	1954		1955		Percent Change 1954 to 1955
	Number	Percent	Number	Percent	
Pintail	63,100	11.4	137,800	16.6	+118
Mallard	255,300	46.2	379,200	45.8	+ 48
Baldpate	17,300	3.1	29,600	3.6	+ 71
Shoveler	19,000	3.4	27,200	3.1	+ 43
Gadwall	8,400	1.5	9,100	1.1	+ 8
B-w. Teal	67,700	12.3	95,900	11.6	+ 42
G-w. Teal	7,900	1.4	4,100	.5	- 48
Scaup	40,600	7.4	59,200	7.1	+ 46
Canvasback	30,800	5.6	32,200	3.9	+ 4
Redhead	17,800	3.2	27,600	3.3	+ 55
Ringneck	4,100	.7	1,700	.2	- 58
Ruddy	4,500	.8	14,100	1.7	+213
Goldeneye	6,400	1.2	4,200	.5	- 34
Bufflehead	8,000	1.5	5,900	.7	- 26
Scoter	300	tr.	200	tr.	- 33
Merganser	300	tr.	100	tr.	- 67
<b>Total Ducks</b>	<b>551,500</b>	<b>99.7</b>	<b>828,100</b>	<b>99.9</b>	<b>+ 50</b>
<b>Coot</b>	<b>8,900</b>		<b>28,500</b>		<b>+220</b>

Table 3 shows that there was an increase over the last two years in percentage of lone drakes for the two strata. This would indicate that the nesting was considerably earlier this year than it was during the two previous years. Pospichal reports sighting his first pintail brood on May 13.

Table 3 - 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 STRATA "A" & "B"
1953	29.4%	34.6%	31.6%
1954	39.2%	51.2%	44.1%
1955	66.0%	77.1%	77.1%

Production Indices -

The brood indices for Stratum A and B are presented in Table 4.

Table 4 - Brood Index - Strata A and B, Manitoba

Year	Index Stratum A	Index Stratum B	Index Strata A & B
1954	13,026	14,612	27,638
1955	11,616	11,566	23,182
% Change	- 11	- 21	- 16

In addition to the decrease in the index to broods observed, it appears that there is less chance for additional production following the survey period than there was in 1954. That is, the number of single drakes, single hens, and pairs observed during the July survey, which are thought to be indicative of the relative strength of late production, decreased from an index of 37,858 in 1954 to 29,120 in 1955 (-23 percent).

On the other hand, 1955 was an early year and it is possible that some of the early hatched mallard and pintail broods were already flying at the time of the July survey and could not be distinguished from adults. Along this line, Table 5 presents data as to the age class distribution among the broods observed during the 1954 and 1955 July surveys.

Table 5 - Age Class Distribution of Broods - Stratum A, Manitoba

Year	No. Broods Aged	Class I	Class II	Class III
1953	150	22.0%	43.3%	34.7%
1954	200	61.5%	33.5%	5.0%
1955	171	41.5%	30.4%	28.1%

Conclusions -

It is believed that the increase of 24 percent in the May breeding population will balance the apparent decrease in production, and that the fall flight from Manitoba will be approximately the same as in 1954.

NORTHERN SASKATCHEWAN, NORTHERN MANITOBA  
AND ONTARIO

Weather and Water Conditions -

Break up in the north country was ahead of normal this year and far ahead of the 1954 break up. Ducks moved into the area early in the season and were not held back by ice. Contrary to the usual course of events, the nesting ducks were not exposed to a single blizzard during the month of May, and although the month of June was rather wet on the east side of the area, no severe weather prevailed. The weather on the west side of the survey area (Northern Saskatchewan and Manitoba) was very favorable for duck production. Water conditions on the pre-cambrian shield are not subject to severe fluctuation, and therefore can usually (except for ice) be considered adequate. Weather and water conditions were about as ideal, especially in Manitoba and Saskatchewan, as can be expected.

Breeding Population Indices -

Based on 6912 lineal miles of aerial transect the following tables presents the breeding population data that were gathered.

Total Duck Index by Provinces - 1954- 1955

Province	Index			ChangePercent		Percent Favored Ducks		
	1954	1955	Average	From 1954	From Aver.	1954	1955	Aver.
Ontario	435,562	373,259	404,410	-14.3	- 4.7	66.8	65.4	66.2
Manitoba	280,318	380,429	330,373	+35.7	+15.1	78.8	80.1	79.5
Saskatchewan	390,729	658,649	524,689	+68.6	+25.5	89.1	82.8	84.4
Total	1,106,609	1,412,337	1,259,473	+27.6	+12.1	78.0	78.1	78.0



MISSISSIPPI FLYWAY

Total Species Index - Entire Area Surveyed , 1954-1955

Species	Species Index		2-Year Average	Change Percent	
	1954	1955		From 1954	From Average
Mallard	255,530	249,093	252,311	- 2.5	- 1.3
Black Duck	92,706	74,839	83,772	- 19.3	- 10.6
Gadwall	-	1,165	582	-	+100.1
Baldpate	25,591	32,559	29,075	+ 27.2	+ 12.0
Pintail	22,099	47,108	34,603	+113.2	+ 36.1
G-w. Teal	5,835	13,486	9,660	+131.1	+ 39.6
B-w. Teal	8,514	4,208	6,361	- 50.6	- 33.8
Shoveler	3,138	1,008	2,073	- 67.8	- 50.4
Merganser	244,115	309,840	276,977	+ 26.9	+ 11.9
Redhead	7,597	10,340	8,968	+ 36.1	+ 15.3
Ringneck	39,825	80,178	60,001	+101.3	+ 33.6
Canvasback	18,151	21,525	19,838	+ 18.6	+ 8.5
L. Scaup	265,930	441,062	353,496	+ 65.8	+ 24.8
Goldeneye	48,389	37,785	43,087	- 21.9	- 12.3
Ruddy Duck	2,957	-	1,478	-	-
Bufflehead	23,291	39,050	31,170	+ 67.7	+ 25.3
Scoter	42,941	49,091	46,016	+ 14.3	+ 6.7
<b>Total Ducks</b>	<b>1,106,609</b>	<b>1,412,337</b>	<b>1,259,473</b>	<b>+ 27.6</b>	<b>+ 12.1</b>
Canada goose	28,417	23,566	25,991	- 17.1	- 10.3

Production Indices -

During July, 7236 lineal miles of transect was flown and resulted in the following data:

Summary of Brood and Potential Later Brood Information - July 1955

Stratum	No. Broods	Observed			Computed for Stratum	
		Class ** II & III	Total Young	PLB*	Total Young	PLB*
Ontario C	51	6.7	341.7	49	123,729	17,743
Manitoba C	54	6.2	334.8	87	58,958	29,128
Manitoba D	53	7.6	402.8	142	29,525	10,408
Sask. C South	70	4.6	322.0	74	45,820	10,530
Sask. C North	19	7.0	133.0	22	80,066	13,244
<b>Total</b>		<b>6.2</b>	<b>1534.3</b>	<b>374</b>	<b>338,098</b>	<b>81,053</b>

\* Potential later broods

\*\* Average number per brood

Summary of Brood and Potential Later Brood Information - July 1954

Stratum	Observed					
	No. Broods	Ave. No./Brd.		PLB*	Total Young	PLB*
		Class	Total			
Ontario C	-	Not sampled 1954		-	-	-
Manitoba C	15	6.3	95	19	17,337	3,467
Manitoba D	29	7.0	189	58	6,124	1,879
Sask. C	22	7.2	144	52	49,565	17,898
Sask. E	17	6.0	102	48	13,097	6,163
<b>Total</b>	<b>83</b>	<b>6.4</b>	<b>530</b>	<b>177</b>	<b>86,123</b>	<b>29,407</b>

\* Potential Later Broods

Comparison of Young and Potential Later Broods - 1954 - 1955

Stratum	Number Young		No. PLB*	
	1954	1955	1954	1955
Ontario C	-	123,729**	-	17,743**
Manitoba C	17,337	58,958	3,467	29,128
Manitoba D	6,124	29,525	1,879	10,408
No. Saskatchewan	62,662	125,886	24,061	23,774
<b>Total</b>	<b>86,123</b>	<b>214,369</b>	<b>29,407</b>	<b>63,310</b>

Increase in Young observed (Manitoba & Saskatchewan only) - 148.9 percent.

Increase in PLB\* observed (Manitoba & Saskatchewan only) - 115.3 percent.

\* Potential Later Broods

\*\* Not included in total

Canada Goose Broods and Adults - 1955

Stratum	Observed				Computed for Stratum		
	No. Broods	Average		Young Adults	Young	Adults	Total
		No./Brood	Total				
Ontario C	10	5.1	51	19	18,467	6,880	25,347
Manitoba C	6	2.5	15	48	2,641	8,453	11,094
Manitoba D	-	-	-	-	-	-	-
Sask. C South	-	-	-	-	-	-	-
Sask. C North	-	-	-	1	-	602	602
<b>Total</b>	<b>16</b>	<b>4.1</b>	<b>66</b>	<b>68</b>	<b>21,108</b>	<b>15,935</b>	<b>36,441</b>

Canada Goose Broods and Adults - 1954

Stratum	Observed				Computed for Stratum		
	No. Broods	Average No./Brood	Total Young	Adults	Young	Adults	Total
Ontario C	Not Sampled						
Manitoba C	3	4.0	12	7	2,190	1,277	3,467
Manitoba D	1	5.0	5	4	162	130	292
Sask. C	-						
Sask. E				2		256	256
<b>Total</b>	<b>4</b>		<b>17</b>	<b>13</b>	<b>2,352</b>	<b>1,663</b>	<b>4,015</b>

Change in Canada goose totals for 1954 (Manitoba and Saskatchewan only) - increase 191.3 percent.

Conclusions -

On the basis of information gathered during May and June, and in view of the favorable weather conditions which prevailed during May, June, and July, in the survey area it is estimated that a duck crop somewhat above average and definitely above 1954 will be produced in Northern Manitoba and Northern Saskatchewan. Although the breeding population was down significantly (38.7 percent) in Ontario this May, it is possible because of the favorable weather that a duck crop equal to that of last year may be produced in this area.

MINNESOTAWeather and Water Conditions -

Most observers estimated that the phenological development of the spring season was at least 10 days ahead of 1954.

This year 3.0 water areas per square mile were tallied compared with 5.2 in 1954, 4.6 in 1953, 3.1 in 1952, and 3.5 in 1951. Drought conditions prevailed over most of the State during much of May and including the time of the surveys.

Breeding Population Indices -

This year the breeding pair survey consisted of the usual auto transect routes, but in addition the aerial transects which were established in 1951 were flown again.

Aerial transect lines totaled 3,108 miles, or 777.3 square miles of sample. This sample represents 37,296 square miles of habitat.

A total of 1,834 ducks was recorded this year compared with 2,841 in 1952 and 2,875 in 1951. In other words, a density of 2.36 ducks per square mile was noted compared with 3.65 ducks per square mile in 1952 and 3.69 ducks per square mile in 1951. This is a 35.5 percent decrease from 1952 and a 36.2 percent decrease from 1951.

The ground survey consisted of comparable auto transects driven in 48 counties from May 6 to May 26. These routes totaled 1,874 miles and were run in Game Management Areas II, III, IV, V, VIII, IX, X, XI and XII which include the principal waterfowl breeding range in the State. The auto transect data are shown in Table 1.

This year 1.66 pairs of ducks per square mile were recorded compared with 3.17 in 1954, 2.41 in 1953, 1.89 in 1952, and 1.24 in 1951. The 2.18 pairs per square mile figure shown in parenthesis for 1954 is believed to represent a more accurate figure for that year as is explained in the 1954 report.

Table 1 - Auto Transect Data Summary

	1951	1952	1953	1954	1955
Number Counties:	51	48	48	48	48
Total Miles:	1,945	1,853	1,891	1,866	1,874
Square Miles	486.3	463.3	472.8	466.5	468.5
Total Water Areas:	1,693	1,451	2,150	2,421	1,421
Water Areas/Square Mile:	3.5	3.1	4.6	5.2	3.0
Areas Occupied:	340	429	549	506	284
Percent Occupied:	20.1	29.6	25.5	20.9	20.0
Total Pairs	603	876	1,141	1,477	776
Pairs/Square Mile:	1.24	1.89	2.41	3.17 (2.18)*	1.66
Total Ducks	1,219	1,590	2,885	2,933	1,342
Ducks/Square Mile:	2.51	3.43	6.11	6.29	2.86
Coots:	145	539	535	967	97

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

Production Indices -

As of the present writing, the only production data available are from the Chippewa Forest Study Area. On this area it was concluded that the 1955 brood production was about the same as 1954, but was considerably below the 1939-1940 level.

Conclusions -

In view of the decreased breeding population and the drought condition which existed, it is estimated that the fall flight from Minnesota will be somewhat smaller than it was in 1954.

# MISSOURI

## Weather and Water Conditions -

Spring movements of waterfowl were considered to have taken place quite early this year. The unprecedented number of wintering mallards in the State had dwindled to only a few thousand by late March, and blue-winged teal started moving through the State on March 6 or approximately two weeks earlier than most years. Wood ducks were observed in the northern portion of the State by March 9, and females were seen hunting for nest sites soon after that date. Pintails moved through the State in normal numbers during February and early March, while Canada geese and blue and snow geese were beginning their mass movements very early in March.

## Breeding Population and Production Indices -

Trend data of the wood duck, mallard, and blue-winged teal nesting efforts are presented in Table I, II and III. It will be noted that all of the trends show a downward change, with the exception of the average number of Class I ducklings per brood. Mallard and blue-winged teal observations on streams this year were down 75 percent from 1954; this may have been caused by the early and rapid spring migration of these species.

Table 1 - Nesting Efforts of Wood Duck, Mallard, and Blue-winged Teal

7, 110 Acres of Lake and Marsh	Lone Drake	Lone Hen	Pairs	Broods		Total Nesting Effort	Nesting Effort Per Sq. Mi.	
				Total No. Young	Avg. Yg. / Brood			
Wood Duck	10	4	15	11	72	6.5	40	.36
Mallard	36	3	23	5	32	6.4	67	.60
Blue-winged Teal	4	1	9	4	17	4.2	18	.16
<hr/>								
Lake and Marsh Totals	50	8	47	20	121	6.0	125	1.12
<hr/>								
666 Miles of Stream							Nesting Effort Per Mile	
Wood Duck	19	26	27	17	110	6.5	89	.13
Mallard	7	3	2	-	-	-	12	.02
Blue-winged Teal	3	1	4	-	-	-	8	.01
<hr/>								
Stream Totals	29	30	33	17	110	6.5	109	.16
<hr/>								
GRAND TOTAL	79	38	80	37	231	6.2	234	-

MISSISSIPPI FLYWAY

Table 2 - Trend Data - Wood Duck Nesting Survey - Missouri, 1953-1955

	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>% Change</u>
Acres of lake and marsh censused	4,976	4,931	7,110	+44
Miles of stream censused	371	581	666	+15
Nesting effort per sq. mi. lake and marsh	5.8	4.4	3.6	--18
Nesting effort per mi. of stream	.24	.22	.13	--41
Number of broods	42	31	28	--10
Broods per mile of stream	.09	.04	.03	--25
Average number of ducklings, Class I	4.9	5.8	7.3	-
Average number of ducklings, Class II	4.4	7.2	6.2	-
Average number of ducklings, Class III	4.6	-	-	-
Average number of ducklings, All Classes	4.5	6.5	6.7	

Table 3 - Trend Data - Mallard and Blue-winged Teal Nesting Survey, 1953-1955

	<u>1953</u>	<u>1954</u>	<u>1954</u>	<u>% Change</u>
Acres of lake and marsh	4,976	4,931	7,110	+44
Mile of stream censused	371	581	666	+15
Nesting effort per sq. mi., lake and marsh	4.0	2.7	2.5	- 7
Nesting effort per mile of stream	.19	.12	.03	-75

Conclusions -

Comparable trend data covering the past three years show a continual decline in nesting attempts and numbers of broods of waterfowl in Missouri. Compared to 1954, nesting efforts by wood ducks are down 18 percent on lakes and marshes, and down 41 percent on streams. Mallard and blue-winged teal production was down 7 percent on lakes and marshes, and 75 percent on streams.

It is concluded that the 1955 fall flight from Missouri will be considerably less than last year.

# IOWA

## Weather and Water Conditions -

Following a mild winter early migrants were moving into and through Iowa during the second week in March. Scaup and ring-necked duck were numerous in early April. A large migratory build-up of blue-winged teal developed during the third week in April, while laggard blue-wings, scaup, and shovelers remained in northwestern Iowa during early May. A warm spring hastened migration into and through this State.

## Breeding Population Indices -

Special emphasis has been placed upon the study of the wood duck because it has again become an important nester during the last fifteen years, and Iowa's contribution to the over-all production of this species is important within the flyway. In 1954 and 1955 both stream survey data and wood duck nesting box checks indicated reduced breeding populations of wood ducks within the State. (Tables 1 and 2).

Table 1 - Wood Duck Stream Survey Data

Survey Rte.No. & Miles Censused	Wood Ducks Counted				Total	Date of Census
	Male	Females	Pairs	Unidentified		
1. 8 miles	-	1	-	4	5	5/9/53
" "	1	1	-	-	2	5/11/54
" "	-	-	-	-	0	5/12/55
2. 7 miles	-	-	-	4	4	5/11/53
Rte. abandoned in 1954 because of stream channel straightened						
3. 7 miles	1	-	2	-	5	5/11/54
" "	-	-	-	-	0	5/12/55
4. 11 miles	3	2	6	-	17	5/13/53
" "	2	2	-	2	6	5/6/54
" "	-	-	-	-	0	5/12/55
5. 13 miles	1	-	3	-	7	5/14/53
" "	1	1	-	-	2	5/13/54
" "	1	-	-	-	1	5/13/55
6. 12 miles route established in 1954						
" "	3	-	-	1	4	5/10/54
" "	-	-	-	-	0	5/19/55



## MISSISSIPPI FLYWAY

Cont.

7.	18 miles	6	5	-	4	15	5/5/53
	" "	1	-	1	5	8	5/7/54
	" "	3	-	-	2	5	5/6/55
8.	9 miles	1	-	1	-	3	5/6/53
	" "	-	1	-	-	1	5/5/54
	" "	3	1	-	-	4	4/26/55
9.	12 miles route established in 1955						
	" "	1	-	-	4	5	5/16/55
<hr/>							
	66 miles total						
	all routes	11	7	13	12	51	5/5-14/53
	78 miles total						
	all routes	9	5	3	8	28	5/5-13/54
	90 miles total						
	all routes	8	1	0	6	15	4/26-5/16/55

Table 2 - Wood Duck Nesting Box Success at Lake Odessa, Louisa County, Iowa

	1950	1951	1952	1953	1954	1955
Number of Nesting Boxes Checked	26	36	24	30	72 (22 wood) (50 metal)	56 (12 wood) (44 metal)
Number of Nesting Boxes Occupied	18	13 pre-flood 9 post-flood	18	15	11 (7 wood d.) (4 merg.)	6 (5 wood d.) (1 merg.)
72 Number of Nests Destroyed by Flood	0	13	0	0	0	0
Number of Eggs Destroyed by Flood	0	108 wood duck	0	0	0	0
Total Number of Potentially Successful Eggs	158	72 wood duck 0 merganser	237 * duck 28 merganser	111 17 merganser	Not Estimated	Not Estimated
Number of Successful Nests	11	6	***	***	***	***
Number of Ducklings Successfully Hatched	129	68	***	***	***	***

## MISSISSIPPI FLYWAY

\* Abnormal success in 1952 was caused by flooding of other nesting cavities and subsequent large scale dump nesting in these nesting boxes raised up above flood crest; the success does not indicate production trend.

\*\* Student observer not available on full-time basis and consequently data not available.

### Production Indices -

On-the-spot check counts in the prairie marshes of northwest Iowa each spring and summer since 1949, plus aerial coverage of the same marsh units since 1952, have provided a studied opinion as to the production trends of blue-winged teal and mallards. Blue-winged teal constitute the most numerous nesting species in the remaining prairie marshes, and the mallard is not far behind. Production of these two species in 1955 exceeded production during 1952, 1953, or 1954.

The productive potential of the wood duck in Iowa is not well understood, not is the size of the standing crop. The nesting density of this species and its range throughout the State has increased during the last ten years, but it is probable that 1949 or 1950 may have been peak years for wood duck production, and that the trend since then has been downward.

### Conclusions -

It is estimated that the fall flight this year from Iowa will be about the same as last year.

### MICHIGAN

### Weather and Water Conditions -

Weather conditions and water levels generally have been conducive to good production.

Mild temperatures averaging 7.6 degrees above normal prevailed through April. The U. S. Weather Bureau reports the warmest April on record. Precipitation averaged 5 percent less than normal.

Although several periods of below-normal temperatures occurred in May and June, abnormal weather that would seriously interfere with nesting or brood survival did not occur.

Swales and ponds were adequately filled with runoff water in the spring and permitted wide dispersal of the breeding population.

### Breeding Population Indices -

Surveys made to determine the comparative abundance of breeding pairs indicate a favorable nesting population. On sample check areas scattered throughout the State, district game biologists found a nesting population slightly lower than in 1954 but higher than the past six-year average. 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

These sample check areas are representative of the better types of habitat in various regions of the State.

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

Mallard	28.7 percent
Black Duck	27.8 percent
Blue-winged Teal	20.4 percent
Wood Duck	6.3 percent
Ring-necked Duck	4.8 percent
Merganser	1.3 percent
Pintail	1.1 percent
Unidentified	9.3 percent

### Production Indices -

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 once in the past six years. The average size of the broods was high. Comparisons are shown on the following page.

MISSISSIPPI FLYWAY

Year	Broods Per Lineal Mile	Hens and Young Per Lineal Mile	Bachelor Ducks Per Lineal Mile	Average Size of Broods Observed
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

Conclusions -

It is estimated that the 1955 fall flight of ducks from Michigan will be somewhat greater than in 1954.

OHIO

Weather and Water Conditions -

Weather and water conditions, with the exception of the Lake Erie marsh area, were in general favorable to waterfowl production in Ohio during 1955. In northern Ohio spring storms, particularly the storm of May 14, inundated much of the Lake Erie marshes effecting a heavy loss of nests and eggs. The inland lakes and streams were about normal and favorable to waterfowl production.

Breeding Population Indices -

Breeding pair surveys were conducted through the Lake Erie marshes by aerial transects, at the Magee Marsh Wildlife Area by boat and foot and on 107 lineal miles of stream by float trips. The aerial transects and the float trips were conducted twice, once during April and again in May. The surveys at Magee Marsh were made periodically throughout the spring by the area manager.

Table 1 - Aerial Breeding Pair Survey - Lake Erie Marshes (80 Linear Miles)

Species	Pairs		Pairs Per Sq. Mi.		% Change
	1954	1955	1954	1955	
Mallard	71	83	7.1	8.3	+ 17
Black Duck	91	79	9.1	7.9	- 13
Blue-winged Teal	11	10	1.1	1.0	- 10
Wood Duck	5	6	.5	.6	+ 20
Total	178	178	17.8	17.8	None

Table 2 - Waterfowl Breeding Pair Survey - Magee Marsh (1,960 Acres)

Species	Pairs		Pairs Per Sq. Mi.		% Change
	1954	1955	1954	1955	
Mallard	27	24	8.71	7.74	- 11
Black Duck	13	6	4.19	1.94	- 54
Blue-winged Teal	9	7	2.90	2.26	- 22
Wood Duck	8	21	2.58	6.77	+163
Green-winged Teal	1	-	.32	-	-
Canada Goose	-	1	-	.32	-
<b>Total</b>	<b>58</b>	<b>59</b>	<b>18.71</b>	<b>19.03</b>	<b>+ 1.72</b>

Table 3 - Waterfowl Breeding Pair Survey - Streams \*

Species	Pairs		Pairs Per Sq. Mi.		% Change
	1954	1955	1954	1955	
Wood Duck	151	64	1.29	.60	- 53
Mallard	24	11	.21	.10	- 52
Black Duck	1	1	.01	.01	None
Blue-winged Teal	2	1	.02	.01	- 50
<b>Total</b>	<b>178</b>	<b>77</b>	<b>1.53</b>	<b>.72</b>	<b>- 53</b>

\* 117 linear miles surveyed during 1954, 107 linear miles surveyed during 1955. Different areas surveyed during 1954 and 1955.

Production Indices -

The brood surveys were made at Magee Marsh, Delaware Reservoir and the 107 linear miles of streams. The surveys at Delaware Reservoir and Magee Marsh were made throughout the spring and summer months. The stream float trips were run once during the latter part of June.

Table 4 - Waterfowl Brood Survey - Delaware Reservoir Area \*\*

Species	No. of Broods		Broods Per Acre of Water		% Change	Young/Brood		% Change
	1954	1955	1954	1955		1954	1955	
Wood Duck	7	22	.33	1.05	+ 214	6.4	7.7	+ 20
Mallard	14	12	.66	.57	- 15	6.4	8.1	+ 27
B-w. Teal	6	2	.29	.09	- 67	6.5	7.1	+ 9
Black Duck	1	1	.05	.05	None	4.0	4.0	None
<b>Total</b>	<b>28</b>	<b>37</b>	<b>1.33</b>	<b>1.76</b>	<b>+ 31</b>	<b>6.1</b>	<b>7.7</b>	<b>+ 26</b>

\*\* Delaware Reservoir Area consists of 1,200 acre lake plus 42 small ponds, averaging 1/2 acre in size, located on a 7,000 acre public hunting area. Brood data above is from the 42 ponds only.

MISSISSIPPI FLYWAY

Table 5 - Waterfowl Brood Survey - Magee Marsh (1,960 Acres)

Species	No. of Broods		Brds/Sq. Mi.		% Change	Young/Brood		
	1954	1955	1954	1955		1954	1955	% Change
Wood Duck	3	12	.98	3.92	+300	5.8	6.3	+ 9
Mallard	9	4	2.94	1.31	- 55	4.3	7.1	+65
Black Duck	10	3	3.27	.98	- 70	6.7	6.1	- 9
B-w. Teal	5	3	1.63	.98	- 40	5.2	6.0	+15
<b>Total</b>	<b>27</b>	<b>22</b>	<b>8.82</b>	<b>7.19</b>	<b>- 19</b>	<b>5.5</b>	<b>6.4</b>	<b>+16</b>

Table 6 - Waterfowl Brood Surveys - Streams (107 Linear Miles)

Species	No. of Broods		Brds/Lin. Mi.		% Change	Young/Brood		
	1954	1955	1954	1955		1954	1955	% Change
Wood Duck	33	33	.284	.336	+ 18	7.1	7.3	+ 3
Mallard	3	3	.023	.028	+ 22	5.8	7.1	+22
Black Duck	1	-	.008	-	-	7.0	-	-
<b>Total</b>	<b>37</b>	<b>36</b>	<b>.315</b>	<b>.364</b>	<b>+ 16</b>	<b>7.06</b>	<b>7.27</b>	<b>+ 3</b>

Conclusions -

It would appear that state-wide there was a definite increase in wood duck populations with a decrease in mallards, blacks and blue-winged teal. Over-all, it is estimated that the fall flight from Ohio will be similar to 1954.

INDIANA

Weather and Water Conditions -

April and May precipitation in the lake and pothole region was a half inch to 1 1/2 inches below normal. This deficiency was not considered detrimental to brood production, as unprecedented rains of October 1954, and the near normal precipitation during the winter months had left the breeding habitat in good condition. By the first of July 1955, some of the wetland study areas were beginning to show the effects of deficient rainfall but general and frequent rains between July 5 and July 15 restored them to normal levels.

### Breeding Population Indices -

The preliminary survey conducted between May 3 and May 16 on three transects totaling 47 miles, indicated that the adult male wood duck population was about 8 percent lower and the adult female population about 34 percent lower than the 1952-53 averages for the same transects.

### Production Indices -

Nine river transects, totaling 143 miles, floated this year were the same as those in the 1954 survey. Equipment and methods were also the same. An all-time low of 56 broods, for an average of 39.2 broods per 100 miles, was observed this year. The total number of broods in 1955 was 37 percent below the figure for 1954 and 40 percent below the average for the previous three years (Table 1).

With only two wood duck broods observed on the preliminary survey, and from the distribution of age classes (Table 1) it may be concluded that the transects were inventoried during the period when a maximum number of broods could have been observed.

During the 1955 survey whole counts were obtained on 32 wood duck broods. The range in whole brood size ran from two to 14, and the average size was 8.6 young per brood. Brood size in 1955 was 0.8 young above the previous four-year average.



Table 1 - Wood Duck Broods Observed, by Arbitrary Sections and Age Classes, Compared  
With Totals for 1954, and Previous Three-Year Average -  
Indiana 1955

Arbitrary Section	Number of Transects	Total Length in Miles	Dates Floated	No. of Broods, by Age Class *									Median Age Class	Mean Float Date	Peak Hatching Date	Total Broods			% Change 1955 from Previous 3-Yr. Average
				I			II			III	1955	1954				Previous 3 Yr. Average			
				a	b	c	a	b	c										
North	3	46	6-14 6-30	0	3	3	4	1	0	1	II-a	6-22	6-1	12	10	14.0	- 14%		
Central	3	50	6-1 6-18	3	2	7	10	5	5	1	II-a	6-10	5-20	29	42	34.6	- 16%		
South	3	47	5-24 6-3	1	4	1	7	2	0	0	II-a	5-29	5-8	15	37	44.5	- 66%		
State	9	143	5-24 6-30	4	9	11	21	8	1	2	II-a	6-10	5-20	56	89	93.1	- 40%		

\* Used Pintail Classes from Gallop and Marshall, May 1954.

## Conclusions -

It is estimated that the number of ducks raised in Indiana this year will be considerably less than in 1954.

## WISCONSIN

### Weather and Water Conditions -

Waterfowl nesting started about 7 to 10 days earlier than in 1954, with the year 1954 being considered average for the past five-year period. Farm field work, as reported by the Wisconsin Crop Reporting Service, was also well ahead of normal by May 1.

Heavy rains which occurred in scattered localities during April caused some nest destruction of mallards. In June, Mr. Ronald Labisky of the U. S. Fish and Wildlife Service reported that heavy rains resulted in nest losses of redheads, ruddy ducks, and coots and some abandonment of mallard and blue-winged teal nests in lowlands on the Horicon Marsh National Wildlife Refuge. The extent of nest losses due to flooding is not definitely known. However, state-wide the waterfowl nest losses should be minor, since the two main species of ducks breeding in Wisconsin, the mallard and blue-winged teal, are primarily upland nesters.

Of 296 water sites censused twice during this survey, 68 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 from previous years, a considerable drop in water levels occurred during June of 1955. Accompanying the drop in water levels, luxuriant growths of aquatic vegetation choked some of the census areas making it more difficult than usual to census broods. This condition is considered in drawing conclusions on waterfowl production for Wisconsin in 1955.

### Breeding Population Indices -

A total of 295 water sites were censused. They were distributed state-wide in 37 of the 71 State counties.

At least 95 percent of the sites censused in 1954 were surveyed this year. All of the water sites were censused once during the breeding ground survey from May 10 - 30, during regular working hours. The same water areas were covered once between June 19 and July 3 for broods, between 4:00 and 8:00 a.m. No aerial census was conducted.

As can be seen in the following table, the trend in the population of the principal duck species breeding in Wisconsin was slightly upward, as compared to the average for the period of 1951 through 1954. However, as compared to 1954, all the main species except the ringneck declined in numbers, with the largest reductions being indicated in the black duck and wood duck. The coot or mud hen experienced an increase in total numbers over the four-year average, but declined slightly from the number present in 1954.

Table 1 - Wisconsin Waterfowl Breeding Pair Trends \*

Species	Average Index 1951 thru 1954	1954		1955		Percent Change of 1955 Index From Average 1954	
		Index	% Lone M	Index	% Lone M		
Mallard	.04	.05	45	.04	54	None	-20
B-w. Teal	.06	.09	21	.08	38	+33	-11
Black Duck	.005	.008	-	.005	-	None	-36
Wood Duck	.006	.009	39	.006	19	None	-33
Ringneck	.01	.01	65	.01	37	None	None
<hr/>							
Total Ducks	.13	.18	28	.15	-	+15	-17
		Average of 1951-1954		1954	1955		
Adult coot observed per acre		.04		.09	.08		
Percent change of 1955 from		+100		-11	-		

\* 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 -

Table 2 presented below contains the pertinent figures on the 1955 Wisconsin waterfowl production picture, together with data from previous years.

Table 2 - 1955 Waterfowl Production in Wisconsin

Year	Duck Pr. Per Acre	Indicated Change	% F*	Young/ Breeding Pair	Indicated Change	Average Brood Size	% Duck Prs. on Br. Survey
1951	.078	-	16	1.46	-	6.5	43
1952	.092	+18%	19	2.58	+77%	6.6	+2% 42

Continued

Table 2 - Continued

Year	Duck Pr. Per Acre	Indicated Change	% F *	Young Per Breeding Pair	Indicated Change	Average Brood Size	Indicated Change	% Duck Prs. on Br. Survey*
1953	.180	+96%	27	2.35	- 9%	7.0	+ 6%	39
1954	.180	None	35	1.51	-36%	7.0	None	41
1955	.153	015%	18	1.85	+23%	7.4	+ 6%	47

\* Percent female of total flocked ducks

\*\* 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 by the total estimated number of pairs on that survey.

#### Conclusions -

It is estimated that the fall flight from Wisconsin will be above the average of the past five years but below that of 1954.

## ATLANTIC FLYWAY

Atlantic Flyway DataWaterfowl Kill Information

The following table presents the estimated kill of waterfowl during the 1952-53, 1953-54 and 1954-55 shooting seasons as determined by the Waterfowl Hunter Mail Survey:

Species	Total Kill *			Percent Change
	1952-53	1953-54	1954-55	1953-54 1954-55
Mallard	205,935	300,380	321,420	+ 7.0
Black Duck	346,252	239,680	398,490	+ 66.3
Wood Duck	- **	114,875	152,070	+ 32.4
G-w. Teal	57,144	85,470	99,615	+ 16.6
B-w. Teal	47,943	64,280	62,850	- 2.2
Pintail	60,170	63,255	73,500	+ 18.1
Baldpate	65,376	33,835	50,760	+ 50.0
Scaup	87,168	55,800	149,380	+167.7
Canvasback	54,601	49,540	65,740	+ 32.7
Other Ducks	286,082	240,056	277,891	+ 15.8
<b>Total Ducks</b>	<b>1,210,671</b>	<b>1,247,171</b>	<b>1,651,716</b>	<b>+ 32.4</b>
Canada Goose	76,977	61,165	111,091	+ 81.6
Brant	6,041	3,060	10,788	+252.5
Other Geese	3,785	1,482	709	- 52.1
<b>Total Geese</b>	<b>86,803</b>	<b>65,707</b>	<b>122,588</b>	<b>+ 86.6</b>
Coot	177,105	122,773	260,087	+111.8

\* Includes both retrieved and unretrieved birds.

\*\* Included under "Other Ducks" during the analysis of 1952-53 data.

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

		1952-53	1953-54	1954-55	% Change 1953-54 to 1954-55
<b>Number of Hunters</b>					
Over 16		306,372	338,234	343,535	+ 1.6
Under 16		11,271	11,273	15,413	+ 36.7
<b>Average Daily Kill</b>					
<u>Over 16</u>	Ducks	.76	.82	.82	N.C.
	Geese	.05	.04	.06	+ 50
	Coot	.09	.08	.12	+ 50
<u>Under 16</u>	Ducks	.36	.43	.39	- 9
	Geese	.002	.01	.03	+200
	Coot	.15	.15	.20	+ 33
<b>Average Seasonal Kill</b>					
<u>Over 16</u>	Ducks	3.01	2.81	3.65	+ 30
	Geese	.21	.15	.28	+ 87
	Coot	.37	.26	.53	+104
<u>Under 16</u>	Ducks	1.42	1.48	1.74	+ 18
	Geese	.01	.04	.14	+250
	Coot	.61	.51	.90	+ 76
<b>Average Times Hunted</b>		3.971	3.438	4.447	+ 29

The over-all kill of ducks, geese, and coot increased in the Atlantic Flyway in 1954-55 as compared to the previous year. These increases were due to a combination of a slight increase in the number of hunters, and a considerable increase in the times afield and the average daily success. This occurred in spite of the fact that the length of the season and daily bag limit remained the same as for the previous year.

## ATLANTIC FLYWAY

### Winter Trend Data - Atlantic Flyway

Weather conditions in the ATLANTIC FLYWAY during the winter survey period were much better than during 1954. The survey was conducted on schedule, except for minor delays in the Chesapeake Bay region, and along the north coast of Hispaniola. This year there was a large increase in the number of waterfowl wintering in and around Chesapeake Bay with corresponding decreased in other States.

### Percent Change in Atlantic Flyway (Continental) Populations Index Figures for Ducks, Geese, Brant, Swan and Coot from January 1954 to 1955

Area	Ducks	Geese	Brant	Swan	Coot	Total
Canada *	- 25	+ 80	-	-	-	- 22
Atlantic Flyway States	+ 10	+ 42	- 25	+ 68	+ 76	+ 16
West Indies	+200	-	-	-	+ 54	+169
Total	+ 12	+ 43	- 25	+ 68	+ 49	+ 18

\* Newfoundland, Quebec and the Maritimes

Species Composition - Atlantic Flyway (Continental) 1954 and 1955

Species	Percent of Birds Identified		Percent Change 1954 to 1955
	1954	1955	
Scaup	21.7	15.8	- 13.6
Canvasback	9.5	5.3	- 38.1
Black Duck	9.7	10.9	+ 32.6
Pintail	9.1	9.4	+ 29.3
Canada Goose	7.3	9.2	+ 51.0
Coot	7.1	10.6	+ 75.1
American Brant	5.2	3.3	- 25.0
Mallard	5.1	6.0	+ 41.5
Baldpate	3.8	5.1	+ 57.2
Wood Duck	2.7	2.9	+ 26.3
Redhead	2.5	4.4	+105.5
Ringneck	2.2	2.0	+ 8.0
Ruddy Duck	2.0	2.9	+ 71.4
Snow Goose	1.1	.8	- 10.0
Goldeneye	1.7	1.4	- 2.4
Whistling Swan	1.1	1.6	+ 68.1
Merganser	1.1	1.7	+ 76.2
Scoter & Eider	3.7	3.6	+ 14.2
Bufflehead	.7	.5	- 18.8
G-w. Teal	.7	.7	+ 7.8
B-w. Teal	.8	.7	+ 13.7
Gadwall	.5	.9	+ 88.3
Old Squaw	.2	.2	- 16.6
Shoveler	.2	.2	- 16.6
Blue Goose	tr.	tr.	-
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>+ 17.6</b>



## ATLANTIC FLYWAY

### Summary of Atlantic Flyway Waterfowl Indices

Waterfowl - The 1955 index indicates no consistent population trend up or down in the Atlantic Flyway for the period 1950-55. This year's index is 14 percent below the 6-year average and compared to individual years is:

18 percent above 1954  
14 percent below 1953  
18 percent above 1952  
34 percent above 1951  
51 percent above 1950

Ducks - The index this year is 14 percent above the average for the past 6 years and compared to individual years stands:

12 percent above 1954  
7 percent below 1953  
12 percent below 1952  
31 percent above 1951  
58 percent above 1950

Among the ducks, the indices were:

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

Geese - The 1955 index for geese is 34 percent above the average level for the past 6 years and compared to individual years is:

43 percent above 1954  
3 percent above 1953  
65 percent above 1952  
70 percent above 1951  
63 percent above 1950

Compared to 1954, the Canada goose increased and the snow goose decreased.

Brant - The brant index is 25 percent above the average for the past 6 years and compared to individual years is:

25 percent below 1954  
18 percent above 1953  
76 percent above 1952  
62 percent above 1951  
125 percent above 1950

Swan - The 1955 swan index is 79 percent above the average for the period 1950-55 and compared to individual years is:

68 percent above 1954  
61 percent above 1953  
148 percent above 1952  
163 percent above 1951  
193 percent above 1950

Coot - The coot index in the Atlantic Flyway is 8 percent below the average for the past 6 years and compared to individual years is:

81 percent above 1954  
55 percent below 1953  
18 percent above 1952  
13 percent above 1951  
4 percent below 1950

## Breeding Ground Surveys

QUEBEC AND LABRADORWeather and Water Conditions -

The season appeared to be ahead by a week or more in southern and western Ontario as compared with last year. Ice went out of Chibougamau Lake on May 3 this year as compared to the usual middle of May. However, in higher reaches of the Laurentians, the season was retarded. Ice was present in the larger lakes on June 2 in the Ashuanipi area and was not out until the 7th of June. West of Ashuanipi and Knob Lake most of the lakes were free at the time mentioned above.

The Canada goose and duck nesting areas south of James Bay and in western Quebec were very dry. Several forest fires were noted and muskegs showed little water. Many lakes were down an estimated three to five feet. The Bagotville area, on the other hand, as well as local areas in eastern Quebec and Labrador had very heavy winter snows and plenty of moisture.

Weather conditions were extremely hot and dry throughout the area. June was the hottest and driest on record in the Kapuskasing area. Forest fires in Ontario were the worst in years as far as this time of year was concerned. Fires were going in May and continued outbreaks of new ones have kept up all summer. At different intervals the forests were closed to tourist travel in both Ontario and Quebec. In Quebec and Labrador fire conditions were bad during the period. This summer several areas in the Open Boreal and Forest Tundra strata were burned over. These burns extended in all directions as far as the eye could see.

Water levels in most of the lakes, ponds, rivers, streams, marshes and muskegs were down. Generally it varies, as to degree, as to particular locations. The Laurentians were holding up fairly well, with Western Quebec down by a marked degree. Areas east of Knob Lake were down by five feet or more in the larger lakes, and muskegs were very dry. Although water conditions were not good, most areas appeared to have sufficient remaining water for waterfowl needs.

Breeding Population Indices -

In comparing 1955 data to last year's, noticeable declines can be seen in all species except the scaup. The general decline may be due to a late season in the eastern portions of Quebec and Labrador where apparently, at the time of the survey, the breeding population had not yet arrived. Very little of the western Quebec area above 52° of latitude was surveyed. Many birds may have been in that area as a result of the eastern area being slow in breaking up.

Considering the factors that affected both the waterfowl breeding population and the aerial survey, it is believed that the eastern Canada waterfowl breeding population was about the same as last year.

### Production Indices -

For comparative purposes all the duck broods, complete, incomplete, unclassified, and unidentified were used to compute the data used in Table 1. This was done for comparative purposes with last year's data and also to give us a total brood and young duckling production. The average brood size in 1955 was 4.62 as compared to 4.35 in 1954, indicating an increase of 6 percent in brood size. Comparing total young produced, we find it is down 21 percent from last year. Noting in our breeding pair count in May and June a decline of 23 percent, a reduced production of 21 percent was not unexpected.

Table 1 - Duck Brood Production Indices, Quebec and Labrador - 1955

Class I	Mixed Boreal	Main Boreal	Open Boreal	Total 1955	Total 1954	Percent Change
			and Forest Tundra			
No. Broods	0	0	285	285	12,890	- 98
Aver. Size	0	0	7.00	7.00	4.58	
No. Young	0	0	1,995	1,995	59,080	- 98
<u>Class II</u>						
No. Broods	0	5,962	12,525	18,487	17,207	+ 7
Aver. Size	0	5.83	4.50	4.93	4.27	
No. Young	0	34,759	56,363	91,122	73,423	+ 24
<u>Class III</u>						
No. Broods	0	6,953	3,131	10,084	8,462	+ 19
Aver. Size	0	4.14	3.67	3.99	4.18	
No. Young	0	28,785	11,491	40,276	35,409	+ 14
<u>Totals</u>						
No. Broods	0	12,915	15,941	28,856	38,559	- 25
Aver. Size	0	4.92	4.38	4.62	4.35	
No. Young	0	63,544	69,849	133,393	167,912	- 20

Note: Above data based on adjusted broods. Includes incomplete and unclassified broods in ratio to complete classed broods. No transects run in Tundra Stratum in 1955. 1954 figures have been corrected by omitting Tundra data for that year for comparative purposes.

Considering the Canada goose production, the picture has taken an about-face. Noting Table 2, we found the brood size reduced from an average size of 4.06 in 1954 to 3.59 in 1955, a decline of 12 percent. On the other hand the young produced were up 49 percent over last year. The May and June survey showed a 53 percent reduction in breeding pairs from last year. The actual increases in production were noted in the plateau marshes of the Laurentians, particularly in the vicinity of Ashuanipi Lake and Knob Lake areas. This may have been a change in breeding location due to climatic conditions. We did not get into the goose breeding areas in the Tundra, as of this date, so the total outlook may be somewhat changed by production in the Tundra area. Second-hand information from the Tundra area indicates a late season and may involve considerable decrease in goose production there.

Goose Brood Production Index, Quebec and Labrador - 1955

Class I	Mixed Boreal	Main Boreal	Open Boreal		Total 1954	Percent Change
			and Forest Tundra	Total 1955		
No. Broods	0	0	0	0	0	
Aver. Size	0	0	0	0	0	
No. Young	0	0	0	0	0	
<u>Class II</u>						
No. Broods	0	0	3,796	3,796	3,686	+ 3
Aver. Size	0	0	3.40	3.40	4.50	
No. Young	0	0	12,905	12,905	16,576	- 22
<u>Class III</u>						
No. Broods	0	0	8,350	8,350	3,957	+111
Aver. Size	0	0	4.00	4.00	3.66	
No. Young	0	0	33,400	33,400	14,483	-130
<u>Totals</u>						
No. Broods	0	0	12,146	12,146	7,643	+ 59
Aver. Size	0	0	3.59	3.59	4.06	
No. Young	0	0	46,305	46,305	31,059	+ 49

Note: No transects run in Tundra Stratum in 1955. For comparative purposes Tundra data for 1954 were deleted from totals.

Conclusions -

It is estimated that the fall flight of ducks from Quebec and Labrador will decrease this year while the flight of geese will be about the same or somewhat greater.

Table 3 - Comparison of 1953-54 Data on Waterfowl Breeding Pair Survey with Index Figure  
on Total Birds by Strata - Quebec and Labrador

Species	Mixed Boreal		Main Boreal		Open Boreal & Forest Tundra		Total		% Change
	1954	1955	1954	1955	1954	1955	1954	1955	
Black Duck	9,926	7,351	129,835	55,242	185,863	118,697	325,624	181,290	- 44
Goldeneye	14,062	1,470	180,109	61,603	175,222	119,430	369,393	182,503	- 51
Ringneck	10,340	-	36,119	-	2,938	-	49,297	-	-
Pintail	4,136	-	976	-	2,838	2,931	7,950	2,931	- 63
Scaup	-	-	-	4,687	36,179	41,764	36,179	46,451	+ 28
Merganser	16,544	5,146	185,478	97,092	168,128	101,113	370,150	203,351	- 45
Scoter	-	-	3,417	25,780	88,675	41,764	92,092	67,544	- 27
Unidentified	5,790	4,411	31,726	114,167	60,299	231,533	97,815	350,111	+258
Total Ducks	60,798	18,378	567,660	358,571	720,042	657,240	1,348,500	1,034,181	- 23
Favored Ducks*	44,254	13,232	378,765	235,699	463,239	514,355	886,258	763,286	- 14
Canada goose	8,272	-	2,440	3,348	134,077	64,478	144,789	67,826	- 53
Sq. Mi. covered	72.0	40.5	372.5	540.0	534.5	517.5	979.0	1098.0	
Sq. Mi. in Stratum		29,780		180,820		379,180		589,780	
Tot. Ducks/Sq. Mi.	2.042	0.617	3.139	1.983	1.899	1.733	2.286	1.754	
Ducks/Sq. Mi. **	1.486	0.444	2.095	1.304	1.222	1.357	1.503	1.294	
Canada goose per Sq. Mi.	0.278		0.013	0.019	0.354	0.170	0.245	0.115	

\* Excluding Merganser and Scoter

\*\* Favored ducks per square mile

NORTHEASTERN STATESWeather and Water Conditions -

The early spring in New England, central and northern New York, and portions of West Virginia was seasonally cold and rainfall slightly above normal. Water levels declined gradually until early summer. Floods and rising waters were either absent or local in nature. In July the water levels were dropping rapidly over much of the area. Sub-normal amounts of rainfall occurred from southwestern Connecticut southward to Delaware. Water levels in this area were far below seasonal average. The usual high tides occurred in the coastal areas.

Throughout the entire Northeast there was the common opinion that the season was approximately two weeks earlier phenologically than last year.

Breeding Population Trends -

Observer reports indicated a breeding population similar to last year and in some areas better. They also stated nesting was at least two weeks ahead of the 1954 season throughout the Northeast.

Production Trends -

The summary of production data from 123 comparable areas is shown in Tables 1 and 2. No important change is indicated in the data from last year. Increases in the average brood size of the dabblers may reflect the good rearing conditions. The mallard continues to increase in numbers in the Northeast. This year the ring-necked duck appears in the tabulation, reflecting the general observed trend of expanding and increasing its breeding range and density.

Table 1 - Number of Comparable Areas by States Showing Status of Production

State	Comparable Areas	Increase	No Change	Decrease
Connecticut	35	12	5	18
Delaware	2	1	0	1
Maine	38	14	7	17
Massachusetts	5	2	0	3
New Hampshire	7	4	2	1
New Jersey	4	2	0	2
New York	17	8	3	6
Rhode Island	12	4	0	8
Vermont	1	1	0	0
West Virginia	2	1	1	0
Total	123	49	18	56

Table 2 - Summer Brood Survey in the Northeastern States, 1955 - (123 Comparable Areas, Table 1)

Species	Total Broods		Young Produced		Average Brood		Percent of Change	
	1955	1954	1955	1954	1955	1954	Young Produced	Broods
Black Duck	342	338	2186	2005	6.4	5.9	+ 9.0	+ 1.2
Wood Duck	228	245	1502	1579	6.6	6.4	- 4.8	- 6.9
Ring-necked Duck	36	33	226	214	6.3	6.5	+ 9.1	+ 5.4
Mallard	78	71	560	429	7.2	6.1	+30.6	+ 9.9
Blue-winged Teal	19	23	107	155	5.6	6.7	-30.8	-17.4
<b>Total</b>	<b>703</b>	<b>710</b>	<b>4581</b>	<b>4382</b>	<b>6.5</b>	<b>6.2</b>	<b>+ 4.5</b>	<b>- 1.0</b>



Conclusions -

The number of birds produced in the Northeastern States will be similar to 1954.

MARITIME PROVINCESWeather and Water Conditions -

During the winter of 1954-55, the precipitation throughout the Maritime Provinces was unusually high. In northern New Brunswick, north-eastern Nova Scotia and Prince Edward Island there was a heavy total snowfall. This large amount of snow, however, disappeared without causing any unusual fluctuations in the levels of such rivers as the Saint John.

The period from March 1 until the middle of June was generally backward, but there have been no sudden or great periods of adverse weather. The rainfall for three consecutive months (April, May and June) has been much below normal, but this has not had any noticeable adverse affect on either nesting or brood production.

Breeding Population Indices -

This year, the aerial survey was carried out by the Canadian Wildlife Service and was modified to include all of the shoreline and larger rivers of Prince Edward Island, and the transects in the area of low production in southwestern New Brunswick were eliminated. Results of comparable coverage in 1954 and 1955 spring aerial surveys are shown in Table 1.

Table 1 - Spring Waterfowl Survey, Maritime Provinces Aerial Comparison, 1954 and 1955

Year	Black	Pin-tail	G. W. Teal	B. W. Teal	Ring-neck	Golden-eye	Scaup	Unid. & Others	Scoters & Eiders	Mergansers	Total Ducks	Total Pref. Game Ducks	Geese	Brant
1954	296/159 2162	3/3 0	13/4 170	-	10/3 416	64/37 337	1/0 29	0/0 158	Scoters 335 Eiders 50	9/13 47	4954	4408	887	2204
1955	365/199 2537	5/2 0	14/2 98	7/1 16	51/10 222	56/21 463	4/0 215	12/2 98	Scoters 172	99/1 391	5898	5135	2420	2162

N. B. Explanation of figures 296/159  
2162      296 = pairs seen    159 = lone drakes    6162 = birds in flocks.

For the purpose of obtaining total number of ducks - pairs and lone drakes are doubled and added to birds in flocks.

$$\frac{296}{2162} \times 2 = 3072 \text{ (total blacks in 1954 survey)}$$

Production Information -

Aerial and ground survey work was carried out by the Canadian Wildlife Service. For comparative purposes in this report, the aerial survey figures have been used. Since parts of the aerial coverage were modified this year, the figures given here are not comparable with those in previous reports.

Table 2 - Comparable Aerial Brood Data

Year	Black Duck		Ringneck		Goldeneye		Total Game Ducks	
	Ad	Br	Ad	Br	Ad	Br	Ad	Br
1953	1211	55	170	8	74	10	1555	68
1954	474	44	210	-	61	2	816	47
1955	532	48	62	9	27	8	727	73

It would seem from the above table that there is a decided decrease in the breeding population of waterfowl in the Maritime Provinces (which does not agree with the spring surveys) although the number of broods observed is larger than either of the other two years. The large decrease is due to the smaller number of adult ringnecks observed.

Conclusions -

It is estimated that the fall flight from the Maritime Provinces will be somewhat larger than last year.

## SUMMARY OF CONDITIONS

### PACIFIC FLYWAY

In January 1955 the wintering population of waterfowl in the Pacific Flyway showed a decrease for the first time in several years. Although geese remained about the same, ducks and brant decreased slight and coot decreased considerably.

In the waterfowl breeding areas supplying the Pacific Flyway increases in breeding population were recorded in Southern Alberta, Northern and Southern Saskatchewan and Northern Manitoba. Breeding populations were about the same in Southern Alberta, Washington, California, and Wyoming, while decreases were recorded in Alaska, Northern Alberta, Northwest Territories, Oregon, Montana, and Nevada.

Weather and water conditions varied throughout the breeding range supplying the flyway. In much of Southern Alberta and Southern Saskatchewan conditions were ideal. Drought conditions prevailed in a small area near the border in Southern Alberta and extended southward into Montana, Wyoming, Nevada and California. Elsewhere, conditions were average.

Production surveys during July have indicated that there will be an increased number of young in Southern Alberta, Saskatchewan, and in Northern Manitoba. It is estimated that Alaska, British Columbia, Southern Manitoba, Washington, Idaho, Utah, and Wyoming will produce about the same number of ducks as last year, and that there will be decreases in Oregon, California, Montana, Nevada, Northern Alberta and the Northwest Territories.

It is estimated that there will be a decreased flight of Canada geese from Oregon, Idaho, Utah, and Wyoming. Although the winter inventory of geese in the Pacific Flyway indicated little change over-all from 1954, there was a decrease in Canadas, which was balanced by an increase in cacklers and white-fronts. It would appear that there may be reason for some concern regarding the Canada goose populations in the Pacific Flyway.

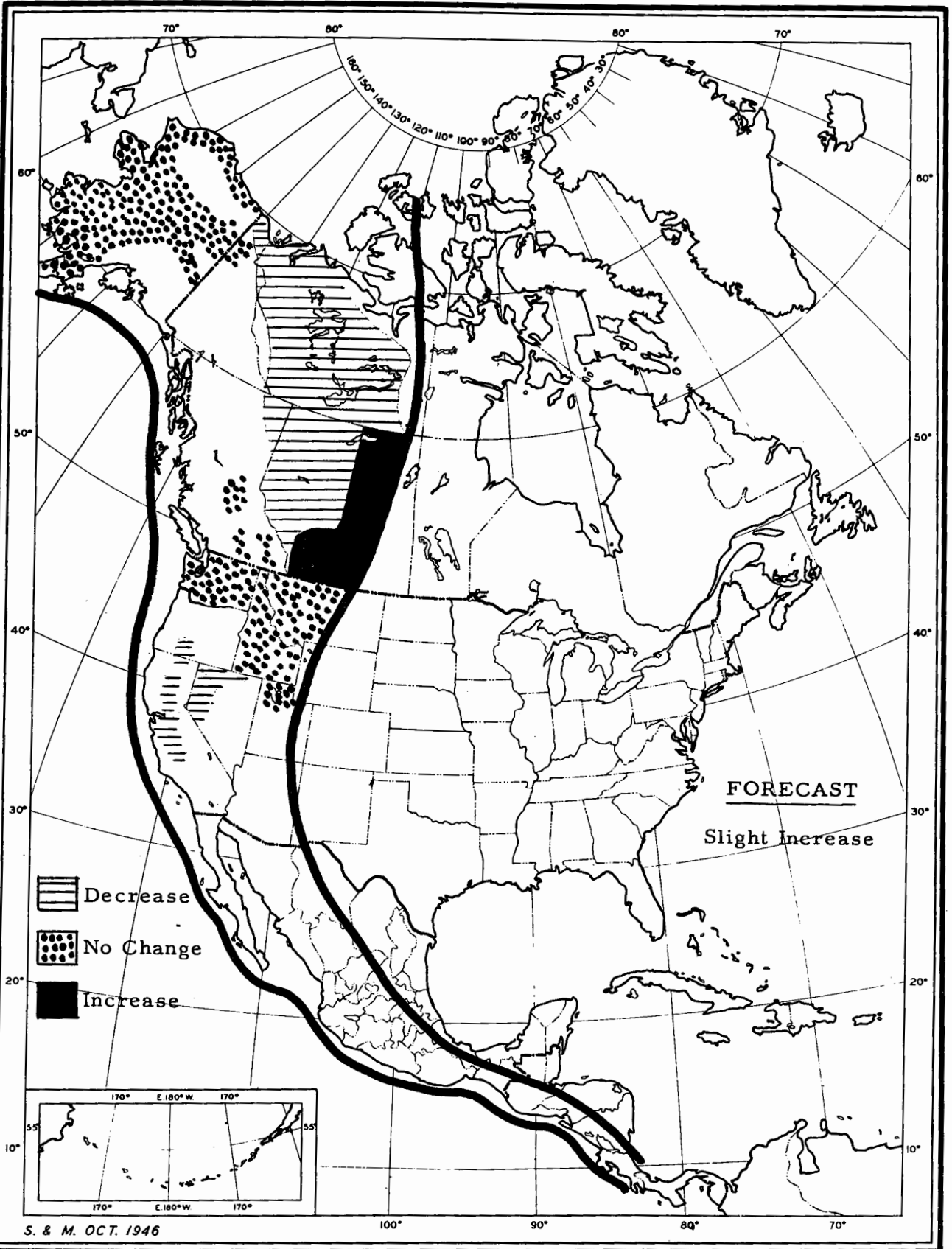
Over-all, it is estimated that the gains in Saskatchewan, Alberta, and Northern Manitoba will more than balance the losses elsewhere and that there will be a slight increase in the fall flight of ducks in the Pacific Flyway in 1955. Also, it is estimated that the fall flight of geese, other than Canadas, will remain about the same, but that the flight of Canadas will decrease. In view of a 39 percent decrease in the wintering population of coot it seems likely that the fall flight of this species will not increase over 1954, and may decrease.

# 1955 FALL FLIGHT FORECAST FOR DUCKS

## PACIFIC FLYWAY

U.S. DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE



## CENTRAL FLYWAY

The annual January waterfowl survey indicated that at the end of last season there was a slight decrease in ducks, a moderate decrease in geese, and a considerable decrease in coot in the Central Flyway as compared to the previous year.

When the birds returned northward to the breeding grounds they encountered drought conditions in South Dakota, southern North Dakota, parts of Colorado and Wyoming, and a small area in Southern Alberta. However, water was more abundant than at any time during the past several years in northern North Dakota, Saskatchewan and Manitoba. Throughout the remainder of the Central Flyway breeding range water conditions were adequate. Phenologically, the season was somewhat earlier than average and definitely ahead of the late season of 1954.

As a result of the varying water conditions there was considerable shifting of breeding populations during the spring of 1955. Northern North Dakota, Southern Manitoba and Saskatchewan, by reason of attractive habitat conditions, drew birds from the drought areas to the south, and appear to have caused birds to stop and nest which were enroute to breeding areas in Northern Alberta and the Northwest Territories. During May, June, and July, conditions for waterfowl production have been excellent in Saskatchewan, Southern Alberta, and northern North Dakota. Frequent rains have maintained water areas without causing undue losses. Rains during May and early June kept farming activity to a minimum in many areas and allowed the first nest of pintails and mallards to hatch successfully. Large numbers of young are being produced in these areas according to the July surveys. It is estimated that the increases here will much more than off-set losses which are forecast for Northern Alberta, Nebraska, and the Northwest Territories, and that there will be a considerable increase in the fall flight of ducks in the Central Flyway this fall.

In view of the apparently favorable conditions in the Central Flyway breeding range of the Canada goose, it is estimated that production may make up some of the decreases recorded during the winter survey and that the fall flight of this species will be about the same as last year.

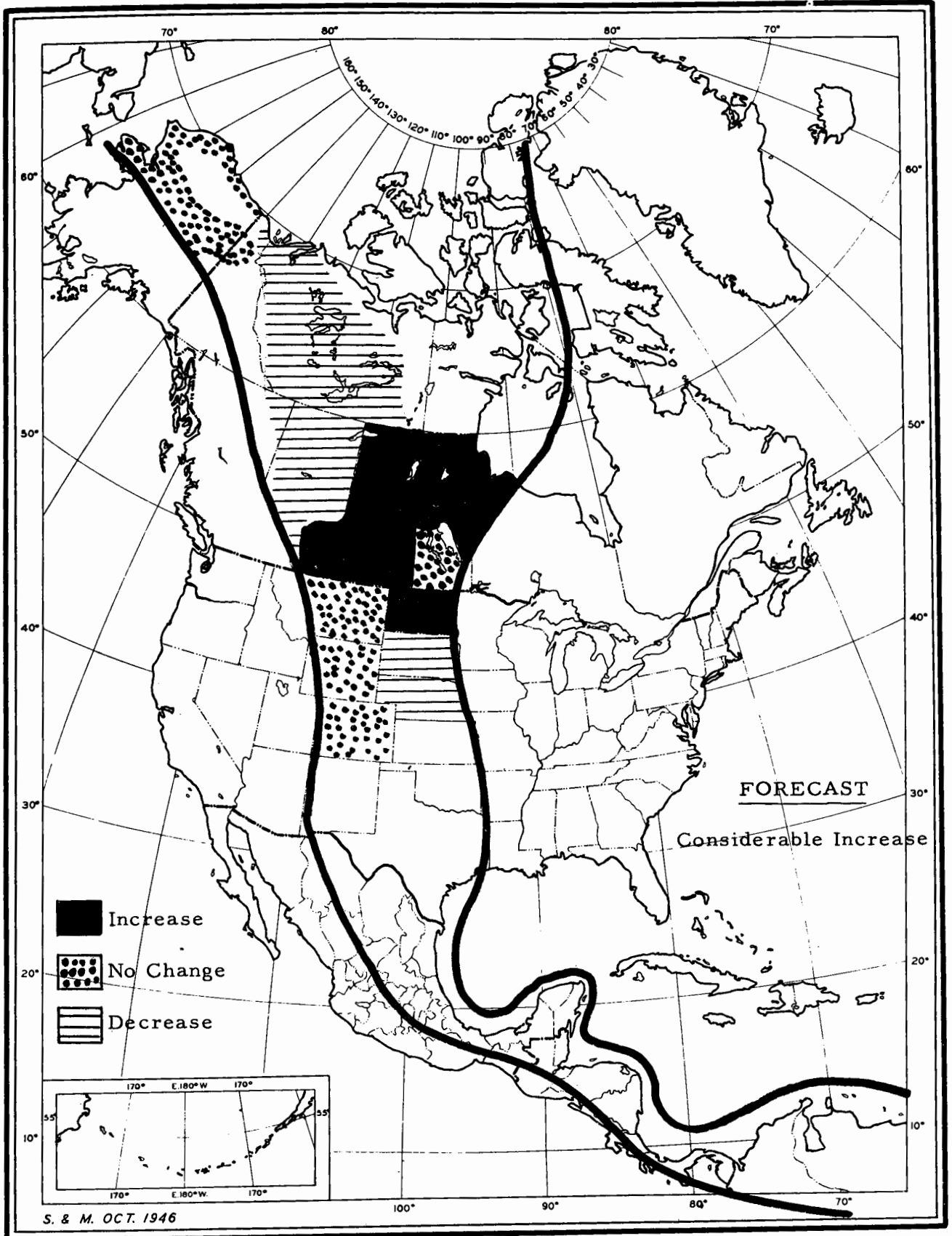
Although the coot breeding population index in the Central Flyway decreased considerably this year, breeding ground surveys indicate that coot production has been excellent, and it is estimated that the fall flight of this species will be at least equal to 1954.

1955 FALL FLIGHT FORECAST FOR DUCKS

CENTRAL FLYWAY

U.S. DEPARTMENT OF THE INTERIOR

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## MISSISSIPPI FLYWAY

The mid-winter survey in the Mississippi Flyway showed that populations of ducks, geese, and coot remained at approximately the same level as last year.

When the birds returned to the breeding grounds this spring, they found drought conditions prevailing in South Dakota and parts of North Dakota, Minnesota, and Ontario. However, water levels were at an all-time high in northern North Dakota, southern Manitoba, and southern Saskatchewan. Elsewhere, water conditions were adequate and the season was from 10 days to two weeks earlier than in 1954. Conditions favorable to production have continued throughout the season, except in the drought areas, and possibly in southern Manitoba where flooding may have caused adverse conditions.

During spring migration, breeding populations were attracted to areas where water was plentiful, and drought areas were avoided. As a result, breeding populations were reduced in South Dakota, Minnesota, and Ontario, while increases were recorded in Manitoba, Saskatchewan, and North Dakota.

Production surveys during July have indicated that the combination of an early season and favorable habitat conditions have paid off abundantly in Saskatchewan and southern Alberta, and that there will be increases also in the fall flight from North Dakota and Michigan. It is believed that the increases are more than enough to off-set the decreases which are anticipated from South Dakota, Indiana, Minnesota, and the Northwest Territories. Therefore, it is estimated that there will be a considerable increase in the fall flight of ducks in the Mississippi Flyway this fall.

Production information for Canada geese and coot is favorable also and it is estimated that there will be a moderate increase in the fall flight of these species. On the basis of winter survey data for blue geese, including age composition information, it is estimated that the fall flight of this species will be about the same as last year.

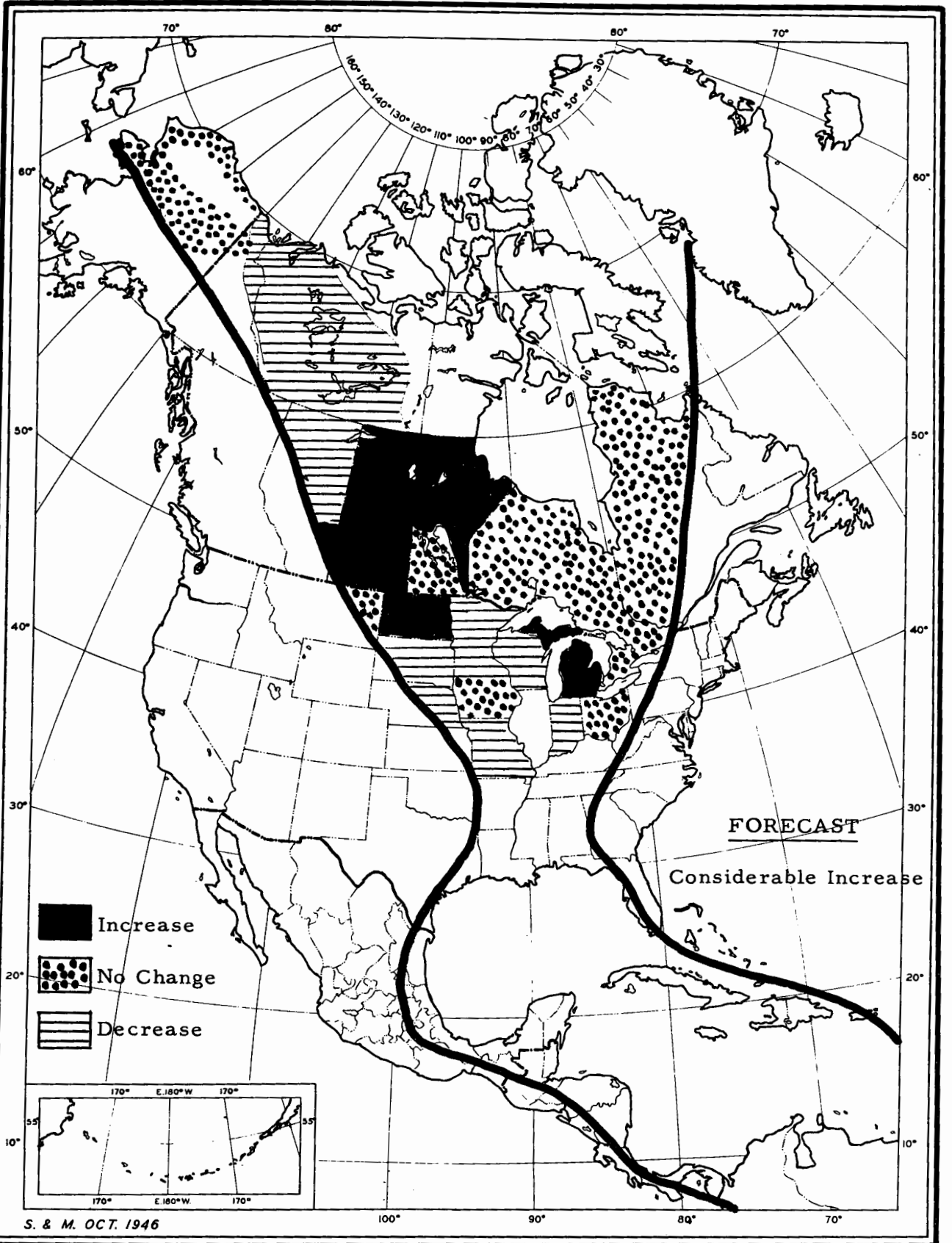


# 1955 FALL FLIGHT FORECAST FOR DUCKS

## MISSISSIPPI FLYWAY

U.S. DEPARTMENT OF THE INTERIOR

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## ATLANTIC FLYWAY

The annual January waterfowl survey indicated that at the end of last year's shooting season there was a small increase in ducks, a continued and considerable increase in Canada geese, a decrease in brant, and a considerable increase in coot.

When the birds returned northward to the breeding grounds they encountered conditions which varied from drought to an abundance of water. In parts of western Quebec and eastern Ontario water levels were down and forest fires were prevalent beginning in May and continuing through the present writing. Drought was present also in South Dakota and parts of North Dakota and Minnesota, from which the Atlantic Flyway receives a small portion of its birds. In other parts of the breeding range of the flyway water conditions were adequate to super-abundant. Throughout eastern Quebec, Labrador, the Northeastern States, the Maritime Provinces, western Ontario, northern Manitoba, northern Saskatchewan, and the Northwest Territories, water was adequate. In the important prairie breeding areas in southern Manitoba and Saskatchewan the highest water levels in recent years were recorded. Over most of the Atlantic Flyway breeding range the season was from 10 days to two weeks earlier than last year. The pattern of rainfall during the summer in the important breeding areas was favorable to production.

Increases in breeding population were recorded in the Maritimes, Saskatchewan, Manitoba, and North Dakota. Decreases were recorded in Quebec, Labrador, Ontario, Northwest Territories, Alaska, Minnesota, and South Dakota, and the breeding population was judged to be about the same as last year in the Northeastern States.

Increases in production were recorded in the Maritimes, Saskatchewan, northern Manitoba, and North Dakota, while it was judged that there would be decreases in the Northwest Territories, South Dakota, and Minnesota. Production was estimated to be about the same as last year in Quebec, Labrador, Ontario, Alaska, and the Northeastern States.

Over-all it is judged that increases will off-set decreases and that the fall flight of ducks in the flyway will show a moderate increase. Breeding ground data indicates that the Canada goose has had a successful season and it is anticipated that there will be a moderate increase in the fall flight of this species as well.

No breeding ground data are available for brant. On the strength of a decrease in the winter survey figures it is estimated that the fall flight of brant will be no better than last year and may decrease.

Production information for coot is favorable and it is anticipated that the fall flight of this species will increase.

1955 FALL FLIGHT FORECAST FOR DUCKS

ATLANTIC FLYWAY

U.S. DEPARTMENT OF THE INTERIOR

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