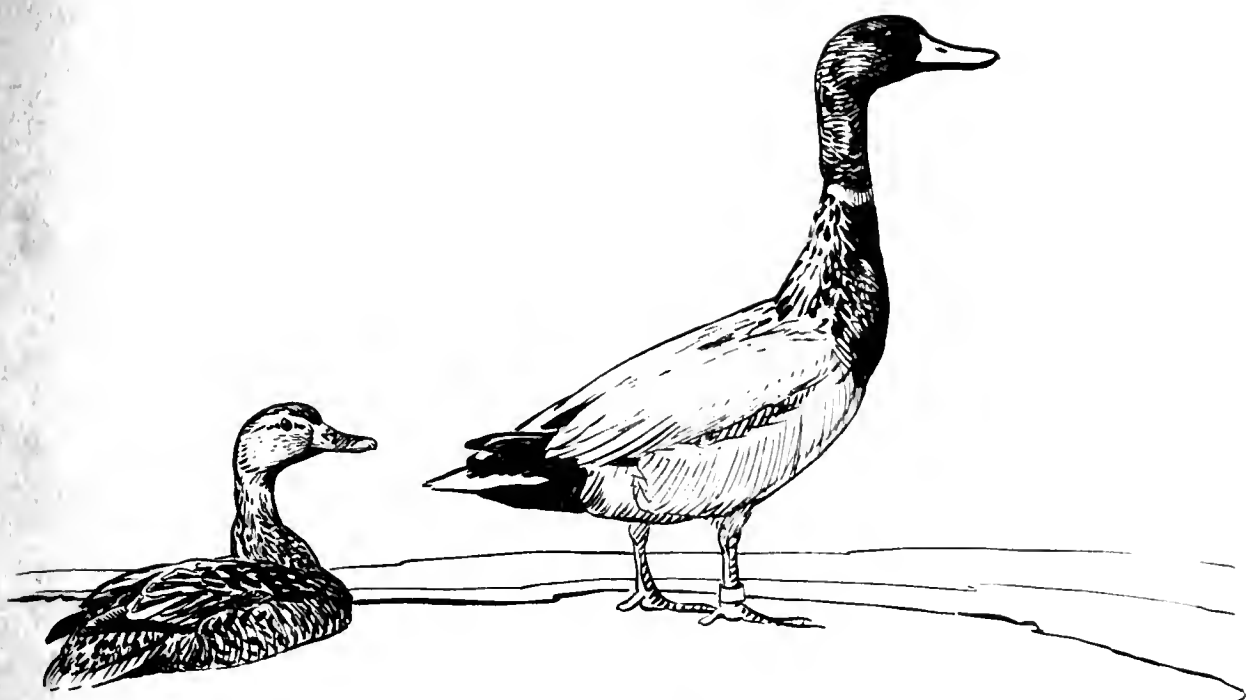
WATERFOWL STATUS REPORT 1968



UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
Special Scientific Report--Wildlife No. 122

UNITED STATES DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
Bureau of Sport Fisheries and Wildlife

WATERFOWL STATUS REPORT 1968

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in collaboration with

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WATERFOWL STATUS REPORT

1968

Data from winter surveys, breeding ground surveys of waterfowl populations and their habitats and mail surveys of hunters play a major role in developing annual hunting regulations for waterfowl. This report presents summaries of the 1968 population and habitat surveys and the results of the mail surveys of waterfowl hunters for the 1967-68 season.

Credit has been given to each individual or organization that submitted a report. Although many of the narrative statements have been briefed, and a few tables deleted or shortened if they contained data submitted previously or in another form, the essential information from each report has been retained to the greatest extent possible.

WINTER SURVEY

During the first half of January a survey of winter waterfowl habitat and its effect upon the distribution of ducks and geese was completed by the Bureau of Sport Fisheries and Wildlife with assistance from State fish and game departments, other Federal agencies and private individuals. All important waterfowl wintering areas in the country were covered.

PACIFIC FLYWAY

Weather during the survey was clear in the Southern States but there was snow, sleet, and rain in the Great Basin. Also, in recent years, survey efficiency has been affected by increasing amounts of smog and haze in the Sacramento Valley. Sufficient moisture and adequate food existed in the California rice fields as well as the majority of the Flyway wintering areas.

The total waterfowl count for the Flyway was 14 percent below 1967. Dabbling ducks were down 10 percent from 1967 but divers were up 15 percent. The survey count of Canada geese was 22 percent below that of 1967, and Ross' geese were down 32 percent from last year. White-fronted and cackling geese showed declines of 62 percent and 49 percent, respectively, from 1967. However, it is felt that the 1968 counts of these geese were not a reliable index to population trends because of the poor survey conditions encountered in the Central Valley of California. The population of Pacific brant, which winters primarily along the west coast of Mexico, was about 15 percent lower than in 1967.

CENTRAL FLYWAY

Although below freezing temperatures and winds up to 30 miles per hour prevailed in the northern portion of the Flyway during the survey, no serious operational problems were encountered. The majority of the wintering habitat in all States except New Mexico and Texas was ice covered and much of the food supply was snow covered. Rain, sleet, snow, and overcast skies, operational problems and equipment failure delayed initiation of the survey in Texas and postponed completion of the survey on the gulf coast of that State until February 2.

The total duck index was about 5 percent below that of 1967. Dabbling ducks were 10 percent above last year, while diving ducks were well below last year. The total goose count was 15-16 percent above that of 1967. Canada goose populations appear to be higher than in 1967 while the index for white-fronted geese, a species difficult to survey in this region, was below that of a year ago. Numbers of snow and blue geese were little changed from a year ago.

MISSISSIPPI FLYWAY

The annual winter survey was started throughout the Flyway on January 8, but, because of inclement weather, was not completed until January 22. In Northern States the survey was completed by January 12 under generally favorable conditions, except in southern Illinois where the goose count was delayed until January 16. In the South, fog, rain, sleet, and snow handicapped operations during the survey period. Interruptions occurred in all of the Southern States and in Louisiana the delay lasted an entire week.

Weather and habitat conditions were not comparable with past years. Snow and ice had pushed most of the birds out of the Northern States. Lake Erie and St. Claire were reported completely frozen, while ice in Lake Michigan extended farther offshore at the time of the survey than in any other recent year. Birds which chose to remain were concentrated and readily visible. Farther south, extensive flooding caused the birds to disperse throughout the major wintering grounds, and those moving into flooded timber were difficult to see.

The total count of dabbling ducks was about 30 percent below that of 1967. Numbers of diving ducks in the Flyway increased about 80 percent, mostly because of a marked increase in scaup counted in Louisiana. The count of white-fronted geese in Louisiana suggested a 47 percent decrease from 1967 but it is thought that this was because of a failure to locate the birds rather than a real population decline. Populations of snow, blue, and Canada geese showed no appreciable change.

ATLANTIC FLYWAY

The Flyway experienced one of the coldest survey periods in 34 years. Icebound conditions existed from Maine to Virginia. In addition, poor flying weather, particularly from Maryland south, caused extended breaks or delays in timing of the coverage. In the North, observers felt that the ice concentrated the birds, making them more visible and therefore a higher than usual portion of the birds present were counted. In the South, the breaks in the survey leave a question as to whether birds were missed or counted more than once. Still another consideration, in the Northeast, is that survey crews endeavored to time their surveys with low tides when the birds,

particularly black ducks, are most visible. This, coupled with the icing conditions in fresh waters and tidal marshes, probably resulted in a more complete count of birds present than has occurred in the past.

Total figures for ducks indicate a 20 to 25 percent decline from 1967. The survey indicates little change in dabbling duck numbers from last year. The important diving ducks declined 25 percent from last year. Numbers of sea ducks counted on the survey were also down from 1967. As occurred last year, large concentrations of scoter and scaup were observed in the ocean off South Carolina and Georgia. None of these birds are included in the table figures. Numbers of snow geese were 15 percent below 1967 while the brant population was similar to that of 1967. Whistling swans were down about one-third from last year. The count of Canada geese was slightly above last year indicating a continuing high population level.

In Puerto Rico and the Virgin Islands 2,000 waterfowl were recorded, consisting primarily of widgeon, blue-winged teal, scaup, ruddy ducks, and coots.

Tables A-1 and A-2 of the appendix summarize the winter survey.

BREEDING GROUND SURVEYS

ALASKA AND YUKON TERRITORY

James G. King, Bureau of Sport Fisheries and Wildlife
and
Wesley Moholt, Bureau of Sport Fisheries and Wildlife

Weather and habitat conditions

Weather conditions this year were quite similar to 1967 with much of the snow evaporating early. There was moderate flooding in the Koyukuk and Minto areas but these account for only a small portion of the habitat.

Water levels are low in most areas, a condition that should result in optimum production.

Very little ice was encountered this year except in the Seward Peninsula and Kotzebue areas where spring seems to be extremely late. On seven of the segments in this area the birds were not properly dispersed as of June 9. The optimum conditions elsewhere should easily compensate for poor conditions in northwestern Alaska.

Breeding population (tables B-1 through B-5)

The Alaska breeding population index of 1.946 million ducks is up 73 percent from 1966 and 35 percent above the 10-year average. This is the highest index in 13 years of comparable surveys. All species showed a sharp increase except goldeneye, bufflehead and eider. The dabbling ducks and canvasback showed the strongest increase but scaup and scoter also are up. Only scaup, bufflehead, and eider are below the 10-year average.

In the Old Crow area, stratum 05, a general increase of 9 percent was noted; however, only pintail showed the dramatic increase found in Alaska and five species decreased. The increases noted in this survey are in excess of what even optimum 1967 conditions could provide. It therefore is apparent that Alaska has received an influx of birds from other areas. In the interior the increase was 93 percent. In the tundra areas of stratum 37 the increase was only slightly less. The guess is then that Alaska is hosting 1.5 to 2 million ducks displaced from other areas, perhaps the drought stricken Canadian Prairies.

Production (table B-6)

Summer weather has been somewhat hotter than last year. Water levels in the lakes are generally slightly lower than last year creating increased shoreline as bars and islands emerge; increased water temperatures with associated increases in plankton and aquatic growth; and increased density of shoreline cover. The general impression is that the Alaskan habitat is in an optimum condition.

Breeding populations in interior Alaska were up 112 percent over 1967. Dabblers and canvasback accounted for the bulk of the increase. In spite of the striking increase in breeding population, the numbers of broods observed increased only moderately, 12 percent at Tetlin and 16 percent at Fort Yukon.

The indications are that Alaska had an influx of birds from other areas that did not necessarily nest with any great degree of success. A few other observations support this thesis. At Tetlin five coots and thirty-five male blue-winged teal were observed. These are the first coots recorded in the area and blue-winged teal are normally seen only rarely. In addition, a redhead brood was encountered, the first since 1960. The occurrence of these species is reminiscent of the 1959 and 1960 seasons when it was felt drought-displaced ducks were present. At Fort Yukon the presence of displaced ducks was less obvious but a brood of ring-necked ducks was encountered for the first time on the study plots. At Juneau the large pond at the airport usually hosts three to ten broods of mallards and occasionally a brood of green-winged teal. Five broods of gadwall and two broods of widgeon were found here as well as one brood of green-winged teal and six broods of mallards. No blue-winged teal, gadwall or widgeon broods had ever been recorded here before. These were all good-sized broods indicating some displaced birds succeed well.

Pintail showed a large increase in breeding population and a slight drop in brood numbers. Vegetation this year was extremely rank and it is felt pintail broods were harder to see than last year so that in fact there is a slight increase in production. Mallard, shoveler, canvasback and particularly widgeon show a very good increase in brood numbers over 1967. Scaup and green-winged teal appear to be much the same as last year. All species combined, this year has the highest number of broods ever recorded on each study area.

On the Yukon Delta, swan, black brant, cackling geese, and white-fronted geese appear to have enjoyed a season very similar to the good season of 1967. Ducks, no doubt, fared equally well.

NORTHERN ALBERTA
NORTHEASTERN BRITISH COLUMBIA
AND NORTHWEST TERRITORIES

Data supplied by Edward G. Wellein and
G. Hortin Jensen, Bureau of Sport Fisheries
and Wildlife

Weather and habitat conditions

Temperatures in March in the mainland sections of the Northwest Territories ranged from 3-15 degrees above normal. Generally, the gradient was from west to east. With this pattern an early spring was in the offing. This trend was arrested somewhat during April with temperatures being near normal in the west, and slightly below normal towards the east. During May temperatures continued near normal westerly in the survey area, and below normal to the east.

At survey time the snow line cut across Great Slave Lake near Fort Reliance and then northwestward and across the eastern ends of the transects north of Great Slave Lake, west of Great Bear Lake, and north and then westward across the tundra to the Mackenzie Delta.

The larger lakes reflected this later season being white with ice and with little water around the edges, especially the eastern segments. However, shallow water and streams were open over all the terrain surveyed, and larger lakes to the west were beginning to open.

The Mackenzie River opened in late May, but extensive stretches of the river below Norman Wells were still bank-to-bank with floe ice. The upper Mackenzie Delta was somewhat flooded because floe ice was packed in the main channels below Point Separation. The Peel River was open, but channels to the Mackenzie Delta were blocked by ice.

The sections of waterfowl habitat adjacent to and along the Mackenzie River were available for occupancy on schedule. In

limited areas waterfowl were excluded because of residual winter conditions.

There was no significant precipitation during the survey period except in northern Alberta, where some rain fell in late May and early June. These rains were sorely needed to assist in combating extensive forest fires in stratum 13.

Breeding populations (tables B-7 and B-8)

With drought returning to the prairies and parklands of southern Canada, there was expectation of a significant increase in birds in the strata to the north. An increase materialized in only three strata. These were strata 14, 15, and 11. Only stratum 15, Athabasca Delta, showed a significant increase. Other strata had decreases. Those showing a marked decrease were associated with the colder habitat conditions in northeastern segments of the survey area.

A 6 percent increase in dabbling ducks from 1967 resulted from increases in the southern strata and specifically in mallards and pintails. Mallards showed an increase of 51, 102, and 125 percent in strata 14, 15, and 09, respectively. The five remaining strata all showed decreases in mallards ranging from 10 - 46 percent. Mallards were 12 percent higher than the 1967 index and 25 percent below the 10-year average. The pintail increase was reflected throughout all the survey area on a hit-or-miss basis so far as individual strata were concerned.

Diving ducks decreased about 20 percent from 1967. This decrease resulted mainly from losses in scaup, scoter, and oldsquaw. They are principal species, and, as such, can significantly effect changes.

The net result of the breeding pair survey over all strata showed 1968 to have the lowest index in the past 10 years. This index was 2,805,000, and the highest during the past 10 years was 6,485,000. The current indexes represent a decrease of 17 percent from 1967, and a 28 percent decrease from 1958-68 average.

The coot index increased phenomenally from 1967 and was 103 percent higher than the 10-year average. This is interpreted as a shift from the droughted prairies and parklands into more favorable habitat farther north.

Canada geese and whistling swan showed little change from 1967 but are below the 10-year average. White-fronted geese occur in only the most northern strata and data on this

species can be erratic so this year's indicated increases may not be real.

The sampling error increased this year to 19 percent of the mean. In 1967 it was 15 percent. The sampling error is based on all segments from the various strata. Small sample size from certain strata make calculation of estimate of error from each strata inadvisable.

Summer weather and habitat conditions

A favorable early season was followed by below normal temperatures in the mainland areas of the Northwest Territories. These below normal temperatures continued in the eastern and central sections with normal temperatures in the west and in the Yukon. The result of this temperature pattern gave a deteriorating gradient in habitat conditions from west to east. Conditions for waterfowl were excellent in the Yukon, good along the Mackenzie drainage, grading to fair along the eastern edge of the sedimentary areas and poor on the precambrian shield. Hard white ice was prevalent north of Great Slave Lake and to the north and west towards Coppermine. Below normal temperatures persisted into mid-July with Hay River and Fort Resolution being 7° below normal.

Precipitation was irregular and generally light throughout the Northwest Territories in May, June, and July. Fort Smith recorded twice the normal rainfall in May. Precipitation was less than one-half inch in June in the central and western areas of the Territories. Rainfall continued below normal in July and Sach's Harbor recorded only .02 of an inch.

In summary, rainfall during the waterfowl season allowed favorable habitat conditions for ducks. Lateness of the season caused by extended below normal temperatures would remove most of the area north and east of Great Slave Lake and north to the Arctic coast at Coppermine from waterfowl production during the past season.

Production (tables B-9 and B-10)

In the past 6 years northern transects for broods have utilized one-fourth mile (1/8 on both sides of the aircraft) standard width transects. This width was continued this year even though the "Standard Procedures" had specified 1/8 mile brood transects. This change was initiated several years ago to increase the sample size. Prior to this

duplicate runs were being made on some of the transects. This innovation allows for an increase in the number of transects flown prior to cut-off date (July 27).

The brood index this year was near average but decidedly better than last year. All strata increased from 1967 except stratum 10. In both years in eastern sections all strata were later than previously observed. This year an early, warm spring was followed by lower than normal mean temperatures. Thus, the waterfowl breeding season could have made a good start which should have been more pronounced in the sedimentary areas of the Mackenzie drainage, but could have been critical in precambrian parts of the survey area.

The brood size for the survey area was 5.3 compared to 6.5 in 1967. Seventy-three percent of the broods were class II and III with 58 percent being class II.

Data for coots, not a northern bird, are always fragmentary. However, northward movements of coots and other prairie waterfowl were noted. The shift resulted from severe drought in southern Canada.

NORTHERN SASKATCHEWAN, NORTHERN MANITOBA, AND SASKATCHEWAN RIVER DELTA

Data supplied by Arthur R. Brazda and
Robert W. Slattery
Bureau of Sport Fisheries and Wildlife

Spring weather and habitat conditions

The fall of 1967 was generally dry, except for light rain and a snowstorm which accumulated up to 8 inches in late September. October and November were mild and dry, and moisture in the form of snow was deficient throughout the winter in northern Saskatchewan and most of northern Manitoba. Temperatures in part of April and May were above normal with considerable wind. Rainfall was completely lacking except

for scattered light showers and considerable blowing dust was evident in the light-soil farming areas in the Prince Albert district.

Due to the conditions described, there was practically no runoff in Saskatchewan, and rivers and lakes were at their lowest levels of the past 15 years. Conditions were better in Manitoba. The larger reservoir created by the hydro-electric project at Grand Rapids, Manitoba, was down two to four feet, creating the best nesting habitat this area has probably ever had. Hundreds of small islands, bars and miles of irregular shaped shoreline were exposed.

As in Alberta, forest fires begin to flare up over western Saskatchewan starting in mid-May. Many raged out of control for several days, the most serious of which consumed over 160,000 acres of timberland in the Meadow Lake-Green Lake Region.

Rain came to north-central Saskatchewan and Manitoba the last few days in May and continued until June 4. Up to three inches were deposited locally in the Prince Albert area with lesser amounts at Hudson Bay, Saskatchewan, The Pas, Flin Flon, and Thompson, Manitoba. Water quality was upgraded somewhat because of this moisture, but by mid-June, most of this had been lost and dry conditions were again evident.

When the Grand Rapids Reservoir was established, the water flooded several thousand acres of willow, dwarf birch and grass-covered meadows. This past spring, much of this area was being extensively used by spawning northern pike. Just what the duckling loss will be to these predators will not be known, but it could be significant in certain areas.

Phenologically, this spring was one to two weeks ahead of 1967, though the ice breakup was only about one week early, and it came rapidly. In 1967, the survey was started on May 24, whereas the survey was commenced May 20 this year. Aspen was beginning to leaf out when the first reconnaissance flight was made about mid-May. However, the ice was still rather firm on all of the larger lakes within 100 miles radius to the north of Prince Albert and many of the smaller water areas had ice on them, also.

Breeding populations (tables B-11 and B-12)

The total duck index increased 30 percent over 1967, and 63 percent over the 10-year average. Dabblers indicated an increase of 18 percent over last year and 68 percent over the

average; divers were up 45 percent and 67 percent respectively. Mallards and gadwalls showed slight decreases from last year, of 3 percent and 8 percent. All other species with the exception of the mergansers, indicated an increase over last year. These increases ranged from moderate to phenomenal. All species except shovelers and canvasbacks were well above the 10-year average. Shovelers indicated only an 8 percent increase, whereas the canvasback index was the same as the long-term average.

Of significance were the increases indicated for the widgeon, blue-winged teal, and the pintails. Widgeon increased 133 percent and 200 percent; pintails, 138 percent and 41 percent. The four major diver species fared as follows: redheads were 27 percent above last year and 100 percent over the average; canvasback, 38 percent and even; scaup, 16 percent and 52 percent; and ringnecks, 31 percent and 68 percent.

The coot index showed a substantial increase in all strata except stratum 18. The coot increase was a fantastic 489 percent over 1967 and 286 percent over the 10-year average. As expected, the largest increase was in the Saskatchewan River Delta, stratum 36. However, coots were observed in several areas where they are not normally recorded. Practically all coots were seen as pairs or single birds and many nests were observed.

Overall, Canada geese increased 21 percent over 1967 and 104 percent over the average. However, as stated in previous reports, the Ontario data is not a reliable indicator of abundance. Disregarding the Ontario data, the Canada goose index was about the same as the previous year.

Summer weather and habitat condtions

Weather conditions were only fair to good during the production period. Temperatures averaged approximately 5° below normal from mid-June through July, dropping as low as 10° below normal during one period in the second half of July. Unsettled conditions prevailed throughout July with a considerable amount of thunderstorm and rain activity, plus high 20 to 40 miles per hour daytime winds.

In May and June, many of the forest-type potholes and shallow lakes in western Saskatchewan were either dry or greatly reduced from their normal size. By the end of July, however, habitat conditions had improved considerably, though much of the moisture may have come too late to aid in the production effort. The larger lakes did not indicate this improvement

and remained two to four feet below normal. The water level near mid-July in Lake Athabasca at Fort Chipewyan, Alberta, was approximately 6.0 feet down from 1967. Habitat conditions in eastern Saskatchewan and also in northern Manitoba remained good, as they were in May and June. In the Saskatchewan River Delta, water levels rose after nesting was in progress, possibly creating the situation that caused a decrease of almost 10,000 broods in this stratum from 1967. Delta #2 was overshadowed by the poor production in Delta #1; the west half of the Delta which lies south of Cumberland House. Here, water levels appeared to have risen after the nesting period was in progress and large areas were void of broods. However, it does not seem that increased water levels alone could have caused the lack of broods and it is suggested below normal temperatures for late June and July may have contributed to the poor production.

Habitat problems of a different and more permanent nature are developing in the Meadow Lake region of western Saskatchewan. The first drainage ditch was noted west of Meadow Lake around 1964. Since that time the project has been allowed to prosper and with the work completed this year, many hundreds of acres of valuable waterfowl habitat have been eliminated.

Production (tables B-13 and B-14)

The overall duck brood index for 1968 was 18 percent below 1967, 201,000 as compared to 228,000. However, it was 57 percent higher than the 7-year average of 128,000. The coot brood index was 17,000, 70 percent over last year and 89 percent above the average which was 9,000. The average brood size was 5.5, one-tenth over both 1967 and the long-term average. The average for six broods of Canada geese observed was 3.8. The duckling index was 1,034,549 or 13 percent lower than the 1967 index of 1,190,468. Class II and III broods made up 77 percent of the total brood index, compared with 75 percent in 1967 and 80 percent in 1966.

The late nesting index for all species, 114,000, was the lowest recorded since 1961; this was 48 percent below last year and 49 percent under the 7-year average. The dabbling duck LNI was 55,000 which is 42 percent lower than 1967 and 30 percent down from the average. Diving ducks, 42,000, decreased 63 percent from 1967 and 58 percent from the average.

SOUTHERN ALBERTA

Data supplied by K. Duane Norman,
Pacific Flyway Biologist, and
Michael F. Sorensen, Surveys Biologist

Spring weather and habitat conditions (table B-15)

Good habitat conditions were few and far between in southern Alberta this year. Total precipitation in the Calgary area since last September was about 33 percent below normal and in Edmonton, 26 percent below normal. Habitat conditions are excellent and equal to last year in the Milk River Ridge in the southwest corner of the Province. The number of May ponds in stratum 28 were only slightly below the 10-year average but decreased about 34 percent from last year. Data for stratum 26 show 54 percent fewer ponds than normal and 60 percent fewer than last year. Aquatic vegetation was beginning to appear in the ponds around May 12 near Calgary. Northward, the vegetation became more apparent.

Breeding population (tables B-16 through B-19)

The duck breeding population index, due largely to the loss of breeding habitat, decreased in the lower three strata about 41 percent from last year. In stratum 13 where the habitat is nearly normal, there are almost 25 percent more birds than were observed last year.

The most startling decrease is that of the pintail which decreased 76 percent from last year.

Mallards showed a decrease of 29 percent in the index from last year. In stratum 13, the mallard index increased about 16 percent.

The data also showed serious decreases in the widgeon, bluewing, and shoveler populations. Almost equal decreases are indicated from the 10-year average. Serious decreases are indicated in the redhead and canvasback populations although increases are shown in stratum 13.

Increases of about 16 percent were indicated for greenwings in the lower three strata and 160 percent in stratum 13. Because of the receding water levels in the parklands, visibility may have been the prime cause for the apparent increase in the index. Gadwall populations increased 21 percent from last year and are nearly 74 percent greater than the 10-year

average. The Canada goose population index decreased about 71 percent in the lower three strata and 67 percent in stratum 13.

This year's lone drake index of 62 percent was the lowest recorded since 1955 when the index was about 60 percent. This low index, might indicate a late nesting season, but mild weather, the scarcity of available breeding habitat, and the flocking of the birds on the major water areas, suggested that the majority of the ducks did not attempt to nest.

Summer weather and habitat conditions (table B-15)

Temperatures during May in Calgary averaged slightly below normal. Rainfall was slightly below average. In Edmonton, May was the driest since rainfall measurements were initiated in 1881. May was a windy month having average winds in excess of 12 miles per hour.

June was cool, dry, and windy. The last week was warm with temperatures reaching to the mid and high eighties. Total precipitation for the month was about two-thirds of normal. Some frost damage was reported in Calgary on the 13th and 14th.

The first half of July was warmer than normal and quite dry. Less than 2 percent of the rainfall normally received has fallen in Calgary. Seven percent of the normal rainfall has been received in Edmonton.

Waterfowl habitat conditions in southern Alberta were very poor. Permanent potholes, large lakes, and highly productive marshes were dry. The total decrease in available waterfowl habitat was 37 percent since the May survey and 43 percent since 1967.

Production (tables B-20 through B-22)

The breeding pair survey data indicated a decrease of 42 percent in the breeding population from last year in southern Alberta. The brood index decreased 42 percent from last year and was 52 percent below the 10-year average.

The average brood size decreased nearly 12 percent from last year. In the poorest habitat, strata 26 and 28, the average brood size decreased 29 percent and 37 percent respectively, but increased slightly in the better habitat of stratum 27. The age class composition of the broods in the survey area indicated about 30 percent of the broods are class I, 47 percent are class II, and 17 percent are class III. The brood composition this year little changed from that of last year.

The late-nesting index for southern Alberta decreased 5 percent from last year and is 81 percent below the 10-year average. The dabbler index decreased 17 percent from last year, but the diver index increased 45 percent. The total late-nesting index remained unchanged for strata 26 and 28 but decreased in stratum 27 from last year.

SOUTHERN SASKATCHEWAN

Data supplied by Rossalius C. Hanson and
R. David Purinton, Bureau of Sport Fisheries
and Wildlife

Spring weather and habitat conditions (table B-23)

Water conditions throughout the prairies of Saskatchewan this spring were very poor. The pond index for the overall area was down 62 percent from 1967 and down 54 percent from the long-term average. Since 1955, only the years of 1959 and 1961 had fewer ponds. Every stratum was down from last year. Water in many ponds was of poor quality. Many potholes had only a few inches of water, and vegetation was rapidly taking over the basins. The situations that appeared most likely to last out the breeding season were in the parklands. They were found mostly east, north, and west of Saskatoon.

The spring was early and at least a week or 10 days ahead of normal. There was a late snowfall on May 9 that covered southern and southwestern portions of the Province. A few isolated places had 4-6 inches. Most other areas had only a trace. It turned warm, and the snow barely lasted out the day. May was generally moderate except for the snow. No cold snaps were reported, and nesting conditions were quite favorable during the month.

Burning was not a noticeable problem in early May. However, the latter part of the month saw extensive burning throughout the parklands. Much of it was in conjunction with land clearing.

During the past few years, sporadic land clearing in the parklands was observed. This is the type of clearing where the aspen and willow complex surrounding potholes was knocked down, pushed into piles, and burned. This year, however, clearing of this kind has become widespread throughout the Province and on a noticeably larger scale. There is no question about the loss of ponds as the fields are opened up, as well as the loss of wildlife habitat in general. This practice now appears to be in full swing, and the resultant detrimental effect on wildlife will become evident. Expanded large scale clearing of the "bush" in the hinterlands was also evident. This has been a continuous thing over the years, but it now appears to be encroaching on some very poor and infertile lands. Some areas, recently cleared, have little top soil.

Breeding populations (tables B-24 and B-25)

There was a decline in overall waterfowl populations this year compared to last year and the long-term average. All ducks were down from last year by 22 percent and 33 percent from the long-term average. The noticeable declines were in the puddle ducks with pintails showing the greatest effect of the water shortage. Pintails were down 50 percent from last year and down 57 percent from the average. Surprisingly, mallards held their own this year compared to last year but were down 3 percent from the long-term average. Gadwalls showed no change from last year and were up 74 percent over the long-term average.

The important diving ducks showed no change from last year but were still down substantially from the average. Bufflehead, not important numerically, were conspicuous this year by their abundance--more were seen this year than at any time on record.

Coots were up over last year, and the index was better than it had been since 1960. A decline was expected in coots with the poor water situations but they congregated in the better watered areas.

The lone drake index for mallards, pintails, and canvasback this year was 78 percent. This figure appears to be low for such an early year and this lower figure may be partially an indication of nonbreeding pairs. Another influencing factor may have been high nest losses because of predation.

Summer weather and habitat conditions (table B-23)

Because of low rainfall in May and June, pond conditions continued to deteriorate. Rainfall was off from 25 to 50 percent from the normal during this period. During July, showers and thunderstorms helped grain crops but did little for duck ponds. The parklands were in better shape than the grasslands, but all were in poor condition. The pond index was lower than all the years except 1961 and 1962--down 41 percent from 1967 and down 70 percent from the long-term average. The remaining water was found in the deeper, more permanent sloughs. Even many of the larger marshes had dried up. There were a few exceptions where water conditions were reasonably good and these areas had most of the waterfowl.

Production (tables B-26 through B-28)

The duck brood index was 81,500 this July, down 17 percent from 1967 and 58 percent below the long-term average. Years in which brood indexes were lower were 1961 through 1965.

The average brood size was 5.0 which was about normal.

The coot broods were a little better this year than last but still were 54 percent below the average.

The brood distribution by age classes was much the same as last year; 75 percent of the broods counted in class I and II. Class I broods made up 34 percent of the total. It was evident that many of the broods were just hatching.

The late-nesting index of 78,400 was 32 percent under last year and 22 percent below the long-term average, indicating a fairly poor late-nesting effort.

SOUTHERN MANITOBA

Data supplied by Morton M. Smith and
Richard Droll, Bureau of Sport Fisheries
and Wildlife
D. R. Halladay, Canadian Wildlife Service

Spring weather and habitat conditions (table B-29)

As a result of a dry fall and open winter, there was a moisture deficit in Manitoba this spring. Blowing dust was encountered on May 6 en route to Winnipeg and on May 13 in the vicinity of Shoal Lake. Despite the moisture deficit, enough rain and snow fell in April and May so that growing season precipitation was above normal in southern Manitoba.

May mean temperatures were below normal at Winnipeg and this was typical of the entire survey area. The month was generally cool and wet.

In contrast to the very late, cold season of 1967 May 1968 was a near normal year. Potholes were open on May 4 and the southern part of Lake Manitoba had substantial open water May 5. Snow covered the ground at Brandon on May 8 but melted off the same evening. Aspens were leafing when surveys started on May 5 and emergents were showing in the shallower ponds. The phenology this May was about two weeks ahead of the 1967 season. Farm field operations proceeded rapidly this spring in contrast to the delayed season of 1967.

Much of extreme southern and western Manitoba has few ponds and little or no brood water. The May ponds counts in stratum 24 are 62 percent below the 1967 figure and in stratum 25 ponds are down 56 percent. The pond index for southern Manitoba in 1968 is the lowest May count recorded in 16 years. There was fair to good water in the vicinity of Minnedosa and the south and west slopes of the Riding Mountains but the total area is of limited size.

Burning was widespread last fall and again this spring. The spring burning in 1967 and 1968 is the most widespread. The result is the destruction of many duck nests, either directly by fire or indirectly through the increased activity of predators. Fall plowing was extensive during 1967. The scene this spring was of large cultivated areas with little or no cover. Many pond basins were plowed through last fall or burned off.

Aspen clearing continues and the usual procedure is to push the downed trees and brush into the nearest basin--wet or dry. Permanent drainage of pond basins is accelerating and becoming more efficient.

The spring rains, which were a boon to farmers, have been of little benefit to waterfowl. Most of the moisture entered the soil and there was little runoff into the ponds.

Breeding populations (tables B-30 and B-31)

Duck numbers in southern Manitoba in 1968 are much below the 1967 count and approach the all-time low recorded in 1953. The 1968 duck index is 38 percent below 1967 and 40 percent below the 15-year average. With very minor exceptions all species of ducks showed a decline in the 1968 count. The mallard was down 31 percent from the 1967 count and 50 percent below the 15-year average. Blue-winged teal were down 44 percent from last year and 48 percent from the long-term-average. The pintail and every diving duck except the ruddy showed substantial declines in southern Manitoba in 1968.

An intensified and expanded aerial survey was conducted in the Interlake region in 1968. The results are not included here but it should be noted that the duck indexes obtained in this expanded count were no greater than those given in this report.

Coot numbers showed an increase this year in the survey area. Many of the coots were in rather sizeable flocks and may not have been breeders.

The lone drake index is considered a barometer of the progress and intensity of the nesting effort. The 1968 lone drake figure of 73 percent is below the long-term average. We believe, however, that the aerial surveys covered the period of peak nesting. There was some flocking of ducks in May and this tended to reduce the lone drake index. Ground studies indicate that nesting activity in 1968 was near normal as to timing and certainly earlier than in the late season of 1967.

Summer weather and habitat conditions (table B-29)

April and May were relatively wet and the accumulated growing season precipitation, since April 1 was above normal at the end of May. June was drier and the accumulated precipitation was about 12 percent below normal at the end of the month. July has been a cool month with frequent scattered thundershowers, but growing season precipitation was still below normal in southern Manitoba on July 16th.

The pond count in stratum 24(A) was 52 percent lower than that of 1967 and 76 percent below the average of the last 14 years. Pond counts in stratum 25(B) are a third lower than last year and 53 percent below the long-term average. The pond count for the southern Manitoba unit is the second lowest in 15 years of surveys--only 1962 had fewer ponds during July. The only good brood water in the survey unit lies in a relatively narrow band below and to the west of the Riding Mountains. Some local areas have received heavy rains from recent thunderstorms but this water was too late for duck production in most instances.

Production (tables B-32 through B-34)

The 1968 brood index was the lowest ever recorded. The estimated number of broods in the Province is less than half that of 1967 and 54 percent below the long-term average production. The coot brood index is 77 percent below the 1967 count and 66 percent below average.

The phenology of the spring in southern Manitoba was considered normal in 1968 and the start of nesting was also normal. Yet nearly half of the known age broods this July were recorded as class I. In view of the normal spring we interpret this as evidence of substantial renesting following the loss of first nests. A high percentage of young broods is not desirable so late in a dry season but in some areas the recent rains have increased their chances for survival.

The 1968 index to late nesting, which is a measure of "broods to come," is the lowest ever recorded since surveys started. Over wide areas in southern Manitoba virtually no breeding waterfowl remained in July. Flocks of ducks of mixed sexes and species were a common sight on the larger water areas this July. In addition, occasional flocked ducks were feeding in field sheet water left by recent thundershowers. None of these flocked ducks gave any evidence of being late nesters.

Data supplied by Alva E. Weinrich,
Ashton W. Brann, Raymond J. Buller,
and Donald W. Combs, Bureau of Sport
Fisheries and Wildlife

Spring weather and habitat conditions (table B-35)

Precipitation averaged about 5 inches or 35 percent below normal this year through the survey period in the Montana area. Snowfall was very light during the winter and spring. In general, the permanent type waters changed the least because of size and depth. No spring flooding occurred and very few residual snowbanks were observed in coulees and creeks. The natural potholes in northeast Montana east ofthe Sweet Grass Hills that had good water last year in May were mostly dry this year. These potholes are usually dry in July. Water surface acreage is greatly reduced this year in pothole and lake types.

Breeding populations (tables B-38 and B-39)

Pintail decreased about 65 percent followed by mallards 44 percent, blue-winged teal 42 percent, and gadwall 19 percent for an overall decrease of dabbling ducks of 38 percent from the 4-year average. Scaup, the most important diver, decreased 17 percent. Total ducks decreased 36 percent from the average which closely parallels the 34 percent decrease in water areas from the average.

A slight reduction occurred in the mallard and pintail lone drake index from last year. For mallard and pintails, nesting progress was about normal; however, many of the other species of ducks were late migrating compared to last year and some large flocks of birds, indicating no nesting efforts, were observed.

Summer weather and habitat conditions (table B-35)

Generally, the precipitation in May was down about 30 percent from 1967. Temperatures varied from highs at Miles City of 103 to lows of 47 at Cut Bank. Generally, the highs ranged 80-90 degrees and the lows 50-60 degrees. Winds were generally not strong.

Rain fell in spots during June causing much variance in range conditions, stock dam levels, and crop production. Generally, the area around Culbertson, Sidney, Glendive, Circle, Roundup, Billings, and Lewistown looked better than the north and northwestern areas around Plentywood, Scobey, Malta, Havre, Cutbank, and Great Falls. July rains were almost nonexistant until midmonth when one to two inches fell in eastern Montana from the 15-19. During this same period, some very locally severe hailstorms occurred, killing at least one cow near Lewistown and numerous chickens. Hay, grain, and property were likewise destroyed.

Many contradictions in water levels occurred. Lake Mason, near Roundup had more water than it has had for several years. Some stock dams on the Roundup study area had higher water levels than in May. Lake Thibadeaux in the Havre study area was nearly dry with no waterfowl and much aquatic vegetation. Many overwater nests were observed in the vegetation of coots or grebes but no birds sighted. Woody Island, Coulee Lakes were dry as was the Big Marsh along the Canadian border.

Production (tables B-38 through B-41)

The duck brood index dropped 6 percent from last year and 17 percent from the average. The average brood size decreased 11 percent from last year and 10 percent from the average. Brood indexes were based on observations of 67 duck broods and 1 coot in stratum 40. These were composed of 8 class I, 30 class II, and 29 class III. Stratum 41 was based on 210 duck broods and 7 coot broods composed of 42 class I, 86 class II, and 82 class III.

The total duck late-nesting index decreased 16 percent from last year and 2 percent from the average. Coot late nesting increased a large amount from last year and the average; but, is not significant because of so few birds involved as is also the case with the diving ducks. Of the dabblers, only the blue-winged teal late-nesting index increased over last year and the average. All other dabblers decreased.

The trends in the Canada goose population during the nesting season in the Helena Unit are given in table B-40. Results of the production survey trends in the same areas are outlined in table B-41.

NORTH AND SOUTH DAKOTA

Data supplied by Gerald Pospichal
and
Donald Frickie
Bureau of Sport Fisheries and Wildlife

Spring weather and habitat conditions (table B-42)

Total precipitation for 1967 was below normal. March was relatively dry in North Dakota and though above average precipitation was received in April it was not enough to offset the potholes deficiencies. North Dakota temperatures for the period September 1967 to April 1968 were generally above normal. Although the monthly winter precipitation in South Dakota was below normal, the span between actual and normal was not as wide as in North Dakota. Central and eastern South Dakota received heavy snows and rains in March and April which greatly improved pothole levels and habitat conditions but the western part of the State remained dry. North Dakota ponds were down 37 percent from 1967 and South Dakota ponds were down 22 percent. In the two central strata (30 and 33), total ponds were down 27 percent from 1967 but were up 15 percent from the long-term average. The greatest decreases occurred in North Dakota where water levels last year were above average. Water quality in May was poor in the North Dakota ponds but fair to good in South Dakota.

Cold spring weather delayed the leafing-out of trees and slowed the growth of pond emergents. Visibility was not hampered in this regard, in fact it was better than in 1967. Visibility was, however, affected by the low water levels and old vegetation, particularly in the large shallow bulrush-cattail type potholes. Vegetation was not as flattened out as in a normal winter and the shallow water created numerous small openings which made observation of many species difficult.

Breeding populations (tables B-43 through B-45)

Total ducks showed a decrease 30 percent from 1967 and were down 15 percent from the average with dabblers down 31 percent from 1967 and down 16 percent from the average. North Dakota showed a decrease in total ducks of 52 percent while South Dakota showed an increase of 9 percent. Coot populations were

approximately the same as in 1967 in North Dakota but were up 34 percent in South Dakota, a further indication of the better water conditions in that State.

It is important to note that in late May, although coots were observed on nests, many were still observed in large flocks (a hundred or more birds) on some of the larger lakes and flocks of gadwalls were common.

The area lone drake index of 70.25 is below that of 1967 (78.4) but higher than the years 1964 through 1966. It indicates a fairly normal progress in the nesting, particularly in the mallard as noted in the breakdown by species and State. An abnormally large number of paired pintails were observed during the survey which may have been an indication of a renesting effort. Although the weather temperature was normal in May, and some heavy snow in southern North Dakota and northern South Dakota that may have adversely affected the early nesting pintails. Early June rains were heavy in central and eastern North Dakota and pothole levels in some areas exceeded those of early May. With normal precipitation the late nesters and renesting may be significant.

Summer weather and habitat conditions (table B-42)

June and July weather in the Dakotas was generally unstable. High winds, thunderstorms with heavy rain in some areas, tornadoes, hail and days of low ceilings and fog were common. Rainfall during June and July was adequate over both States to make this year one of bumper crops in corn, small grains and hay. The dry pothole conditions so obvious in May remained unchanged in eastern and northwest North Dakota and south and southeastern South Dakota; even though rains were heavy enough to produce excellent crops and pasture. Rains were heavy in central, southcentral, and southeast North Dakota (six to ten inches above normal) and fair in the northcentral part of the State. Weather conditions in these areas were improved over May. Northern South Dakota (east of the Missouri River), including the Leola Hills, and the northeast part of the State had precipitation enough to hold spring water levels. Total July ponds in the two Dakotas showed a decrease of 19 percent from 1967. The long-term comparisons for strata 30 and 33 (the areas that received the heaviest rainfall in June and July), showed a decrease of only 4 percent from 1967 but still remained 23 percent above the long-term average. The water conditions in the central Dakotas in

July of 1968 are very similar to 1967 which was 30 percent below 1966. The small grain harvest was underway by July 15 with hay cutting about completed by the 25th.

Production (tables B-46 through B-48)

In strata 30 and 33 North and South Dakota, duck broods were down 39 percent from the long-term average. The coot brood index was down 58 percent from 1967 and down 15 percent from the average. North Dakota was the hardest hit and showed respective declines of 45 and 63 percent for broods of ducks and coots as compared to 1967. In South Dakota duck broods dropped 9 percent from 1967, while coots declined 28 percent. The 1968 survey was completed one week later than normal so these declines are of concern. These declines were also noted during ground surveys and by the banding crews which were having difficulty locating bandable ducks. Large flocks of nonbreeding ducks of mixed species and sexes as well as flocks of 200 to 300 coot were common throughout the area. The dry conditions in April and May in the central and eastern Dakotas which improved with heavy rains in local areas in June and July caused late population shifts of ducks and coots, and apparently disrupted the nesting.

Strata 30 and 33 indicated a late-nesting index of 66 percent below 1967 and 54 percent below the long-term average. Long-term trends in brood and late-nesting indexes, strata 30 and 33 show 1968 the lowest late-nesting index since 1960. Mallards, gadwall, and blue-winged teal, the three major dabbler species, showed decreases of 32 percent, 50 percent, and 97 percent from the long-term average and similar large declines from 1967. Redhead and ruddy ducks showed declines of 77 percent and 16 percent from 1967, and 78 percent and 25 percent from the average.

It is possible that this late-nesting evaluation may be low because of the large flocks of what appeared to be nonbreeding birds, but, large numbers of birds were also noted in 1967 when the data also indicated the second largest late-nesting index since 1960.

MINNESOTA

Data supplied by Robert Jessen
Minnesota Department of Conservation

Weather and habitat conditions

A dry, mild spring in April and early May was followed by cool, wet weather in late May and June.

The Minnesota census was started on May 15 and completed on June 3. Suitable flying weather permitted completion of aerial transects in the southern, western, and central portions of the State by May 22. High winds and rain delayed the northeastern transects, primarily those in stratum 4, until early June. The early warm weather and late flying period hampered observations in the wooded portion of the State where foliage growth was advanced.

A review of the 1967 survey showed that the variability in the data was quite large and an improved sampling procedure was needed. It was also concluded that error could be reduced by using one aerial census crew throughout the State and increasing the number of air:ground visibility transects. Based on the premise that duck numbers are related to the density of water areas, an elaborate stratification was designed based on the number of basins within townships. Strata were divided into quarter-mile, east-west transects of lengths varying from 5 to 43 miles. A random sample of these transects was drawn with the objective of maintaining sampling error within 20 percent at the 95 percent level of confidence for estimates of total ducks.

The May pond index (the total estimated number of all strata) was 172,000. This is substantially less than the 327,000 estimated within the 1967 sample strata.

Breeding populations (tables B-49 and B-50)

Pair densities indicated breeding pairs and groups of birds were tallied on sample transects and these values expanded for each stratum. The unadjusted population index for mallards was 54,000 and for blue-winged teal 66,000. The breeding population index for all ducks was 186,000. Statewide estimates when compared to the 1967 survey indicate a decline in breeding ducks in Minnesota. Total ducks declined in the general magnitude of 20 percent, with mallard and blue-winged teal down 30

to 40 percent. However, it is important to recognize that changes in the routes censused beginning in 1968 and limited air:ground visibility corrections may mean that our statewide estimates are subject to considerable error.

CHIPPEWA NATIONAL FOREST
MINNESOTA

Data supplied by Jay Janecek,
Robert Chesness, Leon Johnson,
Roger Lehmann, and Robert Craig
Minnesota Department of Conservation
John Mathisen
U.S. Forest Service
Lew Cowardin, David Gilmer,
Irvin Ball, and Bill Ellerbrock
Bureau of Sport Fisheries and Wildlife

Habitat conditions

The water level in the Mississippi flowage had been drawn down to approximately 8.2 feet as of April 1 but 13.2 inches of rainfall, of which 7 inches was recorded in June, made the area about 5 feet above normal at the time of the census. Excessive discharge of water from Lake Winnibigoshish and Leech Lake created water conditions 11 inches above normal for the Mud Lake area.

Submergent vegetation was not as heavy as last year. Hard stem bulrushes were quite heavy in some areas. Wild rice growth appeared to be good to excellent. The Third River area continues to have numerous small islands of cattail bogs making numerous openings and channels throughout the area.

Breeding populations and production (tables B-51 and B-52)

The six main species of breeding ducks on the Chippewa National Forest area have been the mallard, widgeon, goldeneye, blue-winged teal, ring-necked duck, and wood duck.

Other ducks include merganser, redhead, Scaup, and green-winged teal.

The brood average of class III mallards for the total survey area in 1968 is 7.1 as compared to the all time average of 6.6. Incomplete broods and maternal hens have not been included.

The 1968 waterfowl survey indicated a 57 percent decrease as compared to the par year 1939-40 and down from last year since Mud Lake was included this year. The adult population increased slightly over last year.

Several factors influenced the count. Excessive water was present on most areas, sloughs and potholes adjacent to the census areas and surrounding country contained water, heavy rains in June appeared to have caused some nest destruction, and changing the census of the Third River count from before noon to afternoon can be considered.

WASHINGTON

Data supplied by Robert G. Jeffery
and Ellis L. Bowhay. Washington
State Game Department

Weather and habitat conditions

Some of the pothole areas of central Washington received more runoff during the winter and spring, and improved perceptibly in duck production capabilities. However, the once important potholes in the far-eastern part of the State contained the least amount of water in the history of the survey. The number of potholes counted in the May sample was 19 percent below the average of the dry-cycle years, 1962-67. In other breeding habitats, water and weather were adequate for average or better waterfowl production.

Breeding populations (table B-53)

In 1968 there were over 120,000 adult ducks on the breeding grounds of Washington. This represented a 9 percent decrease from the 1967 index. Dabblers, except for mallards, gadwall, and widgeon, increased, while diving ducks were uniformly below 1967. Most of the decrease in duck pairs took place in the pothole habitat.

Production (table B-54)

Estimates of duckling production were based on brood counts. Brood pair ratios were compared with long-term averages to determine nesting success values. The State production index for all ducks was 307,300. The index was 5 percent below that of 1967. Young ducks made up 61 percent of the index, a ratio that has remained unchanged for 3 years. Duck production in the far-eastern potholes was down 32 percent. Most other important areas were either static or improved in productivity, with the irrigated lands showing a 29 percent increase over the 1967 index. Mallards, gadwall, and widgeon, and diving ducks as a group, all showed decreases. The three teal species, shovelers, pintail, and wood ducks offset the decline to a considerable extent.

The production index for Canada geese was 11,650, up 3 percent from 1967. More nests were found on the survey, and improved nesting success offset some locally heavy losses to predators. A joint project of State and Federal agencies resulted in the salvage of 1,250 Canada goose eggs before inundation of nesting islands behind the John Day dam on the Columbia River. From these, 920 goslings were raised for release on the river or for nuclei in the establishment of management flocks of geese.

OREGON

Data supplied by Chester E. Kebbe
Oregon State Game Commission

Weather and habitat conditions

The mild winter of 1967-68 was one of the driest on record for southeastern Oregon, the region containing the major waterfowl production marshes in the State. Relatively little precipitation fell, either as rain or snow, during the winter or spring months. As a result many of the small marshes and potholes went dry before the start of the breeding season and water levels of the large marshes, reservoirs, lakes, and streams were drastically reduced. The drought continued into the summer period further shrinking the amount of waterfowl production habitat.

Production (tables B-55 and B-56)

Goose production in Oregon declined 28 percent from the peak production year in 1967, and 13 percent from the previous 6-year average. The decline is due primarily to the loss of habitat. There was little apparent shift of breeders from drought-stricken regions to permanent water areas.

In spite of the loss of considerable marsh habitat in southeastern Oregon duck production on a statewide basis is up 24 percent from the low production year of 1967. A major shift of breeding birds occurred from areas of drought to permanent water areas, with increased production recorded on most transects. Production of dabblers increased 7 percent, with teal and wood ducks showing substantial increases and gadwalls a marked decline.

All divers showed striking increases in production with a major shift of breeders to the Klamath Basin quite apparent. An increase in production of redheads, canvasbacks, and ruddy ducks of 73 percent from an extremely poor productive season in 1967, was recorded.

IDAHO

Data supplied by Elmer R. Norberg
Idaho Fish and Game Department

Weather and habitat conditions

Comparatively dry weather conditions prevailed in Idaho during the winter and spring of 1968. As a result, the snow pack in the mountains was well below normal resulting in a reduced spring water flow. Conditions were further aggravated during the early spring months when unseasonably warm weather prevailed which removed the snow pack early at the middle and low elevations and reduced the soil and moisture. As a result, the stream flow in most Idaho streams was well below normal and did not fluctuate as greatly as during most years. Drawdown of reservoirs began earlier than usual as a result of the reduced water supply.

Breeding populations (table B-57)

Aerial counts of breeding Canada geese in southern Idaho indicated that these populations were down 13 percent from 1967 but still up approximately 10 percent from the long-term average. In general, the breeding population in southwestern Idaho appeared to be holding up somewhat better than the one in eastern Idaho.

Production (table B-58)

Canada goose production based on nest surveys indicates a 10 percent reduction from that of 1967 and 11 percent reduction from the long-term average.

Duck production based on one trend route, Blackfoot Reservoir, was the lowest on record and 81 percent below the long-term average.

CALIFORNIA

Data supplied by J. R. LeDonne,
F. M. Kozlik, Harry George, and
H. McKinnie
California Department of Fish and Game

Weather and habitat conditions

Water and habitat conditions in northeastern California were well below the excellent water year of 1967. The permanent water impoundments and marshes were showing signs of the lack of runoff. Conditions were spotty with some areas at normal level and other areas almost dry. The temporary water areas that produced waterfowl last year were dry this year as a result of the dry winter and mild, warm spring.

The Central Valley received below normal amounts of rainfall, although more important to production in this area is the weather and rain during the late winter and spring months which affects farming operation. This area is composed mostly of artificial and regulated water impoundments such as rice fields, gun clubs, grasslands and pastured areas. The rice and associated vegetation was earlier than in 1967 due to the warm and dry weather that occurred during the spring months.

The late winter and spring months were dry with the northern migration of waterfowl on schedule. The majority of the birds departed from the wintering grounds by the first part of April.

Most of the waterfowl production occurring in California is found in northeastern California and on the rice lands of the Sacramento Valley. Other areas covered by this survey are: The Suisun Marsh, the grasslands, and rice and pasture areas of the Central San Joaquin Valley. Other smaller areas produce some ducks, but the accumulated total is of little significance this year.

Breeding populations and production (tables B-59 and B-60)

Pairs of geese showed a 45 percent increase with a similar 34 percent increase in the fall population index. This contrasted with the overall figure for northeastern California which showed a decrease in breeding pairs and fall population index.

Breeding pairs of ducks were up 25 percent and the fall population index was up 17 percent.

Coots were up 18 percent in pairs and 27 percent in the fall population index.

NEVADA

Data supplied by Fred E. Wright
Nevada Fish and Game Commission

Weather and habitat conditions

Weather was generally good for waterfowl production as the spring warmed earlier than last year and the temperatures have been averaging higher. Water conditions were good in west central Nevada due to carry-over but are deteriorating due to evapotranspiration. Conditions in northern Nevada are generally poor, although the northeast improved due to late rains. Habitat in eastern Nevada is good.

Breeding populations (table B-61)

Total population of all species was down 34 percent, except that geese are the same as last year. Pairs recorded were about the same as the low of 1962. When examining the production figures, it is difficult to explain the drop in pairs observed.

Production (table 62)

Production recorded this year is the highest since 1959 when 26,144 young were classified, however, average brood size has changed very little. One key area reports that hatching success has been found to be about double of that previously estimated.

UTAH

Data supplied by John E. Nagel
Utah Fish and Game Department

Weather and habitat conditions

The winter of 1967-68 provided Utah with above average amounts of precipitation. Spring storms and heavy runoff created optimum nesting conditions for waterfowl throughout the State. All managed marsh areas were in excellent condition when breeding waterfowl returned this spring. Natural marsh areas around the Great Salt Lake and wetland areas in eastern and southern Utah also were enhanced by heavy amounts of precipitation and runoff. Wetland habitat throughout the State remained in excellent condition throughout the spring and early summer.

Continued periods of rain through the end of June has placed little demand on waters stored in irrigation reservoirs. This resulted in sustained high flows into managed marsh areas in northern Utah and slower than average deterioration of natural wetland habitat throughout the State should remain in good to excellent condition throughout the rest of the summer and into the fall hunting season.

Breeding populations and production (tables B-63 through B-66)

Aerial surveys indicate a fairly substantial increase in breeding ducks on northern Utah trend areas. Ground counts on managed marsh areas indicate little or no increase in breeding birds from 1966 levels. However, better habitat conditions throughout the State and especially in areas immediately adjacent to developed marsh areas accounted for significant increases in the number of birds utilizing these areas and in the amount of habitat available to breeding waterfowl. This is essentially the same situation experienced in both 1966 and 1967.

Breeding populations of mallards, redheads, gadwall, ruddy ducks, and shovelers on major census areas can be considered as normal. No major shift in species composition between northern and southern breeding areas was noted.

Canada goose brood counts made during this spring indicate above average production of Great Basin Canada geese throughout

the State. Major production areas in northern Utah including Bear River Migratory Bird Refuge indicate a substantial increase in numbers of breeding pair and goslings. Production areas throughout the remainder of the State with the exception of southern Utah reflect the same upward trend.

WYOMING

Data supplied by George Wrakestraw
Wyoming Game and Fish Commission

Weather and habitat conditions

Water conditions were average. A good carry-over of water areas from 1967 was observed and precipitation amounts were adequate throughout the State to maintain existing water areas.

Spring appeared to arrive early, but cold weather in April and May delayed the growing season by as much as two to three weeks. Waterfowl were apparently undaunted by the change in seasons and nesting got underway in many localities at an extremely early date. Hatching was two weeks earlier in these areas. In the southern part of the State, from the Laramie mountains to western Wyoming, and all of the higher elevations, snow storms and frozen streams and ponds were found the third week of May and birds were not yet on these areas. It is certain that many ducks were "sitting out" the weather at lower elevations and, if the survey areas had been open then, many more birds would have been recorded. Thus, the reported increase in birds would have been much greater than that recorded.

Weather and habitat conditions were ideal for Canada geese and only a limited number of nests were effected by weather and runoff.

Breeding populations (tables B-67 and B-68)

The estimated duck breeding pair population for 1968 shows an increase of 31 percent from 1967 and an increase of 67 percent from the long-term average. All species were found in greater

abundance, with the exception of shovelers and ruddy ducks. The total number of ducks observed during the 1968 survey shows an increase of 35 percent from 1967 and an increase of 70 percent from the 1955-1967 average.

Coots and mergansers were also in greater abundance this year.

The trend of breeding geese is steadily upward and continues to fulfill management objectives of filling vacant nesting habitat. Total geese observed represents a 15 percent increase from 1967 and a 105 percent increase from average. The 1968 count reflects twice as many geese on the survey areas as found in 1953, the peak year between 1952 and 1962. Production surveys at Ocean Lake, Bear River, and in Goshen County indicate good goose production for 1968.

COLORADO

Data supplied by Richard M. Hopper
Colorado Game, Fish and Parks Department

Weather and habitat conditions

Weather conditions favorable for waterfowl nesting existed in Colorado during the spring and early summer of 1968. Winter snowpack, heavy in some areas, was delayed in melting because of a cool spring. Water supplies were generally good, with about normal precipitation and reservoir storage holdover. Water conditions were less desirable on the eastern plains in 1968 than in 1967. The reverse situation appeared to be true for the mountain parks and valleys.

Breeding populations and production (tables B-69 and B-70)

Breeding pair estimates for 1968 were larger than for 1967 in most areas. The San Luis Valley and Yampa Valley showed

slight decreases. The large increase in North Park in 1968 was because of a change in methods of projecting the estimate; thus, 1968 figures for this area and the total estimate are not comparable to 1967 and the 14-year average. For all years prior to 1968, a standard visibility ratio of 0.45 was applied to aerial counts of all species in North Park. Air:ground comparison studies in the United States and Canada have shown that the various species of ducks are not equally visible from the air. Studies in the San Luis Valley indicate that a visibility ratio of 0.45 is too large, even for the mallard. The similarity in habitat between North Park and the San Luis Valley prompted the application of San Luis Valley visibility ratios to North Park aerial counts in 1968. A more realistic estimate by species now seems apparent, particularly for gadwalls, pintails, and teals. This new method produced little change in the mallard estimate for North Park.

Comparisons between 1968 figures and the other two sets of figures are not valid because of the change in methods of projecting estimates for North Park in 1968, as noted above. This change reduced the percent species composition for mallard in 1968 and raised the percentages of pintails, gadwalls, and green-winged teals to a more acceptable level.

Total flock size of geese and production in 1968 represent a considerable increase over 1967 and are the highest ever recorded in the 13-year history of the survey. This situation is mostly the result of the large increase in goose use and production at Brown's Park National Wildlife Refuge along the Green River, brought about by greatly improved habitat conditions. The Yampa River still contributes the greatest production and total number of geese, but the Green River has now surpassed the Little Snake in both categories and promises to continue its increase.

High water appeared to have little effect on goose production. Snowpack in the high country in 1968 was normal or above normal, but cool spring weather delayed runoff until most nests had hatched. Little evidence of nest flooding could be detected.

NEBRASKA

Data supplied by John T. Sweet
Nebraska Game, Forestation and Park
Commission

Weather and habitat conditions

Water conditions throughout the Sandhills were fair to poor at the time of the May surveys. The extreme western area and a narrow band along the northern edge of the Sandhills received good April rains and were in good to excellent condition. The May water index was 10 percent above the 1967 May index.

The Sandhills production area has remained dry throughout the spring and summer. Some local rainfall helped to maintain water levels in some areas but many areas were extremely dry at the time the July brood surveys were made. Only the extreme western and northern portions remained in fair to good condition. The 1968 July water index was 27 percent below the 1967 index.

The southcentral Rainwater Basin production area of the State was quite dry at the time of the May surveys. July brood surveys were not made because of the lack of water and habitat in the area.

Weather conditions were relatively cool during the spring and early summer with only a few days of very high temperatures. Extremes of both high and low temperatures were experienced during the month of June, however.

Breeding populations (table B-71)

Breeding pair transects were flown in the Rainwater Basin area on May 10, 1968, and over the Sandhills area during the period May 20 through May 25. The 1968 Rainwater Basin breeding population index was 11,240. Surveys were not made in 1967 because of the lack of habitat. The 1968 Sandhills breeding population index of 100,069, all species combined, was 4 percent above that of 1967.

Production (table B-72)

Aerial brood transects were flown over the Sandhills area during the period July 15 through July 21, 1968.

A total of 34 broods were observed. Good counts were obtained on 29 broods with 161 ducklings. The total number of broods observed was the same as for 1967. The number of ducklings was 4 percent below that of 1967. There were 5.55 ducklings/brood as compared to the 1967 figure of 4.91.

Surveys indicate that the hatch in Sandhills area is considerably later than normal and somewhat irregular. Class I pintail broods were common past mid-July. The size of many broods would indicate first nesting attempts. Age class percentages for the ducklings sighted on the aerial survey were 47, 44, and 9, respectively, for the age classes I, II, and III.

WATERFOWL KILL SURVEY

Data supplied by Elwood M. Martin, Samuel M. Carney,
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Bureau of Sport Fisheries and Wildlife

Scope and Methods

This report presents estimates of waterfowl hunting activity and success, including bag by species, for the 1967 waterfowl season and compares each estimate with its 1966 season counterpart (Special Scientific Report -- Wildlife No. 111). These estimates are based on information obtained through the Bureau's annual Cooperative Waterfowl Parts Collection and Mail Questionnaire Surveys of United States Waterfowl Hunters. Duck stamp sales figures were provided by the Post Office Department. Preliminary estimates, based on reports of duck stamp sales through the third quarter of fiscal year 1968, were made available for the annual waterfowl regulations meetings in early August in Administrative Report 157. Final estimates, based on total sales for all four quarters, are presented here.

Sampling, hunter contact, stratification, junior hunter expansion, and bias correction procedures are comparable to those used previously (Special Scientific Report -- Wildlife No. 99). As usual, all hunting activity and harvest estimates have been assigned to the State in which the hunter purchased his duck stamp, except as otherwise indicated (Washington, D. C.). In most cases, this is also the State in which the hunting occurred but, when it is not, the indicated distribution of hunting effort among States may be slightly disproportionate.

Species composition figures for the States having late black duck or extended sea duck seasons have been refined by adding information obtained in the questionnaire surveys to that obtained in the parts collection surveys. For more detailed species composition data by State, see Administrative Reports 150 (ducks) and 151 (geese). The latter report also contains information on goose age ratios, while additional data on the duck bag appears in Administrative Reports 152 (age ratios) and 153 (sex ratios). Administrative Report 154 contains estimates of the Illinois and Wisconsin Canada goose bags obtained independently of questionnaire survey figures.

Estimates of waterfowl hunting activity and success during the experimental October season in Colorado's San Luis Valley, the September teal season in 21 States in the Mississippi and Central Flyways, and the whistling swan season in Utah are not included in this report. For information on these special seasons refer to Administrative Reports 155 (teal season), 148 (swan season), and 158 (San Luis Valley season). Hunting activity and harvest figures for the experimental late black duck season in Maine, Massachusetts, and New Hampshire, and for the extended sea duck season of 108 days in nine States of the Atlantic Flyway are included in the estimates presented here, which, therefore, represent total waterfowl hunting effort in these areas.

Results

Table C-1 summarizes bias-adjusted duck and coot bag estimates by species for each flyway and Alaska, together with unretrieved and total kill figures for ducks and coots. Table C-2 presents information on retrieved, unretrieved, and total goose kill in the same manner. Approximately 12,353,000 ducks were bagged in the United States during the 1967 season, 5 percent more than during the previous season. Increases were registered for each of the four major species in the bag -- the mallard (up 9 percent), the pintail (up 27 percent), the green-winged teal (up 24 percent), and the American widgeon (up 1 percent). Changes for other species of special interest were: black duck, down 4 percent; blue-winged and cinnamon teal in combination, up 23 percent; wood duck, down 24 percent; redhead, up 10 percent; and canvasback, down 47 percent. The number of coots bagged during the 1967 season is estimated to have been about 755,000, 21 percent fewer than during the previous season. The total 1967 season bag of 1,135,000 geese is 19 percent below the 1966 figure, a decrease to which all four major species of geese -- the Canada goose (down 6 percent), the snow goose (down 42 percent), the blue goose (down 15 percent), and the white-fronted goose (down 22 percent) -- contributed. Both species of brant also showed decreases in total bag.

Daily duck bag and possession limits, season lengths, and estimated numbers of potential adult waterfowl hunters, together with average and total numbers of days hunted and ducks and geese bagged, unadjusted for response bias, are presented by State for each flyway beginning with Alaska and the Pacific Flyway in table C-3. Duck stamp sales records, together with figures showing their breakdown into nonhunters and active and successful waterfowl hunters, are also summarized by State for each flyway beginning with Alaska and the Pacific Flyway in table C-4. Final reports indicate that 1,926,613 duck stamps were sold in 1967, 7.2 percent more than in 1966, and that waterfowl hunting provided about 12,050,000 hunter-days of recreation in 1967 for an increase of 6 percent from the previous season.

A brief resume of hunter activity and success by flyway for 1967, showing degree of change from the previous year, follows.

Alaska

Duck stamp sales totaled 10,358 (-3 percent) and 69,800 ducks (+34 percent), 500 coots (-44 percent), and 11,000 geese (+49 percent) were bagged during 52,500 hunter-days afield (+43 percent). Those persons buying duck stamps for hunting hunted an average of 4.8 days (+49 percent) and bagged a total of 8.3 ducks (+39 percent) and 1.2 geese (+52 percent) each. The estimates for Alaska are contained in tables C-1, C-2, C-3, and C-4.

Pacific Flyway

An estimated 4,373,800 ducks (+25 percent), 151,800 coots (-9 percent), and 318,900 geese (-28 percent) were bagged in 2,614,200 hunter-days (+7 percent), with 381,583 duck stamps (+1,785 stamps) being sold. Potential adult hunters reported averages of 6.4 hunter-days (+6 percent), 13.9 ducks bagged (+24 percent), and 0.9 geese bagged (-29 percent). Pacific Flyway estimates are shown in tables C-1, C-2, C-3, and C-4.

Central Flyway

Duck stamp sales totaled 359,938 (+16 percent), with 2,033,100 ducks (+5 percent), 64,300 coots (+53 percent), and 277,100 geese (-34 percent) having been bagged in 2,316,200 hunter-days (+9 percent). Potential adult hunters hunted an average of 6.0 days (-7 percent) for a total retrieved kill of 7.2 ducks (-10 percent) and 0.9 geese (-43 percent) each. Figures for the Central Flyway are shown in tables C-1, C-2, C-5, and C-6.

Mississippi Flyway

With duck stamp sales standing at 813,797 (+7 percent), 4,522,500 ducks (-6 percent), 437,100 coots (-31 percent), and 334,900 geese (-4 percent) were bagged in 5,160,300 hunter-days (+5 percent), and averages of 6.0 days (-3 percent), 6.9 ducks bagged (-13 percent), and 0.5 geese bagged (-13 percent) per potential adult hunter were recorded. Estimates for the Mississippi Flyway appear in tables C-1, C-2, C-7, and C-8.

Atlantic Flyway

Totals of 1,371,600 ducks (-4 percent), 101,600 coots (-8 percent), and 192,700 geese (+6 percent) were bagged during 1,906,600 hunter-days (+5 percent), with averages of 5.1 days (-3 percent), 4.2 ducks bagged (-12 percent), and 0.7 geese bagged (-1 percent) being registered per potential adult hunter as duck stamp sales reached 360,937 (+7 percent). The Atlantic Flyway figures are recorded in tables C-1, C-2, C-9, and C-10.

APPENDIX

A. WATERFOWL WINTER SURVEY TABLES

TABLE A-1.--Survey of waterfowl on their winter habitat, January 1968

/nearest hundreds/

Species	Pacific Flyway	Central Flyway	Mississippi Flyway	Atlantic Flyway	Total
Ducks:					
Dabblers:					
Mallard	1,847,700	2,454,100	2,200,500	150,500	6,652,800
Black duck	--	--	135,500	336,600	472,100
Mottled duck	--	7,400	63,000	1,700	72,100
Gadwall	35,000	59,800	812,700	31,900	939,400
American widgeon	768,200	128,600	643,100	94,000	1,633,900
Green-winged teal	349,800	176,600	573,800	53,200	1,153,400
Blue-winged teal	5,500	8,900	164,700	8,700	187,800
Shoveler	317,600	21,000	169,200	20,900	528,700
Pintail	1,378,500	391,700	829,400	134,100	2,733,700
Tree duck	--	1,000	--	--	1,000
Wood duck	3,000	--	--	--	3,000
Subtotal	4,705,300	3,249,100	5,591,900	831,600	14,377,900
Divers:					
Redhead	4,100	124,700	58,700	172,800	360,300
Canvasback	69,200	7,200	36,700	94,100	207,200
Scaup	162,100	57,900	785,800	526,000	1,531,800
Ring-necked duck	5,100	4,100	105,800	65,700	180,700
Goldeneye	44,300	4,900	12,600	60,200	122,000
Bufflehead	26,600	5,600	6,800	41,800	80,800
Ruddy duck	112,300	4,900	36,000	26,600	179,800
Subtotal	423,700	209,300	1,042,400	987,200	2,662,600
Miscellaneous:					
Eider and Scoter	99,900	--	--	189,600	289,500
Oldsquaw	--	--	--	3,100	3,100
Merganser	21,000	90,500	--	44,300	155,800
Subtotal	120,900	90,500	--	237,000	448,400
Unidentified	56,000	11,400	38,800	34,000	140,200
Total ducks	5,305,900	3,560,300	6,673,100	2,089,800	17,629,100

TABLE A-1.--Survey of waterfowl on their winter habitat, January 1968--continued

Species	Pacific Flyway	Central Flyway	Mississippi Flyway	Atlantic Flyway	Total
Geese:					
Snow goose[2]	505,800	164,200	58,000	50,500	778,500
Blue goose	(3)	97,800	305,000	1,200	404,000
White-fronted goose	70,900	12,200	24,400	--	107,500
Canada goose	171,700	275,200	445,300	615,200	1,507,400
Cackling goose	63,600	--	--	--	63,600
Total geese	812,000	549,400	832,700	666,900	2,861,000
Brant:	154,300	--	--	213,500	367,800
Swans:					
Whistling swan	35,600	--	--	45,600	81,200
Trumpeter swan	700	100	--	--	800
Total swans	36,300	100	--	45,600	82,000
Coots:	755,700	101,900	694,500	300,200	1,852,300
Grand total	7,064,200	4,211,700	8,200,300	3,316,000	22,792,200

1 Includes west coast of Mexico
2 Includes Ross' goose
3 Combined with Snow geese

TABLE A-2.--Distribution of wintering waterfowl, 1968

/nearest hundreds/

State	Ducks	Geese	Brant	Swans	Coots	Total
Pacific Flyway:						
Washington	1,260,800	68,400	15,700	1,400	42,600	1,388,900
Oregon	286,200	63,200	900	7,700	44,500	402,500
Idaho	525,000	5,100	--	400	25,700	556,200
Nevada	21,900	4,500	--	300	8,000	34,700
California	3,038,800	662,400	1,700	26,000	597,000	4,325,900
Utah	18,200	1,300	--	300	1,400	21,200
Arizona	44,200	4,600	--	200	27,700	76,500
Montana	82,700	2,200	--	100	8,300	93,400
Wyoming	4,500	200	--	--	500	5,300
Colorado	17,000	100	--	--	--	17,100
New Mexico	6,600	--	--	--	100	6,700
Mexico (west coast)	--	--	136,000	--	--	136,000
Flyway total	5,305,900	812,000	154,300	36,400	755,800	7,064,400
Central Flyway:						
Colorado	333,500	65,900	--	--	--	399,400
Nebraska	358,100	7,800	--	--	--	365,900
Kansas	709,600	23,600	--	--	--	733,200
Oklahoma	395,000	43,700	--	--	6,000	444,700
New Mexico	101,200	12,000	--	--	2,400	115,600
Texas	1,366,200	383,000	--	--	93,500	1,842,700
Montana	46,000	1,000	--	--	--	47,000
Wyoming	28,700	300	--	--	--	29,000
North Dakota	2,300	--	--	--	--	2,300
South Dakota	220,000	12,100	--	100	--	232,200
Flyway total	3,560,600	549,400	--	100	101,900	4,212,000

TABLE A-2.--Distribution of wintering waterfowl, 1968--continued

/nearest hundreds/

State	Ducks	Geese	Brant	Swans	Coots	Total
Mississippi Flyway:						
Minnesota	8,700	8,800	--	--	--	17,500
Wisconsin	17,900	4,300	--	--	--	22,200
Michigan	61,300	2,800	--	--	--	64,100
Iowa	107,400	100	--	--	--	107,500
Missouri	186,700	129,400	--	--	1,000	317,100
Illinois	174,800	178,200	--	--	--	353,000
Indiana	14,700	900	--	--	--	15,600
Ohio	33,000	10,100	--	--	--	43,100
Arkansas	971,300	6,500	--	--	33,300	1,011,100
Mississippi	378,600	1,700	--	--	19,500	399,800
Louisiana	4,235,600	376,900	--	--	621,900	5,234,400
Alabama	91,200	46,800	--	--	7,900	145,900
Kentucky	34,900	10,700	--	--	200	45,800
Tennessee	357,000	55,500	--	--	10,700	423,200
Flyway total	6,673,100	832,700	--	--	694,500	8,200,300
Atlantic Flyway:						
Maine	67,300	300	--	--	--	67,600
New Hampshire	2,200	1,900	--	--	--	4,100
Vermont	2,900	--	--	--	--	2,900
Massachusetts	149,500	9,500	100	--	--	159,100
Connecticut	22,000	500	--	--	--	22,500
Rhode Island	21,400	500	--	--	--	21,900
New York	164,900	3,600	15,400	--	--	183,900
New Jersey	164,900	5,500	182,000	100	100	352,600
Pennsylvania	11,600	6,100	--	--	--	17,700
Delaware	41,100	38,800	1,500	--	100	81,500
Maryland	314,900	403,300	600	26,000	2,700	747,500
Virginia	89,100	74,600	13,500	2,300	4,200	183,700
West Virginia	4,300	100	--	--	100	4,500
North Carolina	205,600	100,300	300	17,200	92,200	415,600
South Carolina	366,400	15,800	100	--	61,300	443,600
Georgia	81,700	400	--	--	3,700	85,800
Florida	380,000	5,700	--	--	135,800	521,500
Flyway total	2,089,800	666,900	213,500	45,600	300,200	3,316,000

B. WATERFOWL BREEDING GROUND SURVEY TABLES

TABLE B-1.--Alaska - 10-year trend in breeding population indexes by species, 1959-1968

/index numbers in thousands/

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	Average
Ducks:											
Dabblers:											
Mallard	98	78	108	60	83	67	27	32	42	76	67
American widgeon	32	26	42	42	27	36	40	32	59	133	47
Green-winged teal	2	1	4	2	2	10	14	17	24	45	12
Shoveler	8	7	17	7	5	7	4	5	6	32	10
Pintail	474	356	440	476	378	379	240	250	247	622	386
Subtotal	614	468	611	587	495	499	325	336	378	908	522
Divers:											
Canvasback	12	19	6	7	17	11	21	17	15	43	17
Scaup	533	597	657	657	585	562	355	425	314	498	518
Goldeneye	8	27	26	33	10	9	9	13	38	35	21
Bufflehead	18	24	31	39	37	32	29	22	30	21	28
Subtotal	571	667	720	736	649	614	414	477	397	597	584
Miscellaneous:											
Scoter	183	324	316	225	165	148	190	252	250	301	235
Eider	17	17	30	11	11	20	27	14	16	7	17
Oldsquaw	59	90	87	69	94	92	49	79	87	133	84
Subtotal	259	431	433	305	270	260	266	345	353	441	336
Total ducks	1,444	1,566	1,764	1,628	1,414	1,373	1,005	1,158	1,128	1,946	1,442

TABLE B-2.--Alaska - comparative status of waterfowl breeding population indexes by species and stratum, 1967-1968

/index numbers in thousands/

Species	Stratum		Total		Average	Percent change from-	
	37	38	1967	1968	1959-68	1967	Average
Ducks:							
Dabblers:							
Mallard	16	60	42	76	67	+ 81	+ 13
American widgeon	40	93	59	133	47	+125	+183
Green-winged teal	16	29	24	45	12	+ 88	+275
Shoveler	4	28	6	32	10	+433	+220
Pintail	362	260	247	622	386	+152	+ 61
Subtotal	438	470	378	908	522	+140	+ 74
Divers:							
Canvasback	1	42	15	43	17	+187	+153
Scaup	186	312	314	498	518	+ 59	- 4
Goldeneye	19	16	38	35	21	- 8	+ 67
Bufflehead	1	20	30	21	28	- 30	- 25
Subtotal	207	390	397	597	584	+ 50	+ 2
Miscellaneous:							
Scoter	166	135	250	301	235	+ 20	+ 28
Eider	7	--	16	7	17	- 56	- 59
Oldsquaw	97	36	87	133	84	+ 53	+ 58
Subtotal	270	171	353	441	336	+ 25	+ 31
Total ducks	915	1,031	1,128	1,946	1,442	+ 73	+ 35

TABLE B-3 .--Alaska - whistling swan breeding population indexes, 1959-1968

/index numbers in thousands/

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	10-year average
Square miles sampled	644	604	648	492	468	414	208	212	210	212	
Number counted	546	710	759	470	567	481	298	256	208	213	
Population index	59	79	79	56	64	50	62	52	43	50	59

TABLE B-4.--Old Crow Flats, Yukon - 10-year trend in waterfowl breeding population index by species, 1958-68

/index numbers in thousands/

Species	1958	1960	1961	1962	1963	1964	1965	1966	1967	1968	Average
Ducks:											
Dabblers:											
Mallard	1	2	4	4	2	--	1	1	3	2	2
American widgeon	4	9	9	6	7	4	5	9	15	13	8
Green-winged teal	1	1	2	1	--	1	--	--	Tr	1	1
Shoveler	1	1	--	--	--	--	--	--	--	1	--
Pintail	16	37	16	6	10	6	4	2	9	24	13
Subtotal	23	50	31	17	19	11	10	12	27	41	24
Divers:											
Canvasback	6	6	1	--	1	--	2	16	8	1	4
Scaup	24	38	49	35	24	24	21	49	38	33	34
Goldeneye	2	2	2	2	3	--	1	--	4	7	2
Bufflehead	--	--	--	--	--	--	--	1	Tr	Tr	--
Subtotal	32	46	52	37	28	24	24	66	50	41	40
Miscellaneous:											
Scoter	31	68	74	52	32	20	17	43	39	47	42
Oldsquaw	6	6	7	11	4	7	3	8	10	10	7
Subtotal	37	74	81	63	36	27	20	51	49	57	49
Total ducks	92	170	164	117	83	62	54	129	126	139	113

Note: 1959 missing

TABLE B-5.--Old Crow Flats, Yukon - comparative status of waterfowl breeding population indexes by species, 1968

/index numbers in thousands/

Species	Stratum 05	Total 1967	Total 1968	Average 1958-68	Percent change from-- 1967	Percent change from-- Average
Ducks:						
Dabblers:						
Mallard	2	3	2	2	- 33	--
American widgeon	13	15	13	8	- 13	+ 63
Green-winged teal	1	Tr	1	1	+100	--
Shoveler	1	--	1	--	--	--
Pintail	24	9	24	13	+167	+ 85
Subtotal	41	27	41	24	+ 52	+ 71
Divers:						
Canvasback	1	8	1	4	- 87	- 75
Scaup	33	38	33	34	- 13	- 3
Goldeneye	7	4	7	2	+ 75	+250
Bufflehead	Tr	Tr	Tr	--	--	--
Subtotal	41	50	41	40	- 20	+ 3
Miscellaneous:						
Scoter	47	39	47	42	+ 21	+ 12
Oldsquaw	10	10	10	7	--	+ 43
Subtotal	57	49	57	49	+ 16	+ 16
Total ducks	139	126	139	113	+ 9	+ 23

Note: 1959 data missing

TABLE B-6 .--Alaska - comparative brood counts from two study areas, 1963-68

Species	Tetlin							Yukon Flats						
	Number of broods						Percent change from--	Number of broods						Percent change from--
	1963	1964	1965	1966	1967	1968	1967	1963	1964	1965	1966	1967	1968	1967
Mallard	23	2	3	8	21	21	same	8	3	16	19	44	39	-11
Widgeon	23	6	7	36	28	39	same	41	14	39	49	62	88	+73
Green-winged teal	27	19	16	66	101	103	+ 28	16	7	18	52	47	44	+42
Shoveler	--	--	--	--	1	7	+600	10	3	8	11	13	21	+62
Pintail	11	4	3	8	21	21	+ 2	30	9	16	19	44	39	- 6
Canvasback	14	2	3	6	9	16	+ 78	8	1	13	15	16	18	+13
L. Scaup[1]	11	2	--	10	14	11	- 21	9	--	12	49	61	65	+ 7
Total	109	35	32	135	187	210	12	122	37	115	201	254	294	16

[1] Scaup hatch not normally complete at time of surveys.

TABLE B-7 .--Northern Alberta, northeastern British Columbia, and Northwest Territories - 10-year trend in waterfowl breeding population indexes by species, 1959-68

/index numbers in thousands/

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Ducks:										
Dabblers:										
Mallard	923	321	795	446	430	477	239	329	297	343
Gadwall	1	1	2	4	1	3	10	2	3	Tr
American widgeon	332	297	277	142	132	203	154	174	90	81
Green-winged teal	241	128	137	52	110	149	88	129	87	83
Blue-winged teal	54	50	51	24	16	47	22	12	1	1
Shoveler	169	71	128	25	29	151	56	66	55	38
Pintail	928	253	473	171	154	182	159	110	61	83
Subtotal	2,648	1,121	1,863	864	872	1,212	728	822	594	629
Divers:										
Redhead	34	21	19	31	12	29	5	7	13	5
Canvasback	40	50	18	13	49	38	20	44	9	46
Scaup	1,831	1,326	1,495	1,279	1,383	1,348	1,306	1,603	1,712	1,256
Ring-necked duck	92	59	27	32	38	45	59	60	56	29
Goldeneye	173	40	99	66	13	48	37	15	18	13
Bufflehead	138	119	93	141	80	118	123	150	119	139
Ruddy duck	13	9	6	1	7	6	3	5	5	Tr
Subtotal	2,321	1,624	1,757	1,563	1,582	1,632	1,553	1,884	1,932	1,488
Miscellaneous:										
Scoter	1,149	1,223	968	548	544	858	638	524	599	515
Oldsquaw	285	188	212	145	81	282	158	293	221	157
Merganser	82	111	113	45	81	69	81	72	46	16
Subtotal	1,516	1,522	1,293	738	706	1,209	877	889	866	688
Total ducks	6,485	4,267	4,913	3,165	3,160	4,053	3,158	3,595	3,392	2,805

TABLE B-7 .--Northern Alberta, northeastern British Columbia, and Northwest Territories - 10-year trend in waterfowl breeding population indexes by species, 1959-68 --continued

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Geese:										
White-fronted goose	10	7	9	6	1	3	4	2	1	7
Canada goose	90	45	30	18	55	17	14	27	11	11
Swans	45	24	30	27	32	19	20	16	18	19
Coots	--	7	16	7	9	7	--	11	Tr	15

TABLE B-8 .--Northern Alberta, northeastern British Columbia, and Northwest Territories - waterfowl breeding population indexes by strata, 1967-68

/Index numbers in thousands/

Species	Stratum and index									Total		10-year Average	Percent change from--	
	14	15	06	07	08	09	10	11	12	1968	1967		1967	Average
Ducks:														
Dabblers:														
Mallard	148.3	35.2	41.9	32.1	32.9	18.9	28.2	5.8	--	343.3	297.2	460.0	+ 12	- 25
Gadwall	--	0.2	--	--	--	--	--	--	--	0.2	3.2	2.7	- 94	- 93
American widgeon	32.3	4.4	12.7	5.7	3.4	5.1	8.7	6.0	2.6	80.9	89.7	188.2	- 10	- 57
Green-winged teal	38.7	2.2	19.0	--	6.1	8.7	6.8	0.4	1.0	82.9	86.8	120.4	- 4	- 31
Blue-winged teal	--	0.8	--	--	--	--	--	--	--	0.8	1.3	27.8	- 38	- 97
Shoveler	6.3	6.6	--	--	24.9	--	--	0.3	--	38.1	54.5	78.8	- 30	- 52
Pintail	4.2	19.8	7.9	22.9	10.8	0.9	7.8	5.3	3.5	83.1	60.9	257.4	+ 36	- 68
Subtotal	229.8	69.2	81.5	60.7	78.1	33.6	51.5	17.8	7.1	629.3	593.6	1,135.3	+ 6	- 75
Divers:														
Redhead	--	3.5	--	--	1.3	--	--	--	--	4.8	12.5	17.6	- 62	- 73
Canvasback	4.2	5.4	--	--	29.6	2.7	4.0	--	--	45.9	8.7	32.7	+428	+ 40
Scaup	260.1	19.0	348.1	89.3	30.9	115.8	322.2	62.1	8.7	1,256.2	1,712.0	1,453.9	- 27	- 14
Ring-necked duck	14.1	--	10.3	2.1	1.3	--	--	0.7	--	28.5	55.8	49.7	- 49	- 43
Goldeneye	--	1.9	--	--	6.0	5.1	--	--	--	13.0	18.1	52.2	- 28	- 75
Bufflehead	68.9	6.8	47.5	5.7	8.1	1.8	--	--	--	138.8	118.8	122.0	+ 17	+ 14
Ruddy duck	--	0.2	--	--	--	--	--	--	--	0.2	5.0	5.5	- 96	- 96
Subtotal	347.3	36.8	405.9	97.1	77.2	125.4	326.2	62.8	8.7	1,437.4	1,930.9	1,733.6	- 23	- 14

TABLE B-8 .--Northern Alberta, northeastern British Columbia, and Northwest Territories - waterfowl breeding population indexes by strata, 1967-68 -- continued

/Index numbers in thousands/

Species	Stratum and index									Total		10-year Average	Percent change from--	
	14	15	06	07	08	09	10	11	12	1968	1967		1967	Average
Ducks:														
Miscellaneous:														
Scoter	--	3.4	165.3	42.9	--	4.2	266.8	14.5	18.0	515.1	598.6	756.6	- 14	- 32
Oldsquaw	34.4	--	29.3	20.7	12.8	--	51.4	1.8	6.7	157.1	220.9	202.2	- 29	- 22
Merganser	--	3.1	2.4	--	8.1	--	2.8	2.8	--	16.4	45.6	71.6	- 64	- 77
Subtotal	34.4	6.5	197.0	63.6	20.9	4.2	321.0	16.3	24.7	688.6	865.1	1,030.4	- 20	- 33
Total ducks	611.5	112.5	684.4	221.4	176.2	163.2	698.7	96.9	40.5	2,805.3	3,389.6	3,899.3	- 17	- 28
Geese:														
White-fronted goose	--	--	--	--	--	--	--	0.5	6.1	6.6	1.3	4.3	+ 408	+ 53
Canada goose	7.0	0.2	--	2.9	--	--	0.4	--	--	10.5	10.7	21.8	- 2	- 67
Swans	--	--	--	--	--	--	7.6	3.2	7.7	18.5	18.1	25.0	+ 2	- 26
Coots	--	9.2	--	--	5.4	--	--	--	--	14.6	0.3	7.2	+4,767	+103

TABLE B-9 .--Northern Alberta, northeastern British Columbia and Northwest Territories - long-term trend in duck brood indexes, July 1961-68

/in thousands/

Stratum	8-year average	Year							
		1961	1962	1963	1964	1965	1966	1967	1968
15	15	6	3	19	9	11	21	20	29
06	283	55	133	158	709	364	505	55	283
07	122	111	93	58	147	172	114	47	128
09	41	43	27	36	79	38	50	12	41
10	291	347	282	183	378	270	304	293	273
11	54	73	28	9	27	50	78	64	102
Total	806	635	566	463	1,349	905	1,072	491	856

Note: Dummy comparison. Stratum 06, data lacking for 1968.

TABLE B-10.--Northern Alberta, northeastern British Columbia, and Northwest Territories - duck brood indexes by stratum compared to previous year, and long-term average, 1968

/in thousands/

	Stratum						Total			Percent change from--	
	15	06	07	09	10	11	1968	1967	Average	1967	Average
Broods observed	103	--	38	25	123	195	484	293	338	+65	+43
Brood size[1]	5.5	--	4.7	5.5	5.3	5.4	5.3	6.5			
Index	29	283[2]	128	41	273	102	856	491	806	+74	+ 6
Average	15	283	122	41	291	54	806				

[1] Based on class II and III broods.
[2] Dummy comparison. Value equals the 7-year average.

TABLE B-11.--Northern Saskatchewan, northern Manitoba, and northern Ontario - 10-year trend in waterfowl breeding population indexes by species, 1959-1968

/index numbers in thousands/

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Ducks:										
Dabblers:										
Mallard	227	252	220	267	178	192	183	173	417	404
Black duck	16	10	30	56	25	30	13	11	27	32
Gadwall	51	1	15	4	8	9	12	8	25	23
American widgeon	14	24	22	37	24	33	36	32	30	70
Green-winged teal	10	6	6	14	10	19	15	19	17	22
Blue-winged teal	10	8	4	27	30	37	14	11	21	69
Shoveler	--	6	6	11	12	26	17	16	11	13
Pintail	13	30	57	13	20	21	9	15	13	31
Subtotal	341	337	360	429	307	367	299	285	561	664
Divers:										
Redhead	--	34	22	11	10	17	18	13	30	38
Canvasback	20	103	50	11	32	37	24	17	26	36
Scaup	310	209	211	235	256	197	248	206	340	396
Ring-necked duck	--	11	15	92	121	42	78	151	94	123
Goldeneye	180	2	73	115	47	23	17	35	17	98
Bufflehead	17	31	22	40	27	9	16	27	33	100
Ruddy Duck	--	--	7	11	4	1	3	3	5	18
Subtotal	527	390	400	515	497	326	404	452	545	809

TABLE B-11.--Northern Saskatchewan, northern Manitoba, and northern Ontario - 10-year trend in waterfowl breeding population indexes by species, 1959-68 --continued

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Miscellaneous:										
Scoter	58	15	34	23	22	8	7	30	28	97
Oldsquaw	--	--	--	--	--	--	--	--	1	2
Merganser	103	253	127	191	166	109	145	149	209	181
Subtotal	161	268	161	214	188	117	152	179	238	280
Total ducks	1,029	995	921	1,158	992	810	855	916	1,344	1,753
Geese:										
Canada goose	24	8	11	11	31	28	17	27	42	51
Coots	51	11	30	6	18	17	16	10	19	112
Grand total	1,104	1,014	962	1,175	1,041	855	888	953	1,405	1,916

TABLE B-12.--Northern Sasketchewan, northern Manitoba and Ontario - comparative status of waterfowl breeding population indexes by species and stratum, 1968

/Index numbers in thousands/

Species	Stratum					Total		Average 1959 1968	Percent change from	
	36	18	17	16	23	Previous year	Current year		1967	Average
Ducks:										
Dabblers:										
Mallard	62	30	127	108	77	417	404	251	- 3	+ 61
Black duck	1	27	2	1	1	27	32	25	+ 19	+ 28
Gadwall	9	--	6	4	4	25	23	16	- 8	+ 44
American widgeon	8	6	21	21	14	30	70	32	+133	+119
Green-winged teal	4	4	8	2	4	17	22	14	+ 29	+ 57
Blue-winged teal	17	--	30	17	5	21	69	23	+229	+200
Shoveler	6	--	2	5	--	11	13	12	+ 18	+ 8
Pintail	10	6	8	4	3	13	31	22	+138	+ 41
Wood duck	--	--	--	--	--	--	--	--	--	--
Subtotal	117	73	204	162	108	561	664	395	+ 18	+ 68
Divers:										
Redhead	14	--	5	10	9	30	38	19	+ 27	+100
Canvasback	17	--	12	6	1	26	36	36	+ 38	--
Scaup	57	71	113	83	72	340	396	261	+ 16	+ 52
Ring-necked duck	34	1	41	35	12	94	123	73	+ 31	+ 68
Goldeneye	1	87	2	2	6	17	98	61	+482	+ 62
Bufflehead	7	26	15	17	35	33	100	32	+203	+213
Ruddy duck	10	--	3	2	3	5	18	5	+260	+260
Subtotal	140	185	191	155	138	544	809	487	+ 49	+ 67

TABLE B-12.--Northern Saskatchewan, northern Manitoba and Ontario - comparative status of waterfowl breeding population indexes by species and stratum, 1968--continued

/Index numbers in thousands/

Species	Stratum					Total		Average 1959	Percent change from	
	36	18	17	16	23	Previous year	Current year	1968	1967	Average
Miscellaneous:										
Merganser	9	81	35	40	16	209	181	163	- 13	+ 11
Scoter	6	38	28	19	6	28	97	32	+246	+203
Old Squaw	--	2	--	--	--	1	2	--	+100	--
Subtotal	15	121	63	59	22	238	280	195	+ 17	+ 44
Total ducks	272	379	458	376	268	1,344	1,753	1,077	+ 30	+ 63
Geese:										
Canada goose	4	34	10	3	--	42	51	25	+ 21	+104
Coots	79	--	10	8	15	19	112	29	+489	+286
Grand total	355	413	478	387	283	1,405	1,916	1,131	+ 36	+ 69

TABLE B-13.--Northern Saskatchewan, northern Manitoba and Ontario - long-term trend in waterfowl brood and late-nesting indexes by species, July 1962-1968

Species	1962	1963	1964	1965	1966	1967	1968
Broods:							
Duck brood index [1]	82	75	152	59	100	228	201
Average brood size	4.8	6.4	5.0	5.1	5.4	5.4	5.5
Coot brood index	6	2	9	6	10	10	17
Late-nesting index:[2]							
Dabblers:							
Mallard	79	83	73	42	35	71	43
Gadwall	2	4	9	3	1	2	2
American widgeon	--	--	--	--	--	4	2
Green-winged teal	2	7	3	1	--	1	1
Blue-winged teal	3	4	5	4	1	2	3
Shoveler	5	1	1	2	3	3	1
Pintail	5	9	5	4	6	10	3
Black duck	--	--	--	--	--	3	--
Subtotal	96	108	96	56	46	96	55
Divers:							
Redhead	4	4	7	4	3	3	2
Canvasback	11	2	2	3	2	2	Tr.
Scaup	65	93	68	31	32	68	25
Ring-necked duck	20	26	24	37	37	28	10
Goldeneye	12	7	7	Tr.	1	2	Tr.
Bufflehead	4	9	7	6	5	9	5
Ruddy duck	2	2	2	3	2	--	--
Subtotal	118	143	117	84	87	112	42
Miscellaneous ducks	87	79	56	31	27	8	15
Grand total	301	330	269	171	155	216	112

[1] Class II and Class III broods only.
[2] As indicated by adult pairs and singles.

TABLE B-14.--Northern Saskatchewan, northern Manitoba and Ontario - waterfowl brood and late-nesting indexes by stratum compared to previous year and long-term average, 1968

Species	Stratum				Total		Average 1962 to 1968	Percent change from	
	16	23	36	17	Previous year	Current year		Previous year	Average
Broods:									
Duck brood index [1]	86	35	22	58	228	201	128	- 18.4	+ 57.0
Average brood size	5.8	5.5	6.0	5.2	5.4	5.5	5.4	+ 1.9	+ 1.9
Coot brood index	3	--	14	--	10	17	9	+ 70.0	+ 88.9
Late-nesting index: [2]									
Dabblers:									
Mallard	19	7	7	10	71	43	61	- 53.5	- 29.5
Gadwall	1	--	1	--	2	2	3	00.0	- 33.3
American widgeon	1	--	1	--	4	2	1	- 50.0	+100.0
Green-winged teal	--	1	Tr.	--	1	1	2	00.0	- 50.0
Blue-winged teal	2	--	1	--	2	3	3	+ 50.0	00.0
Shoveler	1	--	Tr.	--	3	1	2	- 66.7	- 50.0
Pintail	1	--	1	1	9	3	6	- 66.7	- 50.0
Black duck	--	--	--	--	3	--	--	-100.0	00.0
Subtotal	25	8	11	11	95	55	78	- 42.1	- 29.5
Divers:									
Redhead	--	--	2	--	3	2	4	- 33.3	- 50.0
Canvasback	--	--	Tr.	--	2	Tr.	3	-100.0	-100.0
Scaup	9	4	2	10	67	25	55	- 62.7	- 54.5
Ring-necked duck	3	4	1	3	29	10	26	- 65.5	- 61.5
Goldeneye	--	--	Tr.	--	2	Tr.	4	-100.0	-100.0
Bufflehead	1	--	1	3	10	5	6	- 50.0	- 16.7
Ruddy duck	--	--	--	--	--	--	2	--	--
Subtotal	13	8	6	16	113	42	100	- 62.8	- 58.0

TABLE B-14.--Northern Saskatchewan, northern Manitoba, Ontario - waterfowl brood and late-nesting indexes by stratum compared to previous year and long-term average, 1968--continued

Species	Stratum				Total		Average 1962 to 1968	Percent change from	
	16	23	36	17	Previous year	Current year		Previous year	Average
Miscellaneous ducks	2	7	1	5	9	15	43	+ 66.7	- 65.1
Grand total	40	23	18	32	217	113	222	- 47.9	- 49.1

TABLE B-15.--Southern Alberta - long-term trend in pond indexes by strata with comparisons to average and previous year - May and July 1968

/index numbers in thousands/

Year	Stratum			Total
	26	37	28	
May:				
1959	146	253	99	498
1960	287	549	159	995
1961	213	432	56	701
1962	132	345	49	526
1963	189	601	59	849
1964	153	366	113	632
1965	299	637	103	1,039
1966	282	490	72	844
1967	260	361	140	761
1968	103	307	92	502
Average 1958-67	224	446	95	765
Percent change from 1967	-60.4	-15.0	-34.3	-34.0
Percent change from average	-54.0	-31.2	- 3.2	-34.4
July:				
1959	104	147	60	311
1960	93	262	47	402
1961	56	153	30	239
1962	72	257	39	368
1963	162	471	60	693
1964	87	162	59	308
1965	260	485	111	856
1966	187	234	66	487
1967	182	280	92	554
1968	90	159	66	315
Average 1958-67	136	273	61	470
Percent chnage from 1967	-50.5	-43.2	-28.3	-43.1
Percent change from average	-33.8	-41.8	+ 8.2	-33.0

TABLE B-16.--Southern Alberta - 10-year trend in waterfowl breeding population indexes by species, 1959-1968

/index numbers in thousands/

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Ducks:										
Dabblers:										
Mallard	1,307	1,005	860	729	745	836	339	567	628	444
Gadwall	129	142	110	89	86	101	60	110	152	184
American widgeon	257	227	189	127	134	213	56	128	171	103
Green-winged teal	71	56	65	14	15	24	14	32	43	50
Blue-winged teal	194	169	172	60	61	114	80	115	161	82
Shoveler	206	244	171	124	192	210	98	173	215	127
Pintail	565	632	290	233	353	274	343	429	607	144
Subtotal	2,729	2,475	1,857	1,376	1,586	1,772	990	1,554	1,977	1,134
Divers:										
Redhead	68	40	40	21	38	44	30	47	60	20
Canvasback	68	40	38	49	49	56	40	29	40	24
Scaup	332	252	248	214	263	259	134	180	188	155
Ring-necked duck	4	2	2	1	Tr	Tr	3	2	12	4
Goldeneye	3	3	3	2	1	1	Tr	1	--	1
Bufflehead	26	21	31	12	14	15	10	14	19	11
Ruddy duck	32	31	19	19	10	17	8	18	26	17
Subtotal	533	389	381	318	375	392	225	291	345	232

TABLE B-16.--Southern Alberta - 10-year trend in waterfowl breeding population indexes by species, 1959-1968--continued

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Ducks:										
Miscellaneous:										
Scoter	56	35	43	48	17	32	20	24	21	21
Merganser	--	--	--	--	--	--	3	3	1	Tr
Subtotal	56	35	43	48	17	32	23	27	22	21
Total ducks	3,318	2,899	2,281	1,742	1,978	2,196	1,238	1,872	2,344	1,387
Geese:										
Canada goose	--	--	--	--	2	5	4	4	7	2
Coots:										
American coot	125	85	97	22	62	89	48	49	119	53
Grand total	3,443	2,984	2,378	1,764	2,042	2,290	1,290	1,925	2,470	1,442

Note: Canada geese not included before 1963 and mergansers not included before 1965.

TABLE B-17.--Southern Alberta - comparative status of waterfowl breeding population indexes by species and stratum, 1968

/Index numbers in thousands/

Species	Stratum			Total		Average	Percent change from--	
	26	27	28	1967	1968	1958-67	1967	Average
Ducks:								
Dabblers:								
Mallard	93	277	74	628	444	823	-29.3	-46.0
Gadwall	43	132	9	152	184	106	+21.0	+73.6
American widgeon	21	60	22	171	103	168	-39.8	-38.7
Green-winged teal	5	41	4	43	50	37	+16.3	+35.1
Blue-winged teal	14	56	12	161	82	130	-49.1	-36.9
Shoveler	24	81	22	215	127	186	-40.9	-31.7
Pintail	43	52	49	607	144	439	-76.3	-67.2
Subtotal	243	699	192	1,977	1,134	1,889	-42.6	-40.0
Divers:								
Redhead	4	13	3	60	20	45	-66.7	-55.6
Canvasback	3	19	2	40	24	50	-40.0	-52.0
Scaup	27	110	18	188	155	238	-17.6	-34.9
Ring-necked duck	1	3	--	12	4	3	-66.7	+33.3
Goldeneye	--	1	--	--	1	2		50.0
Bufflehead	Tr	10	1	19	11	18	-42.1	38.9
Ruddy duck	3	4	10	26	17	19	-34.6	10.5
Subtotal	38	160	34	345	232	375	-32.8	-38.1
Miscellaneous:								
Scoter	1	19	1	21	21	33	--	-36.4
Merganser	--	--	Tr	1	Tr	1	--	--
Total ducks	282	878	227	2,344	1,387	2,298	-40.8	-39.6
Geese:								
Canada goose	1	Tr	1	7	2	2	-71.4	--
Coots:								
American coot	16	33	4	119	53	77	-55.5	-31.2
Grand total	299	911	232	2,470	1,442	2,377	-41.6	-39.3

TABLE B-18.--Southern Alberta, stratum 13 - 10-year trend in waterfowl breeding population by species, 1959-68

/index numbers in thousands/

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968[1]
Ducks:										
Dabblers:										
Mallard	332	97	295	122	193	151	123	131	92	102
Gadwall	2	1	3	2	4	7	27	3	5	14
American widgeon	95	32	69	40	24	44	24	29	19	32
Green-winged teal	40	16	15	8	7	24	7	22	13	18
Blue-winged teal	51	16	39	17	37	32	13	18	11	5
Shoveler	19	6	29	16	18	31	15	10	15	6
Pintail	75	30	49	12	2	31	37	21	24	18
Subtotal	614	198	499	217	285	320	246	234	179	195
Divers:										
Redhead	44	8	13	23	20	22	6	10	5	10
Canvasback	21	2	10	6	18	21	6	23	7	7
Scaup	225	122	187	112	156	239	143	144	107	168
Ring-necked duck	39	17	33	9	8	9	11	7	4	2
Goldeneye	72	10	59	20	Tr	21	28	3	2	2
Bufflehead	68	40	49	31	33	34	103	57	36	25
Ruddy duck	14	Tr	5	1	7	15	6	4	5	4
Subtotal	483	199	356	202	242	361	303	248	166	218

TABLE B-18.--Southern Alberta, stratum 13 - 10-year trend in waterfowl breeding population by species, 1959-68--continued

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Miscellaneous:										
Scoter	151	44	98	29	58	40	31	24	16	16
Merganser	64	19	29	17	4	16	11	60	6	7
Subtotal	215	63	127	46	62	56	42	84	22	23
Total ducks	1,312	460	982	465	589	737	591	566	367	436
Geese:										
Canada geese	3	--	10	8	5	4	3	--	4	Tr
Coots:										
American coot	125	17	9	9	16	16	35	9	3	29
Grand total	1,440	477	1,001	482	610	757	629	575	374	465

[1] Only 47 percent of stratum sampled; transect 03 data used to obtain the index for that portion not censused.

TABLE B-19.--Southern Alberta, stratum 13 - comparative status of waterfowl breeding population indexes by species, 1968

/index numbers in thousands/

Species	Total 1967	Total 1968	Average 1958-67	percent change from-- 1967	percent change from-- Average
Ducks:					
Dabblers:					
Mallard	92	102	181	+ 10.9	+ 43.6
Gadwall	5	14	6	+180.0	+133.3
American widgeon	19	32	41	+ 68.4	- 22.0
Green-winged teal	13	18	18	+ 38.5	N.C.
Blue-winged teal	11	5	26	- 54.5	- 80.8
Shoveler	15	6	19	- 60.0	- 36.8
Pintail	24	18	45	- 25.0	- 60.0
Subtotal	179	195	336	+ 8.9	- 42.0
Divers:					
Redhead	5	10	16	+100.0	- 37.5
Canvasback	7	7	15	N.C.	- 53.3
Scaup	107	168	164	+ 57.0	+ 2.4
Ring-necked duck	4	2	15	- 50.0	- 86.7
Goldeneye	2	2	36	N.C.	- 94.4
Bufflehead	36	25	49	- 30.6	- 49.0
Ruddy duck	5	4	7	- 20.0	- 42.8
Subtotal	166	218	302	+ 31.3	- 27.8
Miscellaneous:					
Scoter	16	16	54	N.C.	- 70.4
Merganser	6	7	26	+ 16.7	- 73.1
Total ducks	367	436	718	+ 18.8	- 39.3
Geese:					
Canada goose	4	Tr	4	--	--
Coots:					
American coot	3	29	23		+ 26.1
Grand total	374	465	745	+ 24.3	- 37.6

Note: Transect 03 data used to obtain the index for that portion not censused during 1968.

TABLE B-20.--Southern Alberta - long-term trend in waterfowl brood and late-nesting indexes by species, July 1960-68

/in thousands/

Species	1960	1961	1962	1963	1964	1965	1966	1967	1968
Broods:									
Duck brood index	185	213	132	204	190	107	172	165	95
Average brood size[1]	6.0	5.7	5.6	6.0	6.0	6.1	6.6	5.9	5.2
Coot brood index	45	48	19	19	18	17	35	25	2
Late-nesting index:[2]									
Mallard	3	1	1	2	3	12	15	15	14
Gadwall	1	1	T	1	1	8	7	7	8
American widgeon	T	T	T	T	1	5	2	2	4
Green-winged teal	--	T	--	--	--	T	2	6	2
Blue-winged teal	1	1	T	T	T	7	5	3	4
Shoveler	1	T	T	1	1	8	5	7	3
Pintail	1	1	--	T	T	8	12	9	5
Subtotal	7	4	1	4	6	48	48	48	40
Divers:									
Redhead	T	--	T	T	T	2	1	1	1
Canvasback	--	--	T	--	--	T	T	--	1
Scaup	5	2	1	1	3	14	10	8	9
Ring-necked duck	T	--	--	--	--	--	--	T	--
Goldeneye	--	--	--	--	--	T	T	--	1
Bufflehead	--	T	--	--	--	--	--	--	--
Ruddy duck	4	1	1	2	1	5	7	2	4
Subtotal	9	3	2	3	4	21	18	11	16
Grand total	16	7	3	7	10	69	66	59	56

[1] Class II and III broods only.
[2] As indicated by adult pairs and singles.

TABLE B-21.--Southern Alberta - waterfowl brood and late nesting indexes by stratum compared to previous year and long-term average, 1968

/index numbers in thousands/

Species	Stratum 26	27	28	Total 1967	1968	Average 1958-1967	Percent change from 1967	Average
Broods:								
Duck brood index	27	62	6	165	95	198	-42.4	-52.0
Average brood size[1]	4.5	5.7	3.7	5.9	5.2	5.9	-11.9	-11.9
Coot brood index	1	1	--	25	2	36	-92.0	-94.4
Late-nesting index[2]								
Dabblers:								
Mallard	4	6	4	15	14	7		
Gadwall	3	5	Tr	7	8	3		
American widgeon	1	2	1	2	4	1		
Green-winged teal	--	2	Tr	6	2	1		
Blue-winged teal	2	1	1	3	4	2		
Shoveler	1	1	1	7	3	3		
Pintail	2	2	1	9	5	3		
Subtotal	13	19	8	49	40	20	-16.7	+100.0
Divers:								
Redhead	1	--	Tr	1	1	1		
Canvasback	1	Tr	Tr	--	1	Tr		
Scaup	5	2	2	8	9	7		
Ring-necked duck	--	--	--	Tr	--	Tr		
Goldeneye	1	--	--	--	1	Tr		
Bufflehead	--	--	--	--	--	Tr		
Ruddy duck	1	2	1	2	4	3		
Subtotal	9	4	3	11	16	11	+45.4	+45.4
Grand total	22	23	11	60	56	31	- 5.1	+80.6

[1] Class II and III broods only.
[2] As indicated by adult pairs and singles.

TABLE B-22.--Southern Alberta - lone drake index: long-term trend expressed as a percentage of total drakes, 1959-68

Year	Mallard	Pintail	Canvasback	Total
1959	70.66	73.26	42.84	71.00
1960	84.92	82.02	72.04	84.00
1961	77.10	74.22	63.89	76.00
1962	82.39	83.98	54.32	82.00
1963	84.99	85.25	80.08	84.86
1964	85.28	88.14	52.65	84.57
1965	82.07	72.17	65.02	77.85
1966	80.97	74.99	56.09	77.94
1967	83.60	64.14	70.60	79.63
1968	64.11	62.13	27.78	62.46

TABLE B-23.--Southern Saskatchewan - long-term pond indexes by strata and comparison to average and previous year, May and July 1952 to 1968

/index numbers in thousands/

Year	Stratum					Total
	A-West (19)	A-East (20)	B-West (21)	B-East (22)	C (23)	
May:						
1952	726.6	296.4	384.7	772.2	126.4	2,306.3
1953	974.6	508.1	678.7	1,362.3	203.3	3,727.0
1954	722.1	931.8	800.5	1,606.8	203.4	4,264.6
1955	886.6	1,295.0	549.7	1,103.3	198.4	4,033.0
1956	700.3	754.4	284.2	644.8	105.8	2,489.5
1957	357.9	292.3	148.5	576.2	72.2	1,447.1
1958	350.5	526.5	191.0	489.6	105.1	1,662.7
1959	160.2	157.7	57.4	334.5	73.6	783.4
1960	377.3	479.2	164.3	987.4	90.1	2,098.3
1961	171.1	48.7	92.0	221.4	55.7	588.9
1962	1962	336.3	153.2	173.3	49.1	1,347.3
1963	256.0	239.4	131.6	293.9	39.5	960.4
1964	202.1	508.1	114.9	325.9	37.7	1,188.7
1965	453.0	393.6	224.4	484.9	81.4	1,637.1
1966	392.4	556.1	231.1	603.1	97.3	1,880.0
1967	523.3	449.1	216.8	746.2	142.1	2,077.5
1968	215.4	123.4	130.4	301.1	29.9	800.2
Average 1952-1967	474.4	474.3	277.7	699.2	105.1	2,030.7
Percent change:						
1968 from 1967	-58.8	-72.5	-39.9	-59.6	-79.0	-61.5
1968 from average	-54.6	-74.0	-53.0	-56.9	-71.6	-60.6

TABLE B-23.--Southern Saskatchewan - long-term pond indexes by strata and comparison to average and previous year, May and July 1952 to 1968--continued

Year	Stratum					Total
	A-West (19)	A-East (20)	B-West (21)	B-East (22)	C (23)	
July:						
1952	338.7	131.4	99.1	198.9	86.9	855.0
1953	813.8	748.9	295.7	593.5	100.5	2,551.4
1954	362.8	1,326.9	421.7	846.6	79.1	3,037.1
1955	889.9	1,493.6	391.2	785.3	233.7	3,793.7
1956	416.2	601.7	184.8	495.7	55.1	1,753.5
1957	250.2	403.4	127.7	437.7	35.3	1,254.3
1958	141.8	212.8	107.1	267.4	33.8	762.9
1959	120.5	143.0	36.8	145.00	26.0	471.3
1960	265.2	212.4	88.0	318.1	32.7	916.4
1961	50.6	34.4	37.1	61.2	9.8	193.1
1962	61.8	75.7	26.3	68.6	13.3	245.7
1963	227.4	173.8	84.5	161.8	41.6	689.1
1964	97.3	177.8	30.5	121.6	12.3	439.5
1965	280.1	157.3	102.8	288.5	92.6	921.3
1966	239.6	172.5	144.5	502.8	63.8	1,123.2
1967	193.4	94.0	80.9	218.0	45.9	632.2
1968	89.5	38.0	65.4	161.5	17.6	372.0
Average 1952-1967	296.8	385.0	141.2	344.4	60.1	1,227.5
Percent change:						
1968 from 1967	-53.7	-59.6	-19.2	-25.9	-61.7	-41.2
1968 from average	-69.8	-90.1	-53.7	-53.1	-70.7	-69.7

TABLE B-24.--Southern Saskatchewan - 10-year trend in waterfowl breeding population indexes by species, 1959-1968

/index numbers in thousands/

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Ducks										
Dabblers:										
Mallard	1,642.9	1,589.5	994.6	674.1	774.4	671.4	537.4	862.5	982.9	949.2
Black duck	--	--	--	--	--	--	--	--	--	--
Gadwall	63.1	67.4	35.6	64.8	103.0	161.6	131.3	121.2	190.9	177.4
American widgeon	169.7	137.3	82.2	49.9	73.0	88.8	80.2	110.7		
Green-winged teal	16.7	28.9	13.9	5.3	9.1	7.8	13.0	14.9	35.8	23.9
Blue-winged teal	153.5	132.7	92.2	38.5	59.0	125.5	105.2	154.4	203.6	107.5
Shoveler	146.6	294.1	108.7	27.6	101.4	177.4	112.4	268.2	258.5	185.2
Pintail	352.1	575.1	220.6	215.8	257.7	254.5	297.1	539.4	575.3	290.6
Wood duck	--	--	--	--	--	--	--	--	--	--
Subtotal	2,544.6	2,825.0	1,547.8	1,076.0	1,377.6	1,487.0	1,276.6	2,071.3	2,457.4	1,857.9
Divers:										
Redhead	40.8	50.5	23.5	57.6	14.0	31.6	35.3	45.7	47.5	49.2
Canvasback	61.2	61.0	82.9	94.6	52.4	57.5	60.8	100.5	70.5	64.8
Scaup	141.7	149.7	130.8	157.0	58.3	64.8	97.2	129.0	106.5	93.2
Ring-necked duck	26.7	7.5	3.3	0.0	5.7	10.4	10.5	8.7	6.4	1.1
Goldeneye	5.6	7.9	4.7	2.4	1.6	1.2	3.0	6.3	4.8	7.5
Bufflehead	11.8	12.0	11.2	1.5	10.0	9.1	19.8	12.9	14.2	26.1
Ruddy duck	114.8	28.9	27.3	13.4	9.9	10.0	12.3	19.5	12.7	28.0
Subtotal	402.6	317.5	283.7	326.5	151.9	184.6	238.9	322.6	262.6	269.9

TABLE B-24.--Southern Saskatchewan - 10-year trend in waterfowl breeding population indexes by species, 1959-1968--continued

/index numbers in thousands/

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Miscellaneous:										
Scoter	9.2	8.1	5.7	--	4.3	8.2	9.5	3.8	2.0	8.2
Merganser	0.5	11.4	4.0	--	5.4	1.4	1.8	--	0.7	0.6
Subtotal	9.7	19.5	9.7	--	9.7	9.6	11.3	3.8	2.7	8.8
Total ducks	2,956.9	3,162.0	1,841.2	1,402.5	1,539.2	1,681.2	1,526.8	2,397.7	2,722.7	2,136.6
Geese:										
Canada goose	1.8	2.6	2.5	2.5	3.6	3.2	3.0	3.9	2.1	1.6
Coots	175.0	109.3	73.4	56.4	26.2	43.2	52.0	61.9	92.5	106.3
Grand total	3,133.7	3,273.9	1,917.1	1,461.4	1,569.0	1,727.6	1,581.8	2,463.5	2,817.3	2,244.5

TABLE B-25.--Southern Saskatchewan - comparative status of waterfowl breeding population indexes by species and stratum, 1968

/index numbers in thousands/

Species	A-West	A-East	B-West	B-East	C	Total Previous year	Total Current year	Average 1955 to 1967	Percent change from previous year	Percent change from previous Average
	(19)	(20)	(21)	(22)	(23)					
Ducks:										
Dabblers:										
Mallard	305.3	102.2	236.6	237.0	68.1	982.9	949.2	1,405.6	- 3.4	- 32.5
Black duck	--	--	--	--	--	--	--	0.1	--	--
Gadwall	82.6	6.4	33.4	37.1	17.9	190.9	177.4	102.2	- 7.1	- 73.6
American widgeon	37.6	13.2	25.7	37.8	9.8	210.4	124.1	154.3	- 41.0	- 19.6
Green-winged teal	6.7	2.2	6.8	7.0	1.2	35.8	23.9	24.2	- 33.2	- 1.2
Blue-winged teal	33.0	19.1	15.7	33.7	6.0	203.6	107.5	177.2	- 47.2	- 39.3
Shoveler	53.5	9.7	42.5	68.8	10.7	258.5	185.2	209.1	- 28.4	- 11.4
Pintail	133.2	20.4	52.1	58.1	26.8	575.3	290.6	676.9	- 49.5	- 57.1
Wood duck	--	--	--	--	--	--	--	--	--	--
Subtotal	651.9	173.2	412.8	479.5	140.5	2,457.4	1,857.9	2,749.6	- 24.4	- 32.4
Divers:										
Redhead	8.5	2.2	16.9	18.1	3.5	47.5	49.2	57.7	+ 3.6	- 14.7
Canvasback	19.6	5.1	21.2	16.8	2.1	70.5	64.8	107.3	- 8.1	- 39.6
Scaup	15.4	4.7	30.9	37.3	4.9	106.5	93.2	195.2	- 12.5	- 52.3
Rind-necked duck	0.5	--	--	0.6	--	6.4	1.1	9.0	- 82.8	- 87.8
Goldeneye	--	--	2.0	5.5	--	4.8	7.5	5.3	+ 56.3	+ 41.5
Bufflehead	0.9	1.2	10.2	13.8	--	14.2	26.1	11.2	+ 83.8	+100.0
Ruddy duck	1.2	--	17.1	9.0	0.7	12.7	28.0	30.5	+100.0	- 8.2
Subtotal	46.1	13.2	98.3	101.1	11.2	262.6	269.9	416.2	+ 2.8	- 35.2

TABLE B-25.--Southern Saskatchewan - comparative status of waterfowl breeding population indexes by species and stratum--continued

/index numbers in thousands/

Species	A-West	A-East	B-West	B-East	C	Total Previous year	Total Current year	Average 1955 to 1967	Percent change from previous year	Percent change from previous Average
	(19)	(20)	(21)	(22)	(23)					
Miscellaneous:										
Scoter	--	--	5.1	3.1	--	0.7	8.2	2.0	+100.0	+100.0
Merganser	--	--	--	0.6	--	2.0	8.8	8.1	- 70.0	- 90.2
Subtotal	--	--	5.1	3.7	--	2.7	17.0	10.1	+100.0	+ 8.6
Total ducks	698.0	186.4	516.2	584.3	151.7	2,722.7	2,136.6	3,173.9	- 21.5	- 32.7
Geese:										
Canada goose	0.2	--	--	1.2	0.2	2.1	1.6	1.9	- 23.8	- 15.8
Coots	14.8	4.4	25.3	54.4	7.4	92.5	106.3	156.4	+ 14.9	- 32.0
Grand total	713.0	190.8	541.5	639.9	159.3	2,817.3	2,244.5	3,332.2	- 20.3	- 32.6

TABLE B-26.--Southern Saskatchewan - 10-year trend in waterfowl brood and late-nesting indexes by species, July 1968

/index numbers in thousands/

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Broods:										
Duck brood index	105.8	125.8	68.7	32.8	45.8	66.9	49.8	96.3	98.6	81.5
Average brood size[1]	3.7	3.8	4.4	4.9	5.4	5.7	6.0	6.0	5.5	5.0
Coot brood index	5.4	14.8	6.0	0.1	5.2	9.2	8.3	7.6	11.8	14.0
Late-nesting index[2]										
Dabblers:										
Mallard	45.0	76.6	19.6	8.5	23.1	19.7	48.1	46.3	26.8	25.1
Gadwall	3.5	14.8	0.8	2.1	9.7	3.8	19.2	17.2	14.2	9.4
American widgeon	8.5	10.7	0.8	2.1	3.5	0.3	8.0	7.7	6.7	4.3
Green-winged teal	0.7	0.5	--	--	0.9	--	2.0	4.1	4.0	5.6
Blue-winged teal	21.0	20.6	1.4	1.3	8.1	5.3	16.2	26.5	22.9	8.6
Shoveler	1.7	7.5	1.2	0.4	3.1	1.5	8.1	5.2	5.9	2.8
Pintail	2.1	5.4	1.6	3.8	6.5	1.2	7.1	10.7	9.0	5.7
Subtotal	82.5	136.1	25.4	18.2	54.9	31.8	108.7	117.7	89.5	61.5
Divers:										
Redhead	0.5	2.7	--	0.2	1.6	1.3	3.1	3.6	4.3	3.0
Canvasback	2.1	0.5	1.0	--	0.6	0.8	1.0	0.4	2.4	2.4
Scaup	6.1	9.4	4.8	0.4	2.8	8.9	3.2	8.2	2.8	2.7
Ring-necked duck	1.0	--	1.6	0.2	2.3	0.1	0.4	0.2	0.8	--
Goldeneye	0.6	1.2	--	--	--	0.2	--	--	--	--
Bufflehead	0.1	--	1.2	--	--	0.8	1.0	2.8	2.0	0.8
Ruddy duck	9.8	9.6	0.5	0.8	4.0	4.2	4.0	12.5	13.0	8.0
Subtotal	20.2	23.4	9.1	1.6	11.3	16.3	12.7	27.7	25.3	16.9

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TABLE B-26.--Southern Saskatchewan - 10-year trend in waterfowl brood and late-nesting indexes by species, July 1968--continued

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Ducks:										
Miscellaneous	1.0	1.4	--	--	1.4	--	--	--	--	--
Total	103.7	160.9	34.5	19.8	67.6	48.1	121.4	145.4	114.8	78.4

[1] Class II and III broods only.
[2] As indicated by adult pairs and singles.

TABLE B-27.--Southern Saskatchewan - waterfowl brood and late-nesting indexes by stratum compared to previous yesr and long-term average, 1968

/index numbers in thousands/

Species	Stratum					Total		Average 1958 to 1966	Percent change from--	
	A-West (19)	A-East (20)	B-West (21)	B-East (22)	C (23)	Previous year	Current year		1967	Average
Broods:										
Duck brood index	23.0	5.6	25.7	22.2	5.0	98.6	81.5	193.3[3]	- 17.3	- 57.8
Average brood size[1]	4.7	4.9	4.4	5.6	5.4	5.5	5.0	5.3[3]	- 10.0	- 5.7
Coot brood index	1.5	0.7	4.9	6.2	0.7	11.8	14.0	30.6[3]	+ 18.6	- 54.2
Late-nesting index[2]										
Dabblers:										
Mallard	6.7	1.2	5.3	10.1	1.8	26.8	25.1	40.1	- 6.3	- 37.4
Gadwall	4.1	0.4	1.9	1.6	1.4	14.2	9.4	9.3	- 33.8	+ 1.1
American widgeon	0.9	0.4	1.4	1.6	--	6.7	4.3	5.9	- 35.8	- 27.1
Green-winged teal	1.2	0.2	1.4	2.3	0.5	4.0	5.6	1.4	+ 40.0	+ 300.0
Blue-winged teal	2.7	1.0	2.7	1.6	0.6	22.9	8.6	14.7	- 62.5	- 41.5
Shoveler	0.2	0.2	0.8	1.6	--	5.9	2.8	4.0	- 52.5	- 30.0
Pintail	2.3	0.2	1.2	1.5	0.5	9.0	5.7	6.2	- 36.7	- 8.1
Subtotal	18.1	3.6	14.7	20.3	4.8	89.5	61.5	81.6	- 31.3	- 24.6
Divers:										
Redhead	1.0	--	1.2	0.8	--	4.3	3.0	2.2	- 30.2	+ 36.4
Canvasback	0.8	--	1.4	--	0.2	2.4	2.4	1.2		+ 100.0
Scaup	0.8	0.2	0.4	0.8	0.5	2.8	2.7	6.3	- 3.6	- 57.1
Ring-necked duck	--	--	--	--	--	0.8	--	0.8		
Goldeneye	--	--	--	--	--	--	--	--		
Bufflehead	--	--	0.8	--	--	2.0	0.8	0.7	- 60.0	+ 14.3
Ruddy duck	0.8	0.5	3.7	2.3	0.7	13.0	8.0	6.9	- 38.5	+ 15.9
Subtotal	3.4	0.7	7.5	3.9	1.4	25.3	16.9	18.3	- 33.2	- 7.7

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TABLE B-27.--Southern Saskatchewan - waterfowl brood and late-nesting indexes by stratum compared to previous year and long-term average, 1968--continued

/index numbers in thousands/

Species	Stratum					Total		Average 1958 to 1966	Percent change from--	
	A-West (19)	A-East (20)	B-West (21)	B-East (22)	C (23)	Previous year	Current year		1967	Average
Ducks:										
Miscellaneous	--	--	--	--	--	--	--	0.5		
Total	21.5	4.3	22.2	24.2	6.2	114.8	78.4	100.4	-31.7	-21.9

[1] Class II and III broods only.
[2] As indicated by adult pairs and singles.
[3] 15-year average, 1952-1967

TABLE B-28.--Southern Saskatchewan - lone drake index: long-term trend expressed as percentage of total drakes, 1955-

Year	Percent of lone drakes
1955	82.3
1956	78.5
1957	80.7
1958	80.2
1959	73.0
1960	84.7
1961	71.9
1962	47.3
1963	82.6
1964	83.5
1965	81.9
1966	82.9
1967	83.8
1968	77.9

[1] Lone drakes include only mallards, pintails, and canvasbacks.

TABLE B-29.--Southern Manitoba - long-term trend in pond indexes by strata with comparisons to average and previous year, May and July, 1968

/index numbers in thousands/

Year	Stratum A	Stratum B	Total A and B
May:			
1954	258	428	686
1955	315	428	743
1956	391	615	1,006
1957	262	404	666
1958	352	264	616
1959	160	482	642
1960	324	295	619
1961	158	263	421
1962	135	295	430
1963	298	331	629
1964	398	331	729
1965	327	478	805
1966	372	515	887
1967	315	547	862
1968	119	238	357
Average 1954 through 1968	283	399	682
Percent change from 1968-1967	-62	-56	-48
1968 from 1954-1968 average	-58	-40	-48
July:			
1954	473	384	857
1955	339	271	610
1956	425	411	836
1957	241	260	501
1958	163	341	504
1959	96	325	420
1960	164	212	376
1961	41	86	129
1962	97	135	232
1963	145	178	323
1964	201	182	383
1965	129	260	389
1966	167	240	407
1967	100	174	274
1968	48	116	164
Average 1954 through 1968	199	247	446
Percent change from 1968-1967	-52	-33	-40
1968 from 1954-1968 average	-76	-53	-62

TABLE B-30.--Southern Manitoba - 10-year trend in waterfowl breeding population indexes by species, 1959-68

/Index numbers in thousands/

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Ducks:										
Dabblers:										
Mallard	303.6	322.1	211.1	129.2	182.0	167.0	147.0	192.1	193.0	133.4
Black duck	--	--	--	--	1.4	.2	--	.1	--	.5
Gadwall	4.9	4.2	9.9	9.2	14.3	10.8	8.0	14.8	21.3	14.0
American widgeon	29.6	12.7	19.6	10.8	15.2	20.0	23.2	24.1	30.7	23.5
Green-winged teal	4.5	2.2	5.3	.4	4.7	.3	3.1	3.7	5.7	4.5
Blue-winged teal	140.8	94.9	84.1	43.9	47.0	38.2	32.5	26.1	60.2	33.6
Shoveler	36.0	53.6	38.6	17.4	33.3	38.0	32.2	28.9	42.5	22.9
Pintail	40.8	97.5	43.3	41.3	61.7	41.6	51.2	38.6	57.1	20.3
Wood duck	--	--	--	--	--	--	--	--	--	--
Subtotal	560.2	587.2	411.9	252.2	359.6	316.1	297.2	328.4	410.5	252.7
Divers:										
Redhead	23.3	25.8	9.9	13.5	33.8	31.9	45.4	43.3	29.4	16.0
Canvasback	17.9	37.4	31.3	23.0	30.5	38.0	40.7	37.3	33.8	18.1
Scaup	48.0	145.9	114.8	76.1	55.7	72.3	67.1	72.9	79.5	55.9
Ring-necked duck	9.9	4.6	5.5	2.4	6.8	1.8	2.9	.5	4.1	1.6
Goldeneye	9.3	4.6	3.9	2.9	1.1	1.8	3.7	.5	4.7	1.5
Bufflehead	3.9	4.1	3.3	1.5	5.4	3.9	7.8	6.2	12.3	4.5
Ruddy duck	8.7	15.8	18.3	8.2	14.6	11.6	13.6	19.8	14.2	16.2
Subtotal	121.0	238.2	187.0	127.6	147.9	161.3	181.2	180.5	178.0	113.8

TABLE B-30.--Southern Manitoba - 10-year trend in waterfowl breeding population indexes by species, 1959-68--continued

/Index numbers in thousands/

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Ducks:										
Miscellaneous:										
Scoter	--	--	1.5	--	.4	.6	1.0	1.8	1.6	.2
Merganser	--	--	.1	--	--	4.0	3.2	2.0	--	.2
Other	--	--	--	--	--	--	--	--	--	--
Subtotal	--	--	1.6	--	.4	4.6	4.2	3.8	1.6	.4
Total ducks	681.2	825.4	600.5	379.8	507.9	482.0	482.6	512.7	590.1	367.3
Coots	166.0	96.0	80.4	34.0	54.4	56.2	36.3	26.5	35.2	44.3
Grand total	847.2	921.4	680.9	413.8	562.3	538.2	518.9	539.2	625.3	411.6

TABLE B-31.--Southern Manitoba - comparative status of waterfowl breeding population indexes by species and stratum, 1968

/Index numbers in thousands/

Species	1968 Stratum 24(A)	1968 Stratum 25(B)	Totals (Strata 24 & 25 combined) 1967	Totals (Strata 24 & 25 combined) 1968	Average 1953-67	Percent change 1967	Index from 15-year average
Ducks:							
Dabblers:							
Mallard	63.1	70.3	193.0	133.4	268.5	-31	- 50
Black duck	--	.5	--	.5	.2		+150
Gadwall	8.6	5.4	21.3	14.0	8.9	-34	+ 57
American widgeon	13.8	9.7	30.7	23.5	22.7	-33	+ 4
Green-winged teal	3.1	1.4	5.7	4.5	3.5	-21	+ 29
Blue-winged teal	16.3	17.3	60.2	33.6	65.0	-44	- 48
Shoveler	13.7	9.2	42.5	22.9	29.5	-46	- 22
Pintail	11.8	8.5	57.1	20.3	66.4	-64	- 69
Wood duck	--	--	--	--	--	--	--
Subtotal	130.4	122.3	410.5	252.7	464.7	-38	- 46
Divers:							
Redhead	7.0	9.0	29.4	16.0	24.1	-46	- 39
Canvasback	11.1	7.0	33.8	18.1	31.4	-46	- 42
Scaup	30.2	25.7	79.5	55.9	72.7	-30	- 23
Ring-necked duck	1.1	.5	4.1	1.6	3.9	-61	- 59
Goldeneye	.1	1.4	4.7	1.5	3.5	-68	- 57
Bufflehead	3.6	.9	12.3	4.5	4.0	-63	+ 13
Ruddy duck	5.0	11.2	14.2	16.2	10.9	+14	+ 24
Subtotal	58.1	55.7	178.0	113.8	150.5	-36	- 24

TABLE B-31.--Southern Manitoba - comparative status of waterfowl breeding population indexes by species and stratum, 1968--continued

/Index numbers in thousands/

Species	1968 Stratum 24(A)	1968 Stratum 25(B)	Totals (Strata 24 & 25 combined) 1967	Totals (Strata 24 & 25 combined) 1968	Average 1953-67	Percent change 1967	Index from 15-year average
Ducks:							
Miscellaneous:							
Scoter	.2	--	1.6	.2	.6	-87	-67
Merganser	.2	--	--	.2	.7		-71
Other	--	--	--	--	--	--	--
Subtotal	.4	--	1.6	.4	1.3	-75	-69
Total ducks	189.9	178.0	590.1	366.5	615.5	-38	-40
Geese:							
Canada goose	Tr	Tr	Tr				
Coots	19.8	24.5	35.2	44.3	52.2	+26	-15
Grand total	208.7	2-2/5	625.3	411.2	668.7	-39	-39

TABLE B-32.--Southern Manitoba - long-term trend in waterfowl brood and late-nesting indexes by species, July, 1954-1968

/index numbers in thousands/

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Broods:										
Duck brood index	31.1	32.2	35.7	15.6	32.3	25.2	21.7	30.6	32.1	14.7
Average brood size[1]	5.4	6.2	5.5	5.3	5.4	5.0	5.6	5.3	5.1	4.7
Coot brood index	1.3	18.9	4.4	5.1	3.5	12.8	15.8	8.9	13.0	3.0
Late-nest index:										
Dabblers:										
Mallard	20.0	18.1	7.7	6.2	13.3	9.0	12.2	6.8	6.2	4.2
Gadwall	.5	1.0	.9	1.8	2.1	.7	1.1	.4	1.7	1.1
American widgeon	3.9	3.1	2.7	--	4.3	1.2	5.1	1.4	4.9	--
Green-winged teal	--	1.1	.1	--	.2	.1	.9	.3	.1	--
Blue-winged teal	20.6	10.5	1.6	2.8	2.6	5.3	2.3	2.5	2.5	4.2
Shoveler	.4	2.5	.3	--	.2	5.5	1.3	.7	.4	.3
Pintail	2.5	3.2	1.6	.2	2.2	.3	.7	2.4	.6	.1
Subtotal	47.9	39.5	14.9	11.0	24.9	22.1	23.6	14.5	16.4	10.5
Divers:										
Redhead	1.3	1.0	1.2	.1	.7	1.8	1.0	1.5	.8	.3
Canvasback	.9	.4	.9	--	1.1	.3	.4	.3	.8	.3
Scaup	7.8	2.4	3.4	.7	1.7	2.5	3.4	1.3	1.6	1.9
Ring-necked duck	1.0	.2	.6	.7	.2	--	.1	--	.1	--
Goldeneye	.8	--	.1	--	.2	.1	--	.7	--	--
Bufflehead	1.8	.9	.5	--	.2	.1	.1	--	--	--
Ruddy duck	6.7	3.5	1.0	2.4	8.0	6.3	5.0	8.3	3.8	.6
Subtotal	20.3	8.4	7.7	3.9	12.1	11.1	10.0	12.1	7.1	3.1

TABLE B-32.--Southern Manitoba - long-term trend in waterfowl brood and late-nesting indexes by species, July, 1954-1968--continued

/index numbers in thousands/

Species	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Miscellaneous ducks	--	--	1.2	--	--	.1	.2	--	--	--
Totals	68.2	47.9	23.8	14.9	37.0	33.3	33.8	26.6	23.5	13.6

1/ Class II and III broods only.
2/ As indicated by adult pairs and singles.

TABLE B-33.--Southern Manitoba - waterfowl brood and late-nesting indexes by stratum compared to previous year, and long-term average, 1968

/Index numbers in thousands/

Species	1968 Stratum 24(A)	1968 Stratum 25(B)	1967 Stratum 24(A)	1967 Stratum 25(B)	Totals Strata A and B combined 1968	Totals Strata A and B combined 1967	Average 1954 thru 1967	Percent change from 1967	Percent change 14-year Average
Broods:									
Duck brood index	6.4	8.3	9.5	22.7	14.7	32.2	32.5	- 54	- 54
Average brood size[1]	4.8	4.6	5.9	4.8	4.7	5.1	5.5	- 8	- 15
Coot brood index	1.2	1.8	3.3	9.7	3.0	13.0	8.7	- 77	- 66
Late nesting index:[2]									
Dabblers:									
Mallard	2.0	2.2	3.7	2.5	4.2	6.2	14.2	- 32	- 70
Gadwall	.4	.7	.3	1.4	1.1	1.7	1.2	- 35	- 8
American widgeon	.6	--	.9	4.0	.6	4.9	3.2	- 88	- 81
Green-winged teal	--	--	.1	--	--	.1	.5	--	--
Blue-winged teal	1.3	2.9	1.7	.8	4.2	2.5	6.5	+ 68	- 35
Shoveler	.3	--	.4	--	.3	.4	1.2	- 25	- 75
Pintail	.1	--	.6	--	.1	.6	2.0	- 83	- 95
Subtotal	4.7	5.8	7.7	8.7	10.5	16.4	28.8	- 36	- 64
Divers:									
Redhead	.3	--	.1	.7	.3	.8	1.5	- 62	- 80
Canvasback	.3	--	.1	.7	.3	.8	.9	- 62	- 67
Scaup	1.9	--	.9	.7	1.9	1.6	3.1	+ 19	- 39
Ring-necked duck	--	--	.1	--	--	.1	.5	--	--
Goldeneye	--	--	--	--	--	--	.2	--	--
Bufflehead	--	--	--	--	--	--	.4	--	--
Ruddy duck	.6	--	.6	3.2	.6	3.8	5.1	- 84	- 88
Subtotal	3.1	--	1.8	5.3	3.1	7.1	11.7	- 56	- 73

TABLE B-33.--Southern Manitoba - waterfowl brood and late-nesting indexes by stratum compared to previous year, and long-term average, 1968--continued

/Index numbers in thousands/

Species	1968 Stratum 24(A)	1968 Stratum 25(B)	1967 Stratum 24(A)	1967 Stratum 25(B)	Totals Strata A and B combined 1968	Totals Strata A and B combined 1967	Average 1954 thru 1967	Percent change from 1967	Percent change 14-year Average
Miscellaneous ducks	--	--	--	--	--	-- .2	--	--	
Total	7.8	5.8	9.5	14.0	13.6	23.5	40.7	- 42	- 67

1 Class II and III broods only.
2 As indicated by adult pairs and singles.

TABLE B-34.--Southern Manitoba - lone drake index: Long-term trend expressed as a percentage of total drakes, 1953-68

Year	Mallard	Pintail	Canvasback	Percent lone drakes[1]
1953				70.1
1954				79.6
1955				87.5
1956				79.4
1957				88.9
1958				81.9
1959				70.0
1960				86.5
1961				67.5
1962				62.0
1963				83.7
1964				78.0
1965				73.8
1966				84.6
1967				83.4
1968	73.4	66.0	7.4	72.5

[1] Lone drakes include only mallards, pintails, and canvasback.

TABLE B-35.--Montana - long-term trend in pond indexes by strata with comparisons to average and previous year, May and July, 1965-1968

/index numbers in thousands/

Year	Stratum 40			Stratum 41			Total
	Stock dam	Pothole	Stream	Stock dam	Pothole	Stream	
May:							
1965	46.9	16.8	47.4	23.1	54.3	36.1	224.6
1966	33.9	3.8	59.9	30.0	33.6	46.0	207.2
1967	25.3	5.2	45.0	19.0	41.7	31.6	167.8
1968	21.1	5.7	37.7	15.8	16.6	21.4	118.3
Average 1965-68		179.5					
Percent change from 1967		-30					
Percent change from average		-34					
July:							
1966	19.9	1.4	41.7	14.8	10.3	37.6	125.7
1967	26.5	3.5	37.4	15.9	12.5	28.1	123.9
1968	23.5	3.0	31.0	16.3	6.3	20.0	100.1
Average 1966-68		116.6					
Percent change from 1967		-18.2					
Percent change from average		- 6					

TABLE B-36.--Montana - trend in waterfowl breeding population indexes by species, 1965-68

/Index numbers in thousands/

Species	1965	1966	1967	1968
Ducks:				
Dabblers:				
Mallard	233.3	362.8	172.7	126.0
Gadwall	52.1	60.0	35.8	38.0
American widgeon	24.7	29.7	38.1	47.9
Green-winged teal	7.7	10.2	11.7	10.9
Blue-winged teal	29.4	33.2	17.6	13.8
Shoveler	29.7	24.6	33.6	28.6
Pintail	163.3	162.5	128.3	44.4
Subtotal	540.1	683.0	437.8	309.6
Divers:				
Redhead	2.0	4.5	9.4	1.6
Canvasback	2.0	.5	1.7	2.6
Scaup	10.6	17.1	21.6	13.1
Ring-necked duck	--	--	3.5	1.4
Goldeneye	--	--	--	--
Bufflehead	--	--	.9	1.0
Ruddy duck	--	--	.1	1.2
Subtotal	14.6	22.1	37.2	20.9
Miscellaneous:				
Scoter	--	--	--	--
Merganser	--	--	--	--
Other	2.4	3.5	3.2	.4
Total ducks	557.1	708.6	478.2	330.9
Geese:				
Canada goose	--	--	7.3	5.5
Coots:				
American coot	--	--	6.0	15.4
Grand total	557.1	706.8	491.7	351.8

TABLE B-37.--Montana - comparative status of waterfowl breeding population indexes by species and stratum

/Index numbers in thousands/

Species	Stratum 40 1968	Stratum 41	Total 1967	Total 1968	Average 1965-1968	Percent change from 1967	Percent change from Average
Ducks:							
Dabblers:							
Mallard	49.9	76.1	172.7	126.0	223.6	- 27	- 44
Gadwall	7.3	30.7	35.8	38.0	46.4	+ 6	- 19
American widgeon	14.6	33.3	38.1	47.9	35.1	+ 25	+ 36
Green-winged teal	7.0	3.9	11.7	10.9	10.1	- 7	+ 7
Blue-winged teal	5.7	8.1	17.6	13.8	23.5	- 12	- 42
Shoveler	10.8	17.9	33.6	28.6	29.1	- 15	- 2
Pintail	11.4	33.1	128.3	44.4	124.6	- 66	- 65
Subtotal	106.7	203.1	437.8	309.6	492.6	- 30	- 38
Divers:							
Redhead	--	1.6	9.4	1.6	4.3	- 83	- 63
Canvasback	.9	1.7	1.7	2.6	1.7	+ 52	+ 52
Scaup	3.8	9.3	21.6	13.1	15.6	- 40	- 17
Ring-necked duck[1]	--	1.4	3.5	1.4	--	- 60	--
Goldeneye[1]	--	--	--	--	--	--	--
Bufflehead[1]	.6	.4	.1	1.0	.5	+900	+100
Ruddy duck	.9	.3	.9	1.2	1.0	+ 33	+ 20
Subtotal	6.2	14.7	37.2	20.9	22.8	- 44	- 8
Miscellaneous:							
Merganser[1]	.4	--	3.2	.4	1.8	- 87	- 78
Total ducks	113.3	217.8	478.2	331.9	518.7	- 31	- 36
Geese:							
Canada goose[1]	.5	5.0	7.3	5.5	6.4	- 25	- 14
Coots	1.4	14.0	6.0	15.4	10.7	+156	+ 43
Grand total	115.1	236.8	491.7	351.8	525.8	- 29	- 33

TABLE B-38.--Montana - waterfowl brood and late nesting indexes by stratum compared to previous and long-term average, 1967-68

/index numbers in thousands/

Species	Stratum				Total			Average	Percent change from--	
	40		41							
	1967	1968	1967	1968	1966	1967	1968	1966-68	1967	Average
Broods:										
Duck brood index	13.3	15.87	31.7	26.55	66.0	45.0	42.42	51.14	- 6	- 17
Average brood size[1]	4.2	4.47	5.2	4.27	5.3	4.9	4.37	4.86	-11	- 10
Coot brood index	--	.24	--	.89	--	--	1.13	--	--	--
Late-nesting index[2]										
Dabblers:										
Mallard	2.6	.62	2.8	2.51	3.2	5.4	3.13	3.91		
Gadwall	.2	.31	1.9	1.00	2.0	2.1	1.31	1.80		
American widgeon	.7	1.28	1.4	.93	2.4	2.1	2.21	2.24		
Green-winged teal	--	--	.4	--	.2	.4		.20		
Blue-winged teal	.2	1.58	.8	86	.4	1.0	2.44	1.38		
Shoveler	.7	--	.3	.28	.6	1.0	.28	.63		
Pintail	--	.62	.3	.28	.8	.3	.90	.67		
Subtotal	4.4	4.41	7.9	5.86	9.6	12.3	10.27	10.39	-16.5	- 1

See footnotes p.

TABLE B-38.--Montana - waterfowl brood and late nesting indexes by stratum compared to previous and long-term average, 1967-68--continued

/index numbers in thousands/

Species	Stratum 40		Stratum 41		Total			Average[3]	Percent change from--	
	1967	1968	1967	1968	1966	1967	1968	1966-68	1967	Average
Divers:										
Redhead	--	--	--	.4	--	--	.14	.05		
Canvasback	--	--	--	--	--	--	--		--	--
Scaup	--	--	--	--	--	--	--	--	--	--
Ring-necked duck	--	--	.3	.30	--	.3	.30	.20		
Goldeneye	--	--	--	--	--	--	--	--	--	--
Bufflehead	--	--	--	.4	--	--	.4	.5		
Ruddy duck	--	--	.6	.28	--	.6	.28	.29		
Subtotal	--	--	.9	.86	--	.9	.86	.59	- 4	+145
Total ducks	4.4	4.41	8.8	6.72	9.6	13.2	11.13	11.31	-16	-27
Coots	--	2.21	1.0	.86	--	1.0	3.08	1.36	+308	+226

[1] Class II and III broods only.
[2] As indicated by adult pairs and singles.
[3] Average computed includes 1968 figures.

TABLE B-39.--Montana - lone drake index: long-term trend expressed as a percentage of total drakes, 1965-1968

Year	Mallard	Pintail	Total
1965	69.7	76.1	72.3
1966	79.1	85.9	81.2
1967[1]	78.4	87.2	82.4
1968	72.0	83.7	75.2

[1]Recalculated and corrected.

TABLE B-40.--Montana, Helena Unit - Canada goose population trend during nesting season, 1967-1968

Area	1967 P	1967 S	1967 G	1967 T	1968 P	1968 S	1968 G	1968 T
Canyon Ferry Res.	27	13	15	82	26	14	15	81
Missouri River	13	2	4	32	26	8	20	80
Lake Helena	33	8	3	77	28	8	13	77
Totals	73	23	22	191	80	30	48	238

[1] Townsend Bridge to Toston Dam.

TABLE B-41.--Montana, Helena Unit - Canada goose production survey, 1967-1968

Area	1967 NB	1967 Adult	1967 Young	1967 Total	1968 NB	1968 Adult	1968 Young	1968 Total
Canyon Ferry Res.	38	46	93	177	13	18	70	101
Missouri River [1]	2	10	17	29	--	2	5	7
Lake Helena	2	58	81	141	--	66	145	211
Totals	42	114	191	347	13	86	220	319

[1] Townsend Bridge to Toston Dam.

TABLE B-42.--North and South Dakota - long-term trend in pond indexes by strata and comparisons to average and previous years, May and July 1968

/index numbers in thousands/

Year	Strata 30 and 33
May:	
1959	209
1960	397
1961	105
1962	348
1963	413
1964	207
1965	338
1966	475
1967	523
1968[1]	384
Average 1959-1967	335
Percent change 1968 from average	14.6
Percent change 1968 from 1967	26.6
July:	
1959	110
1960	311
1961	108
1962	231
1963	275
1964	211
1965	245
1966	471
1967	328
1968[1]	314
Average 1959-1967	255
Percent change 1968	23.1
Percent change 1968 from 1967	4.

[1] Adjusted for stratum boundary changes.

TABLE B-43.--North and South Dakota - 9-year trend in waterfowl breeding population by species, strata 30 and 33,[1] 1960-68

/index numbers in thousands/

Species	1960	1961	1962	1963	1964	1965	1966	1967	1968
Ducks:									
Dabblers:									
Mallard	123	108	174	247	163	171	160	206.1	130.4
Gadwall	30	20	62	113	38	89	119	153.4	124.4
American widgeon	7	7	3	2	2	--	4	3.4	1.2
Green-winged teal	--	2	3	1	--	--	9	2.3	4.0
Blue-winged teal	88	55	97	166	224	171	101	121.4	106.5
Shoveler	72	37	107	93	41	65	52	70.7	43.6
Pintail	171	83	182	115	60	35	82	122.2	57.7
Subtotal	491	312	628	737	528	531	527	679.5	467.8
Divers:									
Redhead	18	7	22	30	23	30	35	24.4	22.4
Canvasback	9	5	3	13	16	11	26	16.2	10.5
Scaup	22	8	22	19	2	20	17	13.0	14.0
Ring-necked duck	Tr	--	--	1	--	--	2	--	--
Ruddy duck	13	3	6	7	2	3	7	8.2	5.1
Subtotal	62	23	53	70	43	64	87	61.8	52.0
Total ducks	553	335	681	807	571	595	614	741.3	519.8

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TABLE B-43.--North and South Dakota - 9-year trend in waterfowl breeding population by species, strata 30 and 33,[1] 1960-68--continued

Species	1960	1961	1962	1963	1964	1965	1966	1967	1968
Geese:									
Canada goose	--	--	--	--	--	--	--	.2	--
Coots:									
American coot	48	29	56	62	31	72	94	84.6	122.0
Grand total	601	364	737	869	602	667	708	826.1	641.8

[1] North and South Dakota survey sampling increased in 1967 and stratum boundaries adjusted. Strata 30 and 33 (old North Dakota and South Dakota central) are compared directly to past years data.

TABLE B-44.--North Dakota - comparative status of waterfowl population indexes by species and stratum, 1968

/Index numbers in thousands/

Species	Stratum			Total		Percent change from 1967
	29	30	31	1967	1968	
Ducks:						
Dabblers:						
Mallard	5.0	81.9	27.1	275.5	114.0	-58.6
Gadwall	1.1	94.1	1.3	154.8	96.5	-37.7
American widgeon	--	.3	4.6	13.6	4.9	-63.9
Green-winged teal	--	2.2	--	10.0	2.2	-78.0
Blue-winged teal	1.1	79.5	4.6	140.9	85.2	-39.5
Shoveler	.4	33.3	3.6	91.5	37.3	-59.2
Pintail	--	39.2	8.8	155.4	48.0	-69.1
Subtotal	7.6	330.5	50.0	841.7	388.1	-53.9
Divers:						
Redhead	--	17.4	--	25.2	17.4	-30.9
Canvasback	--	9.9	--	16.1	9.9	-38.5
Scaup	--	8.9	--	10.9	8.9	-18.3
Ruddy duck	--	5.7	--	9.3	5.7	-38.7
Subtotal	--	41.9	--	61.5	41.9	-31.9
Total ducks	7.6	372.4	50.0	903.2	430.0	-52.4
Coots	--	90.5	1.6	91.6	92.1	+ .5
Grand total	7.6	462.9	51.6	994.8	522.1	-47.5

TABLE B-45.--South Dakota - comparative status of waterfowl breeding population indexes by species and stratum, 1968

/Index numbers in thousands/

Species	Stratum			Total		Percent change from 1967
	32	33	34	1967	1968	
Ducks:						
Dabblers:						
Mallard	23.0	60.8	74.3	146.9	158.1	+ 7.6
Gadwall	8.6	40.3	13.7	50.3	62.6	+24.4
American widgeon	.3	.8	11.2	20.3	12.3	-39.4
Green-winged teal	.9	1.8	4.0	3.6	6.7	+86.1
Blue-winged teal	13.8	38.6	13.1	47.5	65.5	+37.9
Shoveler	3.9	16.0	18.7	24.7	38.6	+56.3
Pintail	4.8	23.4	14.7	71.2	42.9	-39.7
Subtotal	55.3	181.7	149.7	364.5	386.7	+ 6.1
Divers:						
Redhead	1.1	6.0	--	3.9	7.1	+82.1
Canvasback	.6	1.2	--	2.5	1.8	-28.0
Scaup	2.5	5.5	3.7	5.9	11.7	+98.3
Ring-necked duck	--	--	--	.6	--	--
Bufflehead	--	--	--	.6	--	--
Ruddy duck	.9	.8	1.6	--	3.3	--
Subtotal	5.1	13.5	5.3	13.5	23.9	+77.0
Total ducks	60.4	195.2	155.0	378.0	410.6	+ 8.6
Coots	9.2	46.8	1.8	13.1	57.8	+34.1
Grand total	69.6	242.0	156.8	391.1	468.4	+19.8

TABLE B-46.--North and South Dakota - waterfowl brood and late-nesting indexes by strata and compared to 1967 and the long-term average, 1968

/index numbers in thousands/

	Strata 30 and 33			Percent change from--	Percent change from--
	1968	1967	Long-term average	1967	average
Broods:					
Duck brood index	26.4	43.5	38.9	- 39.3	- 32.3
Average brood size[1]	6.0	5.5	6.0	+ 9.1	--
Coot brood index	6.5	15.3	7.6	- 57.7	- 14.5
Late-nesting index[2]					
Dabblers:					
Mallard	12.8	25.6	18.8	- 50.0	- 31.9
Gadwall	7.0	22.9	14.0	- 69.4	- 50.0
American widgeon	--	.6	.4	--	--
Green-winged teal	--	.8	.4	--	--
Blue-winged teal	1.4	17.4	13.6	- 92.0	- 97.1
Shoveler	--	.8	1.0	--	--
Pintail	--	2.4	1.3	--	--
Subtotal	21.2	70.5	49.5	- 69.9	- 57.2
Divers:					
Redhead	.3	1.3	1.4	- 76.9	- 78.6
Canvasback	--	.4	.2	--	--
Scaup	--	.4	.1	--	--
Ruddy duck	5.1	6.1	6.8	- 16.4	- 25.0
Subtotal	5.4	8.2	8.5	- 34.2	- 46.5
Grand total	26.6	78.7	58.0	- 66.2	- 54.1

1 Class II and III broods only.
2 As indicated by adult pairs and singles.
3 Long-term averages for strata 30 and 33 only.

TABLE B-47.--North and South Dakota - waterfowl brood and late-nesting by stratum compared to 1967 and the long-term averages, 1968

/index numbers in thousands/

	Strata			Total	Total	Percent change
	29 and 32	30 and 33	31 and 34	All strata 1968	all 1967	from-- 1967
Broods:						
Duck brood index	1.0	28.8	20.5	50.3	74.5	- 32.5
Average brood size[1]	4.0	5.9	4.5	5.4	5.3	+ 1.9
Coot brood index	.7	7.4	--	8.1	18.5	- 56.2
Late-nesting index[2]						
Dabblers:						
Mallard	.7	14.4	6.8	21.9	38.4	- 43.0
Gadwall	--	8.1	2.6	10.7	28.1	- 61.9
American widgeon	.5	--	3.2	3.7	3.6	+ 2.8
Green-winged teal	--	--	--	--	1.6	--
Blue-winged teal	.5	1.5	.6	2.6	22.4	- 88.4
Shoveler	--	--	.6	.6	1.3	- 53.9
Pintail	--	--	--	--	8.3	--
Subtotal	1.7	24.0	13.0	39.5	103.7	- 61.9
Divers:						
Redhead	--	.4	--	.4	1.4	- 71.4
Canvasback	--	--	--	--	.4	--
Scaup	--	--	--	--	1.0	--
Ruddy duck	--	5.8	--	5.8	7.8	- 25.6
Subtotal	--	6.2	--	6.2	10.6	- 41.5
Grand total	1.7	30.2	13.8	45.7	114.3	- 60.0
Ponds	83.9	314.0	103.5	501.4	621.1	- 19.3

[1] Class II and III broods only.
[2] As indicated by adult pairs and singles.

TABLE B-48.--North and South Dakota - lone drake index: expressed as percentage of total drakes, 1959-68

Year	Percent lone drakes[1]
1959	45.5
1960	73.3
1961	67.1
1962	73.9
1963	77.7
1964	67.6
1965	66.6
1966	69.6
1967	78.4
1968	70.3

[1] Lone drakes include only mallards, pintails, and canvasback

TABLE B-49.--Minnesota-waterfowl breeding population indexes for selected areas, 1968

Species	Stratum[1]				State total
	1 and 2	3	4	5	
Ducks:					
Dabblers:					
Mallard	21,520	23,485	455	8,318	53,778
Gadwall	621	939	--	--	1,560
American widgeon	569	1,074	90	879	2,612
Green-winged teal	155	--	--	--	155
Blue-winged teal	39,470	24,961	--	1,406	65,837
Shoveler	2,017	2,147	--	--	4,164
Pintail	724	--	--	--	724
Wood duck	2,328	1,610	104	88	4,130
Subtotal	67,404	54,216	649	10,691	132,960
Divers:					
Redhead	5,070	1,879	--	--	6,949
Canvasback	724	2,684	--	--	3,408
Scaup [2]	13,915	7,515	--	264	21,694
Ring-necked duck	5,897	2,818	90	234	9,039
Ruddy duck	466	11,541	--	--	12,007
Subtotal	26,072	26,437	90	498	53,097
Total ducks	93,476	80,653	739	11,489	186,057
Coots	45,109	32,208	--	--	77,317
Total	138,585	112,861	739	11,189	263,374

[1] The strata given here represent the following:
1&2 - high density water area of State
3 - moderate water density area
4 - infertile lake region of various water densities
5 - Roseau and Red Lake bog region of northwestern Minnesota

[2] Scaup are not considered resident breeding ducks

TABLE B-50.--Minnesota - adjustments of population indexes for birds not seen by aerial census for major ducks breeding in Minnesota, 1968

Species	Unadjusted population index	Visibility rate	Adjusted population index
Mallard	53,778	0.49	110,000
Blue-winged teal	65,837	0.41	160,000
Ring-necked duck	9,039	0.78	12,000
All ducks	186,057	0.48	390,000

TABLE B-51.--Chippewa National Forest, Minnesota - Trend in waterfowl breeding populations by area, 1962-1968

Area	1962	1963	1964	1965	1966	1967	1968
Bowstring	242	238	245	301	178	138	277
Burns	24	107	109	87	93	114	41
Kitchie	34	112	204	162	160	163	200
Lower Pigeon	10	117	90	54	33	6	25
Mud Lake	153	251	141	150	170	--	120
Raven Lake	10	17	11	8	--	8	15
Round Lake	207	327	729	445	283	511	262
Third River	133	141	178	365	201	142	72
Lake Winnibigoshish	154	568	309	300	210	220	247
Rabideau	46	247	247	178	211	181	150
Total	1,013	2,125	2,263	2,050	1,539	1,483	1,409

TABLE B-52.--Chippewa National Forest, Minnesota - adult:juvenile ratios by species for all ducks, 1967-1968

Species	1967			1968		
	Adults	Juveniles	Ratio	Adults	Juveniles	Ratio
Mallards	220	518	1:2.3	229	474	1:2.0
American widgeon	85	169	1:2.0	64	136	1:2.0
Goldeneye	51	184	1:3.6	53	121	1:2.3
Blue-winged teal	8	11	1:1.4	16	18	1:1.1
Ringneck	17	38	1:2.2	22	40	1:1.8
Wood duck	56	107	1:1.9	76	104	1:1.4
Other	12	7	1:0.6	24	32	1:1.3

TABLE B-53.--Washington - duck and coot breeding population indexes by species and region, 1967 and 1968

Species	Region				Total		Percent change
	W. Washington	Potholes	Irrigation	Highlands & misc.	1967	1968	
Ducks:							
Dabblers:							
Mallard	5,770	6,660	9,540	16,900	53,510	38,870	- 27
Gadwall	--	1,630	1,200	530	5,610	3,360	- 40
American widgeon	--	6,990	510	1,240	11,970	8,740	- 27
Green-winged teal	110	1,960	970	310	1,960	3,350	+ 71
Blue-winged teal and cinnamon teal	1,120	5,560	8,520	10,160	17,030	25,360	+ 49
Shoveler	60	4,040	1,210	590	4,120	5,900	+ 43
Pintail	--	2,160	150	660	1,440	2,970	+106
Wood duck	4,210	--	1,020	530	4,210	5,760	+ 37
Subtotal	11,270	29,000	23,120	30,920	99,850	94,310	- 6
Divers:							
Redhead	--	3,630	2,400	1,750	7,940	7,780	- 2
Canvasback	--	180	--	--	--	180	--
Scaup	--	5,900	360	1,850	9,410	8,110	- 14
Ring-necked duck	--	180	--	510	4,760	690	- 86
Goldeneye [1]	--	40	--	2,910	3,450	2,950	- 15
Bufflehead	--	--	30	140	50	170	+240
Ruddy duck	--	2,480	1,270	440	5,580	4,190	- 25
Subtotal	--	12,410	4,060	7,600	31,190	24,070	- 23

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TABLE B-53.--Washington - duck and coot breeding population indexes by species and region, 1967 and 1968--continued

Species	Region				Total		Percent change
	W. Washington	Potholes	Irrigation	Highlands & misc.	1967	1968	
Ducks:							
Mergansers:							
American merganser	--	--	--	210	270	210	- 22
Hooded merganser	1,830	--	--	100	1,500	1,930	+ 29
Subtotal	1,830	--	--	310	1,770	2,140	+ 21
Total ducks	13,100	41,410	27,180	38,830	132,810	120,520	- 9
Coots	590	6,550	2,650	6,130	11,360	15,920	+ 40
Grand total	13,690	47,960	29,830	44,960	144,170	136,440	- 5

[1] Bufflehead apparently are present as non-breeding adults only

TABLE B-54.--Washington - waterfowl production index - 1967 and 1968

Species	1967	1968	Percent change
Ducks:			
Dabblers:			
Mallard	134,200	113,700	- 15
Gadwall	14,500	7,900	- 46
American widgeon	30,500	19,900	- 35
Green-winged teal	4,500	8,400	+ 87
Blue-winged teal and cinnamon teal	36,200	64,100	+ 77
Shoveler	9,800	13,600	+ 39
Pintail	3,800	6,700	+ 76
Wood duck	11,600	14,700	+ 27
Subtotal	245,100	249,000	+ 2
Divers:			
Redhead	19,200	18,500	- 4
Canvasback	--	400	--
Scaup	20,000	15,900	- 21
Ring-necked duck	13,000	2,000	- 85
Goldeneye	9,400	7,600	- 19
Bufflehead	100	200	+100
Ruddy duck	13,300	10,200	- 23
Subtotal	75,000	54,800	- 27
Mergansers:			
American merganser	700	400	- 43
Hooded merganser	1,900	3,100	+ 63
Subtotal	2,600	3,500	+ 35
Total ducks	322,700	307,300	- 5
Geese:			
Canada geese	11,300	11,650	+ 3
Coots	26,100	31,600	+ 20

TABLE B-55.--Oregon duck production index by species, 1967 and 1968

(14 Transects)

Species	Number Young 1967	1968	Percent Change
Mallards	1,502	1,605	+ 6.9
Gadwall	2,238	1,278	- 42.9
American widgeon	172	122	- 2.9
Blue-winged teal	242	1,302	+438.0
Green-winged teal	25	53	+112.0
Shoveler	93	95	+ 2.2
Pintail	138	141	+ 2.2
Wood duck	112	233	+108.0
Subtotal	4,522	4,829	+ 6.8
Redhead	1,394	1,727	+ 23.9
Canvasback	70	544	+677.1
Ruddy duck	160	547	+241.9
Subtotal	1,624	2,818	+ 73.5
Miscellaneous	131	149	+ 13.7
Total	6,277	7,796	+ 24.2

TABLE B-56.--Oregon - goose production index, 1967 and 1968

Transect	Total broods		Total young	
	1967	1968	1967	1968
Klamath River	250	188	1,132	848
Sprague River	--	18	--	80
Spring Lake	5	4	24	16
Nuss Lake	22	28	97	127
Agency Lake	70	85	323	384
Wocus Bay	13	49	58	222
Howard Bay	18	59	79	266
Summer Lake	21	36	93	165
N. Lake County	50	12	211	41
Columbia River	11	2	49	7
Wickup Reservoir	10	1	38	5
G. I. Ranch	12	21	56	85
Jefferson County	2	4	9	13
S. Lake County	27	2	109	7
Ladd Marsh	5	5	20	27
Hanks Marsh	24	22	108	100
Malheur Refuge	444	222	2,000	1,000
Klamath Forest Refuge	67	64	300	290
Total	1,051	822	4,706	3,683

TABLE B-57.--Idaho - aerial counts of Canada geese on all major breeding areas, 1959-1968

Area	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	Average 1956-1967	Percent change from-- 1967	Percent change from-- Average
Snake River drainage:													
Farewell Bend to Walter's Ferry	1,184	1,322	1,223	1,420	1,351	1,748	1,331	1,270	1,771	1,599	1,313	- 10	+ 22
Payette River (mouth to Emmett)	284	430	308	409	477	318	450	516	866	635	415	- 27	+ 53
Strike Reservoir to American Falls	148	126	199	224	222	231	154	225	246	265	196	+ 8	+ 35
Island Park	371	404	475	329	451	419	408	330	344	178	365	- 48	- 51
South Fork	176	204	222	143	239	158	225	251	217	208	185	- 4	+ 8
Mud Lake - Camas NWR	298	257	313	297	210	186	216	171	180	NC	238	--	--
Gray's Lake	401	561	596	516	814	872	799	538	696	620	577	- 10	+ 7
Blackfoot Reservoir	444	512	580	395	587	562	418	377	554	645	482	+ 16	+ 34
Bear River drainage:													
Dingle Marsh	1,150	903	1,418	1,077	2,225	1,605	1,950	1,758	1,528	1,243	1,313	- 19	- 16
Total	4,418	4,719	5,332	4,810	6,576	6,099	5,951	5,436	6,402	5,391	4,854	- 13	+ 11

TABLE B-58.--Idaho - Canada goose production summary and comparison, 1968

	Southwest Units[1]					Southeast Units[2]					All Units combined				
			Long-term	Percent change from--				Long-term	Percent change from--				Long-term	Percent change from--	
	1967	1968	average	1967	Average	1967	1968	average	1967	Average	1967	1968	average	1967	Average
Nests	371	302	353	-19	-15	138	172	198	+25	-13	509	474	555	- 7	-14
Nests hatched	292	237	259	-19	- 9	114	131	149	+15	-12	406	368	408	- 9	-10
Average hatch/successful nest	5.0	5.4	5.2	+ 8	+ 4	4.8	4.0	4.6	-17	-13	4.9	4.9	5.0	--	- 2
Goslings produced	1,464	1,279	1,347	-13	- 5	525	519	682	- 1	-24	1,989	1,798	2,027	-10	-11

[1] Homedale and Payette.
[2] Blackfoot, Island Park Reservoir, North Fork, and North Lake.

TABLE B-59.--California - waterfowl nesting pair index, 1967 and 1968

Species	Sacramento Valley		Suisun Marsh		North San Joaquin Valley		South San Joaquin Valley		Northeastern California		Klamath Basin		Total	
	1967	1968	1967	1968	1967	1968	1967	1968	1967	1968	1967	1968	1967	1968
Ducks:														
Dabblers:														
Mallard	27,800	21,840	1,250	760	1,080	1,380	710	1,150	3,280	4,870	410	570	34,620	30,570
Gadwall	800	360	280	230	500	740	20	130	720	1,150	460	720	2,780	3,330
Cinnamon teal	1,200	1,560	110	180	460	850	170	160	890	1,170	360	660	3,190	4,580
Shoveler	320	160	--	20	100	110	--	40	210	190	60	120	690	640
Pintail	480	400	50	30	100	170	60	100	1,260	2,070	1,160	1,820	3,110	4,590
Subtotal	30,680	24,320	1,670	1,220	2,250	3,250	960	1,580	6,360	9,450	2,450	3,890	44,390	43,710
Divers:														
Redhead	--	200	10	--	10	10	10	140	570	370	350	360	950	1,080
Scaup	--	--	--	--	--	--	--	--	170	70	170	200	340	270
Ruddy duck	40	--	40	--	150	20	60	--	160	140	1,180	650	1,660	810
Subtotal	40	200	50	--	160	30	70	140	900	580	1,700	1,210	2,950	2,160
Miscellaneous	80	80	80	--	--	--	--	--	150	140	120	240	350	460
Total ducks	30,800	24,600	1,770	1,220	2,410	3,280	1,030	1,720	7,410	10,170	4,270	5,340	47,690	46,330
Canada goose	--	--	--	--	--	--	--	--	1,310	54	620	900	1,930	1,440
Coots	22,800	14	640	390	2,990	1,840	1,740	770	1,430	2,070	1,710	2,020	31,310	22,010

TABLE B-60.--California - waterfowl fall population index, 1967 and 1968

Species	Sacramento Valley		Suison Marsh		North San Joaquin Valley		South San Joaquin Valley		Northeastern California		Klamath Basin		Total	
	1967	1968	1967	1968	1967	1968	1967	1968	1967	1968	1967	1968	1967	1968
Ducks:														
Dabblers:														
Mallard	116,430	91,210	5,190	3,160	3,530	4,460	1,970	3,170	21,310	31,600	2,720	3,500	151,150	137,100
Gadwall	4,000	1,800	1,410	1,140	1,570	2,300	40	360	5,680	9,000	3,640	5,260	16,340	19,860
Cinnamon teal	4,570	5,830	390	650	1,460	2,680	460	430	5,290	7,600	1,650	3,800	13,820	20,990
Shoveler	1,430	900	--	60	320	330	--	90	1,280	1,140	540	970	3,570	3,490
Pintail	1,850	1,540	210	110	310	510	180	270	7,240	11,860	7,520	11,830	17,310	26,120
Subtotal	128,280	101,280	7,200	5,120	7,190	10,280	2,650	4,320	40,800	61,200	16,070	25,360	202,190	207,560
Divers:														
Redhead	--	900	60	--	30	30	20	380	3,930	2,500	2,540	2,510	6,580	6,320
Scaup	--	--	--	--	--	--	--	--	1,040	440	1,220	1,450	2,260	1,890
Ruddy duck	180	--	300	--	410	40	160	--	910	810	9,920	4,720	11,880	5,570
Subtotal	180	900	360	--	440	70	180	380	5,880	3,750	13,680	8,680	20,720	13,780
Miscellaneous	360	360	--	--	--	--	--	--	730	690	770	1,560	1,860	2,610
Total ducks	128,820	102,540	7,560	5,120	7,630	10,350	2,830	4,700	47,410	65,640	30,520	35,600	224,770	223,950
Canada goose[1]	--	--	--	--	--	--	--	--	15,600	12,370	4,310	5,780	19,910	18,150
Coots	105,050	68,740	3,340	1,780	16,330	10,020	9,500	4,190	8,590	12,390	11,100	14,130	153,910	111,260

TABLE B-61.--Nevada - aerial waterfowl nesting pair surveys, 1965-68

Species	1965	1966	1967	1968
Ducks:				
Dabblers:				
Mallard	1,271	1,373	1,571	649
Gadwall	982	966	669	682
Cinnamon teal	1,524	1,389	2,134	1,217
Shoveler	228	154	84	87
Pintail	685	628	257	275
Subtotal	4,690	4,510	4,715	2,910
Divers:				
Redhead	2,328	1,983	1,962	1,311
Canvasback	100	82	38	71
Ruddy duck	1,008	827	393	309
Subtotal	3,436	2,892	2,393	1,691
Miscellaneous	136	164	107	128
Total ducks	8,262	7,566	7,215	4,729
Geese	637	658	383	181

TABLE B-62.--Nevada - waterfowl production index, by species, 1965-68

Species	Broods				Young			
	1965	1966	1967	1968	1965	1966	1967	1968
Ducks:								
Dabblers:								
Mallard	100	73	48	234	677	494	305	1,390
Gadwall	183	216	113	336	1,405	1,591	589	2,251
Green-winged teal	4	4	15	12	25	27	85	72
Cinnamon teal	255	192	139	648	1,806	1,560	968	4,027
Shoveler	38	10	8	41	271	25	52	221
Pintail	125	40	42	125	852	237	280	671
Subtotal	705	535	365	1,396	5,036	3,934	2,279	8,632
Divers:								
Redhead	215	160	124	395	1,502	1,141	916	2,796
Canvasback	8	--	5	63	59	--	31	421
Ruddy duck	49	25	32	122	277	148	129	494
Subtotal	272	185	161	580	1,838	1,289	1,076	3,711
Total ducks	977	720	526	1,976	6,874	5,223	3,355	12,343
Geese:								
Canada goose	--	--	--	101	789	930	--	689

TABLE B-63.--Utah - waterfowl trend figures obtained from aerial surveys, 1964-68

Route flows	Sq. miles Sampled	Total ducks counted					Ducks per square mile				
		1964	1965	1966	1967	1968	1964	1965	1966	1967	1968
Box Elder County	48.0	2,595	2,468	2,797	2,843	2,943	54.1	41.4	58.3	59.2	61.3
Weber County	15.5	1,050	1,154	616	994	1,092	67.7	74.3	39.7	64.1	70.4
Davis County	14.2	1,056	986	774	1,004	1,007	74.4	69.4	54.5	70.7	70.9
Jordan River clubs	6.2	564	650	173	643	560	91.0	10.5	27.9	103.7	90.3
Salt Lake County	6.7	33	27	24	104	163	4.9	4.1	3.6	15.5	24.3
Utah County	18.0	280	616	430	603	733	15.6	34.2	23.9	33.5	40.7
Total	108.6	5,578	5,901	4,814	6,191	6,498	51.4	54.3	23.9	57.0	59.8

TABLE B-64.--Utah - species composition of breeding populations of waterfowl as determined from ground survey data, 1967-68

/index numbers in thousands/

Species	Northern Utah		Southern Utah	
	1967	1968	1967	1968
Ducks:				
Dabblers:				
Mallards	12.3	11.3	15.2	13.3
Gadwall	13.0	12.4	14.5	15.2
American widgeon	1.0	Tr	1.7	1.3
Green-winged teal	1.3	.7	3.6	3.0
Blue-winged teal	1.7	1.6	1.4	1.5
Cinnamon teal	17.4	15.5	13.8	15.7
Shoveler	6.9	7.1	6.8	7.1
Pintail	7.7	8.3	10.2	10.1
Divers:				
Redhead	27.3	30.7	19.8	20.7
Scaup	--	--	1.5	1.8
Bufflehead	--	--	0.5	--
Goldeneye	--	--	--	--
Ruddy duck	11.4	13.1	10.9	10.3

TABLE B-65.--Utah - Canada geese production index, 1967-68

Area	Number of breeding pairs		Number of young	
	1967	1968	1967	1968
Cutler Reservoir	25	23	106	140
Public shooting grounds	7	13	32	65
Bear Rivery Refuge and vicinity	201	315	1,024	1,486
Ogden Bay Wildlife Management Area	85	143	373	644
Farmington Bay Wildlife Management Area	78	75	360	359
Scipio Reservoir	2	5	12	26
Redmond Lake	10	5	57	26
Gunnison Reservoir	4	5	19	29
Clear Lake Wildlife Management	7	8	31	38
Mona Reservoir	7	3	26	13
Wales Reservoir	9	3	44	21
Rich County (Bear River)	83	114	114	525
Total	518	712	2,478	3,372

TABLE B-66.--Utah - dike-line breeding pair counts of waterfowl on four State refuges, 1967-1968

Species	1967	1968
Ducks:		
Dabblers:		
Mallard	603	375
Gadwall	750	384
American widgeon	17	4
Green-winged teal	21	8
Blue-winged teal	28	31
Cinnamon teal	901	644
Shoveler	277	208
Pintail	414	281
Subtotal	3,011	1,935
Divers:		
Redhead	1,198	1,268
Canvasback	2	--
Scaup	10	3
Goldeneye	--	--
Bufflehead	1	--
Ruddy duck	381	332
Subtotal	1,592	1,603
Total ducks	4,603	3,538
Geese:		
Canada goose	177	167

TABLE B-67.--Wyoming - trend in waterfowl breeding populations, 1965-68

Species	1965	1966	1967	1968	Percent change from-- 1967	Percent change from-- Average
Ducks:						
Dabblers:						
Mallard	168,041	117,274	120,139	168,669	+ 40	+ 54
Gadwall	23,597	12,184	33,510	39,806	- 19	+181
American widgeon	29,135	11,276	11,205	30,032	+168	+202
Teal	39,638	23,928	41,968	34,070	- 19	+ 53
Shoveler	10,708	7,872	16,068	14,196	- 12	+ 32
Pintail	23,091	13,616	17,810	30,904	+ 74	+ 22
Subtotal	294,210	186,150	240,700	317,677		
Divers:						
Redhead	2,470	424	531	2,127	+301	+ 62
Canvasback	510	1,272	531	1,530	+188	+ 96
Scaup	3,272	5,052	2,271	5,570	+145	+262
Goldeneye	163	1,596	953	1,090	+ 14	+ 84
Bufflehead	163	320	--	218	--	--
Ruddy duck	490	108	1,746	4,695	+169	+221
Subtotal	7,068	8,772	6,032	15,230		
Miscellaneous:						
Merganser	9,281	9,306	7,031	9,718	+38	+ 96
Total ducks	310,559	204,228	253,763	342,625		
Coots	6,083	6,434	5,759	14,472	+151	+212

TABLE B-68.--Wyoming - summary of Canada goose breeding pair surveys, 1962-68

Drainage	1962	1963	1964	1965	1966	1967	1968	Percent change from-- 1967	Percent change from-- 1952-67 average
Snake River[1]	270	441	379	493	553	503	554	+ 10	+ 42
Bear River	498	757	747	898	961	1,008	1,189	+ 18	+ 32
Green River	310	478	432	428	440	455	686	+ 51	+119
North Platte River	241	312	348	360	310	410	416	+ 1	+ 52
Wind River	173	182	199	228	266	446	408	- 9	+144
Big Horn River	--	25	40[2]	44	41	106	118	+ 11	+131
Total geese	1,492	2,195	2,145	2,451	2,571	2,923	3,371	+ 15	+105

[1] Years 1958-66 include all of Snake River Drainage in Wyoming.
[2] Represents an estimate

Table B-69.--Colorado-duck breeding population by species, and the 14-year average, 1968

Species	Number of breeding pairs[1]			Species composition, percent[1]		
	1968	1967	1954-1967[2] Average	1968	1967	Average
Ducks:						
Dabblers:						
Mallard	36,644	34,829	28,099	50.4	57.0	62.1
Gadwall	8,425	5,850	3,825	11.6	9.6	8.5
American widgeon	343	1,008	562	0.5	1.6	1.2
Green-winged teal	5,411	3,692	1,318	7.4	6.0	2.9
Blue-winged teal and Cinnamon teal	6,463	6,449	4,078	8.9	10.6	9.0
Shoveler	3,645	2,105	1,652	5.0	3.4	3.7
Pintail	7,970	4,093	2,973	11.0	6.7	6.6
Divers:						
Redhead	2,063	1,383	1,648	2.8	2.3	3.6
Others	1,750	1,691	1,095	2.4	2.8	2.4
Totals	72,714	61,100	45,250	100.0	100.0	100.0

[1] A change in methods of projecting estimates in North Park in 1968 affects the comparability of the figures between 1968 and 1967, as well as the 14-year average.

[2] San Luis Valley averages, included here, are for the years 1964-1967 only.

TABLE B-70.--Colorado - summary of duck breeding ground population estimates by area, and the 14-year average for comparison, 1968

Area	Total estimated breeding pairs		
	1968	1967	14-year average 1954-1967
San Luis Valley	27,611[1]	29,143	27,545[2]
North Park	19,777[1]	13,722	6,187
South Platte Valley	14,000	8,813	5,130
Cache la Poudre Valley	7,403	5,735	2,177
Yampa Valley	2,985	3,246	2,915
Browns Park	938	441	154
Total	72,714	61,100	44,108

[1] Aerial corrected by species from visibility ratios obtained in the San Luis Valley in 1968.

[2] San Luis Valley averages are based on results of 1964-1967 only. The much less intensive coverage of previous years is not included in the calculations.

TABLE B-71.--Nebraska, south-central-ground and aerial duck species composition, 1968

Species	Ground Number[1]	Ground Percent	Aerial Number[2]	Aerial Percent	Population
Ducks:					
Dabblers:					
Mallard	226	14.07	34	16.19	2,314
Gadwall	50	3.11	--	--	--
American widgeon	30	1.87	--	--	--
Green-winged teal	52	3.24	--	--	--
Blue-winged teal	769	47.88	149	69.94	7,400
Pintail	143	8.90	5	2.31	231
Shoveler	310	19.30	25	11.56	1,295
Divers:					
Redhead	6	.37	--	--	--
Scaup	18	1.12	--	--	--
Ruddy duck	2	.12	--	--	--
Totals	1,606	100.00	213	100.00	11,240

1 After lone male adjustments.

2 After correction for ducks identified as unknown.

TABLE B-72.--Nebraska-sandhills-species composition and breeding population comparison, 1968

Species	Stratum A	Stratum B	1968 Total	Percent composition	1967 Total	Percent change
Ducks:						
Dabblers:						
Mallard	21,532	3,475	25,008	25.0	27,615	- 9.4
Gadwall	10,542	590	11,132	11.1	13,553	-17.9
American widgeon	--	--	--	0.0	679	--
Green-winged teal	179	--	179	0.2	170	+ 5.3
Blue-winged teal	20,459	3,475	23,934	23.9	22,721	+ 5.3
Shoveler	17,154	1,159	18,313	18.3	17,124	+ 6.9
Pintail	6,522	2,027	8,549	8.5	6,277	+36.2
Divers:						
Redhead	5,450	--	5,450	5.4	679	+702.7
Canvasback	1,161	--	1,161	1.2	764	+52.0
Scaup	447	--	447	0.5	2,971	-85.0
Ruddy duck	5,897	--	5,897	5.9	3,650	+61.6
Totals	89,343	10,726	100,070	100.0	96,203	+ 4.0

TABLE C-1--Total retrieved (by species) and unretrieved duck and coot kill in the United States during the 1967 hunting season, with 1966 season comparisons (retrieved kill estimates adjusted for response bias; all estimates include kill by junior hunters)

	Season	Alaska	Pacific Flyway	Central Flyway	Mississippi Flyway	Atlantic Flyway	United States total
Retrieved duck kill:							
Mallard	1966	13,200	1,187,100	687,700	1,656,400	217,900	3,762,400
	1967	19,900	1,337,500	802,000	1,720,300	237,300	4,116,900
	Percent change	+ 51	+ 13	+ 17	+ 4	+ 9	+ 9
Domestic mallard	1966	0	1,600	500	4,700	1,500	8,300
	1967	0	0	300	4,500	2,400	7,200
	Percent change	0	--	- 40	- 4	+ 60	- 13
Black duck	1966	0	0	1,700	126,300	279,300	407,200
	1967	0	0	2,800	120,000	266,200	388,900
	Percent change	0	0	+ 65	- 5	- 5	- 4
Black X mallard	1966	0	0	0	3,900	6,700	10,600
	1967	0	0	0	5,000	6,000	10,900
	Percent change	0	0	0	+ 28	- 10	+ 3
Mottled duck	1966	0	0	61,000	51,700	14,900	127,600
	1967	0	0	40,300	37,300	13,600	91,300
	Percent change	0	0	- 34	- 28	- 9	- 28
Gadwall	1966	1,500	119,400	210,300	295,900	24,100	651,300
	1967	300	170,500	207,100	246,600	24,000	648,600
	Percent change	- 80	+ 43	- 2	- 17	0	0
American widgeon	1966	8,500	460,100	154,400	312,100	75,000	1,010,200
	1967	9,000	542,300	131,000	273,100	61,800	1,017,200
	Percent change	+ 6	+ 18	- 15	- 12	- 18	+ 1

Note: Individual columns rounded separately. Totals do not check exactly as result.

TABLE C-1--Total retrieved (by species) and unretrieved duck and coot kill in the United States during the 1967 hunting season, with 1966 season comparisons (retrieved kill estimates adjusted for response bias; all estimates include kill by junior hunters)--continued

	Season	Alaska	Pacific Flyway	Central Flyway	Mississippi Flyway	Atlantic Flyway	United States total
Retrieved duck kill, continued:							
Green-winged teal	1966	9,100	436,800	235,000	362,600	84,000	1,122,500
	1967	12,700	562,800	279,500	446,700	94,900	1,396,600
	Percent change	+ 40	+ 29	+ 19	+ 23	+ 13	+ 24
Blue-winged and cinnamon teal	1966	0	42,000	35,100	223,500	33,000	333,700
	1967	100	99,700	62,400	217,700	29,500	409,300
	Percent change	++	+137	+ 78	- 3	- 11	+ 23
Shoveler	1966	1,600	230,500	87,500	108,400	14,100	442,200
	1967	3,700	270,100	89,200	91,500	12,600	467,100
	Percent change	+131	+ 17	+ 2	- 16	- 11	+ 6
Pintail	1966	11,100	747,000	167,100	223,000	28,700	1,176,900
	1967	13,400	1,052,400	170,300	231,800	29,600	1,497,600
	Percent change	+ 21	+ 41	+ 2	+ 4	+ 3	+ 27
Wood duck	1966	0	27,500	31,900	495,800	190,500	745,700
	1967	0	45,400	26,000	328,100	167,900	567,500
	Percent change	0	+ 65	- 18	- 34	- 12	- 24
Redhead	1966	0	26,200	71,400	94,900	19,700	212,200
	1967	0	35,400	89,400	94,200	15,200	234,200
	Percent change	0	+ 35	+ 25	- 1	- 23	+ 10
Canvasback	1966	200	62,900	39,700	59,200	57,100	219,200
	1967	100	31,300	23,600	39,100	39,100	115,200
	Percent change	- 50	- 50	- 41	- 34	- 34	- 47

TABLE C-1--Total retrieved (by species) and unretrieved duck and coot kill in the United States during the 1967 hunting season, with 1966 season comparisons (retrieved kill estimates adjusted for response bias; all estimates include kill by junior hunters)--continued

	Season	Alaska	Pacific Flyway	Central Flyway	Mississippi Flyway	Atlantic Flyway	United States total
Retrieved duck kill, continued:							
Greater scaup	1966	500	6,800	3,300	40,800	42,500	93,900
	1967	1,700	37,900	1,700	30,900	47,200	119,500
	Percent change	+240	+457	- 48	- 24	+ 11	+ 27
Lesser scaup	1966	1,000	31,100	79,500	288,400	78,300	478,300
	1967	400	55,000	47,700	243,200	67,200	413,600
	Percent change	- 60	+ 77	- 40	- 16	- 14	- 14
Ring-necked duck	1966	200	22,200	35,000	301,000	98,300	456,800
	1967	100	25,700	36,200	256,300	113,100	431,400
	Percent change	- 50	+ 16	+ 3	- 15	+ 15	- 6
Goldeneyes	1966	2,600	23,500	6,300	43,000	17,700	93,000
	1967	2,800	28,100	5,400	35,900	23,400	95,500
	Percent change	+ 8	+ 20	- 14	- 17	+ 32	+ 3
Bufflehead	1966	800	46,300	11,300	43,400	43,100	145,000
	1967	2,000	33,200	7,900	47,000	34,600	124,600
	Percent change	+150	- 28	- 30	+ 8	- 20	- 14
Ruddy duck	1966	0	31,900	7,000	19,100	11,900	69,900
	1967	0	27,200	5,000	12,100	8,900	53,300
	Percent change	0	- 15	- 29	- 37	- 25	- 24
Oldsquaw	1966	0	200	300	1,300	7,500	9,300
	1967	400	600	300	2,300	5,500	9,100
	Percent change	++	+200	0	+ 77	- 27	- 2

TABLE C-1--Total retrieved (by species) and unretrieved duck and coot kill in the United States during the 1967 hunting season, with 1966 season comparisons (retrieved kill estimates adjusted for response bias; all estimates include kill by junior hunters)--continued

	Season	Alaska	Pacific Flyway	Central Flyway	Mississippi Flyway	Atlantic Flyway	United States total
Retrieved duck kill, continued:							
Eiders	1966	0	0	0	0	8,000	8,000
	1967	0	0	0	0	3,800	3,800
	Percent change	0	0	0	0	- 52	- 52
Scoters	1966	0	3,200	200	6,000	44,500	53,900
	1967	2,000	5,800	600	8,900	41,900	59,200
	Percent change	++	+ 81	+200	+ 48	- 6	+ 10
Hooded merganser	1966	0	1,600	3,900	28,600	14,800	49,100
	1967	100	1,500	1,700	23,300	16,400	42,900
	Percent change	++	- 6	- 56	- 19	+ 11	- 13
Other mergansers	1966	300	4,800	1,200	6,000	8,700	21,000
	1967	700	10,900	1,900	6,700	9,500	29,800
	Percent change	+133	+127	+ 58	+ 12	+ 9	+ 42
Other ducks	1966	1,200	200	100	1,000	1,500	4,000
	1967	300	300	1,000	0	0	1,600
	Percent change	- 75	+ 50	++	--	--	- 60
Total	1966	52,000	3,508,000	1,931,600	4,797,300	1,423,600	11,712,400
	1967	69,800	4,373,800	2,033,100	4,522,500	1,371,600	12,352,900
	Percent change	+ 34	+ 25	+ 5	- 6	- 4	+ 5

TABLE C-1--Total retrieved (by species) and unretrieved duck and coot kill in the United States during the 1967 hunting season, with 1966 season comparisons (retrieved kill estimates adjusted for response bias; all estimates include kill by junior hunters)--continued

	Season	Alaska	Pacific Flyway	Central Flyway	Mississippi Flyway	Atlantic Flyway	United States total
Unretrieved duck kill	1966	9,800	645,200	475,200	1,149,000	342,800	2,622,100
	1967	12,100	842,300	469,600	1,059,400	341,400	2,724,700
	Percent change	+ 23	+ 31	- 1	- 8	0	+ 4
Total duck kill	1966	61,800	4,153,200	2,406,800	5,946,300	1,766,400	14,334,500
	1967	81,900	5,216,000	2,502,700	5,581,900	1,695,100	15,077,600
	Percent change	+ 33	+ 26	+ 4	- 6	- 4	+ 5
Retrieved coot kill	1966	900	167,600	41,900	629,400	110,700	950,400
	1967	500	151,800	64,300	437,100	101,600	755,300
	Percent change	- 44	- 9	+ 53	- 31	- 8	- 21
Unretrieved coot kill	1966	200	88,200	26,600	177,700	35,800	328,400
	1967	100	80,600	42,200	131,800	31,800	286,600
	Percent change	- 50	- 9	+ 59	- 26	- 11	- 13
Total coot kill	1966	1,100	255,700	68,500	807,000	146,400	1,278,800
	1967	600	232,400	106,500	569,000	133,400	1,041,900
	Percent change	- 45	- 9	+ 55	- 30	- 9	- 19

TABLE C-2--Total retrieved (by species) and unretrieved goose kill in the United States during the 1967 hunting season, with 1966 season comparisons (retrieved kill estimates adjusted for response bias; all estimates include kill by junior hunters)

	Season	Alaska	Pacific Flyway	Central Flyway	Mississippi Flyway	Atlantic Flyway	United States total
Retrieved kill:							
Canada goose[1]	1966	6,800	187,700	193,700	151,800	148,000	688,100
	1967	8,800	168,000	109,500	189,500	168,300	644,100
	Percent change	+ 29	- 10	- 43	+ 25	+ 14	- 6
Snow goose	1966	100	175,600	135,500	55,300	0	366,500
	1967	100	76,200	92,600	42,500	100	211,600
	Percent change	0	- 57	- 32	- 23	++	- 42
Blue goose	1966	0	0	55,600	100,200	trace	155,800
	1967	0	0	50,700	81,100	trace	131,800
	Percent change	0	0	- 9	- 19	0	- 15
White-fronted goose	1966	100	71,600	34,400	41,400	0	147,400
	1967	700	67,500	24,400	21,800	0	114,400
	Percent change	++	- 6	- 29	- 47	0	- 22
Brant	1966	100	7,600	300	trace	32,900	40,900
	1967	100	6,800	0	0	24,200	31,100
	Percent change	0	- 11	--	0	- 26	- 24
Others and unknown	1966	400[2]	900[3]	0	1,000[4]	0	2,200
	1967	1,300[2]	400[3]	0	0	0	1,700
	Percent change	+225	- 56	0	--	0	- 23
Total	1966	7,400	443,400	419,400	349,700	181,000	1,401,000
	1967	11,000	318,900	277,100	334,900	192,700	1,134,700
	Percent change	+ 49	- 28	- 34	- 4	+ 6	- 19

TABLE C-2--Total retrieved (by species) and unretrieved goose kill in the United States during the 1967 hunting season, with 1966 season comparisons (retrieved kill estimates adjusted for response bias; all estimates include kill by junior hunters)--continued

	Season	Alaska	Pacific Flyway	Central Flyway	Mississippi Flyway	Atlantic Flyway	United States total
Unretrieved kill	1966	1,100	73,600	70,500	53,800	27,100	226,100
	1967	1,300	52,500	46,900	54,800	25,400	180,700
	Percent change	+ 18	- 29	- 33	+ 2	- 6	- 20
Total kill	1966	8,500	517,000	489,900	403,600	208,000	1,627,100
	1967	12,300	371,400	324,000	389,700	218,000	1,315,400
	Percent change	+ 45	- 28	- 34	- 3	+ 5	- 19

[1]Includes all subspecies. [2]Emperor goose. [3]Ross' goose. [4]Unknown.

TABLE C-3--Waterfowl hunting activity and bags of ducks and geese in Alaska and the Pacific Flyway during the 1967 hunting season, with 1966 season comparisons (estimates unadjusted for response bias; totals include activity by junior hunters)

State and hunting season	Daily duck bag and possession limits	Days in duck season	Number of adult hunters (potential)	Days per adult hunter	Total hunter-days	Seasonal duck bag per adult hunter	Total duck bag	Seasonal goose bag per adult hunter	Total goose bag
Alaska:									
1966	5-10	105	10,470	3.21	36,600	5.98	65,800	0.80	8,700
1967	6-12	105	10,130	4.77	52,500	8.31	88,400	1.22	12,900
Percent change	--	--	- 3	+ 49	+ 43	+ 39	+ 34	+ 52	+ 48
Arizona:									
1966	5-10	90	8,630	4.48	42,000	6.62	59,900	0.31	2,800
1967	5-10	90	10,250	5.35	59,600	7.49	80,600	0.24	2,500
Percent change	--	--	+ 19	+ 19	+ 42	+ 13	+ 35	- 23	- 11
California:									
1966	7-7	75	150,810	5.87	961,800	13.94	2,206,400	2.23	352,100
1967	6-6	86	151,290	6.74	1,108,500	19.46	3,090,400	1.62	256,600
Percent change	--	--	0	+ 15	+ 15	+ 40	+ 40	- 27	- 27
Colorado:[1]									
1966	5-10	90	3,590	4.69	18,300	6.69	25,200	0.25	900
1967	5-10	90	3,240	5.48	19,300	8.73	29,700	0.15	500
Percent change	--	--	- 10	+ 17	+ 5	+ 30	+ 18	- 40	- 44
Idaho:									
1966	5-10	90	27,220	6.72	199,000	10.68	305,400	0.77	21,800
1967	6-6	90	28,540	7.41	229,800	14.28	427,800	0.61	18,000
Percent change	--	--	+ 5	+ 10	+ 15	+ 34	+ 40	- 21	- 17

TABLE C-3--Waterfowl hunting activity and bags of ducks and geese in the Pacific Flyway during the 1967 hunting season, with 1966 season comparisons (estimates unadjusted for response bias; totals include activity by junior hunters)--continued

State and hunting season	Daily duck bag and possession limits	Days in duck season	Number of adult hunters (potential)	Days per adult hunter	Total hunter-days	Seasonal duck bag per adult hunter	Total duck bag	Seasonal goose bag per adult hunter	Total goose bag
Montana:[1]									
1966	6-6	90	21,010	5.44	124,200	8.83	194,900	0.28	6,100
1967	6-6	90	19,470	5.09	107,800	8.34	170,400	0.30	6,000
Percent change	--	--	- 7	- 6	- 13	- 6	- 13	+ 7	- 2
Nevada:									
1966	6-12	75	11,910	5.36	69,400	10.81	135,100	0.81	10,100
1967	6-12	75	12,700	5.57	76,900	11.09	147,800	0.79	10,500
Percent change	--	--	+ 7	+ 4	+ 11	+ 3	+ 9	- 2	+ 4
New Mexico:[1]									
1965	6-12	75	1,150	4.83	6,000	6.41	7,800	0.54	700
1967	5-10	90	1,050	8.21	9,400	6.45	7,100	0.27	300
Percent change	--	--	- 9	+ 70	+ 57	+ 1	- 9	- 50	- 57
Oregon:									
1966	5-10	90	48,640	5.98	316,200	9.17	468,400	1.21	61,400
1967	5-10	90	48,000	6.02	314,300	9.70	489,000	0.88	44,000
Percent change	--	--	- 1	+ 1	- 1	+ 6	+ 4	- 27	- 28
Utah:									
1966	5-10	90	32,780	6.20	220,900	9.99	343,700	0.43	14,800
1967	5-10	90	32,080	6.02	210,000	12.12	408,000	0.20	6,700
Percent change	--	--	- 2	- 3	- 5	+ 21	+ 19	- 53	- 55

TABLE C-3--Waterfowl hunting activity and bags of ducks and geese in the Pacific Flyway during the 1967 hunting season, with 1966 season comparisons (estimates unadjusted for response bias; totals include activity by junior hunters)--continued

State and hunting season	Daily duck bag and possession limits	Days in duck season	Number of adult hunters (potential)	Days per adult hunter	Total hunter-days	Seasonal duck bag per adult hunter	Total duck bag	Seasonal goose bag per adult hunter	Total goose bag
Washington:									
1966	5-10	86	68,670	6.28	469,200	9.48	683,600	0.68	48,900
1967	5-10	86	70,430	6.16	471,800	9.16	676,900	0.38	28,000
Percent change	--	--	+ 3	- 2	+ 1	- 3	- 1	- 44	- 43
Wyoming:[1]									
1966	5-10	90	1,420	5.42	8,300	8.61	12,800	0.78	1,100
1967	5-10	90	1,460	4.33	6,900	7.83	12,000	0.85	1,300
Percent change	--	--	+ 3	- 20	- 17	- 9	- 6	+ 9	+ 18
Flyway total:									
1966	--	--	375,800	5.97	2,435,400	11.28	4,443,200	1.33	520,700
1967	--	--	378,510	6.35	2,614,200	13.94	5,539,800	0.95	374,500
Percent change	--	--	+ 1	+ 6	+ 7	+ 24	+ 25	- 29	- 28

[1]Includes only that portion of the State lying within the Pacific Flyway.

TABLE C-4--Total numbers of duck stamps sold and their proportionate distribution among nonhunters, active hunters, and successful hunters in Alaska and the Pacific Flyway during the 1966 and 1967 hunting seasons

State	1966--Final sales report				1967--Final sales report			
	Total duck stamps sold	Percent sold to nonhunters	Percent of potential adult waterfowl hunters who were: Active	Successful	Total duck stamps sold	Percent sold to nonhunters	Percent of potential adult waterfowl hunters who were: Active	Successful
Alaska	10,640	1.57	64	54	10,358	2.24	72	61
Arizona	8,773	1.62	78	62	10,281	0.30	76	59
California	153,308	1.63	83	72	153,053	1.15	87	79
Colorado[1]	3,637	1.18	83	68	3,265	0.64	86	78
Idaho	27,400	0.65	82	71	28,595	0.20	82	74
Montana[1]	21,156	0.67	83	71	19,715	1.23	79	70
Nevada	11,928	0.15	80	67	12,713	0.13	82	70
New Mexico[1]	1,170	1.54	84	68	1,060	0.62	90	72
Oregon	48,884	0.49	80	67	48,332	0.69	83	67
Utah	32,877	0.30	91	81	32,128	0.16	91	82
Washington	69,235	0.82	80	67	70,974	0.77	80	67
Wyoming[1]	1,430	0.82	81	74	1,467	0.76	78	68
Flyway total	379,798	1.04	82	70	381,583	0.81	84	73

[1]Includes only that portion of the State lying within the Pacific Flyway

TABLE C-5--Waterfowl hunting activity and bags of ducks and geese in the Central Flyway during the 1967 hunting season, with 1966 season comparisons (estimates unadjusted for response bias; totals include activity by junior hunters)

State and hunting season	Daily duck bag and possession limits	Days in duck season	Number of adult hunters (potential)	Days per adult hunter	Total hunter-days	Seasonal duck bag per adult hunter	Total duck bag	Seasonal goose bag per adult hunter	Total goose bag
Colorado:[1]									
1966	3-6	60	26,690	5.45	158,000	3.91	110,600	0.51	14,100
1967	3-6	60	28,720	5.79	180,400	5.38	163,800	0.38	11,400
Percent change	--	--	+ 8	+ 6	+ 14	+ 38	+ 48	- 25	- 19
Kansas:									
1966	3-6	54[2]	34,770	5.73	216,200	5.34	197,100	0.39	14,000
1967	4-8	45[2]	47,500	6.16	317,600	7.27	366,400	0.35	17,400
Percent change	--	--	+ 37	+ 8	+ 47	+ 36	+ 86	- 10	+ 24
Montana:[1]									
1966	3-6	60	6,060	5.05	33,200	5.97	38,400	0.28	1,700
1967	3-6	60	6,370	5.59	38,600	5.15	34,800	0.56	3,700
Percent change	--	--	+ 5	+ 11	+ 16	- 14	- 9	+100	+118
Nebraska:									
1966	3-6	60	31,940	7.48	259,400	6.86	232,300	0.59	19,700
1967	3-6	60	40,330	7.39	323,400	8.04	343,700	0.53	22,300
Percent change	--	--	+ 26	- 1	+ 25	+ 17	+ 48	- 10	+ 13
New Mexico:[1]									
1966	4-8	50	4,420	5.40	25,900	6.61	31,000	0.42	1,900
1967	3-6	58	5,000	4.71	25,600	6.53	34,600	0.21	1,100
Percent change	--	--	+ 13	- 13	- 1	- 1	+ 12	- 50	- 42
North Dakota:									
1966	4-8	50	38,800	7.03	296,000	10.48	431,500	1.43	57,900
1967	4-8	50	40,060	7.21	313,500	10.05	427,100	1.47	61,400
Percent change	--	--	+ 3	+ 3	+ 6	- 4	- 1	+ 3	+ 6

TABLE C-5--Waterfowl hunting activity and bags of ducks and geese in the Central Flyway during the 1967 hunting season, with 1966 season comparisons (estimates unadjusted for response bias; totals include activity by junior hunters)--continued

State and hunting season	Daily duck bag and possession limits	Days in duck season	Number of adult hunters (potential)	Days per adult hunter	Total hunter-days	Seasonal duck bag per adult hunter	Total duck bag	Seasonal goose bag per adult hunter	Total goose bag
Oklahoma:									
1966	3-6	60	25,580	6.52	181,000	6.89	186,900	0.74	19,700
1967	3-6	60	32,720	6.64	235,800	7.12	247,000	0.35	11,900
Percent change	--	--	+ 28	+ 2	+ 30	+ 3	+ 32	- 53	- 40
South Dakota:									
1966	3-6	60	35,500	7.54	290,600	9.06	341,300	1.54	56,800
1967	3-6	60	41,540	7.26	327,400	8.02	353,400	1.04	45,100
Percent change	--	--	+ 17	- 4	+ 13	- 11	+ 4	- 32	- 21
Texas									
1966	4-8	50	99,780	5.93	642,400	9.62	1,018,200	2.84	295,400
1967	4-8	50	110,820	4.38	526,700	6.36	747,600	1.25	144,000
Percent change	--	--	+ 11	- 26	- 18	- 34	- 27	- 56	- 51
Wyoming:[1]									
1966	3-6	54[2]	4,140	5.81	26,100	6.04	26,600	0.41	1,800
1967	3-6	54[2]	4,840	5.16	27,100	6.35	32,600	0.17	900
Percent change	--	--	+ 17	- 11	+ 4	+ 5	+ 23	- 59	- 50
Flyway total:									
1966	--	--	307,700	6.38	2,128,800	8.04	2,613,700	1.52	483,000
1967	--	--	357,890	5.96	2,316,200	7.25	2,751,100	0.86	319,100
Percent change	--	--	+ 16	- 7	+ 9	- 10	+ 5	- 43	- 34

[1]Includes only that portion of the State lying within the Central Flyway.
[2]Split season.

TABLE C-6--Total numbers of duck stamps sold and their proportionate distribution among nonhunters, active hunters, and successful hunters in the Central Flyway during the 1966 and 1967 hunting seasons

State	1966--Final sales report				1967--Final sales report			
	Total duck stamps sold	Percent sold to nonhunters	Percent of potential adult waterfowl hunters who were:		Total duck stamps sold	Percent sold to nonhunters	Percent of potential adult waterfowl hunters who were:	
			Active	Successful			Active	Successful
Colorado[1]	27,005	1.18	79	60	28,904	0.64	82	64
Kansas	35,264	1.40	82	62	47,935	0.91	84	69
Montana[1]	6,100	0.67	80	67	6,449	1.23	87	72
Nebraska	32,284	1.06	84	70	40,540	0.53	87	75
New Mexico[1]	4,489	1.54	89	71	5,034	0.62	87	69
North Dakota	39,070	0.68	92	83	40,114	0.14	90	83
Oklahoma	25,723	0.55	82	64	32,806	0.27	84	69
South Dakota	35,695	0.55	88	79	41,798	0.62	88	78
Texas	101,161	1.36	82	70	111,479	0.59	81	66
Wyoming[1]	4,178	0.82	84	72	4,879	0.76	80	71
Flyway total	310,969	1.05	84	70	359,938	0.57	84	71

[1]Includes only that portion of the State lying within the Central Flyway

TABLE C-7--Waterfowl hunting activity and bags of ducks and geese in the Mississippi Flyway during the 1967 hunting season, with 1966 season comparisons (estimates unadjusted for response bias; totals include activity by junior hunters)

State and hunting season	Daily duck bag and possession limits	Days in duck season	Number of adult hunters (potential)	Days per adult hunter	Total hunter-days	Seasonal duck bag per adult hunter	Total duck bag	Seasonal goose bag per adult hunter	Total goose bag
Alabama:									
1966	4-8	45	15,480	6.14	101,700	6.16	99,900	0.39	6,200
1967	4-8	40	16,350	5.05	88,300	4.51	77,100	0.20	3,400
Percent change	--	--	+ 6	- 18	- 13	- 27	- 23	- 49	- 45
Arkansas:									
1966	4-8	45	35,330	7.71	291,600	12.12	448,200	0.03	1,100
1967	4-8	40	37,670	7.04	283,800	11.14	439,100	0.04	1,700
Percent change	--	--	+ 7	- 9	- 3	- 8	- 2	+ 33	+ 55
Illinois:									
1966	4-8	45	65,290	6.72	469,300	6.83	466,400	0.54	36,300
1967	4-8	40	74,860	6.30	504,700	6.23	487,900	0.55	42,800
Percent change	--	--	+ 15	- 6	+ 8	- 9	+ 5	+ 2	+ 18
Indiana:									
1966	4-8	40[1]	19,440	4.64	96,500	3.15	64,100	0.28	5,600
1967	4-8	33[1]	22,380	4.35	104,300	2.59	60,600	0.17	3,900
Percent change	--	--	+ 15	- 6	+ 8	- 18	- 5	- 39	- 30
Iowa:									
1966	4-8	45	46,840	7.13	357,400	7.33	359,200	0.65	31,400
1967	4-8	40	52,030	7.01	390,000	6.13	333,800	0.83	44,800
Percent change	--	--	+ 11	- 2	+ 9	- 16	- 7	+ 28	+ 43

TABLE C-7--Waterfowl hunting activity and bags of ducks and geese in the Mississippi Flyway during the 1967 hunting season, with 1966 season comparisons (estimates unadjusted for response bias; totals include activity by junior hunters)--continued

State and hunting season	Daily duck bag and possession limits	Days in duck season	Number of adult hunters (potential)	Days per adult hunter	Total hunter-days	Seasonal duck bag per adult hunter	Total duck bag	Seasonal goose bag per adult hunter	Total goose bag
Kentucky:									
1966	4-8	45	8,340	5.99	53,500	3.74	32,700	0.62	5,300
1967	4-8	40	9,150	5.86	57,400	4.63	44,300	0.87	8,300
Percent change	--	--	+ 10	- 2	+ 7	+ 24	+ 35	+ 40	+ 57
Louisiana:									
1966	4-8	45	104,680	7.50	840,500	15.22	1,667,900	1.53	165,200
1967	4-8	40	108,560	6.01	697,700	10.74	1,219,700	0.85	95,600
Percent change	--	--	+ 4	- 20	- 17	- 29	- 27	- 44	- 42
Michigan:									
1966	4-8	45	84,240	4.96	447,200	4.34	382,200	0.14	12,400
1967	4-8	40	94,750	5.38	545,300	4.57	453,200	0.15	14,300
Percent change	--	--	+ 12	+ 8	+ 22	+ 5	+ 19	+ 7	+ 15
Minnesota:									
1966	4-8	45	150,070	5.71	916,300	7.92	1,244,000	0.21	32,300
1967	4-8	40	156,820	5.91	991,000	7.86	1,289,500	0.29	46,700
Percent change	--	--	+ 4	+ 4	+ 8	- 1	+ 4	+ 38	+ 45
Mississippi:									
1966	4-8	45	18,500	4.81	95,200	7.01	135,700	0.05	1,000
1967	4-8	40	19,970	5.13	109,600	7.15	149,500	0.21	4,400
Percent change	--	--	+ 8	+ 7	+ 15	+ 2	+ 10	+320	+340

TABLE C-7--Waterfowl hunting activity and bags of ducks and geese in the Mississippi Flyway during the 1967 hunting season, with 1966 season comparisons (estimates unadjusted for response bias; totals include activity by junior hunters)--continued

State and hunting season	Daily duck bag and possession limits	Days in duck season	Number of adult hunters (potential)	Days per adult hunter	Total hunter-days	Seasonal duck bag per adult hunter	Total duck bag	Seasonal goose bag per adult hunter	Total goose bag
Missouri:									
1966	4-8	45	40,390	5.68	245,300	4.52	191,100	1.72	72,000
1967	4-8	40	51,560	5.59	308,400	5.19	280,000	1.68	89,300
Percent change	--	--	+ 28	- 2	+ 26	+ 15	+ 47	- 2	+ 24
Ohio:									
1966	4-8	41[1]	30,400	5.34	173,500	4.30	136,900	0.16	5,200
1967	4-8	40	29,580	6.14	194,400	5.52	171,000	0.26	8,000
Percent change	--	--	- 3	+ 15	+ 12	+ 28	+ 25	+ 62	+ 54
Tennessee:									
1966	4-8	45	23,740	6.72	170,600	7.71	191,600	0.18	4,400
1967	4-8	40	24,810	6.15	163,300	6.36	165,000	0.23	5,800
Percent change	--	--	+ 5	- 8	- 4	- 18	- 14	+ 28	+ 32
Wisconsin:									
1966	4-8	45	107,570	5.78	665,000	6.73	757,800	0.31	34,000
1967	4-8	40	109,270	6.18	722,300	5.71	653,100	0.23	26,100
Percent change	--	--	+ 2	+ 7	+ 9	- 15	- 14	- 26	- 23
Flyway total:									
1966	--	--	750,300	6.14	4,923,600	7.92	6,177,600	0.54	412,400
1967	--	--	807,760	5.97	5,160,300	6.89	5,823,800	0.47	395,000
Percent change	--	--	+ 8	- 3	+ 5	- 13	- 6	- 13	- 4

[1]Split season

TABLE C-8--Total numbers of duck stamps sold and their proportionate distribution among nonhunters, active hunters, and successful hunters in the Mississippi Flyway during the 1966 and 1967 hunting seasons

State	1966--Final sales report				1967--Final sales report			
	Total duck stamps sold	Percent sold to nonhunters	Percent of potential adult waterfowl hunters who were:		Total duck stamps sold	Percent sold to nonhunters	Percent of potential adult waterfowl hunters who were:	
			Active	Successful			Active	Successful
Alabama	15,865	2.40	87	66	16,370	0.15	88	61
Arkansas	35,625	0.83	84	75	38,517	2.21	89	79
Illinois	66,180	1.35	86	70	75,430	0.76	86	68
Indiana	19,880	2.23	83	58	22,579	0.87	81	53
Iowa	47,438	1.27	88	74	52,269	0.46	85	69
Kentucky	8,445	1.23	88	60	9,201	0.53	87	64
Louisiana	105,398	0.68	87	78	108,682	0.11	85	74
Michigan	84,967	0.86	84	63	95,187	0.46	83	62
Minnesota	151,415	0.89	93	81	157,937	0.71	93	78
Mississippi	18,604	0.53	83	66	20,065	0.45	84	66
Missouri	41,033	1.57	86	70	51,879	0.62	89	77
Ohio	31,176	2.50	88	66	30,175	1.96	89	67
Tennessee	23,909	0.69	89	71	25,027	0.86	88	64
Wisconsin	108,833	1.16	88	74	110,479	1.09	87	72
Flyway total	758,768	1.12	88	73	813,797	0.74	87	71

TABLE C-9--Waterfowl hunting activity and bags of ducks and geese in the Atlantic Flyway during the 1967 hunting season, with 1966 season comparisons (estimates unadjusted for response bias; totals include activity by junior hunters)

State and hunting season	Daily duck bag and possession limits	Days in duck season	Number of adult hunters (potential)	Days per adult hunter	Total hunter-days	Seasonal duck bag per adult hunter	Total duck bag	Seasonal goose bag per adult hunter	Total goose bag
Connecticut:									
1966	3-6	50[1]	9,330	4.52	44,400	3.16	30,500	0.16	1,600
1967	3-6	45[1]	9,250	4.60	44,800	3.33	31,800	0.19	1,800
Percent change	--	--	- 1	+ 2	+ 1	+ 5	+ 4	+ 19	+ 13
Delaware:									
1966	3-6	50[1]	9,010	7.04	66,800	4.71	44,000	2.32	21,400
1967	3-6	45[1]	9,640	6.47	65,600	4.18	41,700	2.75	27,100
Percent change	--	--	+ 7	- 8	- 2	- 11	- 5	+ 19	+ 27
Florida:									
1966	4-8	41[1]	27,980	4.95	145,700	8.32	241,200	0.05	1,300
1967	4-8	36[1]	30,060	4.90	154,800	7.71	240,200	0.03	800
Percent change	--	--	+ 7	- 1	+ 6	- 7	0	- 40	- 38
Georgia:									
1966	4-8	45	10,310	4.91	53,300	6.54	69,900	0.04	500
1967	4-8	40	10,690	4.20	47,200	4.27	47,300	0.05	500
Percent change	--	--	+ 4	- 14	- 11	- 35	- 32	+ 25	0
Maine:									
1966	3-6	55	13,330	5.07	71,100	5.36	73,700	0.09	1,300
1967	3-6	45[1]	13,100	4.86	66,900	5.18	69,900	0.13	1,800
Percent change	--	--	- 2	- 4	- 6	- 3	- 5	+ 44	+ 38

TABLE C-9--Waterfowl hunting activity and bags of ducks and geese in the Atlantic Flyway during the 1967 hunting season, with 1966 season comparisons (estimates unadjusted for response bias; totals include activity by junior hunters)--continued

State and hunting season	Daily duck bag and possession limits	Days in duck season	Number of adult hunters (potential)	Days per adult hunter	Total hunter-days	Seasonal duck bag per adult hunter	Total duck bag	Seasonal goose bag per adult hunter	Total goose bag
Maryland:[2]									
1966	3-6	55	27,750	7.11	202,900	7.10	199,500	2.60	71,300
1967	3-6	50	29,840	6.47	198,700	3.18	99,500	3.02	89,400
Percent change	--	--	+ 8	- 9	- 2	- 55	- 50	+ 16	+ 25
Massachusetts:									
1966	3-6	55	22,240	5.81	136,000	4.80	111,000	0.27	6,200
1967	3-6	45[1]	20,810	5.06	110,800	3.75	80,100	0.18	3,900
Percent change	--	--	- 6	- 13	- 19	- 22	- 28	- 33	- 37
New Hampshire:									
1966	3-6	55	6,450	6.36	43,100	3.84	25,600	0.22	1,400
1967	3-6	45[1]	6,610	5.18	36,000	2.50	17,100	0.09	600
Percent change	--	--	+ 2	- 19	- 16	- 35	- 33	- 59	- 57
New Jersey:									
1966	3-6	50[1]	26,320	5.31	147,000	4.62	125,800	1.74	46,800
1967	3-6	50	28,300	5.22	155,300	4.46	130,500	1.11	32,300
Percent change	--	--	+ 8	- 2	+ 6	- 3	+ 4	- 36	- 31
New York:									
1966	3-6	55	65,860	4.76	329,600	3.40	231,800	0.42	28,100
1967	3-6	45[1]	76,370	4.84	389,100	3.70	292,000	0.46	36,300
Percent change	--	--	+ 16	+ 2	+ 18	+ 9	+ 26	+ 10	+ 29

TABLE C-9--Waterfowl hunting activity and bags of ducks and geese in the Atlantic Flyway during the 1967 hunting season, with 1966 season comparisons (estimates unadjusted for response bias; totals include activity by junior hunters)--continued

State and hunting season	Daily duck bag and possession limits	Days in duck season	Number of adult hunters (potential)	Days per adult hunter	Total hunter-days	Seasonal duck bag per adult hunter	Total duck bag	Seasonal goose bag per adult hunter	Total goose bag
North Carolina:[2]									
1966	3-6	55	24,800	5.57	145,000	4.55	116,700	0.50	12,900
1967	3-6	50	22,440	5.47	129,000	5.12	118,800	0.55	12,800
Percent change	--	--	- 10	- 2	- 11	+ 13	+ 2	+ 10	- 1
Pennsylvania:									
1966	3-6	50[1]	42,810	3.86	173,900	2.47	109,600	0.29	12,700
1967	3-6	50	51,390	4.35	235,200	2.53	134,500	0.28	14,700
Percent change	--	--	+ 20	+ 13	+ 35	+ 2	+ 23	- 3	+ 16
Rhode Island:									
1966	3-6	55	2,440	6.82	17,500	4.79	12,100	0.37	900
1967	3-6	50	2,480	6.65	17,300	4.80	12,300	0.15	400
Percent change	--	--	+ 2	- 2	- 1	0	+ 2	- 59	- 56
South Carolina:									
1966	4-8	45	16,450	6.12	105,800	7.46	127,100	0.08	1,300
1967	3-6	50	18,090	6.20	118,000	5.90	110,600	0.08	1,600
Percent change	--	--	+ 10	+ 1	+ 12	- 21	- 13	0	+ 23
Vermont:									
1966	3-6	55	4,980	5.99	31,400	4.46	23,000	0.48	2,400
1967	3-6	45[1]	5,640	4.82	28,600	4.39	25,700	0.24	1,400
Percent change	--	--	+ 13	- 20	- 9	- 2	+ 12	- 50	- 42

TABLE C-9--Waterfowl hunting activity and bags of ducks and geese in the Atlantic Flyway and the entire United States during the 1967 hunting season, with 1966 season comparisons (estimates unadjusted for response bias; totals include activity by junior hunters)--continued

State and hunting season	Daily duck bag and possession limits	Days in duck season	Number of adult hunters (potential)	Days per adult hunter	Total hunter-days	Seasonal duck bag per adult hunter	Total duck bag	Seasonal goose bag per adult hunter	Total goose bag
Virginia:[2]									
1966	3-6	55	18,720	4.71	92,500	4.81	92,800	0.76	14,700
1967	3-6	50	19,720	4.99	102,800	4.96	100,300	0.66	14,200
Percent change	--	--	+ 5	+ 6	+ 11	+ 3	+ 8	- 13	- 3
West Virginia:									
1966	3-6	49[1]	1,550	3.13	5,100	2.18	3,500	0.14	200
1967	3-6	45[1]	1,850	3.32	6,500	2.52	4,800	0.08	100
Percent change	--	--	+ 19	+ 6	+ 27	+ 16	+ 37	- 43	- 50
Flyway total:									
1966	--	--	330,300	5.23	1,811,100	4.78	1,637,700	0.67	225,000
1967	--	--	356,270	5.09	1,906,600	4.22	1,557,300	0.66	239,600
Percent change	--	--	+ 8	- 3	+ 5	- 12	- 5	- 1	+ 6
United States total:									
1966	--	--	1,774,630	5.96	11,335,400	8.09	14,938,000	0.90	1,649,800
1967	--	--	1,910,550	5.87	12,049,800	7.86	15,760,300	0.68	1,341,100
Percent change	--	--	+ 8	- 2	+ 6	- 3	+ 6	- 24	- 19

[1]Split season.
[2]Washington, D.C. hunters and kill allocated to Maryland, North Carolina, and Virginia.

TABLE C-10--Total numbers of duck stamps sold and their proportionate distribution among nonhunters, active hunters, and successful hunters in the Atlantic Flyway during the 1966 and 1967 hunting seasons

State	1966--Final sales report				1967--Final sales report			
	Total duck stamps sold	Percent sold to nonhunters	Percent of potential adult waterfowl hunters who were:		Total duck stamps sold	Percent sold to nonhunters	Percent of potential adult waterfowl hunters who were:	
			Active	Successful			Active	Successful
Connecticut	9,548	2.32	78	57	9,479	2.43	75	54
Delaware	9,179	1.80	85	66	9,695	0.58	86	66
District of Columbia	2,520	3.38	83	68	3,034	4.85	83	66
Florida	28,514	1.89	82	69	30,281	0.73	82	69
Georgia	10,500	1.80	84	68	10,719	0.24	84	63
Maine	13,641	2.26	81	68	13,223	0.95	82	68
Maryland	26,435	0.90	82	68	28,376	1.34	84	68
Massachusetts	22,452	0.92	79	59	21,119	1.48	76	53
New Hampshire	6,563	1.67	83	58	6,726	1.72	79	53
New Jersey	26,928	2.26	81	63	28,935	2.20	80	59
New York	67,549	2.50	77	59	77,586	1.57	76	57
North Carolina	24,871	0.73	85	64	22,483	0.75	84	61
Pennsylvania	43,662	1.95	84	62	52,084	1.33	84	58
Rhode Island	2,500	2.35	79	57	2,507	1.10	75	54
South Carolina	16,576	0.77	90	71	18,107	0.10	86	65
Vermont	5,115	2.64	87	67	5,725	1.45	79	62
Virginia	18,278	1.84	81	63	18,982	0.97	82	64
West Virginia	1,641	5.79	78	50	1,876	1.43	75	58
Flyway total	336,472	1.83	82	63	360,937	1.29	81	61
United States total	1,796,647	1.23	85	70	1,926,613	0.83	85	69

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and faithfully to defend from
waste the natural resources of
my country—its soil and
minerals, forests,
waters, and
wildlife.