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WATERFOWL STATUS REPORT 1968

Compiled and edited by

R. Kahler Martinson, Chief
James F. Voelzer and Mildred R. Hudgins
Branch of Management

DIVISION OF MANAGEMENT AND ENFORCEMENT

in collaboration with

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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 3½ 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. 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 conditions

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 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 7 1/2 percent over the long-term average.

The important diving ducks showed no change from last year but were still down substantially from the average. Buffleheads, 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 water-fowl.

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 thundershows. None of these flocked ducks gave any evidence of being late nesters.
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 of the 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 17° 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 nonexistent 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, tornados, 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-146 through B-148)

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.
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 h, 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 state-wide 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, golden-eye, 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-5½)

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.
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.
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 37 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.
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 run-off.

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 1¼-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.
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, and Robert L. Croft
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

<table>
<thead>
<tr>
<th>Species</th>
<th>Pacific Flyway</th>
<th>Central Flyway</th>
<th>Mississippi Flyway</th>
<th>Atlantic Flyway</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ducks:</strong></td>
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</tr>
<tr>
<td><strong>Dabblers:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mallard</td>
<td>1,847,700</td>
<td>2,454,100</td>
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<td>6,652,800</td>
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<td>Black duck</td>
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<td>--</td>
<td>135,500</td>
<td>336,600</td>
<td>472,100</td>
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<tr>
<td>Mottled duck</td>
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<td>7,400</td>
<td>63,000</td>
<td>1,700</td>
<td>72,100</td>
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<tr>
<td>Gadwall</td>
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<td>59,800</td>
<td>812,700</td>
<td>31,900</td>
<td>939,400</td>
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<td>American widgeon</td>
<td>768,200</td>
<td>128,600</td>
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<td>94,000</td>
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<td>Green-winged teal</td>
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<td>573,800</td>
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<td>Blue-winged teal</td>
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<td>8,700</td>
<td>187,800</td>
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<tr>
<td>Shoveler</td>
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<td>Tree duck</td>
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<td>--</td>
<td>--</td>
<td>1,000</td>
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<td>Wood duck</td>
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<td>--</td>
<td>--</td>
<td>--</td>
<td>3,000</td>
</tr>
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<td><strong>Subtotal</strong></td>
<td>4,705,300</td>
<td>3,249,100</td>
<td>5,591,900</td>
<td>831,600</td>
<td>14,377,900</td>
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<td><strong>Divers:</strong></td>
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<td>Redhead</td>
<td>4,100</td>
<td>124,700</td>
<td>58,700</td>
<td>172,800</td>
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<td>Canvasback</td>
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<td>7,200</td>
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<td>Scaup</td>
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<td>Bufflehead</td>
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<td>41,800</td>
<td>80,800</td>
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<td>Ruddy duck</td>
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<td>179,800</td>
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<tr>
<td><strong>Subtotal</strong></td>
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<td>209,300</td>
<td>1,042,400</td>
<td>987,200</td>
<td>2,662,600</td>
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<td><strong>Miscellaneous:</strong></td>
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<tr>
<td>Eider and Scoter</td>
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<td>189,600</td>
<td>289,500</td>
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<td>Oldsquaw</td>
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<td>--</td>
<td>3,100</td>
<td>3,100</td>
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<tr>
<td>Merganser</td>
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<td>90,500</td>
<td>--</td>
<td>44,300</td>
<td>155,800</td>
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<tr>
<td><strong>Subtotal</strong></td>
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<td>90,500</td>
<td>--</td>
<td>237,000</td>
<td>448,400</td>
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<tr>
<td><strong>Unidentified</strong></td>
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<td>11,400</td>
<td>38,800</td>
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<td>140,200</td>
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<tr>
<td><strong>Total ducks</strong></td>
<td>5,305,900</td>
<td>3,560,300</td>
<td>6,673,100</td>
<td>2,089,800</td>
<td>17,629,100</td>
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TABLE A-1.--Survey of waterfowl on their winter habitat, January 1968--continued

<table>
<thead>
<tr>
<th>Species</th>
<th>Pacific Flyway</th>
<th>Central Flyway</th>
<th>Mississippi Flyway</th>
<th>Atlantic Flyway</th>
<th>Total</th>
</tr>
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<tr>
<td>Geese:</td>
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<tr>
<td>Snow goose(^2)</td>
<td>505,800</td>
<td>164,200</td>
<td>58,000</td>
<td>50,500</td>
<td>778,500</td>
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<tr>
<td>Blue goose</td>
<td>(3)</td>
<td>97,800</td>
<td>305,000</td>
<td>1,200</td>
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<tr>
<td>White-fronted goose</td>
<td>70,900</td>
<td>12,200</td>
<td>24,400</td>
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<td>107,500</td>
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<tr>
<td>Canada goose</td>
<td>171,700</td>
<td>275,200</td>
<td>445,300</td>
<td>615,200</td>
<td>1,507,400</td>
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<td>Cackling goose</td>
<td>63,600</td>
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<td>--</td>
<td>--</td>
<td>63,600</td>
</tr>
<tr>
<td>Total geese</td>
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<td>549,400</td>
<td>832,700</td>
<td>666,900</td>
<td>2,861,400</td>
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<td>Brant:</td>
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<td>367,800</td>
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<td>Swans:</td>
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<td>Whistling swan</td>
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<td>--</td>
<td>45,600</td>
<td>81,200</td>
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<tr>
<td>Trumpeter swan</td>
<td>700</td>
<td>100</td>
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<td>--</td>
<td>800</td>
</tr>
<tr>
<td>Total swans</td>
<td>36,300</td>
<td>100</td>
<td>--</td>
<td>45,600</td>
<td>82,000</td>
</tr>
<tr>
<td>Coots:</td>
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<td>101,900</td>
<td>694,500</td>
<td>300,200</td>
<td>1,852,300</td>
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<tr>
<td>Grand total</td>
<td>7,064,200</td>
<td>4,211,700</td>
<td>8,200,300</td>
<td>3,316,000</td>
<td>22,792,200</td>
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\(^1\) Includes west coast of Mexico

\(^2\) Includes Ross' goose

\(^3\) Combined with Snow geese
### TABLE A-2.--Distribution of wintering waterfowl, 1968

/nearest hundreds/

<table>
<thead>
<tr>
<th>State</th>
<th>Ducks</th>
<th>Geese</th>
<th>Brant</th>
<th>Swans</th>
<th>Coots</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pacific Flyway:</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td>Washington</td>
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<td>15,700</td>
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<td>Oregon</td>
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<td>900</td>
<td>7,700</td>
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<td>Idaho</td>
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<td>--</td>
<td>400</td>
<td>25,700</td>
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<td>Nevada</td>
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<td>300</td>
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<td>California</td>
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<td>300</td>
<td>1,400</td>
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<td>Arizona</td>
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<td>200</td>
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<td>76,500</td>
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<td>Montana</td>
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<td>100</td>
<td>8,300</td>
<td>93,400</td>
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<tr>
<td>Wyoming</td>
<td>4,500</td>
<td>200</td>
<td>--</td>
<td>--</td>
<td>500</td>
<td>5,300</td>
</tr>
<tr>
<td>Colorado</td>
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<td>--</td>
<td>--</td>
<td>17,100</td>
</tr>
<tr>
<td>New Mexico</td>
<td>6,600</td>
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<td>--</td>
<td>--</td>
<td>100</td>
<td>6,700</td>
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<tr>
<td>Mexico (west coast)</td>
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<td>--</td>
<td>136,000</td>
<td>--</td>
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<td>136,000</td>
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<td><strong>Flyway total</strong></td>
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<td>812,000</td>
<td>154,300</td>
<td>36,400</td>
<td>755,800</td>
<td>7,064,400</td>
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<table>
<thead>
<tr>
<th>State</th>
<th>Ducks</th>
<th>Geese</th>
<th>Brant</th>
<th>Swans</th>
<th>Coots</th>
<th>Total</th>
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<td><strong>Central Flyway:</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colorado</td>
<td>333,500</td>
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<td>--</td>
<td>--</td>
<td>399,400</td>
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<tr>
<td>Nebraska</td>
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<td>365,900</td>
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<td>Kansas</td>
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<td>23,600</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>733,200</td>
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<td>Oklahoma</td>
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<td>6,000</td>
<td>444,700</td>
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### TABLE A-2. -- Distribution of wintering waterfowl, 1968--continued

/nearest hundreds/

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<th>Brant</th>
<th>Swans</th>
<th>Coots</th>
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| 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 |

48
### B. WATERFOWL BREEDING GROUND SURVEY TABLES

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

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<td>76</td>
<td>67</td>
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<td>42</td>
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<td>32</td>
<td>59</td>
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<td>2</td>
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<td>17</td>
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<td>17</td>
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<td>611</td>
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<td>597</td>
<td>657</td>
<td>657</td>
<td>585</td>
<td>562</td>
<td>355</td>
<td>425</td>
<td>314</td>
<td>498</td>
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<td>26</td>
<td>33</td>
<td>10</td>
<td>9</td>
<td>9</td>
<td>13</td>
<td>38</td>
<td>35</td>
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TABLE B-2.--Alaska - comparative status of waterfowl breeding population indexes by species and stratum, 1967-1968

(index numbers in thousands/)

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<th>Total 1968</th>
<th>Average 1959-68</th>
<th>Average 1967</th>
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<td>+ 88</td>
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<td>32</td>
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<tr>
<td>Pintail</td>
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<td>247</td>
<td>622</td>
<td>386</td>
<td>+ 152</td>
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<td>378</td>
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</tr>
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<td>312</td>
<td>314</td>
<td>498</td>
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<td>+ 59</td>
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<td>38</td>
<td>35</td>
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<td>+ 89</td>
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<td>133</td>
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<td>+ 53</td>
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<td>353</td>
<td>441</td>
<td>+ 25</td>
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<tr>
<td>Total ducks</td>
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<td>1,946</td>
<td>1,442</td>
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### TABLE B-3. --Alaska - whistling swan breeding population indexes, 1959-1968

[index numbers in thousands/]

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<td>648</td>
<td>492</td>
<td>468</td>
<td>414</td>
<td>208</td>
<td>212</td>
<td>210</td>
<td>212</td>
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<td>Number counted</td>
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<td>710</td>
<td>759</td>
<td>470</td>
<td>567</td>
<td>481</td>
<td>298</td>
<td>256</td>
<td>208</td>
<td>213</td>
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<td>79</td>
<td>56</td>
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TABLE B-4. --Old Crow Flats, Yukon - 10-year trend in waterfowl breeding population index by species, 1958-68

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<td>Dabblers:</td>
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<td>1</td>
<td>1</td>
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<td>2</td>
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</tr>
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<td>6</td>
<td>7</td>
<td>4</td>
<td>5</td>
<td>9</td>
<td>15</td>
<td>13</td>
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<td>--</td>
<td>1</td>
<td>--</td>
<td>1</td>
<td>--</td>
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Note: 1959 data missing
### TABLE B-6 - Alaska: comparative brood counts from two study areas, 1963-68

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\(^1\) 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)

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

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

[Index numbers in thousands/]

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<tr>
<td>Shoveler</td>
<td>6.3 6.6 -- --</td>
<td>28.9 --</td>
<td>0.3</td>
<td>38.1 34.5 78.8</td>
<td>30 -52</td>
</tr>
<tr>
<td>Pintail</td>
<td>4.2 19.8 7.9 22.9 10.8 0.9 7.8 5.3 3.5</td>
<td>83.1 60.9 257.4</td>
<td>+ 36 -66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>229.8 69.2 81.5 60.7 78.1 33.6 51.5 17.8 7.1</td>
<td>629.3 593.6 1,135.3</td>
<td>+ 6 -75</td>
<td></td>
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<tr>
<td>Divers:</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redhead</td>
<td>-- 3.5 -- --</td>
<td>1.3 --</td>
<td>--</td>
<td>4.8 12.5 17.6</td>
<td>- 62 -73</td>
</tr>
<tr>
<td>Canvasback</td>
<td>4.2 5.4 -- --</td>
<td>29.6 2.7 4.0</td>
<td>--</td>
<td>45.9 8.7 32.7</td>
<td>+ 428 +40</td>
</tr>
<tr>
<td>Scaup</td>
<td>260.1 19.0 348.1 89.3 30.9 115.8 328.2 62.1 8.7</td>
<td>1,256.2 1,712.0</td>
<td>1,453.9</td>
<td>- 27 -14</td>
<td></td>
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<tr>
<td>Ring-necked duck</td>
<td>14.1 -- 10.3 2.1</td>
<td>1.3 --</td>
<td>0.7</td>
<td>28.5 55.8 49.7</td>
<td>- 40 -43</td>
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<tr>
<td>Goldeneye</td>
<td>-- 1.9 -- --</td>
<td>6.0 5.1</td>
<td>--</td>
<td>13.0 18.1 52.2</td>
<td>- 28 -75</td>
</tr>
<tr>
<td>Ruffehead</td>
<td>68.9 6.8 47.5 5.7</td>
<td>8.1 1.8</td>
<td>--</td>
<td>138.5 118.8 122.0</td>
<td>+ 17 +14</td>
</tr>
<tr>
<td>Ruddy duck</td>
<td>-- 0.2 -- --</td>
<td>--</td>
<td>0.2 5.0</td>
<td>5.5</td>
<td>- 96 -96</td>
</tr>
<tr>
<td>Subtotal</td>
<td>347.3 36.8 405.9 97.1 77.2 125.4 326.2 62.8 8.7</td>
<td>1,157.4 1,930.9 1,733.6</td>
<td>- 23 -14</td>
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</tbody>
</table>

Note: The values in the table represent the waterfowl breeding population indexes by strata in the Northern Alberta, northeastern British Columbia, and Northwest Territories region from 1967 to 1968. The indexes are given in thousands, and the percentage change from the 1967 average is also provided.
TABLE 3-8.--Northern Alberta, northeastern British Columbia, and Northwest Territories - waterfowl breeding population indexes by strata, 1967-68 -- continued

<table>
<thead>
<tr>
<th>Species</th>
<th>Stratum and index</th>
<th>Total 1968</th>
<th>Total 1967</th>
<th>10-year Average</th>
<th>Percent change from 1967 Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14</td>
<td>15</td>
<td>06</td>
<td>07</td>
<td>08</td>
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<td>Ducks:</td>
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<td>Miscellaneous:</td>
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<td></td>
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<tr>
<td>Scoter</td>
<td>--</td>
<td>3.4</td>
<td>165.3</td>
<td>42.9</td>
<td>--</td>
</tr>
<tr>
<td>Oldsquaw</td>
<td>34.4</td>
<td>--</td>
<td>29.3</td>
<td>20.7</td>
<td>12.8</td>
</tr>
<tr>
<td>Merganser</td>
<td>--</td>
<td>3.1</td>
<td>2.4</td>
<td>--</td>
<td>8.1</td>
</tr>
<tr>
<td>Subtotal</td>
<td>34.4</td>
<td>6.5</td>
<td>197.0</td>
<td>63.6</td>
<td>20.9</td>
</tr>
<tr>
<td>Total ducks</td>
<td>611.5</td>
<td>112.5</td>
<td>604.4</td>
<td>221.4</td>
<td>176.2</td>
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<tr>
<td>Geese:</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White-fronted goose</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Canada goose</td>
<td>7.0</td>
<td>0.2</td>
<td>--</td>
<td>2.9</td>
<td>--</td>
</tr>
<tr>
<td>Swans</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Coots</td>
<td>--</td>
<td>9.2</td>
<td>--</td>
<td>--</td>
<td>5.4</td>
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</table>

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

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<tr>
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<td>19</td>
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<td>11</td>
<td>21</td>
<td>20</td>
<td>29</td>
</tr>
<tr>
<td>06</td>
<td>283</td>
<td>55</td>
<td>133</td>
<td>158</td>
<td>709</td>
<td>364</td>
<td>505</td>
<td>55</td>
<td>283</td>
</tr>
<tr>
<td>07</td>
<td>122</td>
<td>111</td>
<td>93</td>
<td>58</td>
<td>147</td>
<td>172</td>
<td>114</td>
<td>47</td>
<td>128</td>
</tr>
<tr>
<td>09</td>
<td>41</td>
<td>43</td>
<td>27</td>
<td>36</td>
<td>79</td>
<td>38</td>
<td>50</td>
<td>12</td>
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<tr>
<td>10</td>
<td>291</td>
<td>347</td>
<td>282</td>
<td>183</td>
<td>378</td>
<td>270</td>
<td>304</td>
<td>293</td>
<td>273</td>
</tr>
<tr>
<td>11</td>
<td>54</td>
<td>73</td>
<td>28</td>
<td>9</td>
<td>27</td>
<td>50</td>
<td>78</td>
<td>64</td>
<td>102</td>
</tr>
<tr>
<td>Total</td>
<td>806</td>
<td>635</td>
<td>566</td>
<td>463</td>
<td>1,349</td>
<td>905</td>
<td>1,072</td>
<td>491</td>
<td>856</td>
</tr>
</tbody>
</table>

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

<table>
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<tr>
<th>Stratum</th>
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<th>06</th>
<th>07</th>
<th>09</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broods observed</td>
<td>103</td>
<td>--</td>
<td>38</td>
<td>25</td>
<td>123</td>
<td>195</td>
</tr>
<tr>
<td>Brood size</td>
<td>5.5</td>
<td>--</td>
<td>4.7</td>
<td>5.5</td>
<td>5.3</td>
<td>5.4</td>
</tr>
<tr>
<td>Index</td>
<td>29</td>
<td>283</td>
<td>128</td>
<td>41</td>
<td>273</td>
<td>102</td>
</tr>
<tr>
<td>Average</td>
<td>15</td>
<td>283</td>
<td>122</td>
<td>41</td>
<td>291</td>
<td>54</td>
</tr>
</tbody>
</table>

| Total | 1968 | 1967 | Average | Percent change from 1967
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Broods observed</td>
<td>484</td>
<td>293</td>
<td>338</td>
<td>+65</td>
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<tr>
<td>Brood size</td>
<td>5.3</td>
<td>6.5</td>
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<td></td>
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<tr>
<td>Index</td>
<td>856</td>
<td>491</td>
<td>806</td>
<td>+74</td>
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<tr>
<td>Average</td>
<td>806</td>
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<td></td>
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</tr>
</tbody>
</table>

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/]

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<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dabblers:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mallard</td>
<td>227</td>
<td>252</td>
<td>220</td>
<td>267</td>
<td>178</td>
<td>192</td>
<td>183</td>
<td>173</td>
<td>417</td>
<td>404</td>
</tr>
<tr>
<td>Black duck</td>
<td>16</td>
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<td>27</td>
<td>32</td>
</tr>
<tr>
<td>Gadwall</td>
<td>51</td>
<td>1</td>
<td>15</td>
<td>4</td>
<td>8</td>
<td>9</td>
<td>12</td>
<td>8</td>
<td>25</td>
<td>23</td>
</tr>
<tr>
<td>American widgeon</td>
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<td>22</td>
<td>37</td>
<td>24</td>
<td>33</td>
<td>36</td>
<td>32</td>
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<td>14</td>
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<td>15</td>
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<td>22</td>
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<td>8</td>
<td>4</td>
<td>27</td>
<td>30</td>
<td>37</td>
<td>14</td>
<td>11</td>
<td>21</td>
<td>69</td>
</tr>
<tr>
<td>Shoveler</td>
<td>--</td>
<td>6</td>
<td>6</td>
<td>11</td>
<td>12</td>
<td>26</td>
<td>17</td>
<td>16</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Pintail</td>
<td>13</td>
<td>30</td>
<td>57</td>
<td>13</td>
<td>20</td>
<td>21</td>
<td>9</td>
<td>15</td>
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</tr>
<tr>
<td><strong>Subtotal</strong></td>
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<td>337</td>
<td>360</td>
<td>429</td>
<td>307</td>
<td>367</td>
<td>299</td>
<td>285</td>
<td>561</td>
<td>664</td>
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<td><strong>Divers:</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Redhead</td>
<td>--</td>
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<td>22</td>
<td>11</td>
<td>10</td>
<td>17</td>
<td>18</td>
<td>13</td>
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<td>50</td>
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<td>32</td>
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<td>24</td>
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<td>Scaup</td>
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<td>211</td>
<td>235</td>
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<td>15</td>
<td>92</td>
<td>121</td>
<td>42</td>
<td>78</td>
<td>151</td>
<td>94</td>
<td>123</td>
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<td>2</td>
<td>73</td>
<td>115</td>
<td>47</td>
<td>23</td>
<td>17</td>
<td>35</td>
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<td>98</td>
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<td>Bufflehead</td>
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<td>22</td>
<td>40</td>
<td>27</td>
<td>9</td>
<td>16</td>
<td>27</td>
<td>33</td>
<td>100</td>
</tr>
<tr>
<td>Ruddy Duck</td>
<td>--</td>
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<td>7</td>
<td>11</td>
<td>4</td>
<td>1</td>
<td>3</td>
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<td>5</td>
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</tr>
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<td>515</td>
<td>497</td>
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<td>404</td>
<td>452</td>
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<td>809</td>
</tr>
<tr>
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<td>------</td>
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<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
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</tr>
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<td>23</td>
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<td>Oldsquaw</td>
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<td>--</td>
<td>--</td>
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<td>1</td>
<td>2</td>
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<tr>
<td>Merganser</td>
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<td>253</td>
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<td>191</td>
<td>166</td>
<td>109</td>
<td>145</td>
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<td>181</td>
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<tr>
<td>Subtotal</td>
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<td>268</td>
<td>161</td>
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<td>117</td>
<td>152</td>
<td>179</td>
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</tr>
<tr>
<td>Total ducks</td>
<td>1,029</td>
<td>995</td>
<td>921</td>
<td>1,158</td>
<td>992</td>
<td>810</td>
<td>855</td>
<td>916</td>
<td>1,344</td>
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<td>Canada goose</td>
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<td>28</td>
<td>17</td>
<td>27</td>
<td>42</td>
<td>51</td>
</tr>
<tr>
<td>Coots</td>
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<td>30</td>
<td>6</td>
<td>18</td>
<td>17</td>
<td>16</td>
<td>10</td>
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<td>953</td>
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TABLE B-12.--Northern Saskatchewan, northern Manitoba and Ontario -- comparative status of waterfowl breeding population indexes by species and stratum, 1968

(Index numbers in thousands/)

<table>
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<tr>
<th>Species</th>
<th>Stratum</th>
<th>Total Previous Year</th>
<th>Total Current Year</th>
<th>Average 1959</th>
<th>Average 1968</th>
<th>Percent change from 1967 Average</th>
</tr>
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<td>18</td>
<td>17</td>
<td>16</td>
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</tr>
<tr>
<td>Dabblers:</td>
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</tr>
<tr>
<td>Mallard</td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>Black duck</td>
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<td>Gadwall</td>
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</tr>
<tr>
<td>American widgeon</td>
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### TABLE B-13—Northern Saskatchewan, northern Manitoba and Ontario—long-term trend in waterfowl brood and late-nesting indexes by species, July 1962-1968

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<tr>
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<td><strong>155</strong></td>
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</table>

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

<table>
<thead>
<tr>
<th>Species</th>
<th>Stratum</th>
<th>Total Previous year</th>
<th>Total Current year</th>
<th>Average 1962 to 1968</th>
<th>Percent change from Previous year</th>
<th>Percent change from Average</th>
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<td>Broods:</td>
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</tr>
<tr>
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<td>- 18.4</td>
<td>+ 57.0</td>
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<td>5.5</td>
<td>5.4</td>
<td>+ 1.9</td>
<td>+ 1.9</td>
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<td>Coot brood index</td>
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<td>9</td>
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<td>+ 88.9</td>
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<td>Dabblers:</td>
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<tr>
<td>Mallard</td>
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<td>43</td>
<td>61</td>
<td>- 53.5</td>
<td>- 29.5</td>
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<tr>
<td>Gadwall</td>
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<td>- 33.3</td>
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<tr>
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</tr>
<tr>
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<td>3</td>
<td>+ 50.0</td>
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<tr>
<td>Shoveler</td>
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<td>2</td>
<td>- 66.7</td>
<td>- 50.0</td>
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<td>Pintail</td>
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<td>6</td>
<td>- 66.7</td>
<td>- 50.0</td>
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<td>-100.0</td>
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<td>--</td>
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<tr>
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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

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<th>Species</th>
<th>Stratum</th>
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<th>Total Current year</th>
<th>Average 1962 to 1968</th>
<th>Percent change from Previous year</th>
<th>Average</th>
</tr>
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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/)

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

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Note: Canada geese not included before 1963 and mergansers not included before 1965.
TABLE P-17.—Southern Alberta - comparative status of waterfowl breeding population indexes by species and stratum, 1968

[Index numbers in thousands/]

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

(Numbers in thousands)

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<td>757</td>
<td>629</td>
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<td>465</td>
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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

\(\text{index numbers in thousands}/\)

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<th>Species</th>
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<th>Total 1968</th>
<th>Average 1958-67</th>
<th>percent change from 1967 Average</th>
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<td>Dabblers:</td>
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<tr>
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<td>92</td>
<td>102</td>
<td>181</td>
<td>+10.9  +43.6</td>
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<tr>
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<td>14</td>
<td>6</td>
<td>+180.0 +133.3</td>
</tr>
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<td>American widgeon</td>
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<td>32</td>
<td>41</td>
<td>+68.4  -22.0</td>
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<tr>
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<td>13</td>
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<td>18</td>
<td>+38.5  N.C.</td>
</tr>
<tr>
<td>Blue-winged teal</td>
<td>11</td>
<td>5</td>
<td>26</td>
<td>-54.5  -80.8</td>
</tr>
<tr>
<td>Shoveler</td>
<td>15</td>
<td>6</td>
<td>19</td>
<td>-60.0  -36.8</td>
</tr>
<tr>
<td>Pintail</td>
<td>24</td>
<td>18</td>
<td>45</td>
<td>-25.0  -60.0</td>
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<tr>
<td><strong>Subtotal</strong></td>
<td>179</td>
<td>195</td>
<td>336</td>
<td>+8.9   -42.0</td>
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<td><strong>Divers:</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redhead</td>
<td>5</td>
<td>10</td>
<td>16</td>
<td>+100.0 -37.5</td>
</tr>
<tr>
<td>Canvasback</td>
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<td>7</td>
<td>15</td>
<td>N.C.  -53.3</td>
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<td>Scaup</td>
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<td>168</td>
<td>164</td>
<td>+57.0  +2.4</td>
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<tr>
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<td>2</td>
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<td>N.C.  -94.4</td>
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<tr>
<td>Bufflehead</td>
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<td>25</td>
<td>49</td>
<td>-30.6  -49.0</td>
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<tr>
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</tr>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Scoter</td>
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<td>16</td>
<td>54</td>
<td>N.C.  -70.4</td>
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<tr>
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<td>436</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Canada goose</td>
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</tr>
<tr>
<td><strong>Coots:</strong></td>
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<td></td>
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<tr>
<td>American coot</td>
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<td>23</td>
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<td>465</td>
<td>745</td>
<td>+24.3  -37.6</td>
</tr>
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**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

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<td></td>
</tr>
<tr>
<td>Duck brood index</td>
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<td>132</td>
<td>204</td>
<td>190</td>
<td>107</td>
<td>172</td>
<td>165</td>
<td>95</td>
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<td>6.0</td>
<td>6.1</td>
<td>6.6</td>
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<td>18</td>
<td>17</td>
<td>35</td>
<td>25</td>
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<td><strong>Late-nesting index:</strong> (^2)</td>
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<td>Green-winged teal</td>
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<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>T</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Blue-winged teal</td>
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<td>1</td>
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<td>T</td>
<td>T</td>
<td>7</td>
<td>5</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Shoveler</td>
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<td>7</td>
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<tr>
<td>Pintail</td>
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<td>1</td>
<td>--</td>
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<td>12</td>
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<td>T</td>
<td>T</td>
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<td>1</td>
<td>1</td>
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<td>T</td>
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</tr>
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<td>10</td>
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<td>9</td>
</tr>
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<td>Ring-necked duck</td>
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<td>--</td>
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<td>--</td>
<td>--</td>
<td>T</td>
<td>T</td>
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<td>1</td>
</tr>
<tr>
<td>Bufflehead</td>
<td>--</td>
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<td>--</td>
<td>--</td>
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</tr>
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<td>3</td>
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<td>10</td>
<td>69</td>
<td>66</td>
<td>59</td>
<td>56</td>
</tr>
</tbody>
</table>

\(^1\) 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/

<table>
<thead>
<tr>
<th>Species</th>
<th>Stratum</th>
<th>Total</th>
<th>Average</th>
<th>Percent change from 1967 Average</th>
</tr>
</thead>
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</tr>
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<td>165</td>
<td>95</td>
<td>198</td>
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<tr>
<td>Average brood size</td>
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<td>5.9</td>
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<tr>
<td>American widgeon</td>
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</tr>
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</tr>
<tr>
<td>Shoveler</td>
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<td>7</td>
<td>3</td>
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</tr>
<tr>
<td>Pintail</td>
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<td>9</td>
<td>5</td>
<td></td>
</tr>
<tr>
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<td>49</td>
<td>40</td>
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</tr>
<tr>
<td>Divers:</td>
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<td></td>
</tr>
<tr>
<td>Redhead</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Canvasback</td>
<td>1 Tr Tr</td>
<td>--</td>
<td>1 Tr</td>
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</tr>
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<td>Scaup</td>
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<td>7</td>
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<td>--</td>
<td>Tr</td>
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<tr>
<td>Goldeneye</td>
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<td>1 Tr</td>
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<td>Bufflehead</td>
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<td>--</td>
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<td>Tr</td>
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<td>11</td>
</tr>
<tr>
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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

<table>
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<tr>
<th>Year</th>
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<th>Canvasback</th>
<th>Total</th>
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TABLE B-23.--Southern Saskatchewan - long-term pond indexes by strata and comparison to average and previous year, May and July 1952 to 1968

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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

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*(Index numbers in thousands)*
TABLE B-25.--Southern Saskatchewan -- comparative status of waterfowl breeding population indexes by species and stratum, 1968

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<th>Current year</th>
<th>Average 1955 to 1967</th>
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Note: Index numbers in thousands.
TABLE B-26.--Southern Saskatchewan - 10-year trend in waterfowl brood and late-nesting indexes by species, July 1968

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Footnotes p. 85
### TABLE B-26

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

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

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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:

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<td>1955</td>
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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/

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<td>295</td>
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<tr>
<td>1961</td>
<td>158</td>
<td>263</td>
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<td>399</td>
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<td>247</td>
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### TABLE B-30.--Southern Manitoba - 10-year trend in waterfowl breeding population indexes by species, 1959-68

*Index numbers in thousands*

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

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

*Index numbers in thousands/

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<th>Percent change 1967</th>
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TABLE B-31.--Southern Manitoba - comparative status of waterfowl breeding population indexes by species and stratum, 1968--continued

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<th>Totals</th>
<th>Average 1953-67</th>
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<th>Index from 15-year average</th>
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TABLE B-32. Southern Manitoba - long-term trend in waterfowl brood and late-nesting indexes by species, July, 1954-1968—continued

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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

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<th>Species</th>
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<th>Totals Strata A and B combined</th>
<th>Average 1954 thru 1967</th>
<th>Percent change from 14-year Average</th>
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TABLE B-33.—Southern Manitoba—waterfowl brood and late-nesting indexes by stratum compared to previous year, and long-term average, 1968—continued

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<th>Average 1954 thru 1967</th>
<th>Percent change from 14-year Average</th>
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TABLE B-34.--Southern Manitoba - lone drake index: Long-term trend expressed as a percentage of total drakes, 1953-68

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<td>1967</td>
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<td>83.4</td>
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<td>1968</td>
<td>73.4</td>
<td>66.0</td>
<td>7.4</td>
<td>72.5</td>
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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*)

<table>
<thead>
<tr>
<th>Year</th>
<th>Stratum 40</th>
<th>Stratum 41</th>
<th>Total</th>
</tr>
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<tr>
<td></td>
<td>Stock dam</td>
<td>Pothole</td>
<td>Stock dam</td>
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<tr>
<td>May:</td>
<td></td>
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<td>1965</td>
<td>46.9</td>
<td>16.8</td>
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<td>1966</td>
<td>33.9</td>
<td>3.8</td>
<td>59.9</td>
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<td>1967</td>
<td>25.3</td>
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<td>1968</td>
<td>21.1</td>
<td>5.7</td>
<td>37.7</td>
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Average 1965-68 179.5

Percent change from 1967 -30

Percent change from average -34

July:

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<th>Total</th>
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</thead>
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<td></td>
<td>Stock dam</td>
<td>Pothole</td>
<td>Stock dam</td>
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<td>1966</td>
<td>19.9</td>
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<td>26.5</td>
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<td>1968</td>
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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/]

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<th>Species</th>
<th>1965</th>
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<th>1967</th>
<th>1968</th>
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<td></td>
</tr>
<tr>
<td>Dabblers:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mallard</td>
<td>233.3</td>
<td>362.8</td>
<td>172.7</td>
<td>126.0</td>
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<tr>
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<td>52.1</td>
<td>60.0</td>
<td>35.8</td>
<td>38.0</td>
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<tr>
<td>American widgeon</td>
<td>24.7</td>
<td>29.7</td>
<td>38.1</td>
<td>47.9</td>
</tr>
<tr>
<td>Green-winged teal</td>
<td>7.7</td>
<td>10.2</td>
<td>11.7</td>
<td>10.9</td>
</tr>
<tr>
<td>Blue-winged teal</td>
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<td>33.2</td>
<td>17.6</td>
<td>13.8</td>
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<tr>
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<td>24.6</td>
<td>33.6</td>
<td>28.6</td>
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<tr>
<td>Pintail</td>
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<td>162.5</td>
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<td>Divers:</td>
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<td>Redhead</td>
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<td>4.5</td>
<td>9.4</td>
<td>1.6</td>
</tr>
<tr>
<td>Canvasback</td>
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<td>5.0</td>
<td>1.7</td>
<td>2.6</td>
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<td>17.1</td>
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<td>13.1</td>
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<td>3.5</td>
<td>1.4</td>
</tr>
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<td>Goldeneye</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bufflehead</td>
<td></td>
<td></td>
<td>0.9</td>
<td>1.0</td>
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<tr>
<td>Ruddy duck</td>
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<td>0.1</td>
<td>1.2</td>
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<td>37.2</td>
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<td>Scoter</td>
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<td></td>
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</tr>
<tr>
<td>Merganser</td>
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<tr>
<td>Other</td>
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<tr>
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<td>557.1</td>
<td>708.6</td>
<td>478.2</td>
<td>330.9</td>
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<td>5.5</td>
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<tr>
<td>Coots:</td>
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<td></td>
<td>6.0</td>
<td>15.4</td>
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<tr>
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<td>706.8</td>
<td>491.7</td>
<td>351.8</td>
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100
TABLE B-37. — Montana - comparative status of waterfowl breeding population indexes by species and stratum

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<td></td>
<td></td>
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<td>38.1</td>
<td>47.9</td>
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<td>10.1</td>
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<td>23.5</td>
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<td>33.6</td>
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<td>29.1</td>
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<td>128.3</td>
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<td></td>
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<tr>
<td>Redhead</td>
<td>___</td>
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<td>1.6</td>
<td></td>
<td>9.4</td>
<td>1.6</td>
<td>4.3</td>
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<td>- 83 = 63</td>
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<td>1.7</td>
<td>2.6</td>
<td>1.7</td>
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<td>+ 52 = 52</td>
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<td>9.3</td>
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<td>21.6</td>
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<td>1.4</td>
<td>___</td>
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<td></td>
<td>___</td>
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<td>___</td>
<td>___</td>
<td>___</td>
<td></td>
<td>___ = ___</td>
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<td></td>
<td>.4</td>
<td></td>
<td>.1</td>
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<td>.5</td>
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<td>+900 = 100</td>
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<td>.9</td>
<td>1.2</td>
<td>1.0</td>
<td></td>
<td>+ 33 = 20</td>
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<td>37.2</td>
<td>20.9</td>
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<td>Merganser</td>
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<td>___</td>
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<td>4.4</td>
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<td>- 87 = 78</td>
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<td>331.9</td>
<td>518.7</td>
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<td>- 31 = 36</td>
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<td>7.3</td>
<td>5.5</td>
<td>6.4</td>
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<td>- 25 = 14</td>
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<td>15.4</td>
<td>10.7</td>
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<td>+156 = 43</td>
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<td>351.8</td>
<td>525.8</td>
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<td>- 29 = 33</td>
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Index numbers in thousands.
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)

<table>
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<tr>
<th>Species</th>
<th>Stratum 40</th>
<th>Stratum 41</th>
<th>Total 1966</th>
<th>Total 1967</th>
<th>Total 1968</th>
<th>Average 1966-68</th>
<th>1967</th>
<th>Average</th>
<th>Percent change from--</th>
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<td>Duck brood index</td>
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<td>51.14</td>
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<td>-17</td>
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<tr>
<td>Average brood size¹</td>
<td>4.2 4.47</td>
<td>5.2 4.27</td>
<td>5.3 4.9</td>
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<td>4.86</td>
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<td>Dabblers:</td>
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</tr>
<tr>
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<td>2.6 .62</td>
<td>2.8 2.51</td>
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<td>-- .4</td>
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<td>.3 .28</td>
<td>.6 1.0</td>
<td>.28</td>
<td>.63</td>
<td></td>
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<tr>
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<td>-- .62</td>
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<td>.90</td>
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<td>10.39</td>
<td>-16.5</td>
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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

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<th>Stratum 41</th>
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<th>Average</th>
<th>Percent change from--</th>
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</tr>
<tr>
<td>Redhead</td>
<td>--</td>
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<td>--</td>
<td>.4</td>
<td>--</td>
<td>--</td>
<td>.14</td>
<td>.05</td>
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</tr>
<tr>
<td>Scaup</td>
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<td>--</td>
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<td>--</td>
<td>--</td>
<td>--</td>
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</tr>
<tr>
<td>Ring-necked duck</td>
<td>--</td>
<td>--</td>
<td>.3</td>
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<td>.3</td>
<td>.30</td>
<td>.20</td>
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<td>--</td>
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<td>--</td>
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</tr>
<tr>
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<td>--</td>
<td>.4</td>
<td>--</td>
<td>--</td>
<td>.4</td>
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<tr>
<td>Ruddy duck</td>
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<td>.6</td>
<td>.28</td>
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<td>.6</td>
<td>.28</td>
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<td>Subtotal</td>
<td>--</td>
<td>--</td>
<td>.9</td>
<td>.86</td>
<td>--</td>
<td>.9</td>
<td>.86</td>
<td>.59</td>
<td>- 4</td>
</tr>
<tr>
<td>Total ducks</td>
<td>4.4</td>
<td>4.41</td>
<td>8.8</td>
<td>6.72</td>
<td>9.6</td>
<td>13.2</td>
<td>11.13</td>
<td>11.31</td>
<td>-16</td>
</tr>
<tr>
<td>Coots</td>
<td>--</td>
<td>2.21</td>
<td>1.0</td>
<td>.86</td>
<td>--</td>
<td>1.0</td>
<td>3.08</td>
<td>1.36</td>
<td>+308</td>
</tr>
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</table>

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Mallard</th>
<th>Pintail</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1965</td>
<td>69.7</td>
<td>76.1</td>
<td>72.3</td>
</tr>
<tr>
<td>1966</td>
<td>79.1</td>
<td>85.9</td>
<td>81.2</td>
</tr>
<tr>
<td>1967¹</td>
<td>78.4</td>
<td>87.2</td>
<td>82.4</td>
</tr>
<tr>
<td>1968</td>
<td>72.0</td>
<td>83.7</td>
<td>75.2</td>
</tr>
</tbody>
</table>

¹Recalculated and corrected.
TABLE B-40. — Montana, Helena Unit — Canada goose population trend during nesting season, 1967-1968

<table>
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<tr>
<th>Area</th>
<th>1967</th>
<th></th>
<th></th>
<th>1968</th>
<th></th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>P</td>
<td>S</td>
<td>G</td>
<td>T</td>
<td>P</td>
<td>S</td>
</tr>
<tr>
<td>Canyon Ferry Res.</td>
<td>27</td>
<td>13</td>
<td>15</td>
<td>82</td>
<td>26</td>
<td>14</td>
</tr>
<tr>
<td>Missouri River</td>
<td>13</td>
<td>2</td>
<td>4</td>
<td>32</td>
<td>26</td>
<td>8</td>
</tr>
<tr>
<td>Lake Helena</td>
<td>33</td>
<td>8</td>
<td>3</td>
<td>77</td>
<td>28</td>
<td>8</td>
</tr>
<tr>
<td>Totals</td>
<td>73</td>
<td>23</td>
<td>22</td>
<td>191</td>
<td>80</td>
<td>30</td>
</tr>
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</table>

1 Townsend Bridge to Toston Dam.

---


<table>
<thead>
<tr>
<th>Area</th>
<th>1967</th>
<th></th>
<th></th>
<th>Total</th>
<th>1968</th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NB</td>
<td>Adult</td>
<td>Young</td>
<td></td>
<td>NB</td>
<td>Adult</td>
<td>Young</td>
<td></td>
</tr>
<tr>
<td>Canyon Ferry Res.</td>
<td>38</td>
<td>46</td>
<td>93</td>
<td>177</td>
<td>13</td>
<td>18</td>
<td>70</td>
<td>101</td>
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<tr>
<td>Missouri River</td>
<td>2</td>
<td>10</td>
<td>17</td>
<td>29</td>
<td>--</td>
<td>2</td>
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<td>7</td>
</tr>
<tr>
<td>Lake Helena</td>
<td>2</td>
<td>58</td>
<td>81</td>
<td>141</td>
<td>--</td>
<td>66</td>
<td>145</td>
<td>211</td>
</tr>
<tr>
<td>Totals</td>
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<td>114</td>
<td>191</td>
<td>347</td>
<td>13</td>
<td>86</td>
<td>220</td>
<td>319</td>
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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 /

<table>
<thead>
<tr>
<th>Year</th>
<th>Strata 30 and 33</th>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>May:</strong></td>
<td></td>
</tr>
<tr>
<td>1959</td>
<td>209</td>
</tr>
<tr>
<td>1960</td>
<td>397</td>
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<tr>
<td>1961</td>
<td>105</td>
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<tr>
<td>1962</td>
<td>348</td>
</tr>
<tr>
<td>1963</td>
<td>413</td>
</tr>
<tr>
<td>1964</td>
<td>207</td>
</tr>
<tr>
<td>1965</td>
<td>338</td>
</tr>
<tr>
<td>1966</td>
<td>475</td>
</tr>
<tr>
<td>1967</td>
<td>523</td>
</tr>
<tr>
<td>1968†</td>
<td>384</td>
</tr>
<tr>
<td><strong>Average 1959-1967</strong></td>
<td><strong>335</strong></td>
</tr>
<tr>
<td><strong>Percent change 1968 from average</strong></td>
<td><strong>14.6</strong></td>
</tr>
<tr>
<td><strong>Percent change 1968 from 1967</strong></td>
<td><strong>26.6</strong></td>
</tr>
<tr>
<td><strong>July:</strong></td>
<td></td>
</tr>
<tr>
<td>1959</td>
<td>110</td>
</tr>
<tr>
<td>1960</td>
<td>311</td>
</tr>
<tr>
<td>1961</td>
<td>108</td>
</tr>
<tr>
<td>1962</td>
<td>231</td>
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<td>1963</td>
<td>275</td>
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<td>1964</td>
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<td>1965</td>
<td>471</td>
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<td>1966</td>
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</tr>
<tr>
<td>1967</td>
<td>328</td>
</tr>
<tr>
<td>1968†</td>
<td>314</td>
</tr>
<tr>
<td><strong>Average 1959-1967</strong></td>
<td><strong>255</strong></td>
</tr>
<tr>
<td><strong>Percent change 1968</strong></td>
<td><strong>23.1</strong></td>
</tr>
<tr>
<td><strong>Percent change 1968 from 1967</strong></td>
<td>4.</td>
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</tbody>
</table>

† 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, 1960-68

*Index numbers in thousands*

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ducks:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dabblers:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mallard</td>
<td>123</td>
<td>108</td>
<td>174</td>
<td>247</td>
<td>163</td>
<td>171</td>
<td>160</td>
<td>206.1</td>
<td>130.4</td>
</tr>
<tr>
<td>Gadwall</td>
<td>30</td>
<td>20</td>
<td>62</td>
<td>113</td>
<td>38</td>
<td>89</td>
<td>119</td>
<td>153.4</td>
<td>124.4</td>
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<tr>
<td>Green-winged teal</td>
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<td>2</td>
<td>3</td>
<td>1</td>
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<td>--</td>
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<td>2.3</td>
<td>4.0</td>
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<td>224</td>
<td>171</td>
<td>101</td>
<td>121.4</td>
<td>106.5</td>
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<tr>
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<td>37</td>
<td>107</td>
<td>93</td>
<td>41</td>
<td>65</td>
<td>52</td>
<td>70.7</td>
<td>43.6</td>
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<td>Pintail</td>
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<td>182</td>
<td>115</td>
<td>60</td>
<td>35</td>
<td>82</td>
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<td>57.7</td>
</tr>
<tr>
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<td>628</td>
<td>737</td>
<td>528</td>
<td>531</td>
<td>527</td>
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<td>467.8</td>
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<tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redhead</td>
<td>18</td>
<td>7</td>
<td>22</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>35</td>
<td>24.4</td>
<td>22.4</td>
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<tr>
<td>Canvasback</td>
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<td>5</td>
<td>3</td>
<td>13</td>
<td>16</td>
<td>11</td>
<td>26</td>
<td>16.2</td>
<td>10.5</td>
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<tr>
<td>Ring-necked duck</td>
<td>Tr</td>
<td>--</td>
<td>--</td>
<td>1</td>
<td>--</td>
<td>--</td>
<td>2</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Ruddy duck</td>
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<td>6</td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>7</td>
<td>8.2</td>
<td>5.1</td>
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<td><strong>Subtotal</strong></td>
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<td>23</td>
<td>53</td>
<td>70</td>
<td>43</td>
<td>64</td>
<td>87</td>
<td>61.8</td>
<td>52.0</td>
</tr>
<tr>
<td><strong>Total ducks</strong></td>
<td>553</td>
<td>335</td>
<td>681</td>
<td>807</td>
<td>571</td>
<td>595</td>
<td>614</td>
<td>741.3</td>
<td>519.8</td>
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</table>

Footnote p. 108
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</tr>
</thead>
<tbody>
<tr>
<td>Geese:</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada goose</td>
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<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>.2</td>
<td>--</td>
</tr>
<tr>
<td>Coots:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td>56</td>
<td>62</td>
<td>31</td>
<td>72</td>
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<td>84.6</td>
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<td>737</td>
<td>869</td>
<td>602</td>
<td>667</td>
<td>708</td>
<td>826.1</td>
<td>641.8</td>
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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.14.--North Dakota - comparative status of waterfowl population indexes by species and stratum, 1968

*Index numbers in thousands*

<table>
<thead>
<tr>
<th>Species</th>
<th>Stratum</th>
<th>Total</th>
<th>Percent change from 1967</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>29</td>
<td>30</td>
<td>31</td>
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<td>Ducks:</td>
<td></td>
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<tr>
<td>Dabblers:</td>
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<td></td>
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<tr>
<td>Mallard</td>
<td>5.0</td>
<td>81.9</td>
<td>27.1</td>
</tr>
<tr>
<td>Gadwall</td>
<td>1.1</td>
<td>94.1</td>
<td>1.3</td>
</tr>
<tr>
<td>American widgeon</td>
<td>--</td>
<td>.3</td>
<td>4.6</td>
</tr>
<tr>
<td>Green-winged teal</td>
<td>--</td>
<td>2.2</td>
<td>--</td>
</tr>
<tr>
<td>Blue-winged teal</td>
<td>1.1</td>
<td>79.5</td>
<td>4.6</td>
</tr>
<tr>
<td>Shoveler</td>
<td>.4</td>
<td>33.3</td>
<td>3.6</td>
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<tr>
<td>Pintail</td>
<td>--</td>
<td>39.2</td>
<td>8.8</td>
</tr>
<tr>
<td>Subtotal</td>
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<td>330.5</td>
<td>50.0</td>
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<td>Divers:</td>
<td></td>
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</tr>
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<td>Redhead</td>
<td>--</td>
<td>17.4</td>
<td>--</td>
</tr>
<tr>
<td>Canvasback</td>
<td>--</td>
<td>9.9</td>
<td>--</td>
</tr>
<tr>
<td>Scaup</td>
<td>--</td>
<td>8.9</td>
<td>--</td>
</tr>
<tr>
<td>Ruddy duck</td>
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<td>--</td>
</tr>
<tr>
<td>Subtotal</td>
<td>--</td>
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<td>90.5</td>
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<td>462.9</td>
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TABLE B-45.—South Dakota - comparative status of waterfowl breeding population indexes by species and stratum, 1968

[index numbers in thousands/]

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<th>Species</th>
<th>Stratum</th>
<th>Total</th>
<th>Percent change from 1967</th>
</tr>
</thead>
<tbody>
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<td></td>
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<td>33</td>
<td>34</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dabblers:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Mallard</td>
<td>23.0</td>
<td>60.8</td>
<td>74.3</td>
</tr>
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<td>Gadwall</td>
<td>8.6</td>
<td>40.3</td>
<td>13.7</td>
</tr>
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<td>American widgeon</td>
<td>.3</td>
<td>.8</td>
<td>11.2</td>
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<tr>
<td>Green-winged teal</td>
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<td>1.8</td>
<td>4.0</td>
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<td>Blue-winged teal</td>
<td>13.8</td>
<td>38.6</td>
<td>13.1</td>
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<td>18.7</td>
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<tr>
<td>Pintail</td>
<td>4.8</td>
<td>23.4</td>
<td>14.7</td>
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<td>181.7</td>
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<td>Divers:</td>
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<td></td>
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</tr>
<tr>
<td>Redhead</td>
<td>1.1</td>
<td>6.0</td>
<td>--</td>
</tr>
<tr>
<td>Canvasback</td>
<td>.6</td>
<td>1.2</td>
<td>--</td>
</tr>
<tr>
<td>Scaup</td>
<td>2.5</td>
<td>5.5</td>
<td>3.7</td>
</tr>
<tr>
<td>Ring-necked duck</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Bufflehead</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Ruddy duck</td>
<td>.9</td>
<td>.8</td>
<td>1.6</td>
</tr>
<tr>
<td>Subtotal</td>
<td>5.1</td>
<td>13.5</td>
<td>5.3</td>
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<tr>
<td>Total ducks</td>
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<td>46.8</td>
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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

\[\text{index numbers in thousands}\]

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<th>Percent change from-</th>
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<td>average</td>
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<td>Broods:</td>
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<td>38.9 - 39.3</td>
<td>- 32.3</td>
</tr>
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<td>6.0 + 9.1</td>
<td>--</td>
</tr>
<tr>
<td>Coot brood index</td>
<td>6.5 15.3</td>
<td>7.6 - 57.7</td>
<td>- 14.5</td>
</tr>
<tr>
<td>Late-nesting index(^2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dabblers:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mallard</td>
<td>12.8 25.6</td>
<td>18.8 - 50.0</td>
<td>- 31.9</td>
</tr>
<tr>
<td>Gadwall</td>
<td>7.0 22.9</td>
<td>14.0 - 69.4</td>
<td>- 50.0</td>
</tr>
<tr>
<td>American widgeon</td>
<td>-- .6</td>
<td>.4 --</td>
<td>--</td>
</tr>
<tr>
<td>Green-winged teal</td>
<td>-- .8</td>
<td>.4 --</td>
<td>--</td>
</tr>
<tr>
<td>Blue-winged teal</td>
<td>1.4 17.4</td>
<td>13.6 - 92.0</td>
<td>- 97.1</td>
</tr>
<tr>
<td>Shoveler</td>
<td>-- .8</td>
<td>1.0 --</td>
<td>--</td>
</tr>
<tr>
<td>Pintail</td>
<td>-- 2.4</td>
<td>1.3 --</td>
<td>--</td>
</tr>
<tr>
<td>Subtotal</td>
<td>21.2 70.5</td>
<td>49.5 - 69.9</td>
<td>- 57.2</td>
</tr>
<tr>
<td>Divers:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redhead</td>
<td>.3 1.3</td>
<td>1.4 - 76.9</td>
<td>- 78.6</td>
</tr>
<tr>
<td>Canvasback</td>
<td>-- .4</td>
<td>.2 --</td>
<td>--</td>
</tr>
<tr>
<td>Scaup</td>
<td>-- .4</td>
<td>.1 --</td>
<td>--</td>
</tr>
<tr>
<td>Ruddy duck</td>
<td>5.1 6.1</td>
<td>6.8 - 16.4</td>
<td>- 25.0</td>
</tr>
<tr>
<td>Subtotal</td>
<td>5.4 8.2</td>
<td>8.5 - 34.2</td>
<td>- 46.5</td>
</tr>
<tr>
<td>Grand total</td>
<td>26.6 78.7</td>
<td>58.0 - 66.2</td>
<td>- 54.1</td>
</tr>
</tbody>
</table>

\(^1\) 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/.

<table>
<thead>
<tr>
<th>Strata</th>
<th>Duck brood index</th>
<th>Average brood size</th>
<th>Coot brood index</th>
<th>Late-nesting index</th>
</tr>
</thead>
<tbody>
<tr>
<td>29 and 30 and 31</td>
<td>1.0</td>
<td>4.0</td>
<td>.7</td>
<td>Mallard .7</td>
</tr>
<tr>
<td>32 and 33 and 34</td>
<td>28.8</td>
<td>5.9</td>
<td>7.4</td>
<td>Gadwall --</td>
</tr>
<tr>
<td>All strata</td>
<td>20.5</td>
<td>4.5</td>
<td>--</td>
<td>American widgeon .5</td>
</tr>
<tr>
<td>1968</td>
<td>50.3</td>
<td>5.4</td>
<td>8.1</td>
<td>Green-winged teal</td>
</tr>
<tr>
<td>1967</td>
<td>74.5</td>
<td>5.3</td>
<td>18.5</td>
<td>Blue-winged teal .5</td>
</tr>
<tr>
<td>All</td>
<td>-32.5</td>
<td>+1.9</td>
<td>-56.2</td>
<td>Shoveler</td>
</tr>
</tbody>
</table>

Subtotal 1.7 24.0 13.0 39.5 103.7 61.9

Divers:

| Redhead | .4 | Canvasback | .4 |
| Scaup | .4 |
| Ruddy duck | 5.8 | |

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent lone drakes¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>1959</td>
<td>45.5</td>
</tr>
<tr>
<td>1960</td>
<td>73.3</td>
</tr>
<tr>
<td>1961</td>
<td>67.1</td>
</tr>
<tr>
<td>1962</td>
<td>73.9</td>
</tr>
<tr>
<td>1963</td>
<td>77.7</td>
</tr>
<tr>
<td>1964</td>
<td>67.6</td>
</tr>
<tr>
<td>1965</td>
<td>66.6</td>
</tr>
<tr>
<td>1966</td>
<td>69.6</td>
</tr>
<tr>
<td>1967</td>
<td>78.4</td>
</tr>
<tr>
<td>1968</td>
<td>70.3</td>
</tr>
</tbody>
</table>

¹ Lone drakes include only mallards, pintails, and canvasback.
TABLE B-49.--Minnesota-waterfowl breeding population indexes for selected areas, 1968

<table>
<thead>
<tr>
<th>Species</th>
<th>Stratum</th>
<th>Stratum</th>
<th>Stratum</th>
<th>Stratum</th>
<th>State total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 and 2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Ducks:</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Dabblers:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mallard</td>
<td>21,520</td>
<td>23,485</td>
<td>455</td>
<td>8,318</td>
<td>53,778</td>
</tr>
<tr>
<td>Gadwall</td>
<td>652</td>
<td>939</td>
<td>--</td>
<td>--</td>
<td>1,560</td>
</tr>
<tr>
<td>American widgeon</td>
<td>569</td>
<td>1,074</td>
<td>90</td>
<td>879</td>
<td>2,612</td>
</tr>
<tr>
<td>Green-winged teal</td>
<td>155</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>155</td>
</tr>
<tr>
<td>Blue-winged teal</td>
<td>39,470</td>
<td>24,961</td>
<td>--</td>
<td>1,406</td>
<td>65,837</td>
</tr>
<tr>
<td>Shoveler</td>
<td>2,017</td>
<td>2,147</td>
<td>--</td>
<td>--</td>
<td>4,164</td>
</tr>
<tr>
<td>Pintail</td>
<td>724</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>724</td>
</tr>
<tr>
<td>Wood duck</td>
<td>2,328</td>
<td>1,610</td>
<td>104</td>
<td>88</td>
<td>4,130</td>
</tr>
<tr>
<td><em>Subtotal</em></td>
<td>67,404</td>
<td>54,216</td>
<td>649</td>
<td>10,691</td>
<td>132,960</td>
</tr>
<tr>
<td>Divers:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redhead</td>
<td>5,070</td>
<td>1,879</td>
<td>--</td>
<td>--</td>
<td>6,949</td>
</tr>
<tr>
<td>Canvasbaek</td>
<td>724</td>
<td>2,684</td>
<td>--</td>
<td>--</td>
<td>3,408</td>
</tr>
<tr>
<td>Scaup 2</td>
<td>13,915</td>
<td>7,515</td>
<td>--</td>
<td>264</td>
<td>21,694</td>
</tr>
<tr>
<td>Ring-necked duck</td>
<td>5,897</td>
<td>2,818</td>
<td>90</td>
<td>234</td>
<td>9,039</td>
</tr>
<tr>
<td>Ruddy duck</td>
<td>466</td>
<td>11,541</td>
<td>--</td>
<td>--</td>
<td>12,007</td>
</tr>
<tr>
<td><em>Subtotal</em></td>
<td>26,072</td>
<td>26,437</td>
<td>90</td>
<td>498</td>
<td>53,097</td>
</tr>
<tr>
<td>Total ducks</td>
<td>93,476</td>
<td>80,653</td>
<td>739</td>
<td>11,489</td>
<td>186,057</td>
</tr>
<tr>
<td>Coots</td>
<td>45,109</td>
<td>32,208</td>
<td>--</td>
<td>--</td>
<td>77,317</td>
</tr>
<tr>
<td><em>Total</em></td>
<td>138,585</td>
<td>112,861</td>
<td>739</td>
<td>11,189</td>
<td>263,374</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Species</th>
<th>Unadjusted population index</th>
<th>Visibility rate</th>
<th>Adjusted population index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mallard</td>
<td>53,778</td>
<td>0.49</td>
<td>110,000</td>
</tr>
<tr>
<td>Blue-winged teal</td>
<td>65,837</td>
<td>0.41</td>
<td>160,000</td>
</tr>
<tr>
<td>Ring-necked duck</td>
<td>9,039</td>
<td>0.78</td>
<td>12,000</td>
</tr>
<tr>
<td>All ducks</td>
<td>186,057</td>
<td>0.48</td>
<td>390,000</td>
</tr>
</tbody>
</table>
TABLE B-51.--Chippewa National Forest, Minnesota - Trend in waterfowl breeding populations by area, 1962-1968

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

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

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

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

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

Footnote p. 118
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<tbody>
<tr>
<td><strong>Ducks:</strong></td>
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<td></td>
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<td><strong>Mergansers:</strong></td>
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<td></td>
</tr>
<tr>
<td>American merganser</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hooded merganser</td>
<td>1,830</td>
<td></td>
<td>100</td>
<td></td>
<td>1,500</td>
<td>1,930</td>
<td>+ 29</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>1,830</td>
<td></td>
<td>310</td>
<td></td>
<td>1,770</td>
<td>2,140</td>
<td>+ 21</td>
</tr>
<tr>
<td><strong>Total ducks</strong></td>
<td>13,100</td>
<td>41,410</td>
<td>27,180</td>
<td>38,830</td>
<td>132,810</td>
<td>120,520</td>
<td>- 9</td>
</tr>
<tr>
<td><strong>Coots</strong></td>
<td>590</td>
<td>6,550</td>
<td>2,650</td>
<td>6,130</td>
<td>11,360</td>
<td>15,920</td>
<td>+ 40</td>
</tr>
<tr>
<td><strong>Grand total</strong></td>
<td>13,690</td>
<td>47,960</td>
<td>29,830</td>
<td>44,960</td>
<td>144,170</td>
<td>136,440</td>
<td>- 5</td>
</tr>
</tbody>
</table>

1 Bufflehead apparently are present as non-breeding adults only.
TABLE B-54.--Washington—waterfowl production index—1967 and 1968

<table>
<thead>
<tr>
<th>Species</th>
<th>1967</th>
<th>1968</th>
<th>Percent change</th>
</tr>
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<tbody>
<tr>
<td>Ducks:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dabblers:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mallard</td>
<td>134,200</td>
<td>113,700</td>
<td>-15</td>
</tr>
<tr>
<td>Gadwall</td>
<td>14,500</td>
<td>7,900</td>
<td>-46</td>
</tr>
<tr>
<td>American widgeon</td>
<td>30,500</td>
<td>19,900</td>
<td>-35</td>
</tr>
<tr>
<td>Green-winged teal</td>
<td>4,500</td>
<td>8,400</td>
<td>+87</td>
</tr>
<tr>
<td>Blue-winged teal and</td>
<td>36,200</td>
<td>64,100</td>
<td>+77</td>
</tr>
<tr>
<td>cinnamon teal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shoveler</td>
<td>9,800</td>
<td>13,600</td>
<td>+39</td>
</tr>
<tr>
<td>Pintail</td>
<td>3,800</td>
<td>6,700</td>
<td>+76</td>
</tr>
<tr>
<td>Wood duck</td>
<td>11,600</td>
<td>14,700</td>
<td>+27</td>
</tr>
<tr>
<td>Subtotal</td>
<td>245,100</td>
<td>249,000</td>
<td>+2</td>
</tr>
<tr>
<td>Divers:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redhead</td>
<td>19,200</td>
<td>18,500</td>
<td>-4</td>
</tr>
<tr>
<td>Canvasback</td>
<td>--</td>
<td>400</td>
<td>--</td>
</tr>
<tr>
<td>Scaup</td>
<td>20,000</td>
<td>15,900</td>
<td>-21</td>
</tr>
<tr>
<td>Ring-necked duck</td>
<td>13,000</td>
<td>2,900</td>
<td>-85</td>
</tr>
<tr>
<td>Goldeneye</td>
<td>9,400</td>
<td>7,600</td>
<td>-19</td>
</tr>
<tr>
<td>Bufflehead</td>
<td>100</td>
<td>200</td>
<td>+100</td>
</tr>
<tr>
<td>Ruddy duck</td>
<td>13,300</td>
<td>10,200</td>
<td>-23</td>
</tr>
<tr>
<td>Subtotal</td>
<td>75,000</td>
<td>54,800</td>
<td>-27</td>
</tr>
<tr>
<td>Mergansers:</td>
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</tr>
<tr>
<td>American merganser</td>
<td>700</td>
<td>400</td>
<td>-43</td>
</tr>
<tr>
<td>Hooded merganser</td>
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<td>3,100</td>
<td>+63</td>
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<tr>
<td>Subtotal</td>
<td>2,600</td>
<td>3,500</td>
<td>+35</td>
</tr>
<tr>
<td>Total ducks</td>
<td>322,700</td>
<td>307,300</td>
<td>-5</td>
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<tr>
<td>Geese:</td>
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<td></td>
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<tr>
<td>Canada geese</td>
<td>11,300</td>
<td>11,650</td>
<td>+3</td>
</tr>
<tr>
<td>Coots</td>
<td>26,100</td>
<td>31,600</td>
<td>+20</td>
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</table>
TABLE B-55.—Oregon duck production index by species, 1967 and 1968

(14 Transects)

<table>
<thead>
<tr>
<th>Species</th>
<th>Number Young</th>
<th>Percent Change</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>1967</td>
<td>1968</td>
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<tr>
<td>Mallards</td>
<td>1,502</td>
<td>1,605</td>
</tr>
<tr>
<td>Gadwall</td>
<td>2,238</td>
<td>1,278</td>
</tr>
<tr>
<td>American widgeon</td>
<td>172</td>
<td>122</td>
</tr>
<tr>
<td>Blue-winged teal</td>
<td>242</td>
<td>1,302</td>
</tr>
<tr>
<td>Green-winged teal</td>
<td>25</td>
<td>53</td>
</tr>
<tr>
<td>Shoveler</td>
<td>93</td>
<td>95</td>
</tr>
<tr>
<td>Pintail</td>
<td>138</td>
<td>141</td>
</tr>
<tr>
<td>Wood duck</td>
<td>112</td>
<td>233</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>4,522</td>
<td>4,829</td>
</tr>
<tr>
<td>Redhead</td>
<td>1,394</td>
<td>1,727</td>
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<tr>
<td>Canvasback</td>
<td>70</td>
<td>544</td>
</tr>
<tr>
<td>Ruddy duck</td>
<td>160</td>
<td>547</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>1,624</td>
<td>2,818</td>
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<tr>
<td>Miscellaneous</td>
<td>131</td>
<td>149</td>
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<tr>
<td><strong>Total</strong></td>
<td>6,277</td>
<td>7,796</td>
</tr>
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</table>
TABLE B-56.--Oregon - goose production index, 1967 and 1968

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

Total 1,051 822 4,706 3,683
### TABLE B-57.--Idaho - aerial counts of Canada geese on all major breeding areas, 1959-1968

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Snake River drainage:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farewell Bend to Walter's Ferry</td>
<td>1,184</td>
<td>1,322</td>
<td>1,223</td>
<td>1,420</td>
<td>1,351</td>
<td>1,748</td>
<td>1,331</td>
<td>1,270</td>
<td>1,771</td>
<td>1,599</td>
<td>1,313</td>
<td>- 10 + 22</td>
</tr>
<tr>
<td>Fayette River (mouth to Emmett)</td>
<td>284</td>
<td>430</td>
<td>308</td>
<td>409</td>
<td>477</td>
<td>318</td>
<td>450</td>
<td>516</td>
<td>866</td>
<td>635</td>
<td>415</td>
<td>- 27 + 53</td>
</tr>
<tr>
<td>Strike Reservoir to American Falls</td>
<td>148</td>
<td>126</td>
<td>199</td>
<td>224</td>
<td>222</td>
<td>231</td>
<td>154</td>
<td>225</td>
<td>246</td>
<td>265</td>
<td>196</td>
<td>+ 8 + 35</td>
</tr>
<tr>
<td>Island Park</td>
<td>371</td>
<td>404</td>
<td>475</td>
<td>329</td>
<td>451</td>
<td>419</td>
<td>408</td>
<td>330</td>
<td>344</td>
<td>178</td>
<td>365</td>
<td>- 48 - 51</td>
</tr>
<tr>
<td>South Fork</td>
<td>176</td>
<td>204</td>
<td>222</td>
<td>143</td>
<td>239</td>
<td>158</td>
<td>225</td>
<td>251</td>
<td>217</td>
<td>208</td>
<td>185</td>
<td>- 4 + 8</td>
</tr>
<tr>
<td>Mud Lake - Camas NWR</td>
<td>298</td>
<td>257</td>
<td>313</td>
<td>297</td>
<td>210</td>
<td>186</td>
<td>216</td>
<td>171</td>
<td>180</td>
<td>NC</td>
<td>238</td>
<td>-- --</td>
</tr>
<tr>
<td>Gray's Lake</td>
<td>401</td>
<td>561</td>
<td>596</td>
<td>516</td>
<td>814</td>
<td>872</td>
<td>799</td>
<td>538</td>
<td>696</td>
<td>620</td>
<td>577</td>
<td>- 10 + 7</td>
</tr>
<tr>
<td>Blackfoot Reservoir</td>
<td>444</td>
<td>512</td>
<td>580</td>
<td>395</td>
<td>587</td>
<td>562</td>
<td>418</td>
<td>377</td>
<td>554</td>
<td>645</td>
<td>482</td>
<td>+ 16 + 34</td>
</tr>
<tr>
<td>Bear River drainage:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dingle Marsh</td>
<td>1,150</td>
<td>903</td>
<td>1,418</td>
<td>1,077</td>
<td>2,225</td>
<td>1,605</td>
<td>1,950</td>
<td>1,758</td>
<td>1,528</td>
<td>1,243</td>
<td>1,313</td>
<td>- 19 - 16</td>
</tr>
<tr>
<td>Total</td>
<td>4,418</td>
<td>4,719</td>
<td>5,332</td>
<td>4,810</td>
<td>6,576</td>
<td>6,099</td>
<td>5,951</td>
<td>5,436</td>
<td>6,402</td>
<td>5,391</td>
<td>4,854</td>
<td>- 13 + 11</td>
</tr>
</tbody>
</table>
TABLE B-58.--Idaho - Canada goose production summary and comparison, 1968

<table>
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<tr>
<th></th>
<th>Southwest Units&lt;sup&gt;1&lt;/sup&gt;</th>
<th></th>
<th>Southeast Units&lt;sup&gt;2&lt;/sup&gt;</th>
<th></th>
<th>All Units combined</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Long-term average</td>
<td>Percent change from--</td>
<td>Long-term average</td>
<td>Percent change from--</td>
<td>Long-term average</td>
</tr>
<tr>
<td>Nests</td>
<td>371 302 353</td>
<td>-19 -15</td>
<td>138 172 198</td>
<td>+25 -13</td>
<td>509 474 555</td>
</tr>
<tr>
<td>Nests hatched</td>
<td>292 237 259</td>
<td>-19 -9</td>
<td>114 131 149</td>
<td>+15 -12</td>
<td>406 368 408</td>
</tr>
<tr>
<td>Average hatch/successful nest</td>
<td>5.0 5.4 5.2 +8 +4</td>
<td>4.8 4.0 4.6 -17 -13</td>
<td>4.9 4.9 5.0 -- -2</td>
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</tr>
<tr>
<td>Goslings produced</td>
<td>1,464 1,279 1,347</td>
<td>-13 -5</td>
<td>525 519 682</td>
<td>-1 -24</td>
<td>1,989 1,798 2,027</td>
</tr>
</tbody>
</table>

<sup>1</sup> Homedale and Payette.
<sup>2</sup> Blackfoot, Island Park Reservoir, North Fork, and North Lake.
<table>
<thead>
<tr>
<th>Species</th>
<th>Sacramento Valley</th>
<th>San Joaquin Valley</th>
<th>North San Joaquin Valley</th>
<th>South San Joaquin Valley</th>
<th>North-eastern California</th>
<th>Klamath Basin</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ducks:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Dabblers:</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mallard</td>
<td>27,800</td>
<td>21,840</td>
<td>1,250</td>
<td>760</td>
<td>1,080</td>
<td>1,380</td>
<td>710</td>
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<tr>
<td>Gadwall</td>
<td>800</td>
<td>360</td>
<td>280</td>
<td>230</td>
<td>500</td>
<td>740</td>
<td>20</td>
</tr>
<tr>
<td>Cinnamon teal</td>
<td>1,200</td>
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<td>110</td>
<td>180</td>
<td>460</td>
<td>850</td>
<td>170</td>
</tr>
<tr>
<td>Shoveler</td>
<td>320</td>
<td>160</td>
<td>20</td>
<td>100</td>
<td>110</td>
<td></td>
<td>--</td>
</tr>
<tr>
<td>Pintail</td>
<td>480</td>
<td>400</td>
<td>50</td>
<td>30</td>
<td>100</td>
<td>170</td>
<td>60</td>
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<tr>
<td>Subtotal</td>
<td>30,680</td>
<td>24,320</td>
<td>1,670</td>
<td>1,220</td>
<td>2,250</td>
<td>3,250</td>
<td>960</td>
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<td>Divers:</td>
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<td></td>
</tr>
<tr>
<td>Redhead</td>
<td>--</td>
<td>200</td>
<td>10</td>
<td>--</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Scaup</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Ruddy duck</td>
<td>40</td>
<td>--</td>
<td>40</td>
<td>--</td>
<td>150</td>
<td>20</td>
<td>60</td>
</tr>
<tr>
<td>Subtotal</td>
<td>40</td>
<td>200</td>
<td>50</td>
<td>--</td>
<td>160</td>
<td>30</td>
<td>70</td>
</tr>
<tr>
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<td>80</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Total ducks</td>
<td>30,800</td>
<td>24,600</td>
<td>1,770</td>
<td>1,220</td>
<td>2,410</td>
<td>3,280</td>
<td>1,030</td>
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<tr>
<td>Canada goose</td>
<td>--</td>
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<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Coots</td>
<td>22,800</td>
<td>14</td>
<td>640</td>
<td>390</td>
<td>2,990</td>
<td>1,840</td>
<td>1,740</td>
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<tr>
<td>Species</td>
<td>Sacramento Valley</td>
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<td>North San Joaquin Valley</td>
<td>South San Joaquin Valley</td>
<td>North-eastern California</td>
<td>Klamath Basin</td>
<td>Total</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------</td>
<td>-------------</td>
<td>--------------------------</td>
<td>--------------------------</td>
<td>--------------------------</td>
<td>--------------</td>
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</tr>
<tr>
<td>Ducks:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dabblers:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mallard</td>
<td>116,430</td>
<td>91,210</td>
<td>5,190</td>
<td>3,160</td>
<td>3,530</td>
<td>4,460</td>
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<tr>
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<td>4,000</td>
<td>1,800</td>
<td>1,410</td>
<td>1,140</td>
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<tr>
<td>Cinnamon teal</td>
<td>4,570</td>
<td>5,830</td>
<td>390</td>
<td>650</td>
<td>1,460</td>
<td>2,680</td>
<td>460</td>
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<tr>
<td>Shoveler</td>
<td>1,430</td>
<td>900</td>
<td>--</td>
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<tr>
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<td>1,850</td>
<td>1,540</td>
<td>210</td>
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<tr>
<td>Subtotal</td>
<td>128,280</td>
<td>101,280</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Redhead</td>
<td>--</td>
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<td>60</td>
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<tr>
<td>Scaup</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Ruddy duck</td>
<td>180</td>
<td>300</td>
<td>--</td>
<td>410</td>
<td>40</td>
<td>160</td>
<td>--</td>
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<tr>
<td>Subtotal</td>
<td>180</td>
<td>900</td>
<td>360</td>
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<tr>
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<td>360</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Total ducks</td>
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<td>102,540</td>
<td>7,560</td>
<td>5,120</td>
<td>7,630</td>
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<td>2,830</td>
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<td>--</td>
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<td>--</td>
<td>--</td>
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<td>1968</td>
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<tr>
<td><strong>Ducks:</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dabblers:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mallard</td>
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<td>1,373</td>
<td>1,571</td>
<td>649</td>
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</tr>
<tr>
<td>Gadwall</td>
<td>982</td>
<td>966</td>
<td>669</td>
<td>682</td>
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<td></td>
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<tr>
<td>Cinnamon teal</td>
<td>1,524</td>
<td>1,389</td>
<td>2,134</td>
<td>1,217</td>
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</tr>
<tr>
<td>Shoveler</td>
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<td>154</td>
<td>84</td>
<td>87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pintail</td>
<td>685</td>
<td>628</td>
<td>257</td>
<td>275</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>**Subtotal</td>
<td>4,690</td>
<td>4,510</td>
<td>4,715</td>
<td>2,910</td>
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<td></td>
<td></td>
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<tr>
<td><strong>Divers:</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redhead</td>
<td>2,328</td>
<td>1,983</td>
<td>1,962</td>
<td>1,311</td>
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<td></td>
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<tr>
<td>Canvasback</td>
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<td>82</td>
<td>38</td>
<td>71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ruddy duck</td>
<td>1,008</td>
<td>827</td>
<td>393</td>
<td>309</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>**Subtotal</td>
<td>3,436</td>
<td>2,892</td>
<td>2,393</td>
<td>1,691</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Miscellaneous</strong></td>
<td>136</td>
<td>164</td>
<td>107</td>
<td>128</td>
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<td></td>
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</tr>
<tr>
<td><strong>Total ducks</strong></td>
<td>8,262</td>
<td>7,566</td>
<td>7,215</td>
<td>4,729</td>
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<tr>
<td>Geese</td>
<td>637</td>
<td>658</td>
<td>383</td>
<td>181</td>
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TABLE B-62.--Nevada - waterfowl production index, by species, 1965-68

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<tr>
<th>Species</th>
<th>Broods</th>
<th>Young</th>
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</thead>
<tbody>
<tr>
<td><strong>Ducks:</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dabblers:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mallard</td>
<td>100</td>
<td>73</td>
<td>48</td>
</tr>
<tr>
<td>Gadwall</td>
<td>183</td>
<td>216</td>
<td>113</td>
</tr>
<tr>
<td>Green-winged teal</td>
<td>4</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Cinnamon teal</td>
<td>255</td>
<td>192</td>
<td>139</td>
</tr>
<tr>
<td>Shoveler</td>
<td>38</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Pintail</td>
<td>125</td>
<td>40</td>
<td>42</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>705</td>
<td>535</td>
<td>365</td>
</tr>
<tr>
<td><strong>Divers:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redhead</td>
<td>215</td>
<td>160</td>
<td>124</td>
</tr>
<tr>
<td>Canvasback</td>
<td>8</td>
<td>--</td>
<td>5</td>
</tr>
<tr>
<td>Ruddy duck</td>
<td>49</td>
<td>25</td>
<td>32</td>
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<tr>
<td><strong>Subtotal</strong></td>
<td>272</td>
<td>185</td>
<td>161</td>
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<tr>
<td><strong>Total ducks</strong></td>
<td>977</td>
<td>720</td>
<td>526</td>
</tr>
<tr>
<td><strong>Geese:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada goose</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

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

<table>
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<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Box Elder County</td>
<td>48.0</td>
<td>2,595</td>
<td>2,468</td>
<td>2,797</td>
<td>2,843</td>
<td>2,943</td>
<td>54.1</td>
<td>41.4</td>
<td>58.3</td>
<td>59.2</td>
<td>61.3</td>
</tr>
<tr>
<td>Weber County</td>
<td>15.5</td>
<td>1,050</td>
<td>1,154</td>
<td>616</td>
<td>994</td>
<td>1,092</td>
<td>67.7</td>
<td>74.3</td>
<td>39.7</td>
<td>64.1</td>
<td>70.4</td>
</tr>
<tr>
<td>Davis County</td>
<td>14.2</td>
<td>1,056</td>
<td>986</td>
<td>774</td>
<td>1,004</td>
<td>1,007</td>
<td>74.4</td>
<td>69.4</td>
<td>54.5</td>
<td>70.7</td>
<td>70.9</td>
</tr>
<tr>
<td>Jordan River clubs</td>
<td>6.2</td>
<td>564</td>
<td>650</td>
<td>173</td>
<td>643</td>
<td>560</td>
<td>91.0</td>
<td>10.5</td>
<td>27.9</td>
<td>103.7</td>
<td>90.3</td>
</tr>
<tr>
<td>Salt Lake County</td>
<td>6.7</td>
<td>33</td>
<td>27</td>
<td>24</td>
<td>104</td>
<td>163</td>
<td>4.9</td>
<td>4.1</td>
<td>3.6</td>
<td>15.5</td>
<td>24.3</td>
</tr>
<tr>
<td>Utah County</td>
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<td>280</td>
<td>616</td>
<td>430</td>
<td>603</td>
<td>733</td>
<td>15.6</td>
<td>34.2</td>
<td>23.9</td>
<td>33.5</td>
<td>40.7</td>
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<tr>
<td>Total</td>
<td>108.6</td>
<td>5,578</td>
<td>5,901</td>
<td>4,814</td>
<td>6,191</td>
<td>6,498</td>
<td>51.4</td>
<td>54.3</td>
<td>23.9</td>
<td>57.0</td>
<td>59.8</td>
</tr>
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</table>
TABLE B-64.--Utah - species composition of breeding populations of waterfowl as determined from ground survey data, 1967-68

Species composition of breeding populations of waterfowl as determined from ground survey data, 1967-68

<table>
<thead>
<tr>
<th>Species</th>
<th>Northern Utah</th>
<th>Southern Utah</th>
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<tbody>
<tr>
<td>Ducks:</td>
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<td></td>
</tr>
<tr>
<td>Dabblers:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mallards</td>
<td>12.3</td>
<td>11.3</td>
</tr>
<tr>
<td>Gadwall</td>
<td>13.0</td>
<td>12.4</td>
</tr>
<tr>
<td>American widgeon</td>
<td>1.0</td>
<td>Tr</td>
</tr>
<tr>
<td>Green-winged teal</td>
<td>1.3</td>
<td>.7</td>
</tr>
<tr>
<td>Blue-winged teal</td>
<td>1.7</td>
<td>1.6</td>
</tr>
<tr>
<td>Cinnamon teal</td>
<td>17.4</td>
<td>15.5</td>
</tr>
<tr>
<td>Shoveler</td>
<td>6.9</td>
<td>7.1</td>
</tr>
<tr>
<td>Pintail</td>
<td>7.7</td>
<td>8.3</td>
</tr>
<tr>
<td>Divers:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redhead</td>
<td>27.3</td>
<td>30.7</td>
</tr>
<tr>
<td>Scaup</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Bufflehead</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Goldeneye</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Ruddy duck</td>
<td>11.4</td>
<td>13.1</td>
</tr>
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TABLE B-65.--Utah - Canada geese production index, 1967-68

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<th>Area</th>
<th>Number of breeding pairs</th>
<th>Number of young</th>
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<tbody>
<tr>
<td>Cutler Reservoir</td>
<td>25</td>
<td>23</td>
</tr>
<tr>
<td>Public shooting grounds</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>Bear Rivery Refuge and vicinity</td>
<td>201</td>
<td>315</td>
</tr>
<tr>
<td>Ogden Bay Wildlife Management Area</td>
<td>85</td>
<td>143</td>
</tr>
<tr>
<td>Farmington Bay Wildlife Management Area</td>
<td>78</td>
<td>75</td>
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<tr>
<td>Scipio Reservoir</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Redmond Lake</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Gunnison Reservoir</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Clear Lake Wildlife Management</td>
<td>7</td>
<td>8</td>
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<tr>
<td>Mona Reservoir</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Wales Reservoir</td>
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<td>3</td>
</tr>
<tr>
<td>Rich County (Bear River)</td>
<td>83</td>
<td>114</td>
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<tr>
<td><strong>Total</strong></td>
<td>518</td>
<td>712</td>
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</table>
## TABLE B-66.—Utah - dike-line breeding pair counts of waterfowl on four State refuges, 1967-1968

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<th>Species</th>
<th>1967</th>
<th>1968</th>
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<tr>
<td>Ducks:</td>
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<tr>
<td>Dabblers:</td>
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<td></td>
</tr>
<tr>
<td>Mallard</td>
<td>603</td>
<td>375</td>
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<tr>
<td>Gadwall</td>
<td>750</td>
<td>384</td>
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<tr>
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<td>17</td>
<td>4</td>
</tr>
<tr>
<td>Green-winged teal</td>
<td>21</td>
<td>8</td>
</tr>
<tr>
<td>Blue-winged teal</td>
<td>28</td>
<td>31</td>
</tr>
<tr>
<td>Cinnamon teal</td>
<td>901</td>
<td>644</td>
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<td>Shoveler</td>
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<td>208</td>
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<tr>
<td>Canvasback</td>
<td>2</td>
<td>--</td>
</tr>
<tr>
<td>Scaup</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Goldeneye</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Bufflehead</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Ruddy duck</td>
<td>381</td>
<td>332</td>
</tr>
<tr>
<td>Subtotal</td>
<td>1,592</td>
<td>1,603</td>
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<tr>
<td>Geese:</td>
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<td>167</td>
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<tr>
<td>Total ducks</td>
<td>4,603</td>
<td>3,538</td>
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TABLE B-67.—Wyoming - trend in waterfowl breeding populations, 1965-68

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<th>1966</th>
<th>1967</th>
<th>1968</th>
<th>Percent change from--</th>
<th>Percent change from--</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1967</td>
<td>Average</td>
</tr>
<tr>
<td>Ducks:</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Dabblers:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mallard</td>
<td>168,041</td>
<td>117,274</td>
<td>120,139</td>
<td>168,669</td>
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<td>+ 54</td>
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<td>23,597</td>
<td>12,184</td>
<td>33,510</td>
<td>39,806</td>
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<td>+181</td>
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<tr>
<td>American widgeon</td>
<td>29,135</td>
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<td>30,032</td>
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<td>+202</td>
</tr>
<tr>
<td>Teal</td>
<td>39,638</td>
<td>23,928</td>
<td>41,968</td>
<td>34,070</td>
<td>- 19</td>
<td>+ 53</td>
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<tr>
<td>Shoveler</td>
<td>10,708</td>
<td>7,872</td>
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<td>14,196</td>
<td>- 12</td>
<td>+ 32</td>
</tr>
<tr>
<td>Pintail</td>
<td>23,091</td>
<td>13,616</td>
<td>17,810</td>
<td>30,904</td>
<td>+ 74</td>
<td>+ 22</td>
</tr>
<tr>
<td>Subtotal</td>
<td>294,210</td>
<td>186,150</td>
<td>240,700</td>
<td>317,677</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divers:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redhead</td>
<td>2,470</td>
<td>424</td>
<td>531</td>
<td>2,127</td>
<td>+301</td>
<td>+ 62</td>
</tr>
<tr>
<td>Canvasback</td>
<td>510</td>
<td>1,272</td>
<td>531</td>
<td>1,530</td>
<td>+188</td>
<td>+ 96</td>
</tr>
<tr>
<td>Scaup</td>
<td>3,272</td>
<td>5,052</td>
<td>2,271</td>
<td>5,570</td>
<td>+145</td>
<td>+262</td>
</tr>
<tr>
<td>Goldeneye</td>
<td>163</td>
<td>1,596</td>
<td>953</td>
<td>1,090</td>
<td>+ 14</td>
<td>+ 84</td>
</tr>
<tr>
<td>Bufflehead</td>
<td>163</td>
<td>320</td>
<td>--</td>
<td>218</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Ruddy duck</td>
<td>490</td>
<td>108</td>
<td>1,746</td>
<td>4,695</td>
<td>+169</td>
<td>+221</td>
</tr>
<tr>
<td>Subtotal</td>
<td>7,068</td>
<td>8,772</td>
<td>6,032</td>
<td>15,230</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miscellaneous:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Merganser</td>
<td>9,281</td>
<td>9,306</td>
<td>7,031</td>
<td>9,718</td>
<td>+38</td>
<td>+ 96</td>
</tr>
<tr>
<td>Total ducks</td>
<td>310,559</td>
<td>204,228</td>
<td>253,763</td>
<td>342,625</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coots</td>
<td>6,083</td>
<td>6,434</td>
<td>5,759</td>
<td>14,472</td>
<td>+151</td>
<td>+212</td>
</tr>
</tbody>
</table>
TABLE B-68. -- Wyoming - summary of Canada goose breeding pair surveys, 1962-68

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1967</td>
<td>1952-67 average</td>
</tr>
<tr>
<td>Snake River¹</td>
<td>270</td>
<td>441</td>
<td>379</td>
<td>493</td>
<td>553</td>
<td>503</td>
<td>554</td>
<td>+ 10</td>
<td>+ 42</td>
</tr>
<tr>
<td>Bear River</td>
<td>498</td>
<td>757</td>
<td>747</td>
<td>898</td>
<td>961</td>
<td>1,008</td>
<td>1,189</td>
<td>+ 18</td>
<td>+ 32</td>
</tr>
<tr>
<td>Green River</td>
<td>310</td>
<td>478</td>
<td>432</td>
<td>428</td>
<td>440</td>
<td>455</td>
<td>686</td>
<td>+ 51</td>
<td>+ 119</td>
</tr>
<tr>
<td>North Platte River</td>
<td>241</td>
<td>312</td>
<td>348</td>
<td>360</td>
<td>310</td>
<td>410</td>
<td>416</td>
<td>+ 1</td>
<td>+ 52</td>
</tr>
<tr>
<td>Wind River</td>
<td>173</td>
<td>182</td>
<td>199</td>
<td>228</td>
<td>266</td>
<td>446</td>
<td>408</td>
<td>- 9</td>
<td>+ 144</td>
</tr>
<tr>
<td>Big Horn River</td>
<td>--</td>
<td>25</td>
<td>40²</td>
<td>44</td>
<td>41</td>
<td>106</td>
<td>118</td>
<td>+ 11</td>
<td>+ 131</td>
</tr>
<tr>
<td>Total geese</td>
<td>1,492</td>
<td>2,195</td>
<td>2,145</td>
<td>2,451</td>
<td>2,571</td>
<td>2,923</td>
<td>3,371</td>
<td>+ 15</td>
<td>+ 105</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Species</th>
<th>Number of breeding pairs</th>
<th>Species composition, percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ducks:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dabblers:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mallard</td>
<td>36,644</td>
<td>34,829</td>
</tr>
<tr>
<td>Gadwall</td>
<td>8,425</td>
<td>5,850</td>
</tr>
<tr>
<td>American widgeon</td>
<td>343</td>
<td>1,008</td>
</tr>
<tr>
<td>Green-winged teal</td>
<td>5,411</td>
<td>3,692</td>
</tr>
<tr>
<td>Blue-winged teal and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cinnamon teal</td>
<td>6,463</td>
<td>6,449</td>
</tr>
<tr>
<td>Shoveler</td>
<td>3,645</td>
<td>2,105</td>
</tr>
<tr>
<td>Pintail</td>
<td>7,970</td>
<td>4,093</td>
</tr>
<tr>
<td>Divers:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redhead</td>
<td>2,063</td>
<td>1,383</td>
</tr>
<tr>
<td>Others</td>
<td>1,750</td>
<td>1,691</td>
</tr>
<tr>
<td>Totals</td>
<td>72,714</td>
<td>61,100</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Area</th>
<th>Total estimated breeding pairs</th>
<th>14-year average</th>
</tr>
</thead>
</table>
| San Luis Valley           | 27,611 | 29,143 | 27,545
| North Park                | 19,777 | 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

<table>
<thead>
<tr>
<th>Species</th>
<th>Number&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Percent</th>
<th>Number/</th>
<th>Percent</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ducks:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mallard</td>
<td>226</td>
<td>14.07</td>
<td>34</td>
<td>16.19</td>
<td>2,314</td>
</tr>
<tr>
<td>Gadwall</td>
<td>50</td>
<td>3.11</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>American widgeon</td>
<td>30</td>
<td>1.87</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Green-winged teal</td>
<td>52</td>
<td>3.24</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Blue-winged teal</td>
<td>769</td>
<td>47.88</td>
<td>149</td>
<td>69.94</td>
<td>7,400</td>
</tr>
<tr>
<td>Pintail</td>
<td>143</td>
<td>8.90</td>
<td>5</td>
<td>2.31</td>
<td>231</td>
</tr>
<tr>
<td>Shoveler</td>
<td>310</td>
<td>19.30</td>
<td>25</td>
<td>11.56</td>
<td>1,295</td>
</tr>
<tr>
<td><strong>Divers:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redhead</td>
<td>6</td>
<td>.37</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Scaup</td>
<td>18</td>
<td>1.12</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Ruddy duck</td>
<td>2</td>
<td>.12</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>1,606</td>
<td>100.00</td>
<td>213</td>
<td>100.00</td>
<td>11,240</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Species</th>
<th>Stratum</th>
<th>1968</th>
<th>Percent composition</th>
<th>1967</th>
<th>Percent change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ducks:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mallard</td>
<td>21,532</td>
<td>3,475</td>
<td>25,008</td>
<td>25.0</td>
<td>27,615</td>
</tr>
<tr>
<td>Gadwall</td>
<td>10,542</td>
<td>590</td>
<td>11,132</td>
<td>11.1</td>
<td>13,553</td>
</tr>
<tr>
<td>American widgeon</td>
<td>--</td>
<td>--</td>
<td>0.0</td>
<td>0.0</td>
<td>679</td>
</tr>
<tr>
<td>Green-winged teal</td>
<td>179</td>
<td>--</td>
<td>179</td>
<td>0.2</td>
<td>170</td>
</tr>
<tr>
<td>Blue-winged teal</td>
<td>20,459</td>
<td>3,475</td>
<td>23,934</td>
<td>23.9</td>
<td>22,721</td>
</tr>
<tr>
<td>Shoveler</td>
<td>17,154</td>
<td>1,159</td>
<td>18,313</td>
<td>18.3</td>
<td>17,124</td>
</tr>
<tr>
<td>Pintail</td>
<td>6,522</td>
<td>2,027</td>
<td>8,549</td>
<td>8.5</td>
<td>6,277</td>
</tr>
<tr>
<td></td>
<td>5,450</td>
<td>--</td>
<td>5,450</td>
<td>5.4</td>
<td>679</td>
</tr>
<tr>
<td>Canvasback</td>
<td>1,161</td>
<td>--</td>
<td>1,161</td>
<td>1.2</td>
<td>764</td>
</tr>
<tr>
<td>Scaup</td>
<td>447</td>
<td>--</td>
<td>447</td>
<td>0.5</td>
<td>2,971</td>
</tr>
<tr>
<td>Ruddy duck</td>
<td>5,897</td>
<td>--</td>
<td>5,897</td>
<td>5.9</td>
<td>3,650</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>89,343</td>
<td>10,726</td>
<td>100,070</td>
<td>100.0</td>
<td>96,203</td>
</tr>
</tbody>
</table>

135
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)

<table>
<thead>
<tr>
<th>Season</th>
<th>Alaska</th>
<th>Pacific Flyway</th>
<th>Central Flyway</th>
<th>Mississippi Flyway</th>
<th>Atlantic Flyway</th>
<th>United States total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mallard</td>
<td>1966</td>
<td>13,200</td>
<td>1,187,100</td>
<td>687,700</td>
<td>1,656,400</td>
<td>217,900</td>
</tr>
<tr>
<td></td>
<td>1967</td>
<td>19,900</td>
<td>1,337,500</td>
<td>802,000</td>
<td>1,720,300</td>
<td>237,300</td>
</tr>
<tr>
<td>Percent change</td>
<td>+51</td>
<td>+13</td>
<td>+17</td>
<td>+4</td>
<td>+9</td>
<td>+9</td>
</tr>
<tr>
<td>Domestic mallard</td>
<td>1966</td>
<td>0</td>
<td>1,600</td>
<td>500</td>
<td>4,700</td>
<td>1,500</td>
</tr>
<tr>
<td></td>
<td>1967</td>
<td>0</td>
<td>0</td>
<td>300</td>
<td>4,500</td>
<td>2,400</td>
</tr>
<tr>
<td>Percent change</td>
<td>0</td>
<td>--</td>
<td>-40</td>
<td>-4</td>
<td>+60</td>
<td>-13</td>
</tr>
<tr>
<td>Black duck</td>
<td>1966</td>
<td>0</td>
<td>0</td>
<td>1,700</td>
<td>126,300</td>
<td>279,300</td>
</tr>
<tr>
<td></td>
<td>1967</td>
<td>0</td>
<td>0</td>
<td>2,800</td>
<td>120,000</td>
<td>266,200</td>
</tr>
<tr>
<td>Percent change</td>
<td>0</td>
<td>0</td>
<td>+65</td>
<td>-5</td>
<td>-5</td>
<td>-4</td>
</tr>
<tr>
<td>Black X mallard</td>
<td>1966</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3,900</td>
<td>6,700</td>
</tr>
<tr>
<td></td>
<td>1967</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5,000</td>
<td>6,000</td>
</tr>
<tr>
<td>Percent change</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>+28</td>
<td>-10</td>
<td>+3</td>
</tr>
<tr>
<td>Mottled duck</td>
<td>1966</td>
<td>0</td>
<td>0</td>
<td>61,000</td>
<td>51,700</td>
<td>14,900</td>
</tr>
<tr>
<td></td>
<td>1967</td>
<td>0</td>
<td>0</td>
<td>40,300</td>
<td>37,300</td>
<td>13,600</td>
</tr>
<tr>
<td>Percent change</td>
<td>0</td>
<td>0</td>
<td>-34</td>
<td>-28</td>
<td>-9</td>
<td>-28</td>
</tr>
<tr>
<td>Gadwall</td>
<td>1966</td>
<td>1,500</td>
<td>119,400</td>
<td>210,300</td>
<td>295,900</td>
<td>24,100</td>
</tr>
<tr>
<td></td>
<td>1967</td>
<td>300</td>
<td>170,500</td>
<td>207,100</td>
<td>246,600</td>
<td>24,000</td>
</tr>
<tr>
<td>Percent change</td>
<td>-80</td>
<td>+43</td>
<td>-2</td>
<td>-17</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>American widgeon</td>
<td>1966</td>
<td>8,500</td>
<td>460,100</td>
<td>154,400</td>
<td>312,100</td>
<td>75,000</td>
</tr>
<tr>
<td></td>
<td>1967</td>
<td>9,000</td>
<td>542,300</td>
<td>131,000</td>
<td>273,100</td>
<td>61,800</td>
</tr>
<tr>
<td>Percent change</td>
<td>6</td>
<td>18</td>
<td>-15</td>
<td>-12</td>
<td>-18</td>
<td>+1</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Season</th>
<th>Alaska</th>
<th>Pacific Flyway</th>
<th>Central Flyway</th>
<th>Mississippi Flyway</th>
<th>Atlantic Flyway</th>
<th>United States total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retrieved duck kill, continued:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green-winged teal</td>
<td>1966</td>
<td>9,100</td>
<td>436,800</td>
<td>235,000</td>
<td>362,600</td>
<td>84,000</td>
</tr>
<tr>
<td></td>
<td>1967</td>
<td>12,700</td>
<td>562,800</td>
<td>279,500</td>
<td>446,700</td>
<td>94,900</td>
</tr>
<tr>
<td></td>
<td>Percent change</td>
<td>+40</td>
<td>+29</td>
<td>+19</td>
<td>+23</td>
<td>+13</td>
</tr>
<tr>
<td>Blue-winged and cinnamon teal</td>
<td>1966</td>
<td>0</td>
<td>42,000</td>
<td>35,100</td>
<td>223,500</td>
<td>33,000</td>
</tr>
<tr>
<td></td>
<td>1967</td>
<td>100</td>
<td>99,700</td>
<td>62,400</td>
<td>217,700</td>
<td>29,500</td>
</tr>
<tr>
<td></td>
<td>Percent change</td>
<td>++</td>
<td>+137</td>
<td>+78</td>
<td>-3</td>
<td>-11</td>
</tr>
<tr>
<td>Shoveler</td>
<td>1966</td>
<td>1,600</td>
<td>230,500</td>
<td>87,500</td>
<td>108,400</td>
<td>14,100</td>
</tr>
<tr>
<td></td>
<td>1967</td>
<td>3,700</td>
<td>270,100</td>
<td>89,200</td>
<td>91,500</td>
<td>12,600</td>
</tr>
<tr>
<td></td>
<td>Percent change</td>
<td>+131</td>
<td>+17</td>
<td>+2</td>
<td>-16</td>
<td>-11</td>
</tr>
<tr>
<td>Pintail</td>
<td>1966</td>
<td>11,100</td>
<td>747,000</td>
<td>167,100</td>
<td>223,000</td>
<td>28,700</td>
</tr>
<tr>
<td></td>
<td>1967</td>
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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

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<th>Mississippi Flyway</th>
<th>Atlantic Flyway</th>
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### 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

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1Includes all subspecies. 2Emperor goose. 3Ross' goose. 4Unknown.
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<th>Days per adult hunter</th>
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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

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<th>Days per adult hunter</th>
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</tr>
</tbody>
</table>

1Includes 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

<table>
<thead>
<tr>
<th>State</th>
<th>1966--Final sales report</th>
<th>1967--Final sales report</th>
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<tbody>
<tr>
<td></td>
<td>Total duck stamps sold</td>
<td>Percent sold to nonhunters</td>
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<td>10,640</td>
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<tr>
<td>Arizona</td>
<td>8,773</td>
<td>1.62</td>
</tr>
<tr>
<td>California</td>
<td>153,308</td>
<td>1.63</td>
</tr>
<tr>
<td>Colorado</td>
<td>3,637</td>
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<tr>
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<td>0.65</td>
</tr>
<tr>
<td>Montana</td>
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<td>0.67</td>
</tr>
<tr>
<td>Nevada</td>
<td>11,928</td>
<td>0.15</td>
</tr>
<tr>
<td>New Mexico</td>
<td>1,170</td>
<td>1.54</td>
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<tr>
<td>Oregon</td>
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<td>Utah</td>
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<tr>
<td>Washington</td>
<td>69,235</td>
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<td>Wyoming</td>
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<table>
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<tr>
<td></td>
<td>381,583</td>
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1Includes only that portion of the State lying within the Pacific Flyway.
<table>
<thead>
<tr>
<th>State and hunting season</th>
<th>Daily duck bag and possession limits</th>
<th>Days in duck season</th>
<th>Number of adult hunters (potential)</th>
<th>Days per adult hunter</th>
<th>Total hunter-days</th>
<th>Seasonal duck bag per adult hunter</th>
<th>Total duck bag</th>
<th>Seasonal goose bag per adult hunter</th>
<th>Total goose bag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado: ¹</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
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<td>3-6</td>
<td>60</td>
<td>26,690</td>
<td>5.45</td>
<td>158,000</td>
<td>3.91</td>
<td>110,600</td>
<td>0.51</td>
<td>14,100</td>
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<tr>
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<td>28,720</td>
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<td>180,400</td>
<td>5.38</td>
<td>163,800</td>
<td>0.38</td>
<td>11,400</td>
</tr>
<tr>
<td>Percent change</td>
<td>--</td>
<td>--</td>
<td>+ 8</td>
<td>+ 6</td>
<td>+ 14</td>
<td>+ 38</td>
<td>+ 48</td>
<td>- 25</td>
<td>- 19</td>
</tr>
<tr>
<td>Kansas:</td>
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<td></td>
</tr>
<tr>
<td>1966</td>
<td>3-6</td>
<td>54²</td>
<td>34,770</td>
<td>5.73</td>
<td>216,200</td>
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<td>+ 8</td>
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<td>+ 86</td>
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<td>+ 24</td>
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<td>+ 11</td>
<td>+ 16</td>
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<td>+ 25</td>
<td>+ 17</td>
<td>+ 48</td>
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<td>+ 6</td>
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<td>Days in duck season</td>
<td>Number of adult hunters (potential)</td>
<td>Days per adult hunter</td>
<td>Total hunter-days</td>
<td>Seasonal duck bag per adult hunter</td>
<td>Total duck bag</td>
<td>Seasonal goose bag per adult hunter</td>
<td>Total goose bag</td>
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<td>+ 3</td>
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<td>+ 13</td>
<td>- 11</td>
<td>+ 4</td>
<td>- 32</td>
<td>- 21</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>27,100</td>
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</tr>
<tr>
<td>Percent change</td>
<td>--</td>
<td>--</td>
<td>+ 17</td>
<td>- 11</td>
<td>+ 4</td>
<td>+ 5</td>
<td>+ 23</td>
<td>- 59</td>
<td>- 50</td>
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<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>8.04</td>
<td>2,613,700</td>
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<td>483,000</td>
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<tr>
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<td>--</td>
<td>--</td>
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<td>319,100</td>
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<td>- 7</td>
<td>+ 9</td>
<td>- 10</td>
<td>+ 5</td>
<td>- 43</td>
<td>- 34</td>
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</table>

1Includes only that portion of the State lying within the Central Flyway.
2Split season.
<table>
<thead>
<tr>
<th>State</th>
<th>Total duck stamps sold</th>
<th>Percent sold to nonhunters</th>
<th>Percent of potential adult waterfowl hunters who were:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Active</td>
</tr>
<tr>
<td>Colorado¹</td>
<td>27,005</td>
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<td>79</td>
</tr>
<tr>
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</tr>
<tr>
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<td>6,100</td>
<td>0.67</td>
<td>80</td>
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<tr>
<td>Nebraska</td>
<td>32,284</td>
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<td>84</td>
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<td>New Mexico¹</td>
<td>4,489</td>
<td>1.54</td>
<td>89</td>
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<tr>
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<td>Oklahoma</td>
<td>25,723</td>
<td>0.55</td>
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</tr>
<tr>
<td>South Dakota</td>
<td>35,695</td>
<td>0.55</td>
<td>88</td>
</tr>
<tr>
<td>Texas</td>
<td>101,161</td>
<td>1.36</td>
<td>82</td>
</tr>
<tr>
<td>Wyoming¹</td>
<td>4,178</td>
<td>0.82</td>
<td>84</td>
</tr>
<tr>
<td><strong>Flyway total</strong></td>
<td><strong>310,969</strong></td>
<td><strong>1.05</strong></td>
<td><strong>84</strong></td>
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<table>
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<tr>
<th>State</th>
<th>Total duck stamps sold</th>
<th>Percent sold to nonhunters</th>
<th>Percent of potential adult waterfowl hunters who were:</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td>Active</td>
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<tr>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Colorado¹</td>
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<td>0.64</td>
<td>82</td>
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<tr>
<td>Kansas</td>
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<td>87</td>
</tr>
<tr>
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<td>87</td>
</tr>
<tr>
<td>North Dakota</td>
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<td>90</td>
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<td>84</td>
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<td>88</td>
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<tr>
<td>Texas</td>
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<td>81</td>
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<td><strong>359,938</strong></td>
<td><strong>0.57</strong></td>
<td><strong>84</strong></td>
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</tbody>
</table>

¹Includes only that portion of the State lying within the Central Flyway area.
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)

<table>
<thead>
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<th>State and hunting season</th>
<th>Daily duck bag limits</th>
<th>Days in duck season</th>
<th>Number of adult hunters (potential)</th>
<th>Days per adult hunter</th>
<th>Total hunter-days</th>
<th>Seasonal duck bag per adult hunter</th>
<th>Total duck bag</th>
<th>Seasonal goose bag per adult hunter</th>
<th>Total goose bag</th>
</tr>
</thead>
<tbody>
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<td>101,700</td>
<td>6.16</td>
<td>99,900</td>
<td>0.39</td>
<td>6,200</td>
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<tr>
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<td>88,300</td>
<td>4.51</td>
<td>77,100</td>
<td>0.20</td>
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</tr>
<tr>
<td>Percent change</td>
<td>--</td>
<td>--</td>
<td>+ 6</td>
<td>- 18</td>
<td>- 13</td>
<td>- 27</td>
<td>- 23</td>
<td>- 49</td>
<td>- 45</td>
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<sup>1</sup>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

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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)

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<th>Days per adult hunter</th>
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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

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<td>Delaware</td>
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<td>Maine</td>
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<td>West Virginia</td>
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<td><strong>Flyway total</strong></td>
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<tr>
<td><strong>United States total</strong></td>
<td><strong>1,796,647</strong></td>
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As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral, land, park, and recreational resources. Indian and Territorial affairs are other major concerns of America's "Department of Natural Resources."

The Department works to assure the wisest choice in managing all our resources so each will make its full contribution to a better United States -- now and in the future.

CONSERVATION PLEDGE

I give my pledge
as an American to save
and faithfully to defend from
waste the natural resources of
my country—its soil and
minerals, forests,
waters, and
wildlife.