

Population Study of Canada Geese in Jackson Hole, Wyoming
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Following is a summary of this three year study which was completed this summer.

Periodic censuses of the population of Canada geese were made from the air and from the ground. Nesting surveys were conducted by searching the study area on foot or in a boat. Each year since 1956 (except 1959) molting geese have been trapped and banded at Turbid Lake, Yellowstone National Park, Wyoming. Data from this source were used to compute mortality and survival rates for the Jackson Hole population. In 1963 colored neck-collars were placed on 284 geese to obtain information about the timing of movements, size of the population migrating through Jackson Hole, and the breeding area of geese which molt at Turbid Lake. Hydrological data were obtained from the Bureau of Reclamation, the U.S. Weather Bureau, and the U.S. Geological Survey. Climatological data were provided by the U.S. Weather Bureau for stations at Jackson, Moose, and Moran, Wyoming.

Flocks of geese spend the winter along the Snake River drainage of northwestern Wyoming in Lincoln County (Star Valley) and Teton County (Jackson Hole). During the period 1952-64 the wintering flock in this drainage varied from 441 to 1061, with a mean of 659 geese.

The spring migration of geese into the breeding ground is not obvious, primarily because of the presence of geese which spent the winter there, some of which may remain there to breed. Courtship activity commences during late February and early March. Selection of the nest sites extends from late March to late May. In most years, the initiation of nesting in Jackson Hole coincides with the disappearance of snow from the nesting areas.

One hundred forty-five nests were located in Jackson Hole; 51.0 per cent of these nests were grouped in three small areas. Seventy-one per cent of all nests found were on islands. The mean distance to water for 140 nests was 45.7 feet. Nest sites were usually located close to good feeding areas. Sandy substrates were preferred for nesting when this substrate was available. Cover types most often selected for nesting were shrub (32.4 per cent) and driftwood (26.9 per cent). Concealment of nests ranged from poor to excellent, with no preference indicated for any of four categories used. Geese tended to select nest locations with excellent or good visibility of the surrounding terrain. Vegetative lining of the nest hollow was always material found in the immediate vicinity of the nest. Defense of the nesting territory was observed often, both on the Snake River and on marshes and ponds throughout the study area.

Sixty-two per cent of all nests for which fates were determined were successful, 35 per cent were destroyed and three per cent were deserted.

Birds were the most serious nest predator. Flooding was not an important cause of nest destruction, primarily because many nests were in areas not susceptible to flooding, or were completed before flooding occurred. In some years, the management practices of Jackson Lake Dam have reduced the total volume of water downstream in the Snake River, and have helped prevent some losses to flooding which may have otherwise occurred. Manipulation of water in the Snake River, however may have reduced the desirability of this river as a nesting area for Canada geese, and may have contributed to the apparent decline indicated by a comparison of the population reported in 1947 with that found in this study.

The peak of hatching occurred between May 16 and 30 in 1962 and 1964. The peak of hatching was about two weeks earlier than this in 1963, primarily because a lack of snow cover on the nesting areas made nest sites available sooner. Mean clutch size varied annually from 4.9 to 5.5 eggs with a mean of 5.2 eggs for 114 completed clutches. Mean brood size was 4.7 for 61 broods observed during 1962 and 1963. Mortality of the goslings appeared to be negligible. Non-breeding geese and unsuccessful breeders left the nesting areas to pass the flightless period. Molting concentrations totaling 970 geese in 1963 and 747 geese in 1964 were located on five areas in Jackson Hole and Yellowstone National Park.

The autumn migration through Jackson Hole begins in late July and continues through late October or early November. In 1963 an estimated 2260 geese passed through Jackson Hole during the autumn migration. Major wintering areas outside Wyoming for geese banded at Turbid Lake are in central Arizona and southern California.

Trends in the population during the breeding season were determined from aerial surveys of the Snake River conducted by the Wyoming Game and Fish Commission since 1952. The population was generally highest in the earliest part of this period, declining during 1958-62, then increasing in 1963 and 1964. The results of two independent aerial censuses made each breeding season were compared with nesting studies and ground counts to more precisely determine the population in Jackson Hole during the study period. The mean population during the breeding season was 287.3 geese. Breeding pairs each year comprised 40.2 to 47.0 per cent of this population, averaging 43.5 per cent for the 3-year period. The sex ratio among 333 adults sexed at Turbid Lake in 1963 favored males 1.2:1. The survival analysis utilized 345 recoveries from 1350 geese banded as adults. The average annual mortality rate for the composite banding class (1956, 1957, 1958 and 1960) was 37.13 per cent. Adjusted to incorporate estimated juvenile first-year mortality, this rate was 39.66 per cent. A comparison of trap return information with band recovery data indicated that the latter may overestimate mortality rates in older age classes of Canada geese.

A comparison of the average annual mortality rate with the average annual increase from natality indicated a 2.1 per cent decrease in the population from one breeding season to the next. The proper interpretation of these data relating to natality and mortality was thought to be that the population was neither steadily decreasing or increasing, but fluctuating around a mean of slightly less than 300 geese.

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