Ecology of Canada geese (Branta canadensis) at Medicine Lake National Wildlife Refuge
by Harry Scott Denson

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Fish and Wildlife Management
Montana State University

Abstract:
This study was initiated because of two concerns over the Canada goose (Brant a canadensis) population at Medicine Lake National Wildlife Refuge (MLNWR): 1) the population appeared to have stagnated growth, and 2) the early fall departures from the area prior to hunting season. Production, seasonal activity, and migration chronology were studied during 1985 and 1986. A total of 299 and 307 Canada goose nests were located on the study area in 1985 and 1986, respectively, and distributions were plotted. Physical parameters were measured at all nest locations. Average clutch size for 1985 and 1986 were 5.1 and 5.7, respectively. Nest success for 1985 and 1986 was 63.5 and 72.3 %, respectively. Canada geese left the study area in September both years. Sixty-two band recoveries from geese banded on MLNWR showed a high return (72 %) from the North Platte River valley near Lisco, Nebraska. This study indicated that MLNWR supported a stable, self-sustaining population with the potential for increased growth. The Central Flyway Waterfowl Technical Committee established a goal of 1000 breeding pairs of Canada geese for northeastern Montana. Management recommendation are discussed to assist MLNWR to meet this goal.

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APPROVAL

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Harry Scott Denson

This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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Graduate Dean

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ABSTRACT

This study was initiated because of two concerns over the Canada goose (Branta canadensis) population at Medicine Lake National Wildlife Refuge (MLNWR): 1) the population appeared to have stagnated growth, and 2) the early fall departures from the area prior to hunting season. Production, seasonal activity, and migration chronology were studied during 1985 and 1986. A total of 299 and 307 Canada goose nests were located on the study area in 1985 and 1986, respectively, and distributions were plotted. Physical parameters were measured at all nest locations. Average clutch size for 1985 and 1986 were 5.1 and 5.7, respectively. Nest success for 1985 and 1986 was 63.5 and 72.3 %, respectively. Canada geese left the study area in September both years. Sixty-two band recoveries from geese banded on MLNWR showed a high return (72 %) from the North Platte River valley near Lisco, Nebraska. This study indicated that MLNWR supported a stable, self-sustaining population with the potential for increased growth. The Central Flyway Waterfowl Technical Committee established a goal of 1000 breeding pairs of Canada geese for northeastern Montana. Management recommendation are discussed to assist MLNWR to meet this goal.

INTRODUCTION

Seven Great Basin Canada geese (Branta canadensis) were live trapped at Bowdoin Refuge in 1939 in an attempt to re-establish a nesting population on Medicine Lake National Wildlife Refuge (MLNWR). These efforts were directed at maintaining a captive breeding flock and luring wild migrants into the area to nest. The captive breeding program at MLNWR was terminated in 1966, and the remaining 22 pinioned geese were transferred to Charles M. Russell National Game Refuge. The 54 nesting pairs on MLNWR in 1966 have since increased to approximately 300 pairs.

Two concerns over the Canada goose population at MLNWR have recently surfaced which precipitated this study. The first was an apparent stagnation in population growth which seemingly caused available breeding habitat to go unoccupied. A second concern, which is a recent phenomenon, was an early departure of geese from the area in the fall before the opening of the hunting season.

Past banding analyses have indicated that many of the geese from MLNWR migrate through, or winter along, the North Platte River between Scottsbluff and Lewellen near Lisco, Nebraska. The natural springs along the river in

this area maintain open water through the most severe winters which seems to attract and hold these geese (Hunt 1986).

The objectives of this study were to: 1) determine the annual productivity of Canada geese breeding at MLNWR, 2) evaluate movements of family groups and aggregations of families during the summer, 3) determine the fall movements, migration, and mortality of MLNWR geese, and 4) evaluate early spring movements, and establishment and defense of breeding territories.

Field work was conducted from late March through December, 1985 and from middle March through December, 1986.

DESCRIPTION OF STUDY AREA

Medicine Lake National Wildlife Refuge (MLNWR) is located in extreme northeast Montana within Sheridan and Roosevelt Counties between Plentywood and Culbertson (Figure 1). The landscape is gently rolling to flat terrain with elevations ranging from 590 (1,935) to 617 meters (m) (2,025 feet (ft). Three intermittent streams, Sand Creek, Cottonwood Creek and Lake Creek, drain into the management units and eventually into Medicine Lake. Two other intermittent streams, Lost Creek and Sheep Creek drain into Homestead Lake. Muddy Creek drains the entire area and is classified as a permanent stream.

Medicine Lake is located north of the ancestral Missouri River channel which originally flowed north to Hudson Bay. The last glacial activity forced it to turn its course to the east as the glacial sheet moved down from Canada. When the massive sheet of ice receded, it left a blanket of glacial till resulting in rocky rolling hills with numerous wetlands and marshes. These heavily glaciated rolling plains are located in the mixed grass and short grass prairie transition zone.