

A STUDY OF NESTING CANADA GEESE AT CONDIE NATURE REFUGE, SASKATCHEWAN

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The Condie Nature Refuge (Map 1) is located approximately 16 km northwest of Regina on No. 11 highway. The reservoir was created in 1924 by the C.N.R. to provide water for their locomotives, and in 1961 was acquired by Saskatchewan Tourism and Renewable Resources (then Dept. of Natural Resources) for preservation of the marsh and grassland as a nature refuge and recreation site. The 273.2-ha area is now intensively used for outdoor recreation by Regina schools. The reservoir and marsh provide a nesting and staging area for Canada Geese and some species of ducks.

The geese at Condie are mostly descendants from the Wascana Centre flock in Regina. Most of these geese are now crosses of *Branta canadensis maxima* and *B. c. moffiti* which are slightly smaller than *B. c. maxima* (Scott, personal communication).

From 11 May to 12 June, 1978 a nesting survey of Canada geese was conducted to determine nest numbers and locations, hatching success and gosling survival. A canoe was used to gain access to the islands and marshy areas. The author was aided by Rhonda Phillips and Larry Bogdan.

In addition to an academic interest in the numbers and success of nesting geese, the purpose of the

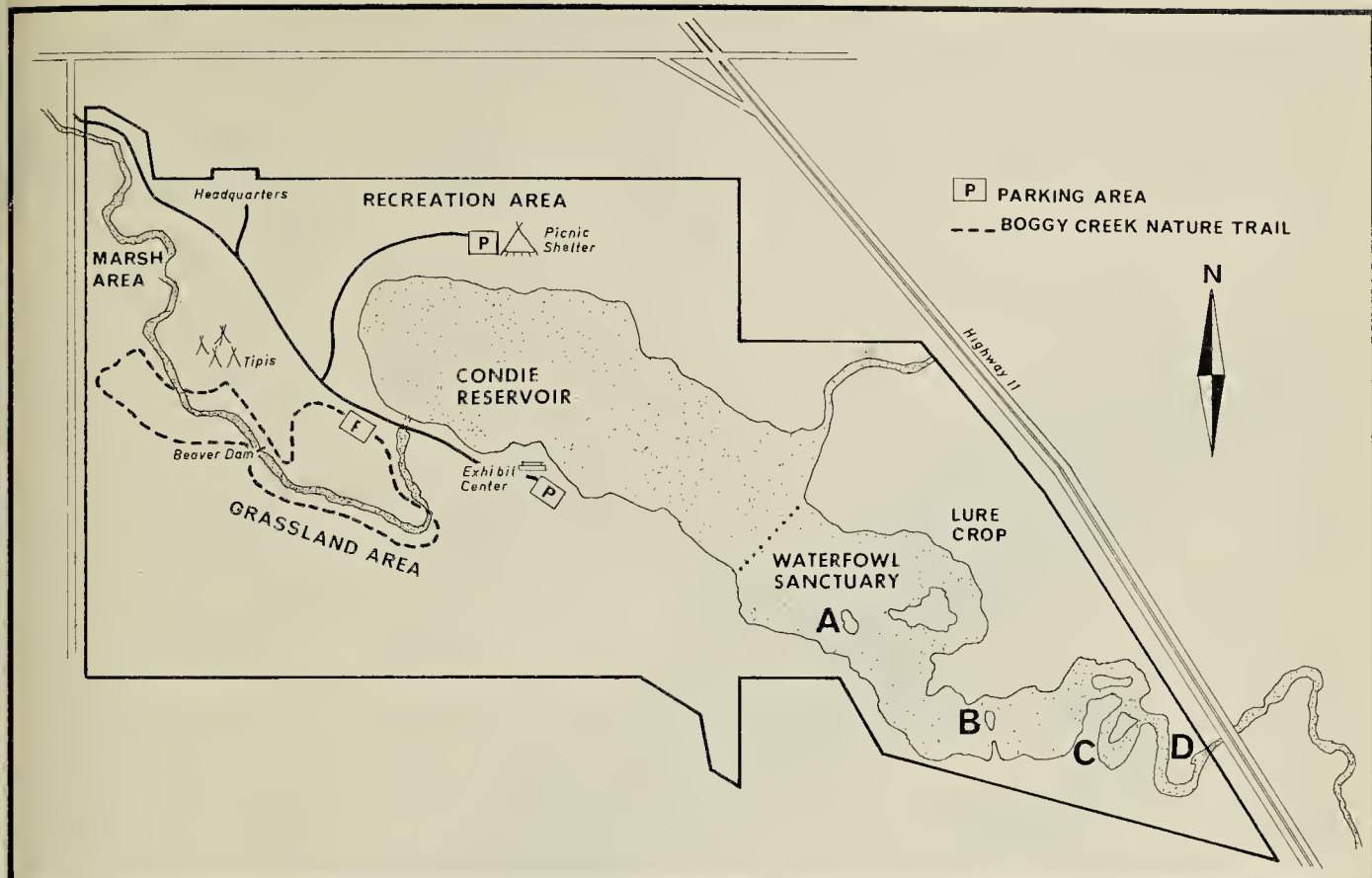
study was to determine which areas of the refuge are most used by nesting and brood-rearing birds. The information gained may be used in planning of future interpretive developments, such as observation blinds or walking trails, so that disturbance of the geese may be minimized by people using the area.

Nests

Table 1 is a summary of the results of the nest survey.

A small island (A), in map 1, in the waterfowl sanctuary contained eight nests (37 eggs). The vegetation consisted of many willow bushes with sparse ground cover at the beginning of the survey. By the end of the survey the nests were well concealed by increased vegetation. The substrate was dry. Six nests containing 24 eggs were abandoned. The other two nests hatched ten eggs.

Roosting Island (B) is small, has banked edges and little vegetative cover. This island was not checked until mid-way through the survey so the total number of eggs laid cannot be determined. There were two nests. One appeared to have already hatched and there was one egg beside the nest. The other nest hatched two eggs. Four eggs with holes in their sides, scattered near this nest, indicated predation. No definite conclusions can be made about success of eggs on this island,



Map of Condie Nature Refuge

but the percent of successful nests was at least 50%.

A marshy peninsula (C) contained four nests of which two (6 eggs) were abandoned probably as a result of flooding. One was at the base of a shrub on dry ground; the other was on a hill of mud at the shore.

A fairly open peninsula (D) with rocky soil, willow bushes and dock, contained two nests (ten eggs).

Two nests were located by the picnic shelter on the north side of the reservoir. This area consists of mowed lawns and a tree plantation. One nest in a small marshy area hatched all four eggs. The other nest on the top of the bank (approximately 1.8 to 2.4 m above the water) near the tree plantation, hatched three of four eggs. The gander from this nest was very aggressive and attacked the investigators.

Two nests (nine eggs) were located along the creek. There was no follow up on one nest of four

eggs. The other nest hatched all five eggs. This nest was about 0.6 m above the water in a grassy area.

Other nests were; one with six eggs in thick rose bushes along the shore (hatched), one in willows at the shore opposite the nature centre (hatched three of five eggs), one with six eggs on the mainland at the base of a lone tree near the drainage ditch (hatched), one with six eggs in a small clump of shrubs near a marshy area (hatched) and one with eleven eggs at the base of a willow at the shore of the northeast side of the highway (hatched).

Goslings

On 2 June and 12 June, 1978, at 8:00 a.m. goslings were counted. The count on 2 June was 45 goslings and on 12 June 42 goslings. This is approximately a 43% loss of goslings from the 79 eggs hatched. Considering total eggs laid (126), the success rate appears to be only about 36%.

TABLE 1. Summary of Canada goose nest locations, egg production, clutch sizes, nesting success and hatching success at Condie Nature Refuge, Summer, 1978.

Location	Number of nests	Number of eggs	Average number of eggs per clutch	Number of eggs hatched	% nests successful (hatched at least 1 egg)	% eggs hatched
Island A	8	37	4.6	10	25	27
Island B**	2	7(Min*)	3.5(Min)	2(Min)	50(Min)	28.5(?)
Peninsula C	4	21	5.25	13	50	61.9
Peninsula D	2	10	5.0	10	100	100
Picnic Area	2	8	4.0	7	100	87.5
Creek***	2	9	4.5	5(Min)	50(Min)	55.5(?)
Other	5	34	6.8	32	100	94.1
TOTALS	25	126(Min)	5.04(Min)	79(Min)	76(Min)	62.6
**Island B	1	1(Min)	1(Min)	?	?	?
	1	6(Min)	6(Min)	2	100	33
***Creek	1	5	5.0	5	100	100
	1	4	4.0	?	?	?

* = Minimum

In the morning, the popular areas for the geese and goslings to feed were on the grass by the picnic shelter and in the lure crop field. A few families were observed on the grassy southwest shore and by the pond on the northeast side of the highway.

Discussion

When selecting nest sites Canada geese consider the following: 1) abundance of nesting material, 2) island nest sites, 3) closeness to water, 4) firmness of nesting substrate, 5) closeness of grazing area, 6) presence of loafing sites, 7) absence of other nests, 8) good visibility from nest sites and, 9) a closeness of brood rearing area.¹

At Condie Nature Refuge all nests were close to water and had good visibility, at least at the beginning of the nesting season. The lure crop field and lawns provide grazing areas

and goslings can be hidden in the long grass and reeds. The island nest sites were the least successful, probably because of crowding and interactions between pairs. The most successful nests were along the shore and on the dry section of a marshy peninsula. The other three islands (Map 1) are only reed beds; there is no firm substrate.

At Condie, the average clutch size was 5.0, the nesting success was 76% and the hatching success was 62.6%. These results are comparable to other studies. At Waterhen Marsh, Saskatchewan, the average clutch size was 5.6, average nesting success was 82.7% and hatching success was 77.4%.¹ Clutch sizes at Marshy Point, Manitoba, averaged 5.7 in 1969 and 5.6 in 1970 and 1971.² Nest success ranged from a low of 65% in 1970 to 82% in 1971 and egg success averaged 67%.²



Canada Geese

Fred W. Lahrman

The following information is from Wascana Centre (L. Scott, personal communication). In 1978 there were 250 nests (1,400 eggs) on Wascana Lake with an average clutch size of

5.6 eggs. In 1977 average clutch size was 4.5 and in 1976 was 6.0. Only 700 goslings were raised in 1978 for a success rate of 50%. All the nests at Wascana were on islands or in

fenced areas so there was little harassment by dogs or humans. There are a few mink but their effect on nests is not known. Territorial combats between geese resulted in a high number of abandoned nests.

At Condie there appeared to be a 43% loss of goslings from the 79 eggs hatched, to make a total success rate of only 36%. This apparent loss is inexplicable. Only one dead gosling was found. Possibly the goslings were taken into other brood-rearing areas. At Waterhen Marsh, observed mortality prior to brood mixing and for coloured broods less than 2 weeks old was about 7%.¹ However, at the end of the flightless period there appeared to be a reduction of 65%. It was assumed that there were unknown brood-rearing areas.¹ In Utah average mortality during brood rearing was only 7% for 3 years combined; most mortality probably occurred in the week following hatching.³ At Seney National Wildlife Refuge, Michigan, gosling survival rates were 16% in 1964, 78% in 1963 and 72% in 1965 with most mortality probably in the first 3 to 4 weeks.⁴ Predation appeared to be the main limiting factor on goose production although disease was also important.⁴

Very few of the geese were protective of their nests or goslings against human interference. In Michigan, it was also found that goose pairs would usually depart rather than defend.⁴

Six nests or 24% of the nests at Condie Nature Refuge were deserted for reasons unknown. Flooding appeared to be the reason in two of the nests and predation in at least two. Other causes for nest loss are destruction, infertile eggs and embryo death.

Conclusions

The productivity of geese at Condie Nature Refuge was a little lower than in other studies. Perhaps the area could be improved by providing other nesting sites. At Marshy Point, Manitoba, nest success was highest (77%) among nests in nest boxes and on muskrat houses and lowest (69%) for ground nests.² Nest success on islands at Condie was very low likely due to overcrowding. A few artificial nesting structures could be installed to determine if geese would use them.

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¹BRACE, R. K. 1972. A study of the nesting ecology, productivity, and mortality of Canada geese at Waterhen Marsh, Saskatchewan. M.Sc. Thesis, University of Saskatchewan, Regina Campus, Regina, Saskatchewan. 162 pp.

²COOPER, J. A. 1978. The history and breeding biology of the Canada goose of Marshy Point, Manitoba. Wildlife Monogr. No. 61. 87 pp.

³MARTIN, F. W. 1964. Behaviour and survival of Canada geese in Utah. Utah Dept. Fish Game Bull. No. 64(7): 89 pp.

⁴SHERWOOD, G. A. 1965. Canada geese of the Seney National Wildlife Refuge. Completion Rept. for Wildlife Management Studies No. 1 and No. 2, Seney National Wildlife Refuge, Seney, Michigan. 177 pp.