

## Canada Goose Survey on Middleton Island - 2004

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We conducted a survey of Canada geese on Middleton Island from June 20-22, 2004. This effort is directed at documenting growth of this island group and periodically determining its status as part of the dusky Canada goose population.

### **Survey Methodology**

Survey methodology was similar to surveys conducted in 1996, 1997, 2000 and 2002. Five observers walked the perimeter of the island during 3 days of observations. For the area beginning at the old dump site (traveling south and ending at the ship wreck), 2 observers surveyed for geese below the bluff focusing on the side of the bluff, beach and offshore areas (Fig. 1). One person carried a spotting scope to observe geese swimming offshore. Three observers surveyed geese above the bluff to locate broods in the dense vegetation (fern, skunk cabbage, salmon berry, cow parsnip), and scan for adults in the sedge/grass meadows. Distances between observers above the bluff were variable depending on vegetative cover. The range for observers above the bluff extended, at times, to the furthest inland terrace. When surveying the area beginning at the old dump site (traveling north ending at the road to the old FAA quarters and control site), 3 observers surveyed below and 2 surveyed above the bluff (Fig. 1). All 5 observers searched below the bluff along the west side of the island beginning at the "beach trail" near the abandoned air force base, and ending at the spur road leading to the old FAA quarters and control site (Fig. 1). The northern tip of the island and the area between the shipwreck and the "beach trail" were not surveyed (Fig. 1).

### **Estimation of Brood Size and Gosling Abundance**

Accurate counts of goslings were difficult to obtain when flushed in thick vegetation. Brood size and age class were also difficult to determine for some family groups observed offshore because of their distance from the observer, the tendency for family groups to associate with other geese, and the effects of the surf and other obstructions (rocky outcrops) on observation. To estimate average brood size we used brood observations where the total number of goslings was accurately determined and the number of adults observed with the brood was  $< 3$  ( $n=105$  broods). Family groups with more than 2 adults may have comprised more than one brood, therefore they were not included in the calculation of average brood size. For family groups with more than 2 adults we divided the number of goslings by the average brood size to obtain the number of broods. We used the average brood size to calculate the number of goslings in family groups when the number of young could not be accurately counted ( $n=88$ ), and for paired geese suspected of having a brood ( $n=39$ ).

## **Results and Discussion**

We counted 1499 adult and 618 young Canada geese on Middleton Island during 3 days of surveys (Table 1). Average brood size was 3.43 goslings (SD = 1.47). We estimated that 254 broods were present. Four active nests were located and 4 collared birds from previous marking events were observed during the survey.

The number of adult geese observed was the largest recorded (Table 1), but abundance varied by only 331 adults among the last 5 surveys (Fig. 2) indicating little change in the size of the breeding population over the last 8 years. We estimate that 37% of the Canada goose population on Middleton Island was composed of young in 2004 compared to 34%, 40%, 48% and 37% in 1996, 1997, 2000, and 2002, respectively. The high productivity is undoubtedly related to the lack of mammalian predators on the island. Of the 174 broods classified in 2004, most were between 5 and 11 days of age (40%), and 12 and 20 days of age (49%) (Fig. 3). This age distribution suggests that nests were initiated in late April – early May and peak hatch was during June 1-15.

A stable number of adults with relatively high levels of productivity indicate that the Canada goose population is thriving on Middleton Island.

## **ACKNOWLEDGEMENTS**

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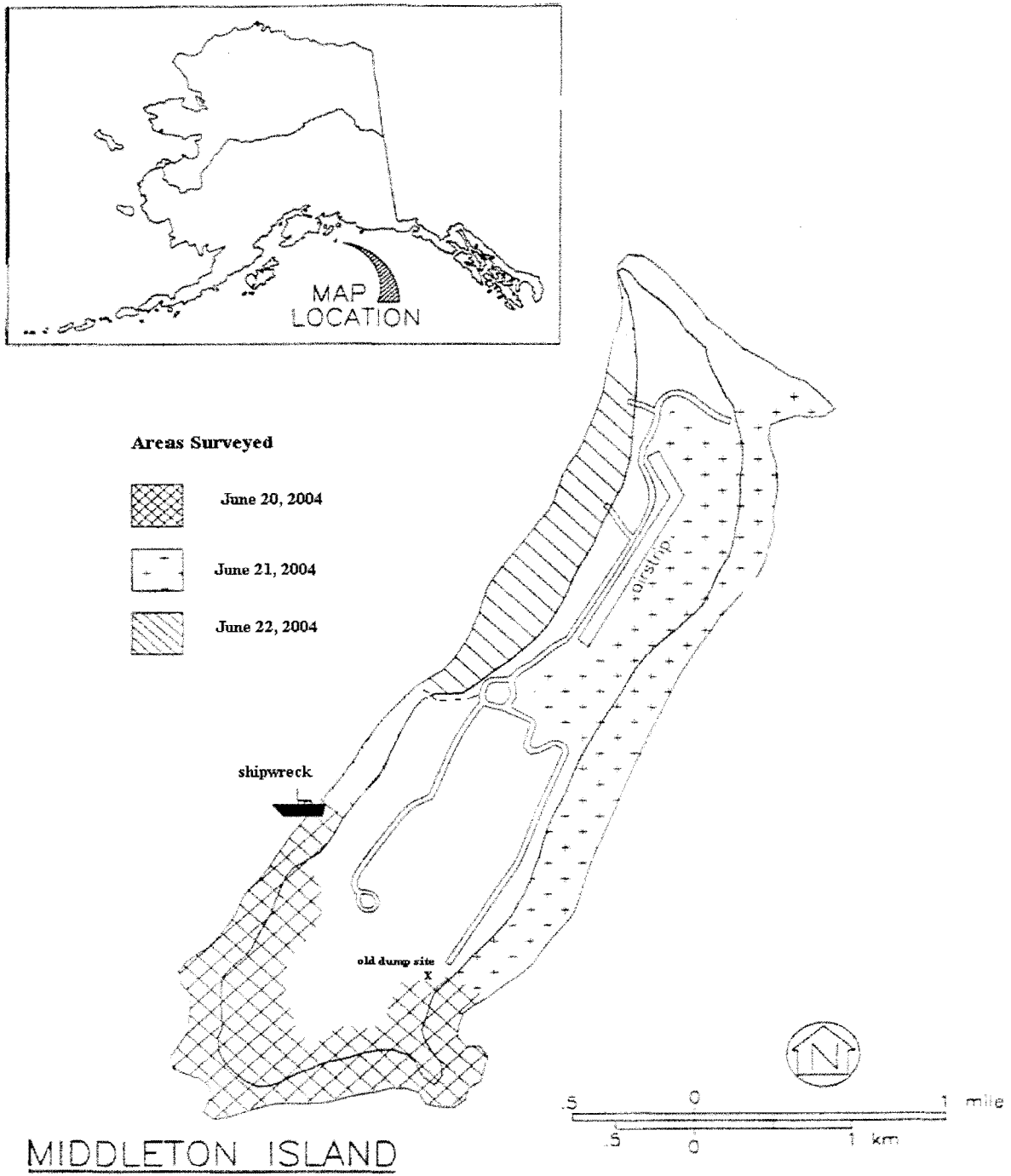


Fig. 1. Areas surveyed for Canada geese on Middleton Island, AK from 20-22 June 2004.

Table 1. Numbers of Canada geese observed on Middleton Island, Alaska during June in 1996, 1997, 2000, 2002 and 2004. The average and S.D. of known-sized broods was used to estimate size of suspected broods and broods of unknown size.

Date	Number of Adults	Number of known-sized broods (#young)	Number of unknown-sized broods (#young)	Number of suspected broods <sup>a</sup>	Estimated number of young <sup>b</sup>	Estimated number of broods	Average brood size (SD)	Total geese observed <sup>c</sup>	Total geese estimated <sup>d</sup>
1996 Jun 20-22	1456	27 (111)	118 (420)	38	752±246	183	4.11 (1.58)	1987	2208±246
1997 Jun 23-25	1168	27 (106)	156 (490)	18	789±282	201	3.93 (1.62)	1764	1957±282
2000 Jun 19-21	1309	163 (638)	108 (284)	39	1227±284	310	4.01 (1.93)	2231	2536±284
2002 Jun 27-29	1416	107 (347)	136 (314)	17	843±226	260	3.24 (1.48)	2077	2259±226
2004 June 20-22	1499	105 (360)	110 (258)	39	871±219	254	3.43 (1.47)	2117	2370±219

<sup>a</sup> Single or paired adult geese that flushed from thick vegetation close to the observer. Goslings were suspected of being present but were not observed.

<sup>b</sup> Number of young in known-sized broods + [(number of unknown-sized broods + number of suspected broods) \* average brood size ± standard deviation].

<sup>c</sup> Adults + all observed young.

<sup>d</sup> Adults + estimated young.

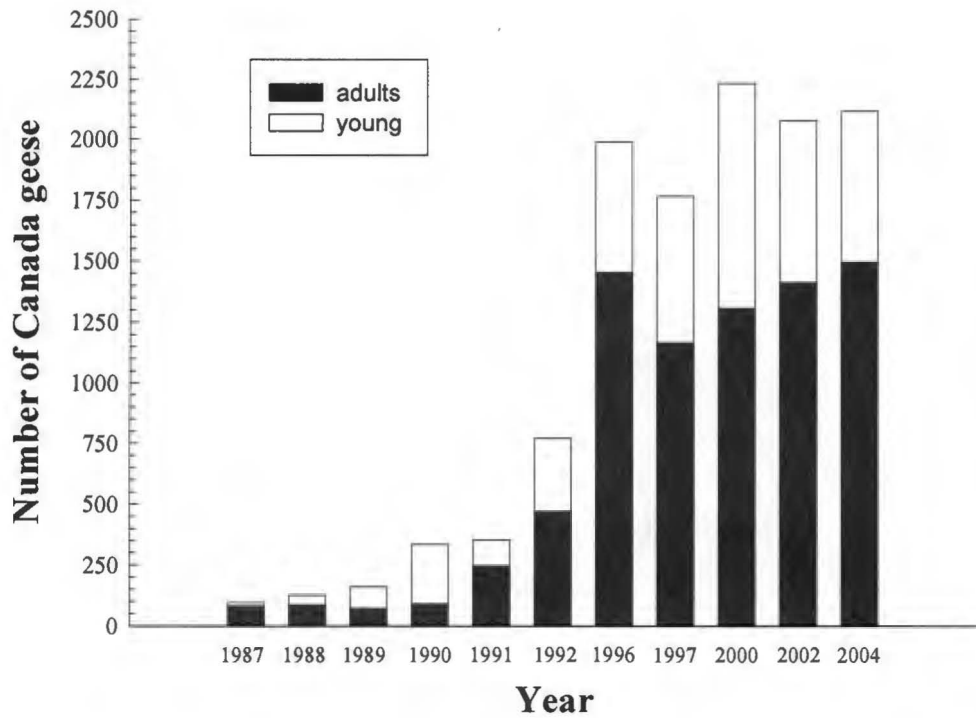


Fig. 2. Number of adult and young Canada geese observed on Middleton Island, Alaska during June 1987-2004.

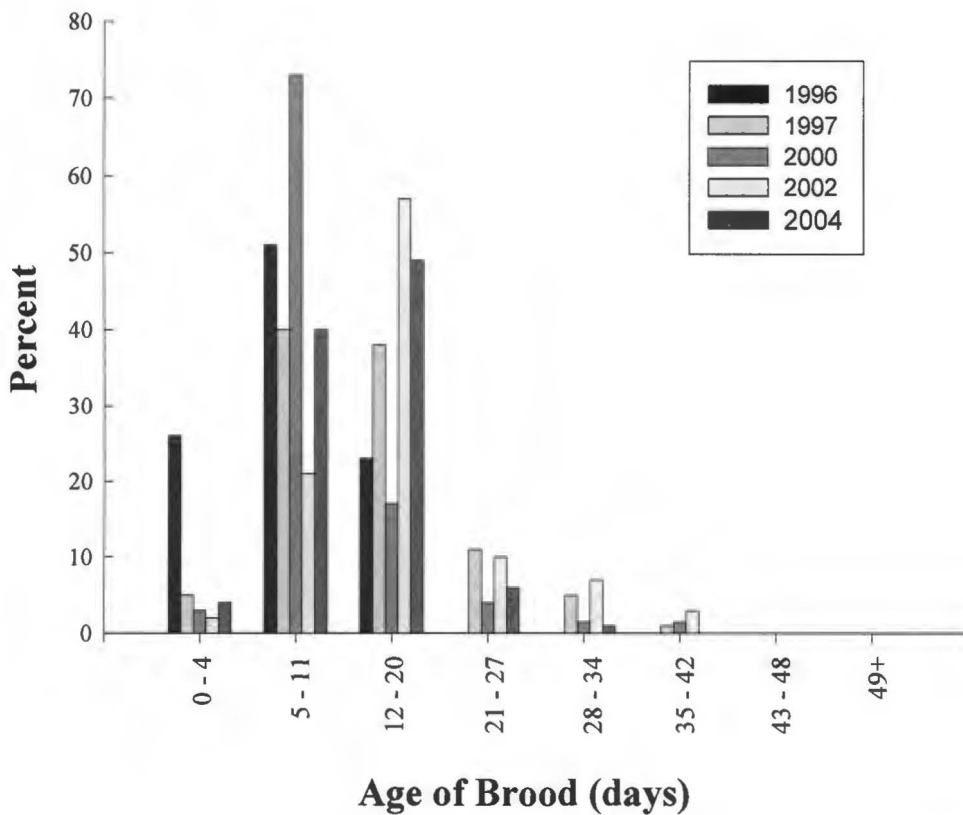


Fig. 3. Age distribution of Canada goose broods observed on Middleton Island, Alaska in June 1996 (n=82), 1997 (n=128), 2000 (n=206), 2002 (n=197) and 2004 (n=174).