

## Canada Goose Survey on Middleton Island - 2002

Mike Petrula, Tom Rothe, Dan Rosenberg, Steve Bethune  
Alaska Department of Fish and Game  
Division of Wildlife Conservation  
Statewide Waterfowl Program

We conducted a survey of Canada geese on Middleton Island from June 27-29, 2002. 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 and 2000. 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  $< 3$  ( $n=107$  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 ( $n=99$ ), and for paired geese suspected of having a brood ( $n=17$ ).

## **Results and Discussion**

We counted 1416 adult and 661 young Canada geese on Middleton Island during 3 days of surveys (Table 1). Average brood size was 3.24 goslings (SD = 1.48). We estimated that 260 broods were present.

The number of adult geese observed varied slightly (<288 geese) among the last 4 surveys (Fig. 2), indicating little change in the size of the breeding population over the last 6 years. The number of estimated young, however, was more variable among years indicating annual variability in production. We estimate that 41% of the Canada goose population on Middleton Island was composed of young in 2002 compared to 34%, 40% and 48% in 1996, 1997 and 2000, respectively. Fifty seven percent of the broods classified (n=197) were between 12 and 20 days of age (Fig. 3).

## **ACKNOWLEDGEMENTS**

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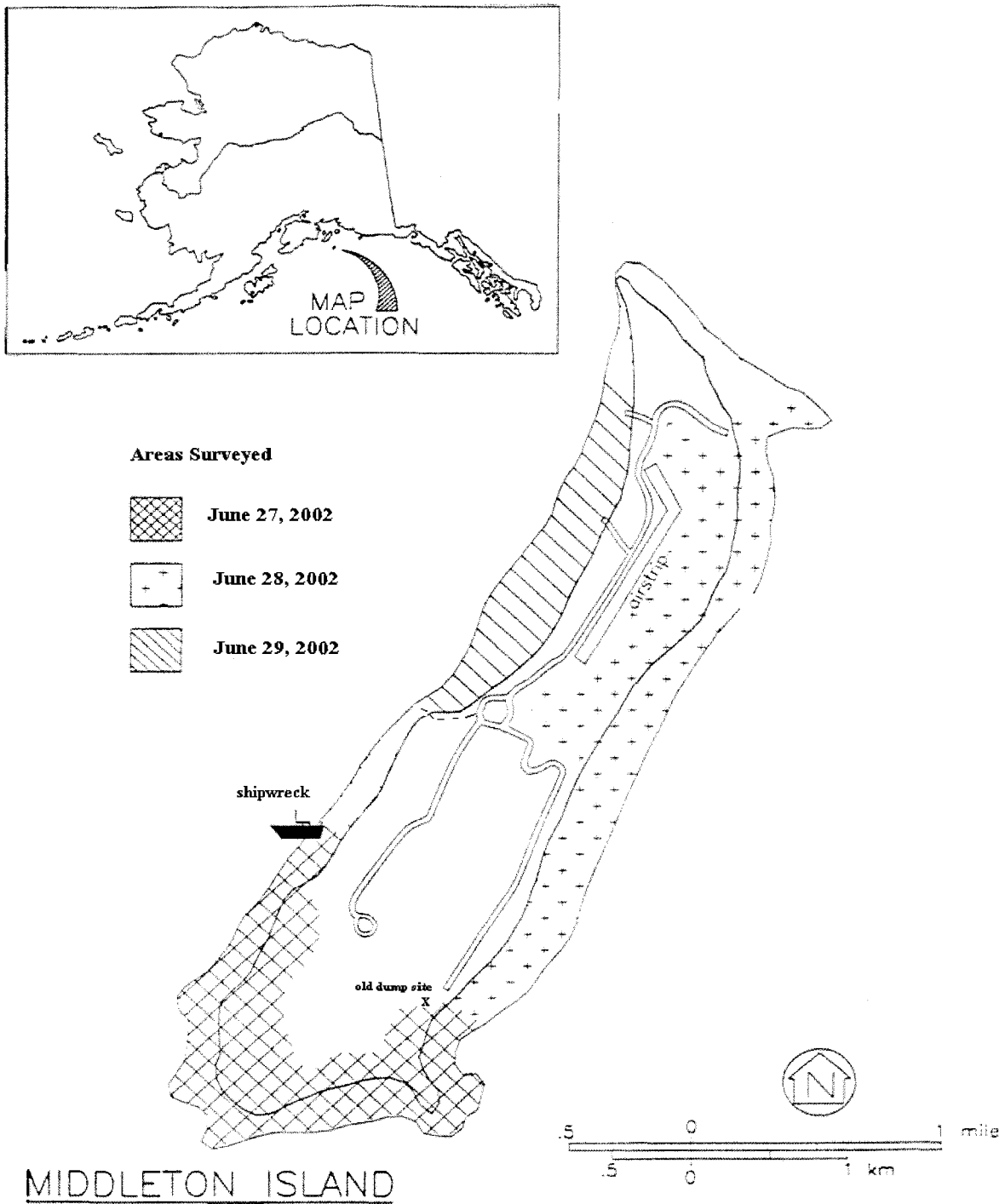


Fig. 1. Areas surveyed for Canada geese on Middleton Island, AK from 27-29 June 2002.

Table 1. Numbers of Canada geese observed on Middleton Island, Alaska during June in 1996, 1997, 2000, and 2002. 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                           |

<sup>a</sup> Single or paired adult geese that flushed from thick vegetation close to the observer, landed nearby and behaved broody, although no goslings were observed.

<sup>b</sup> No goslings, however, were observed because of thick vegetation.

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

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

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

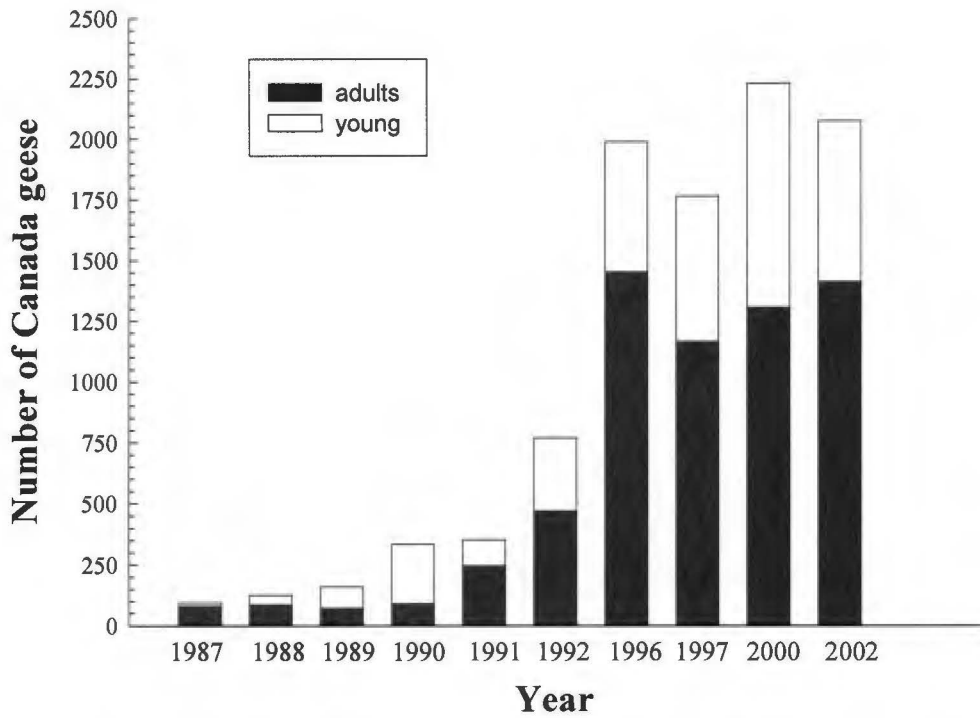


Fig. 2. Number of adult and young Canada geese observed on Middleton Island, Alaska during June in 1996, 1997, 2000 and 2002.

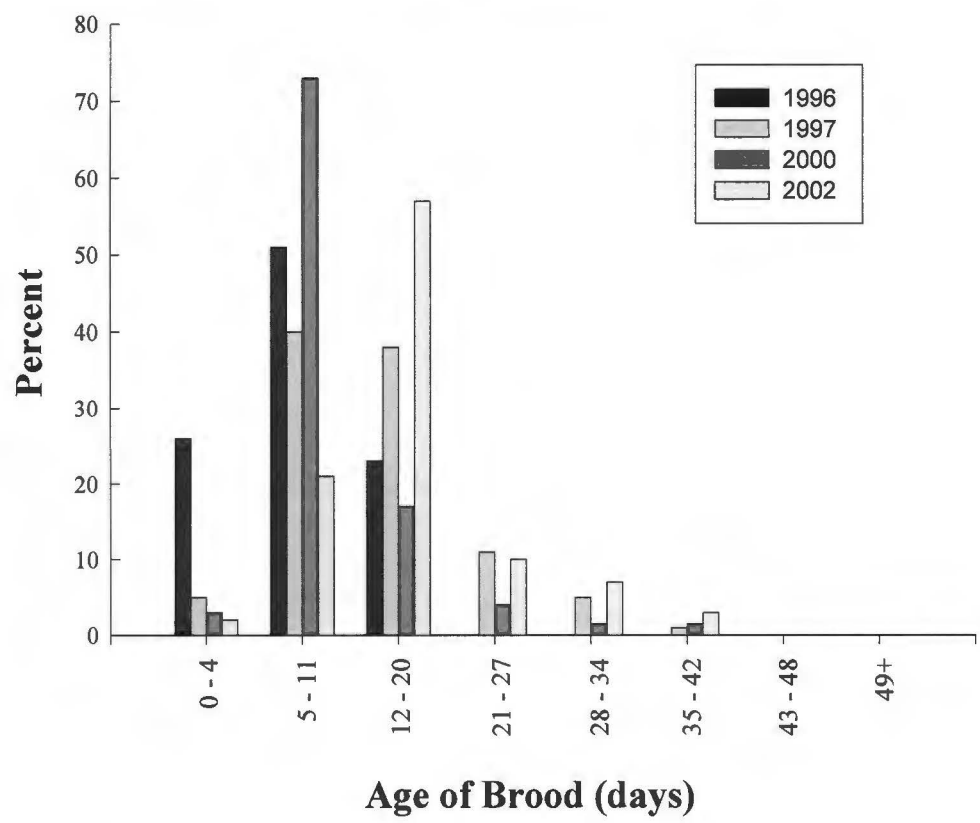


Fig. 3. Age distribution of Canada goose broods observed on Middleton Island, Alaska in June 1996 (n=82), 1997 (n=128), 2000 (n=206), and 2002 (n=197).