

Canada Goose Survey on Middleton Island - 2012

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We conducted a survey of Canada geese on Middleton Island from June 26-28, 2012. This biennial 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 was similar to surveys conducted from 1996-2010.

Middleton Island is located in the Gulf of Alaska approximately 120 km south-west of Cordova, Alaska (Fig. 1). The island is small measuring approximately 7.5 km long and 3 km wide. Canada geese were not observed on Middleton Island prior to the 1981 (Gould and Zablouil 1981), possibly because it was not suitable habitat. The island was raised 15 feet by the 1964 earthquake creating brackish and fresh water ponds. After a breeding population became established the number of Canada geese grew rapidly (Fig. 2). Biennial estimates of the MI goose population over the last 14 years indicate a stable population averaging ca. 1,350 adult geese (Table 1). The absence of mammalian predators on MI is most likely why gosling production is so high averaging 40% young (Table 1). The MI adult count is added to the annual estimates for Copper River Delta (CRD) dusky Canada geese to generate a total dusky population estimate. With the decline in CRD dusks, MI has been contributing an increasingly significant portion of the collective dusky estimate.

Estimation of Broods, Brood Size and Gosling Abundance

Accurate counts of goslings are difficult to obtain when broods are flushed in thick vegetation and an unknown number of broods may escape detection altogether. Brood size and age class are 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, reefs) on observations. To estimate average brood size we used brood observations where the total number of goslings were accurately determined and the number of adults observed with the brood was < 3 ($n=141$ broods). Family groups with > 2 adults may have comprised more than one brood, therefore they were not included in the calculation of average brood size. We used the average brood size to calculate the number of goslings in broods when the number of young could not be accurately counted ($n=64$ broods), and when broods were suspected but not observed ($n=48$; Table 1). For family groups with more than 2 adults ($n=22$), we divided the number of goslings by the average brood size to estimate the number of broods ($n=36$).

Results and Discussion

Our counts of Canada geese should be considered a minimum for the island because some geese go undetected and small portions of the island are not surveyed (Fig. 3). Effort among years has been consistent. We counted 1193 adult and 687 young Canada geese on Middleton Island during 3 days of surveys (Table 1). Average brood size was 3.30 goslings ($SD = 1.7$). We estimated that 1027 goslings were present in 293 broods (Table 1).

The number of adult geese observed in 2012 was slightly lower than the average of our previous surveys (Table 1) however, little change has occurred in the size of the breeding population during the last 16 years (Fig. 2). We estimated that 46.3 % of the Canada goose population on Middleton Island was composed of young in 2012; higher than average and remaining consistently high for this island nesting group (Table 1).

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Gould, P. J. and A. E. Zabloudil. 1981. Reproductive ecology of seabirds at Middleton Island, Alaska, 14-26 June 1981. Unpubl. report. 15 p. On file with: U.S. Geological Survey, Alaska Biological Sciences Center, 1011 East Tudor Road, Anchorage, AK 99503.

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Table 1. Numbers of Canada geese observed on Middleton Island, Alaska during June 1996 - 2012.

Year ^a	Number of Adults	Number of known-sized broods ^b (#young)	Number of unknown-sized broods (#young) ^c	Number of estimated broods (#young) ^d	Number of suspected broods ^e	Average brood size ^f (SD)	Goslings counted (estimated) ^g	Number of broods	Total geese ^h	% young
1996	1497	62 (227)	59 (140)	51 (184)	20	3.66 (1.7)	551 (673)	192	2170	31.0
1997	1168	25 (96)	132 (317)	48 (183)	18	3.84 (1.6)	596 (884)	223	2052	43.1
2000	1309	151 (586)	81 (167)	44 (169)	39	3.85 (1.7)	922(1220)	315	2529	48.2
2002	1416	107 (347)	69 (147)	51 (167)	18	3.24 (1.5)	661 (806)	245	2222	36.3
2004	1499	105 (360)	70 (132)	37 (126)	42	3.46 (1.6)	618 (876)	254	2375	36.9
2006	1453	166 (564)	52 (92)	34 (117)	31	3.52 (1.9)	773 (974)	283	2427	40.1
2008	1317	100 (331)	43 (82)	67 (220)	30	3.31 (1.5)	633 (795)	240	2112	37.6
2010	1249	155 (582)	88 (152)	18 (47)	52	3.75 (1.6)	781 (976)	313	2225	43.9
2012	1193	141 (466)	64 (103)	36 (103)	48	3.30 (1.7)	687(1027)	293	2220	46.3
Average	1345	112 (395)	73 (148)	43 (146)	33	3.55 (1.6)	691 (915)	262	2259	40.4

^a Surveys were conducted within a 4-day period between June 19 and June 28.

^b The number of broods in which the number of goslings were counted accurately and the number of adults present was < 3.

^c The number of broods in which the number of goslings were not counted accurately and the number of adults present was < 3.

^d We used average brood size to calculate the number of broods when the number of adults present was > 2 regardless of whether an accurate gosling count was obtained. The number of young represents the number of goslings observed.

^e Single or paired adult geese that flushed from thick vegetation close to the observer. Goslings were suspected of being present but were not observed.

^f Average number of goslings in known-sized broods.

^g Estimated goslings include those observed and those estimated in suspected and unknown sized broods.

^h Adults + estimated young.

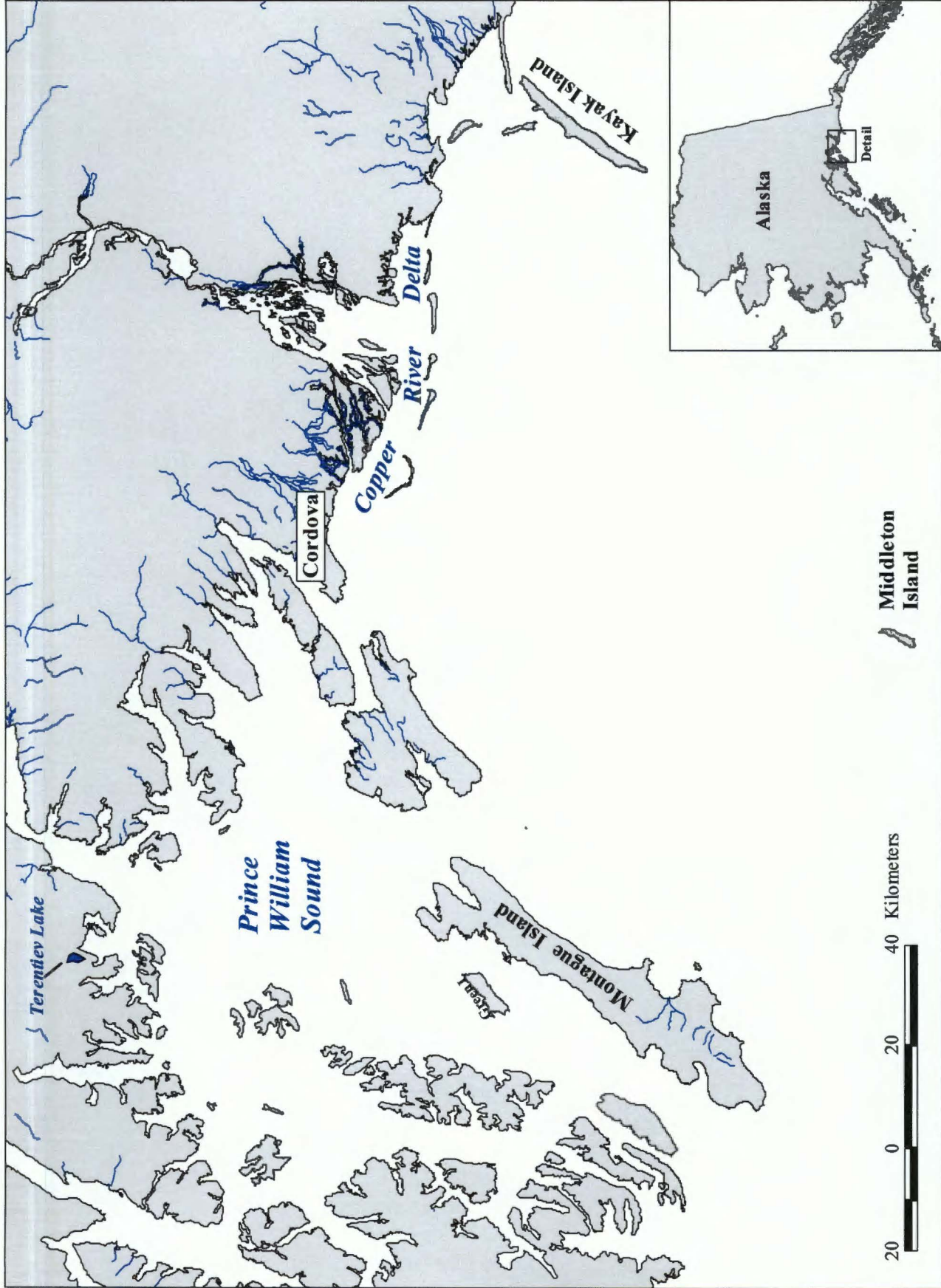


Fig. 1. North Gulf Coast of Alaska showing location of Middleton Island, Prince William Sound, and the Copper River Delta, AK.

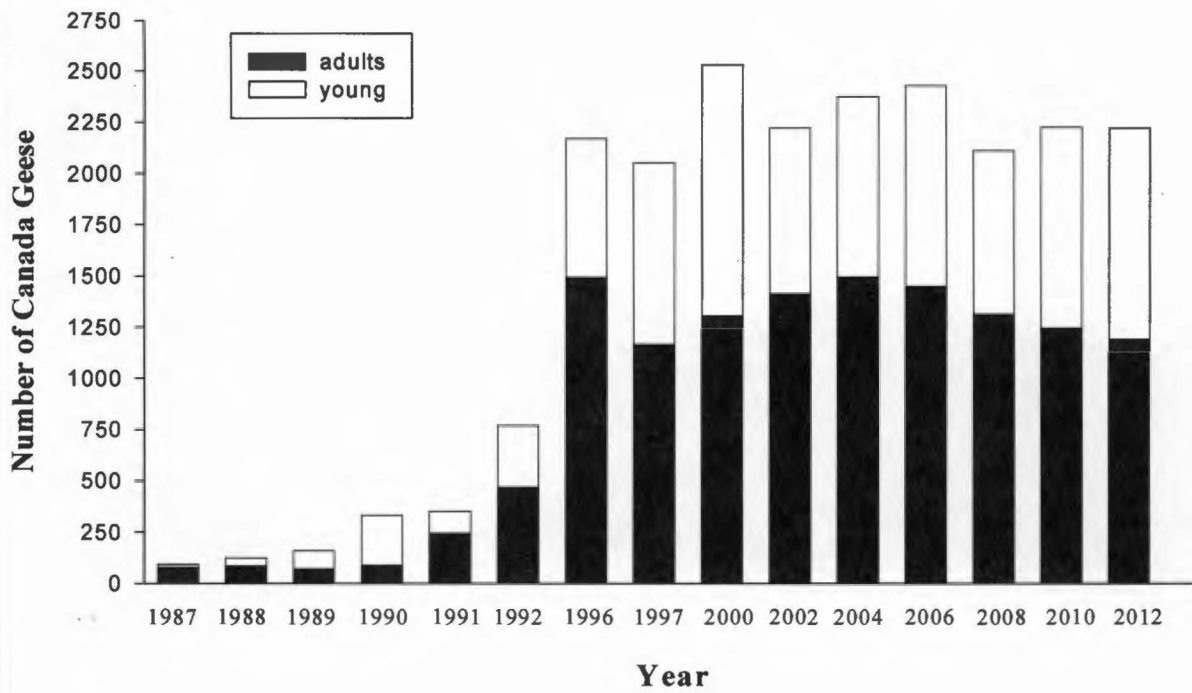


Fig. 2. Number of adult and young Canada geese estimated on Middleton Island, AK.

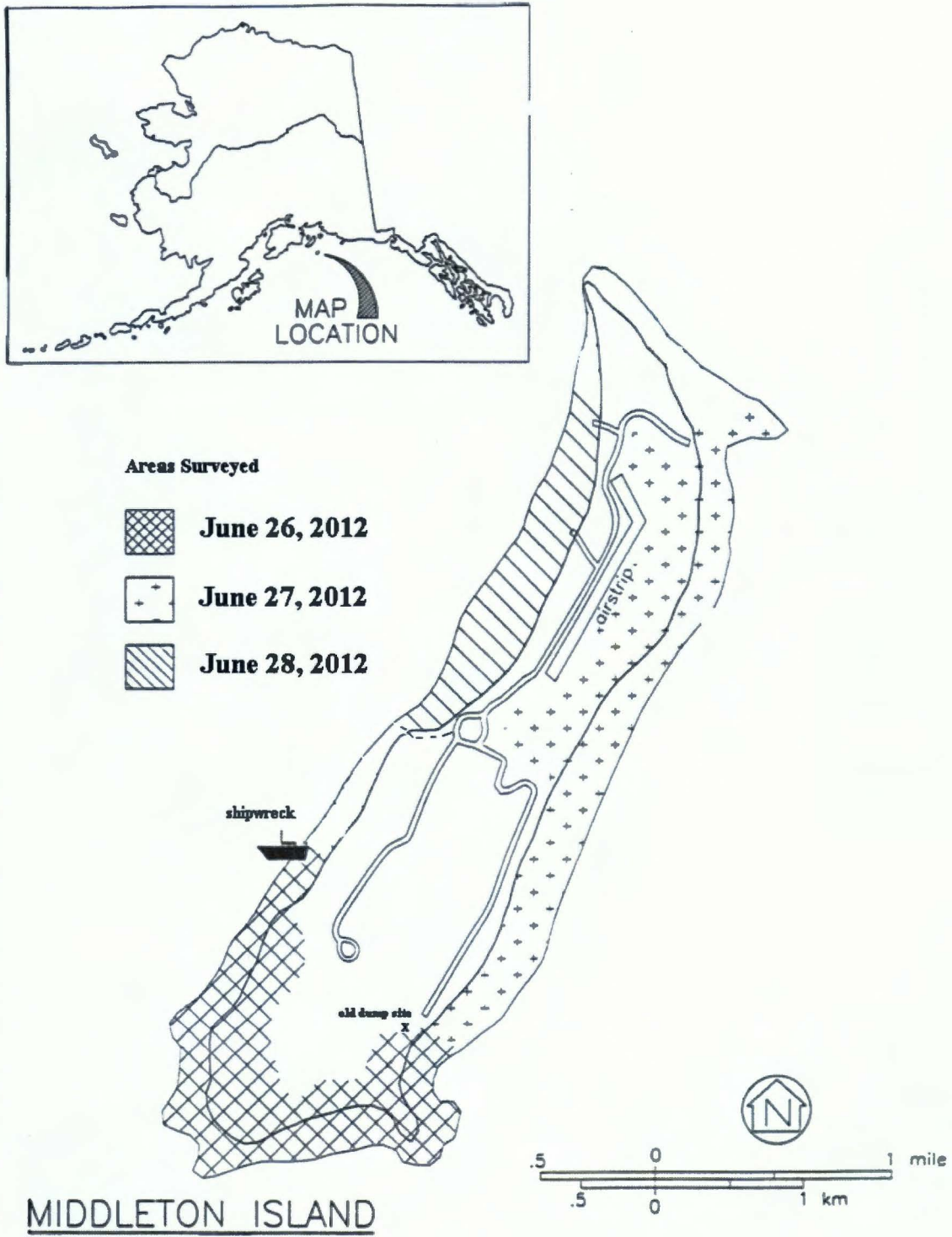


Fig. 3. Map of Middleton Island showing areas surveyed for Canada geese in 2012.