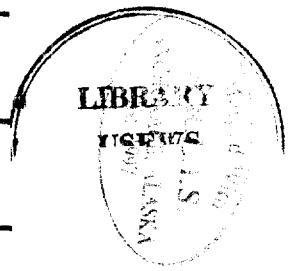

Aleutian Canada Goose Population and Nest Surveys at Agattu Island, Aleutian Islands, Alaska Spring, 1985

By Susan E. Cantor and Elizabeth Sharpe

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Aleutian Canada Goose Population and Nest Surveys at Agattu Island, Aleutian Islands, Alaska, Spring 1985

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AUTHOR(S)
Susan E. Cantor and Elizabeth Sharpe

CITATION

OBJECTIVE To further document the return of banded and unbanded geese and the extent of the nesting goose population on the southeast third of Agattu Island. The goal was to observe at least 50 individual geese and/or locate at least 15 nests.

METHOD OF STUDY The survey of the returning geese followed methods used in the past on Agattu and Alaid/Nizki. A combination of 10x40 binnoculars and spotting scope were utilized to document returning geese and determine band numbers if possible. The survey encompassed the area from McDonald Point to Karab Cove. Searching for nests followed techniques developed on Buldir with the biologists walking about 10m abreast and thoroughly searching for goose nests. The search encompassed all suitable habitat from Aga Cove to Anemone Falls.

MAIN FINDINGS During the period from 6 to 26 June, six biologists made 231 observations of geese. Of this number 43 were banded, 74 unbanded, and 114 undiscernable. From these observations it is estimated that Agattu Island has a minimum Aleutian Canada goose population of 52 individuals. Eleven Aleutian Canada goose nests and one brood pair were located.

CONCLUSIONS A viable population of Aleutian Canada geese has been established on Agattu through transplanting birds from Buldir.

MANAGEMENT IMPLICATIONS The recolonization of Agattu Island by Aleutian Canada geese has been firmly established bringing the subspecies one step closer to its removal from the endangered species list. Allows the process of recolonization of Aleutian Canada geese on a new island to begin with the 1985 Buldir transplant.

ADDITIONAL REMARKS

UPDATES OR SUPERSEDES I.D. NO.

PROGRAM

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INTRODUCTION

Agattu Island is the second largest of the Near Island group in the Aleutian chain and the island is located 35.2 km (22 mi) southeast of Attu Island and 30.4 km (19 mi) south of Shemya Island. It is roughly triangular, with a mountain ridge running the length of the northern shore. The southern portion of the island is a raised plateau, gently rolling with numerous lakes and streams. This level plain is ringed by a precipitous, rocky shoreline. The coastal cliffs and sea stacks serve as nesting grounds for thousands of cormorants (Phalacrocoras sp.), puffins (Fratercula sp.), murres (Uria sp.), and kittiwakes (Rissa tridactyla). Gravel beaches below offer breeding territories for large numbers of Steller's sea lions (Eumetopias jubatus) and harbor seals (Phoca vitulina) (Sekora, 1973).

The introduction of arctic fox (Alopex lagopus) to most of the Aleutian Islands has caused the near-decimation of the Aleutian Canada goose (Branta canadensis leucopareia). A remnant population survived on remote Buldir Island; smaller nesting populations have recently been discovered on Chagulak Island and Kaliktagilc Island in the Semidi Islands. Following the removal of foxes from Agattu Island, the geese were successfully transplanted to the island beginning in 1979 using captive stock and wild birds from Buldir Island. By 1982 it was apparent that captive-reared birds were not colonizing the island successfully. Only wild geese from Buldir have been used in subsequent transplants. A total of 463 wild geese have been transplanted to Agattu Island from Buldir Island between 1974 and 1984 (Martin et al. 1982, refuge files).

Observations of returning geese were conducted on Agattu Island in the springs of 1982 and 1983. In 1984, refuge personnel continued these observations and conducted a limited nest survey.

Three goose nests were discovered, confirming the initial success of the transplant operation. The objective of the 1985 study was to further document the return of banded geese, the presence of unbanded geese, and to determine the extent of the nesting goose population on Agattu Island.

METHODS

In order to assess the status of Aleutian Canada geese on Agattu Island, six investigators were stationed on the east shore from 6 to 26 June 1985. Appendix I contains detailed information of the field crews daily activities. During this time the entire shoreline of the southeastern third of the island was investigated (Figure 1) to allow an estimate of the number of geese present on the island and any nesting occuring in the area. From 6 to 16 June field efforts centered around observations of banded geese. After 16 June the emphasis of the project shifted to nest searching in areas where geese had previously been seen. From 6 to 12 June investigators were split into two groups. One group of two was stationed at Aga Cove and one group of four at Camp Cove. After 12 June all investigators were stationed at Camp Cove.

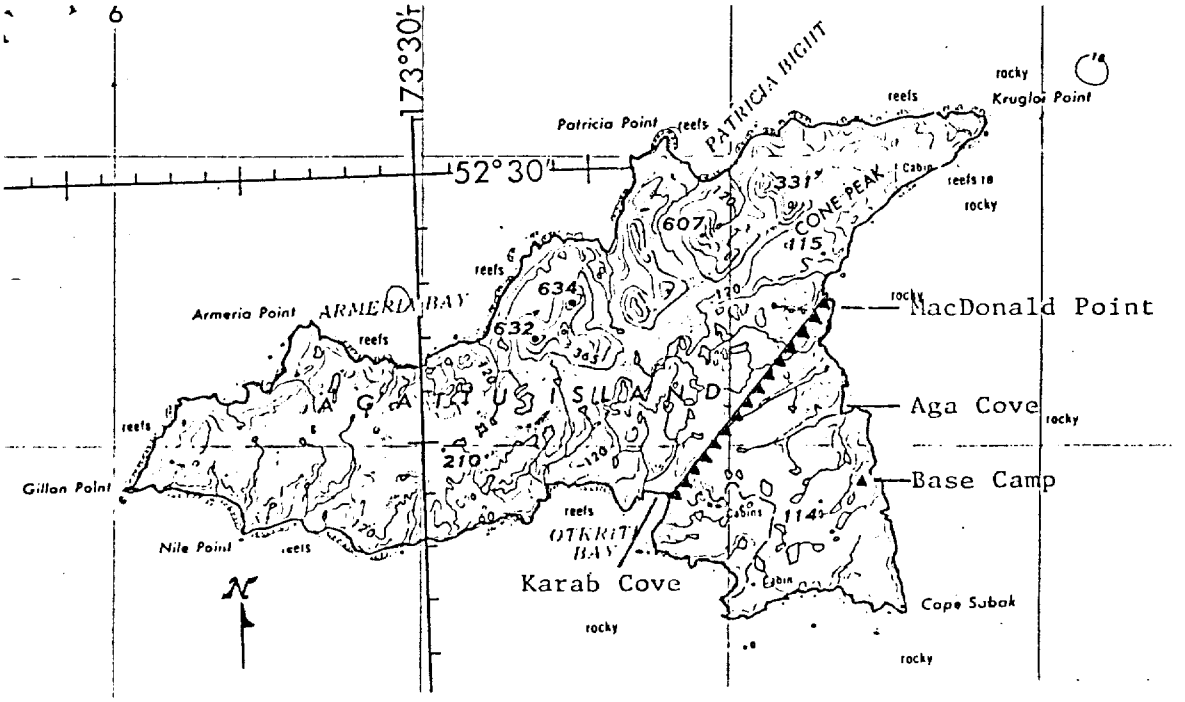


FIGURE 1. AGATTU ISLAND, NEAR ISLAND GROUP, ALASKA.
study encompassed area east of ▲▲▲▲▲▲▲▲▲▲▲▲.
(Scale 1:250,000)

Goose observations were conducted along the coastline from McDonald Cove to Karab Cove (see Appendixes II and III). Upon sighting a goose or group of geese, individual birds were counted. With the use of 10x40 binoculars, a spotting scope or a Questar, an attempt was also made to discern if the geese were banded. If the geese were banded, the band number was recorded. If the band number could not be read, or the geese were unbanded, or the observer was unable to discern the presence of a band that information was also recorded. The date of observation, time, specific location, status (flying or not flying), and the direction of flight were also recorded. Individuals, pairs, or groups of geese were considered separable from other birds observed when individual geese, pairs, or groups were seen repeatedly in the same area; individuals, pairs, or groups were seen far apart; birds were individually identifiable due to the presence or absence of bands and when hens were discovered on nests.

Nest searches were conducted throughout the Elymus-umbel community fringing the coast from Aga Cove to Anemone Falls. The Thomas Lakes region and the entire Cape Sabak area were also systematically searched.

Nest searches followed the procedure described by Byrd (1978). Four to six personnel walked abreast, with the end person following a natural boundary (usually the coastline). If the search area was wider than the line of investigators, several passes were made by doubling back along a transect line set by the person on the inside end. The end of the line of observers was marked with orange surveyor's flags. The distance between observers varied to allow complete visual coverage of an area. Each sweep ranged from one to five meters in width determined by, vegetation and terrain.

When a nest was encountered, observers recorded clutch size, nest characteristics, and parental behavior. A photograph was taken of each nest. To minimize disturbance, observers covered the nest with down and departed the area as soon as data gathering was accomplished.

RESULTS AND DISCUSSION

Weather Conditions

Most of Alaska recorded cooler than normal temperatures during the spring of 1985. River break-up was delayed in most parts of the state. June temperatures on Agattu Island reflected this trend, with an average low of 18o C (39o F) and an average high of 24o C (50o F). Temperatures ranged from 16o C to 26o C (36-53o F). Typically, winds were light and variable, with overcast or partly cloudy skies. Winds exceeded 25 knots on only one day. The base camp only experienced two days of steady rain and five days with drizzle throughout the study period. The first fog did not appear until 25 June, when it was accompanied by rough seas (Appendix IV).

Observations of Geese

The total geese released on Agattu island numbers 1164, 463 of which were wild birds transplanted directly from Buldir Island. In the 11 days of intensive goose surveying, a total of 231 observations were made. The observations averaged out to 21 sightings per day, compared to 13.3 sightings per day in 1984 (Deines and Willging 1984) and 8.3 sightings per day in 1983 (Dragoo and Deines 1983). Of the 231 observations, observers were able to discern whether 117 (51%) of the geese were banded or unbanded. Of those, 43 (37%) were banded and 74 (63%) were unbanded. Thirty (70%) of the 43 sighted bands were read. A total of 12 individuals (bands) were involved. In the remaining 114 observations (49%) observers were unable to discern the presence or absence of bands (Table 1).

In comparing the number of banded to unbanded geese, observers could discern the presence or absence of bands on approximately one-third (37%) of the geese. This is about the same as the (30%) observed in 1984 (Deines and Willging 1984). The low number of recorded banded geese is probably due to several factors including: 1) unbanded geese from other islands pairing with geese released on Agattu while both were on the wintering grounds, 2) geese produced on Agattu by geese released there in previous years, 3) immature geese from wintering grounds following other geese back to Agattu for the summer, 4) natural dispersal, 5) the secretive habits of all geese when they reach breeding age and 6) natural pioneering from Buldir and other islands. All of these factors in combination probably contribute to the observation that twice as many unbanded geese as banded geese occur on the island.

In 1985 the banded geese were observed in similar locations to those of 1983 and 1984. Thirty-four geese were observed in 1985 at the Cape Sabak area and eighteen were encountered in the Aga Cove area. Of the twelve identifiable banded geese, seven (58%) were found from Aga Cove north to McDonald Cove and five (42%) were found from Camp Cove to Cape Sabak. Of the seven geese found in the Aga Cove area, four (57%) were 1984 goslings while in the Cape Sabak area two (40%) were 1984 goslings. As with the previous Agattu spring goose surveys, the majority of the banded birds recorded at Aga Cove were from the release of the previous year. This affixation to Aga Cove is to be expected for non-breeding birds following the year of release as they tend to return to the site of their first flight. Of the remaining six banded geese (Table 2), 2 were banded and released as goslings on Agattu in 1982 and one in 1983. One adult goose (C26) was also banded and released on Agattu in 1982. The remaining two banded geese were banded as adults on the wintering grounds in central California. Only three of the banded geese had been observed in previous surveys. Birds with band numbers C26 and 932 were observed in 1983 and number E45 was observed in 1984.

Table 1. Summary of 1985 Agattu Goose Observations.

Date	Total Number of Geese Observed	Number Observed of Banded Geese	Number Observed Unbanded Geese	Number Observed Unknown Geese	Number Unread Bands	Number Bands Read	Recorded Colored Leg Band #'s
6/6/85	33	3	1	29	3		
6/7/85	23	6	5	12	4	2	E53, X62
6/8/85	69	15	28	26	5	10	X20, X62, E53, X46, E62
6/9/85	39	6	14	19	1	5	E45, X62, X20
6/10/85	5	2	1	2	0	2	C26, Yellow #14
6/11/85	14	3	7	4	0	3	X62, C26
6/12/85	3	2	1		0	2	C26, Yellow #14
6/13/85	3	2	1		0	2	C26, Yellow #14
6/14/85	32	2	9	21	0	2	E96, E62
6/16/85	10	2	7	1	0	2	E96, Red J05
TOTALS	231	43	74	114	13	30	Three bands read later 932, X61, E45

Table 2. Summary of Capture and Release Data for Banded Geese Observed on Agattu in 1985

Band #	Release Site	Release Date	Sex & Age at Handling	Source
Blue C26	Aga Cove	8/82	AHY-F	Buldir
Blue E45	Aga Cove	8/83	L-M	Buldir
Blue E53	Aga Cove	7/84	L-M	Buldir
Blue E62	Aga Cove	8/84	L-M	Buldir
Blue E96	Aga Cove	8/84	L-F	Buldir
Blue X20	Aga Cove	8/82	L-M	Buldir
Blue X46	Aga Cove	8/84	L-F	Buldir
Blue X61	Aga Cove	8/84	L-F	Buldir
Blue X62	Aga Cove	8/84	L-M	Buldir
Blue 605*	Aga Cove	8/82	ATY-F	Buldir
Blue 932	Aga Cove	8/82	L-M	Buldir
Red J05	Crescent City, CA	3/85	ASY-M	Crescent City, CA
Yellow 14	Crescent City, CA	4/83	ASY-F	Crescent City, CA

* Only found leg w/blue band.

Based on all observations, an attempt was made to estimate the total number of individual geese sighted. Two assumptions were made in this attempt: 1) that all observations were random, and 2) that the average number of observations per readable banded bird was the same as the average number of observations for all birds. The 30 bands that were readable were used as a known number of sightings for 12 known individuals, yielding an average number of 2.50 sightings per goose. Applying this number to the total number of observations indicates that as many as 92 individual geese may have been seen. Although this approach suggests that 92 geese were present, the frequency of sightings per individual bird may have been underestimated. Some of the unread banded goose sightings may have been of the 12 known individuals. If the additional unread banded goose sightings are included, each known individual would have been sighted an average of 3.6 times. Applying this number to the total number of sightings indicates 64 individuals may have been sighted. Therefore, a range of 64 to 92 individual geese sighted in the southeast third of Agattu Island could be proposed. Other factors, however, must also be considered. These include the total number of goose observations, daily observation patterns of individual birds or groups of birds at particular locations, and the potential for duplicate sightings. When all these factors are considered, it could be estimated that as few as 52 individual geese were observed on Agattu in June 1985 (Table 3). The sighting locations for these birds are shown in Figure 2.

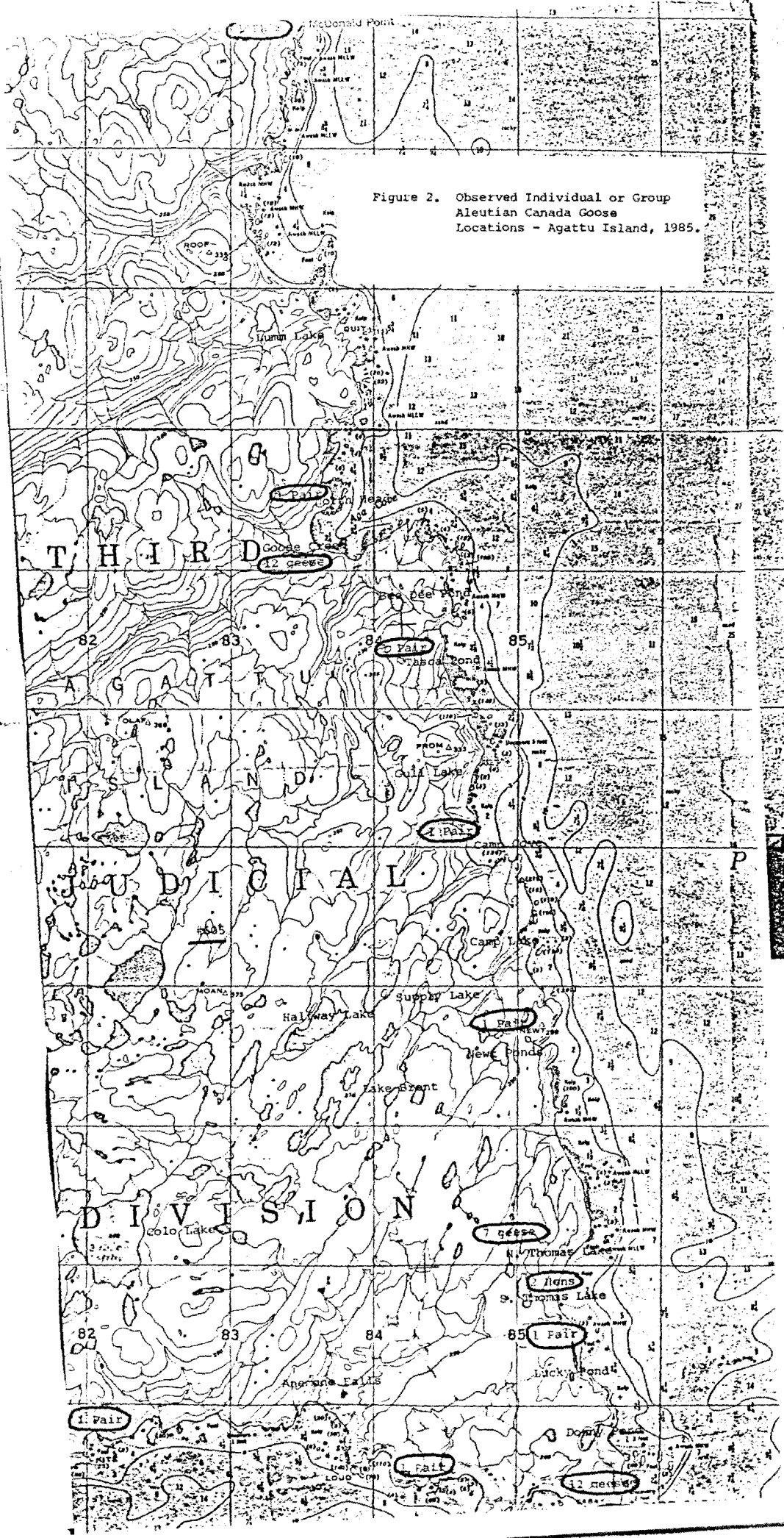


Figure 2. Observed Individual or Group Aleutian Canada Goose Locations - Agattu Island, 1985.

Table 3. Minimum Number of Individual Aleutian Canada Geese Observed on Agattu, 1985.

12 individuals in Aga Cove area	12 geese at Cape Sabak
2 (pair) McDonald Cove area	3 hens at Cape Sabak
2 from nest #4	2 geese (pair) at point
2 from nest #5	west of Cape Sabak
7 geese at Thomas Lakes	2 geese (pair) at Kite Point
2 hens nesting in this area	2 geese (pair) at Newt Ponds
2 one pair (nest not found)	2 geese (pair) at base camp

Total 52 geese on area of Agattu searched

Nest Survey

A total of 11 Aleutian Canada Goose nests (see Appendix V) were found east and south from McDonald Cove to Anemone Falls (Figure 3). These areas were selected for nest searching on the basis of goose observations in early June. The Thomas Lakes area and Cape Sabak had received the heaviest use by geese at that time. At least seven geese and two nests were found by Thomas Lakes and 15 geese and three nests were found on Cape Sabak. In addition, over 18 birds were seen in the Aga Cove region and two nests were found there.

Additional nesting habitat may exist along the south shore west of Karab Cove. This area was not explored in 1985; however, evidence of geese diminished rapidly as the observers travelled west from Cape Sabak towards Karab Cove. Furthermore, the Elymus-umbel community fringing the coast is considerably less extensive west of Anemone Falls. The north shore of Agattu is dominated by steep mountains. It apparently does not contain much, if any, goose nesting habitat similar to that found on other islands in the Aleutian chain used by Aleutian Canada geese.

The average clutch size of the eleven nests found was 5.73 (Table 4). This compares favorably with clutch sizes found at Buldir and Chagulak Islands (5.5 and 5.8, respectively). Nesting studies at Buldir Island showed a mean of 3.99 goslings fledged per nest, and a nesting success of 93% (Byrd et al. 1978). Extending these results to the Agattu population, a minimum of 40 goslings were potentially produced there in 1985 at the eleven nests located. However, conditions on Agattu are vastly different than those on Buldir with respect to habitat, avian predators, and goose density.

Nest sites chosen on Agattu Island varied considerably from those found on other islands (Table 5). Eight of the eleven Agattu nests were in the Elymus-umbel community. Two were in short grass areas, and the remaining nest was in upland tundra near Aga Cove. On Buldir Island, nests were found exclusively in the Elymus-umbel hummock habitat (Byrd et al. 1977; Woolington and Early 1978; Henry and Early 1979; Deines and Early 1982). On

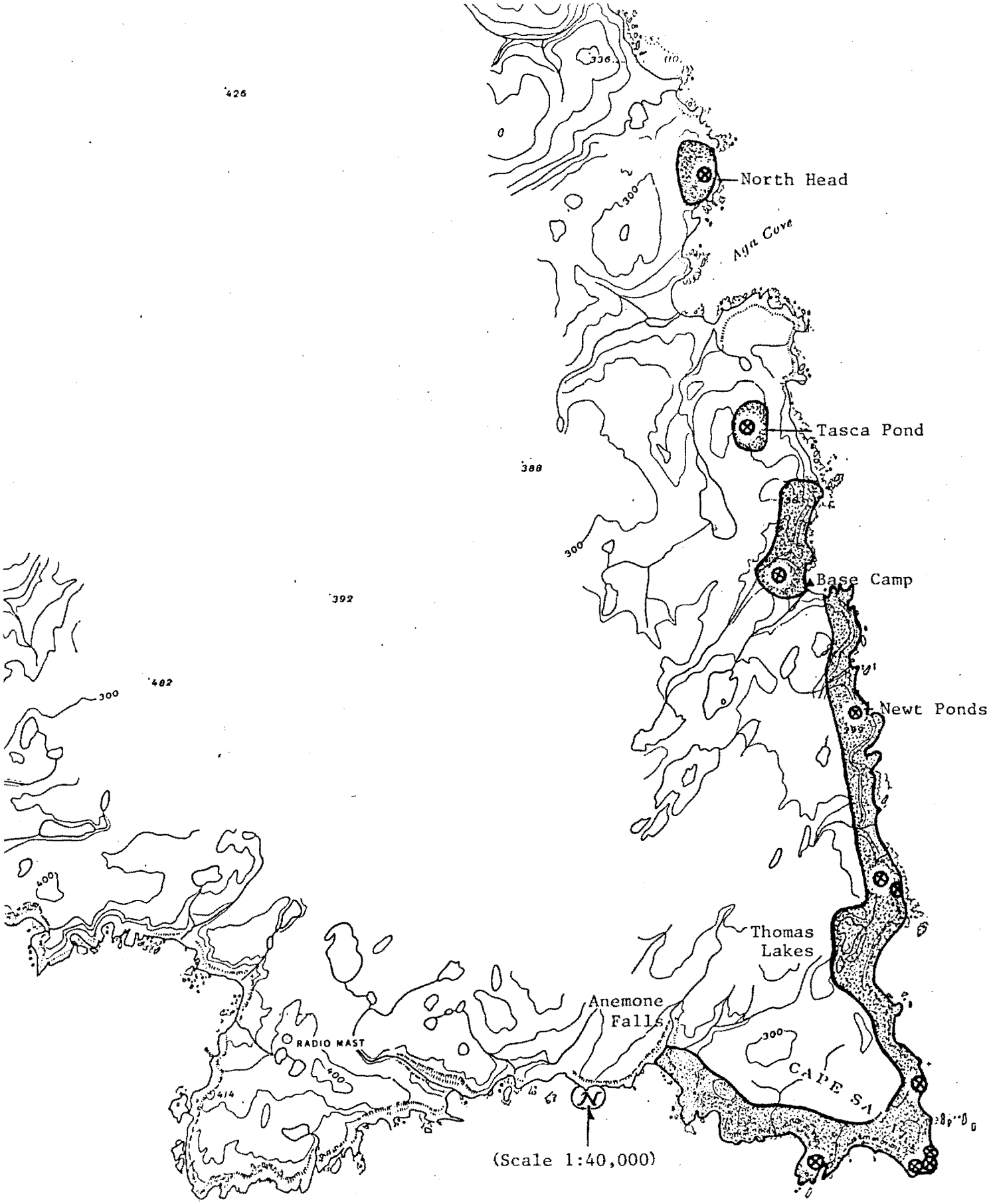
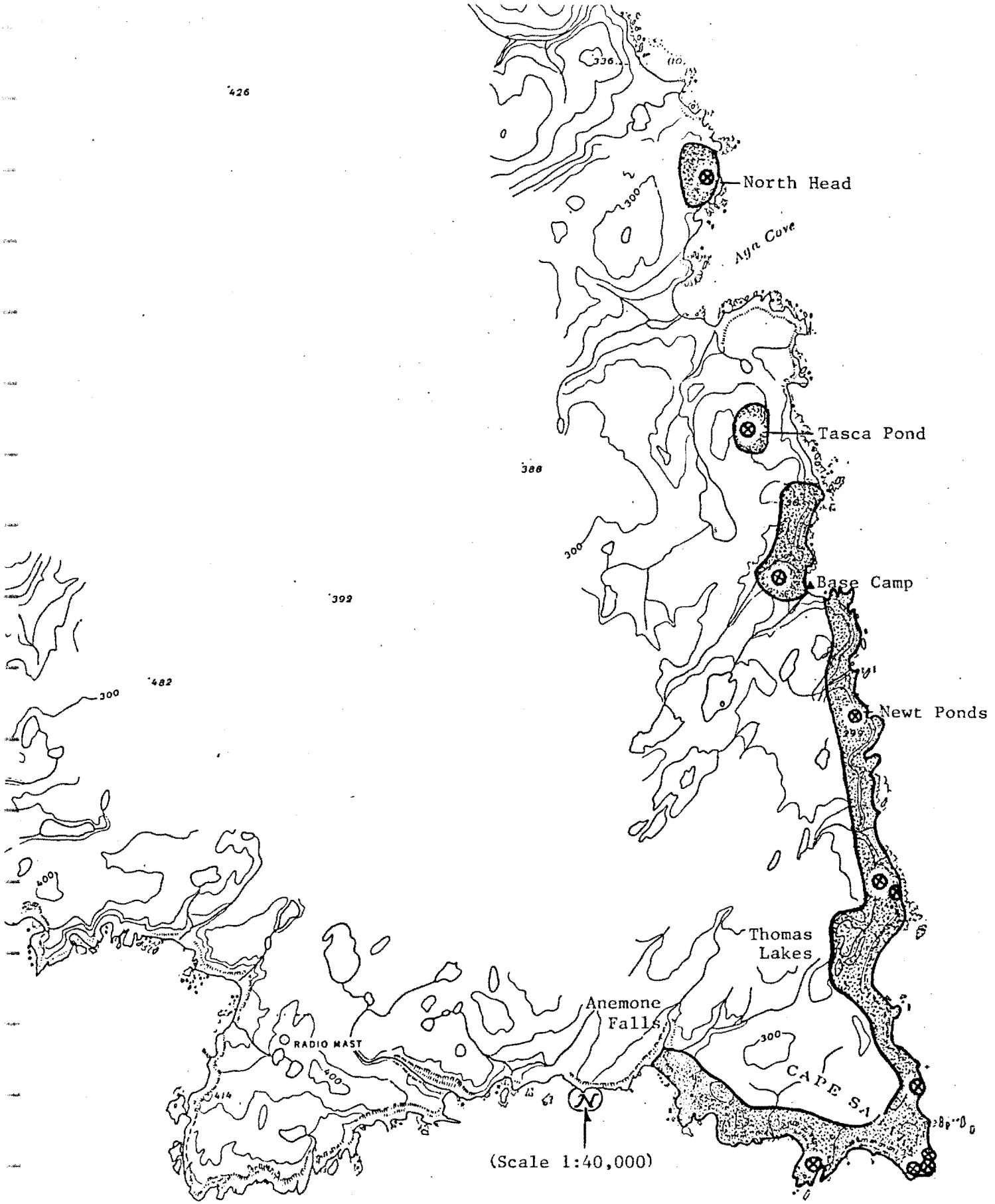


FIGURE 3. NEST LOCATIONS AND NEST SEARCH AREAS - AGATTU ISLAND, 1985.

Systematic nest searches were conducted in potential Aleutian Canada Goose nesting areas identified in the southeast third of Agattu Island.

⊗ Aleutian Canada Goose nests

Areas searched for nests



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Systematic nest searches were conducted in potential Aleutian Canada Goose nesting areas identified in the southeast third of Agattu Island.

⊗ Aleutian Canada Goose nests

▒ Areas searched for nests

Chagulak Island, all eight nests were found in short grass mixed with moss and willow (Salix sp.) on boulder-strewn slopes (Deines and Hatch 1984). Interestingly, the only nests ever previously discovered in upland tundra also occurred in the Aga Cove area of Agattu in 1974 with Patuxent-reared geese (Byrd et al. 1974).

Table 4. Clutch Size Frequency of Aleutian Canada Geese on Agattu 1985.

Clutch Size	No. Nests	% Frequency
4	1	9.1
5	2	18.2
6	7	63.6
7	1	9.1
Total	11	100%
Average Clutch Size = 5.73 Range = 4-7 S = 0.786		

Ninety-one percent of the nests found on Agattu Island this year occurred within 250 meters of the coast. Nests on Buldir Island showed a similar association with the coast; 91% of 128 nests examined were within 250 meters of the shore (Byrd et al. 1978). In contrast, eight nests found on Chagulak Island were from 175 to 525 meters away from the shore (Deines pers. comm.).

In contrast to nests found on other islands, ten of the eleven nests found on Agattu Island during this survey were on fairly level slopes (Table 5) . Byrd et al. (1977) noted that, although 72% of all Buldir Island nests were on slopes over 20%, nesting success was higher for nests built on level areas. The predominance of level nest sites found on Agattu Island may indicate that this habitat is favored where it is widely available. The rugged terrain of Buldir and Chagulak Islands does not offer an abundance of such habitat.

The average distance between nests on Agattu Island was 920 meters (Table 6). In contrast, 54% of nests examined on Buldir were found within 50 meters of another active nest (Byrd et al. 1978). This indicates the nesting density observed at Agattu Island is far from its maximum potential. Historical reports confirm this conclusion (Clark 1910).

Table 5. Nesting Habitat for Aleutian Canada Geese on the Aleutian Islands, Alaska

	Total No. Nests	Average Slope (N)	Habitat Description
AGATTU 1984 (1)*	3	23.3 (3)	All three nests on steep grassy slopes- two in Elymus-umbel, one in Elymus only.
AGATTU 1985	11	12.0 (11)	Eight nests (72.7%) in Elymus-umbel; two nests (18.2%) in short Elymus (no clumps) one nest (9.1%) in Empetrum-moss - all but one nest on fairly level terrain.
AGATTU 1974 (2)	4	0.15 (4)	Three nests in Empetrum nigrum, one in Salix arctica. Distance to water 3-66 m.
CHAGULAK 1984 (3)	8	Steep!	Seven nests on W facing slope; one on SSW slope; all nests found in short grass/moss/willow mixture with Elymus/Claytonia - on boulder strewn slopes.
BULDIR 1974 (4)	33	30.4 (33)	Exclusively nested in Elymus-umbel community; mostly on steep slopes; very hi nest-site fidelity; hummocks ranged .2-.5 m tall at nest sites.
BULDIR 1975 (4)	45	28.8 (42)	Nests 20-1000 m apart; north slopes were the least successful.
BULDIR 1976 (4)	78	27.1 (77)	
BULDIR 1977 (5)	36	30.5 (27)	
BULDIR 1979 (6)	45	26.9 (36)	Exclusively in Elymus-umbel community.
BULDIR 1982 (7)	68		Apparently exclusively nested in Elymus-umbel community (not clearly stated).
AGATTU TOTAL	18		Three nests on slopes >15o; 15 nests with slope < 15o; 10 in Elymus-umbel; three in short Elymus with no clumps; five in Empetrum-Salix - moss tundra (all in Aga Cove area).
CHAGULAK TOTAL	8		Eight nests in short grass/moss/willow mixture w/ Elymus-Claytonia.
BULDIR TOTAL	305		Exclusively nested in Elymus-umbel community with hummocks.

* For citation see Table 7.

Table 6. Nearest Neighbor Distance of Aleutian Canada Goose Nests on Agattu 1985.

Nests	Distance Between Nests (m)
5 & 4	2,000
4 & 6	1,200
6 & 8	1,320
8 & 7	1,320
7 & 9	120
9 & 1	1,600
1 & 2	600
2 & 10	120
10 & 11	120
1 & 3	800

Average Nearest Neighbor Distance = 920

Eggs measured from Agattu Island nests were slightly larger than eggs from Buldir or Chagulak Islands (Table 7). This may be due to a small sample size (n=9). However, it may also reflect the lack of competition for resources resulting from low nesting densities on the island.

While food and habitat do not seem to be limiting nesting production on Agattu Island, the factor of human disturbance must certainly take a toll on the population. For the past four years surveys have been conducted on the island during the peak of laying and early incubation (Table 7). Hanson and Eberhardt (1971) have found that disturbance of Canada geese early in the nesting cycle frequently causes abandonment and nest failure. Observer interactions with banded geese at Cape Sabak, Thomas Lakes, and Aga Cove may be partially responsible for the relatively large numbers of non-breeding geese seen in these areas. It should be noted, however, that most banded birds observed returning to Agattu have not reached breeding age.

RECOMMENDATIONS

1) Additional surveys should not be conducted at Agattu Island during the goose nesting season for at least three years.

2) When surveys are resumed, the southwest shore of Agattu should be searched for potential nesting habitat. All areas surveyed in 1985 should be resurveyed for comparative nesting data. Other areas possibly being used by geese should also be identified.

3) A rope may be useful in maintaining distances between investigators during future nest searches.

Table 7. Nesting Data for Aleutian Canada Geese in the Aleutian Islands, Alaska

	Total Nests Found	Avg. Clutch Size(N)	Avg. Egg Width(N) mm	Avg. Egg Length(N) mm	Success(N)	Date Laying Init.	Peak Laying Init.	Date Hatch	Peak Hatch	Est.# Breed Pairs	Est.# Gosl Prod	Est. Fall Pop.
AGATTU 1984 (1)	3	4.0 (3)	---	---	---	---	---	---	---	---	---	---
AGATTU 1985	11	5.7(11)	55.0 (9)	86.0 (9)	---	---	---	---	---	---	---	50-60
AGATTU 1974*(2)	4	3.0 (4)	51.0 (8)	80.4 (8)	50%	6/1 -10	6/5	7/6 -10	7/10	4	2	0
CHAGULAK 1984 (3)	8	5.8 (8)	52.2(46)	79.0(46)	---	---	---	---	---	---	---	250-300
BULDIR 1974 (4)	33	5.6(29)	52.5(144)	79.8(144)	81%(21)	5/17- 6/1	5/25	6/20- 7/4	6/27	---	---	579
BULDIR 1975 (4)	45	5.8(45)			89%(45)	5/26- 6/5	5/30	6/28- 7/9	7/13	---	---	---
BULDIR 1976 (4)	78	5.4(78)			93%(76)	5/15- 6/13	5/27	6/19- 7/11	6/29	137	510 (winter ct)	1280
BULDIR 1977 (5)	36	5.5(36)			---	5/10- 6/8	5/29	6/15- 7/18	6/25- 7/4	171+10	622	1736
BULDIR 1979 (6)	45	5.4(45)	---	---	---	5/11- 6/5	5/13- 5/18	6/15- 7/10	6/18- 6/20	150+69	559	1697
BULDIR 1982 (7)	68	5.5(68)	---	---	---	?- 6/7	6/4	6/20- ?	7/3	287+145	1065	3528
AGATTU TOTAL	18	5.6(14)**	53.1(17)	83.4(17)	---							
CHAGULAK TOTAL	8	5.8	52.2(46)	79.0(46)								
BULDIR TOTAL	305	5.5(272)	52.5(144)	79.8(144)	90.1%(142)							

(1) Deines and Willging 1984
(2) Byrd et. al., 1974
(3) Deines and Hatch 1984
(4) Byrd et. al., 1978
(5) Woolington and Early 1977
(6) Henry and Early 1979
(7) Deines and Early 1982

* Introduced group of 41 Patuxent-reared geese, May 1974.
** Excludes 1974 Patuxent-reared geese.

LITERATURE CITED

Byrd, G.V., J.L. Trapp, C.S. Craighead, C.P. Dau, and M.H. Dick. 1974. Progress Report on Restoration of Aleutian Canada Geese in the Aleutian Islands, 1974. U.S. Fish and Wildlife Service, unpublished report. 149 pp.

Byrd, G.V. and D.W. Woolington. 1978. Breeding Biology, Habitat Utilization and Population Structure of Aleutian Canada Geese on Buldir Island. U.S. Fish and Wildlife Service, unpublished report. 110 pp.

Clark, A.H. 1910. The birds collected and observed during the cruise of the United States fisheries steamer "Albatross" in the North Pacific Ocean and in the Bering, Okhotsk, Japan, and Eastern Seas from April to December, 1906. Proc. U.S. Natl. Mus. 38:25-74.

Deines, F.G. 1985. Personal communication, U.S. Fish and Wildlife Service, Aleutian Islands Unit - Alaska Maritime National Wildlife Refuge, Adak, AK. July 23, 1985.

Deines, F.G. and T.J. Early. 1982. Progress Report on Study of Aleutian Canada Geese at Buldir Island, Alaska. U.S. Fish and Wildlife Service, unpublished report. 50 pp.

Deines, F.G. and S. Hatch. 1984. Aleutian Canada Goose Nesting Survey at Chagulak Island, Aleutian Islands, Alaska-Spring 1984. U.S. Fish and Wildlife Service, unpublished report. 7 pp.

Deines, F.G. and B. Willging. 1984. Aleutian Canada Goose Survey at Agattu Island, Aleutian Islands, Alaska, Spring 1984. U.S. Fish and Wildlife Service, unpublished report. 16 pp.

Dragoo, D. and F. Deines. 1983. Aleutian Canada Goose Survey Agattu Island, 1983. U.S. Fish and Wildlife Service, unpublished report. 16 pp.

Hanson, C.C. and L.L. Eberhardt. 1971. A Columbia River Canada goose population. Wildl. Monogr. 28:1-61.

Henry, W.G. and T.J. Early. 1979. Progress Report on Study of Aleutian Canada Geese at Buldir Island - 1977. U.S. Fish and Wildlife Service, unpublished report. 27 pp.+

Martin, J.L., J.R. LeDonne, F.B. Lee, P.F. Lehenbauer, P.F. Springer, and D.E. Timm. 1982. Aleutian Canada Goose Recovery Plan. U.S. Fish and Wildlife Service. 41 pp.+

Sekora, P. 1973. Aleutian Islands National Wildlife Refuge Wilderness Study Report. U.S. Fish and Wildlife Service. 409 pp.

Woolington, D.W. and T.J. Early. 1977. Progress Report on Study of Aleutian Canada Geese at Buldir Island - 1977. U.S. Fish and Wildlife Service, unpublished report. 18 pp.+

APPENDIX I

Daily Activities: Agattu Base Camp, 1985

5 June: 1200-1600 - Unloaded Aga Cove gear; Tom and Liz stayed on board the Norpac. Van checked the original campsite by Zodiac but could not land due to kelp beds. Finally discovered a suitable beach on the east coast 2 miles north of Cape Sabak and 1 mile south of Aga Cove. This gravel beach is 1/4 mile long, with two streams feeding into the sea. The cove is sheltered by sea stacks on the north and south ends and a hill behind the cove to the west. Flushed two ACG from midden site above camp - couldn't see if they were banded.

1800-2400 - Unloaded all Agattu gear onto beach, slept on board the Norpac. Weather sunny and mild.

6 June: 0900 - Dropped Tom and Liz off at Aga Cove.

1100-2200 - Unloaded the last of our gear and set up two weatherports, radio and antenna, etc. Needed socket wrench. Caused abandonment of 4 glaucous-winged gull nests on beach. Weather sunny and warm, drizzle by 1730.

7 June: 1000-2000 - Set up camp, built table, shelves, etc. Constructed and dug outhouse. Ellen, Greg, and Susan checked lake above camp for contamination by gulls - apparently not a problem. Found one depredated goose egg on tundra.

8 June: 1000-2000 - Hiked to Cape Sabak, about 1 1/2 hours. Sea lions in nearly every cove. Two red-necked phalaropes by Newt Ponds, also 3 parasitic jaegers. Red-faced cormorants abundant along coast. Flushed 5 ACG from Thomas Lakes area, no bands. Casual nest search along Elymus-lined coast yielded Nest #1! Susan observed 11 geese on Cape Sabak with two bands out of 10 birds examined (only one read - E62). The others scouted for nests and found #2 on the Cape. Also flushed 5 additional geese from the southern tip - unknowns as far as bands are concerned. Greg and Ellen saw 3 geese in Newt Ponds area - one unbanded, others unknown. Partly cloudy.

9 June: 1000-2000 - Two geese landed on beach by camp at 1000 - X62 and X20 (Aga Cove bands). Hiked to Kite Point, about 2 hours. Explored midden site and observed two ACG there, no bands. Counted sea birds and sea lions along coast all the way to Cape Sabak. At Loud Point we saw two sea lion colonies totalling 800 adults; watched one pair copulate for 20 minutes. As we approached the Cape, saw at least 6 geese, flying all around the area. Observations difficult; the geese were spooky and we did not want to pursue them on to the Cape (since we disturbed them there yesterday). Susan observed 6 geese on pond west of Donny Pond, no bands. The others explored the peninsula west of the Cape and found Nest #3. Mild and mostly cloudy.

10 June: 1200-1630 - Tom and Liz came over from Aga Cove for a conference. Decided to concentrate all personnel at Aga Cove tomorrow to determine exact numbers of geese there. Tom and Liz found Nest #4 by Tasca Pond on way over - they noticed a territorial pair and searched the area. It was in moss-lichen tundra community. They also read yellow band 14 on goose above our camp.

1630-1730 - Susan climbed ridge above camp to observe goose seen there. Did not read band but discerned that it was yellow. Later that evening yellow band 14 was read at north creek of camp. Partly sunny with occasional drizzle.

11 June: 1030-1800 - Hiked to Aga Cove and conferred at the cabin with Liz and Tom. We stationed Greg at North Head, Ellen to the north of him, Liz in the valley west of North Head, Van and Tom at Goose Lake, Susan at Bee Dee Lake. Greg saw two geese and found Nest #5 at North Head; Ellen saw no geese; Liz saw 2 geese; Van and Susan saw the same 3 geese including X62 and two unbanded geese (Susan saw them twice, Van once). Susan also saw the pair at Tasca Pond; one banded, one unbanded - Band not readable. Windy and rainy.

12 June: 1015-1900 - Hiked west to radio tower on scouting mission. Saw very few birds all day, and no geese - a few red-faced cormorants and tufted puffins at the tower, but very few sea birds or mammals along the coast until we arrived at Kite Point. One common loon, parasitic jaegers, snow buntings, and lapland longspurs were seen inland. On return trip, saw 300 black-legged kittiwakes on large lake north of Kite Point. Tom and Liz left Aga Cove to join us at the base camp. Windy, partly sunny.

13 June: 1000-1200 - Van and Tom retrieved gear from Aga Cove via Zodiac. Also conducted Aga Cove Beach Survey. Greg, Liz, Ellen and Susan conducted first systematic nest search along ridge directly north of camp. Did not find nest, but Greg and Ellen continued searching at midden site and found it almost immediately (Nest #6).

1230-1530 - Liz and Susan observed pair at Nest #4 (Tasca Pond) and read C26, the other unbanded. Beautiful and sunny.

14 June: 1000-1900 - Hiked south to Cape Sabak. Observed 7 geese in Thomas Lakes area: E96, four unbanded, the other two unknown. While Tom observed, the rest of us searched for nests along Elymus fringe from Nursery Pond to Thomas Lakes - found Nest #7. At Donny Pond observed 3 unbanded geese; then saw E62 and an unknown goose. A total of 12 geese examined on the Cape - very difficult to see bands in tall grass. Five were unbanded, one had a metal band only, one had an unknown blue band, and the other five were unknown. Saw female pintail on Donny Pond. Returned to camp to find male sea lion hauled out on beach. Overcast and misty.

15 June: Weather day. Installed antenna from Aga Cove. Rain and drizzle, windy.

16 June: 1000-1900 - Conducted intensive nest search along Elymus fringe from Newt Ponds to Lucky Pond, and including inland area around Thomas Lakes. Found Nest #8 by Newt Ponds, and Nest #9 on steep grassy slope slightly north of N. Thomas Lake. Also observed two geese by Newt Ponds - the parents of Nest #8? - One banded (not read), one unbanded. Seven geese were observed by Thomas Lakes; E96, Red J05, and five unbanded. Also saw ruddy turnstone and carcass of snowy owl near S. Thomas Lake. Two song sparrow nests found; one empty, one with 4 chicks. Overcast, occasional rain.

17 June: 1030-1900 - Conducted intensive nest search on Cape Sabak. Used natural boundaries and transect flags; it worked very well. Only found two additional nests (#10 and 11). Also searched the Elymus fringe from Cape Sabak to Lucky Pond. Saw geese but did not check for leg bands. Clear and mild, light rain.

18 June: 1000-1900 - Conducted intensive nest search from Cape Sabak to Anemone Falls. Did not find any nests, except for Nest #3. Only saw about 4 geese all day. Saw another pair of sea lions copulating; the beaches are full of pups and adults, playing and courting at high intensities. One rain squall around 1300; cloudy and windy.

19 June: Camp Day. Overcast, almost no wind.

20 June: Weather day. Misty rain, fog, wind.

21 June: 1000-1900 - Hiked to Karab Cove and conducted Beach Survey there. Followed WWII road to the Cove - saw snowy owl, plane wreck. Once at the beach we saw two arctic warblers, gray-crowned rosy finches, murres, puffins, cormorants, common eiders. Also two seals with pups on the rocky shores. Found shipwreck on shore. Van explored midden site with the "largest house-pit" he had seen. Found goose leg with band 605 one mile west of camp. Ellen and Greg returned to camp first to find a large male sea lion hauled out on the beach. Mostly cloudy.

22 June: 1100-1700 - Repeated nest search along coast near Thomas Lakes; attempted to observe pair nesting by Newt Ponds. Both attempts failed. The nesting pair was nowhere to be seen, although the nest area was observed for an hour. Also searched coastal fringe immediately south of camp to Newt Ponds - no nests. Mostly cloudy.

23 June: 1000-1700 - Van, Greg, Liz, and Ellen circumnavigated the island from MacDonald Cove around Cape Sabak to Kite Cove and Kohl Island. They counted 18,164 black-legged kittiwakes and 11,666 murres. Tom and Susan collected plants and conducted a Beach Survey at Aga Cove. Saw two peregrine falcons

enroute along beach. Saw two white-winged scoters by Aga Cove. Walking back, observed six geese - E45, X61 and four unbanded.

23 June: 1700-2400 - Packed all gear in cooking tent and dismantled the weatherport. Packed personal gear. Cloudy.

24 June: Norpac waiting at Binnacle Bay for the seas to calm. Overcast, windy, with swell to three feet in our cove. Set up kitchen in main tent and waited out the storm.

25 June: Still waiting...Very foggy, almost no wind, but heavy swell.

26 June: Seas still somewhat rough but managed to unload gear and personnel onto Norpac.

APPENDIX II

Daily Accounts of Goose Observations
(For all routes hiked see Appendix III)

6/6/85

Aga Cove:

1030: 12 geese flew SW to NE over the cabin and landed. 2 of the 12 landed on the hillside near the cabin. 1 of the 2 had a blue band (but too far to read) the other was unbanded. The other 10 were too far to determine whether they were banded.
1100: 2 geese were seen flying SE to NW.
1130: 1 goose was seen flying SW.
1200: 2 geese were seen flying SE.
1500: 4 geese were sighted grazing on a hillside SE of the cabin. 1 of the 4 had a blue leg band on the left leg, the others were unbanded. All 4 flew NW.
1545: 5 geese were seen in Goose Creek. 1 had a blue band on the right leg (but couldn't read).
1645: 5 geese were seen flying SW.
1715: 2 geese landed on the hill between the cabin and Goose Lake. Observers could not see if they were banded.

6/7/85

Aga Cove: Observers spent the day in an A frame at Goose Creek.
1030: 2 geese were seen flying S.
1100: 2 geese were seen flying S.
1230: 3 geese were seen flying SW.
1245: 2 geese landed in Goose Creek area , both had blue bands. E53 and X62. 1 unbanded goose joined them.
1410: 1 unbanded goose landed and joined the above unbanded goose.
1430: 2 more geese landed in the Goose Creek area. 1 was banded on the left leg (could not read), the other was unbanded.
1440: 5 more geese arrived in the Goose Creek area. 2 geese were banded on the right leg, 1 was banded on the left leg, and 2 were unbanded. One rt. band was X-? the other rt. band was E-?. At this time there were a total of 11 geese in the Goose Creek area. By 1700 the 11 geese left the Goose Creek area.
1700: 2 geese flew S (don't know if these are new geese or 2 of the previous 11).
After 1700 hiked to inland lakes.
1830: 2 geese were seen at Goose Lake. They flew SE before bands could be seen.
2000: 1 goose was seen flying N.

6/8/85

Aga Cove:

The two group members in Aga Cove split up today. One stayed in the A frame observing the geese at Goose Creek while the other hiked inland. At 1200 they switched tasks.

0700: 2 geese were seen flying S over the cabin.

From A frame at Goose Creek

0840: 1 goose flew into Goose Creek area from upstream (could not see band).
0930: 5 geese were seen flying S.
1050: 2 geese landed in the Goose Creek area. 1 was unbanded and 1 had a blue band on the right leg but observer could not read it. Both left at 1105, one flew N the other flew S.
1210: 1 goose arrived in the Goose Creek area with a blue band on the right leg E-? .
1245: 3 geese arrived from the N all 3 had blue bands. X-20, X-62, and E-53.
1330: 3 geese arrived from the S. 2 were unbanded and one had a blue band X-46.
1430: 2 geese flew from the S and headed up Goose Creek.
1445: 2 geese arrived both had blue bands X-62 and X-20.
1620: 3 geese arrived in the area. 1 was unbanded and two had blue bands X-20 and X-62.
1635: 1 goose arrived in the area. It was unbanded.
1725: 1 goose arrived in the area, but observer could not see if it was banded.
1900: 2 geese arrived in the area. Both were unbanded.

From the Hikes

Morning hike: No geese were seen.

Afternoon hike:
1350: 3 Geese were seen flying S over Bee Dee Pond. Observer could not see if they were banded.
1410: 1 unbanded goose was seen near Tasca Pond high on a gravel ridge. It flew N.
1500: 5 geese were seen on a ridge near Gull Lake. 3 were unbanded and 2 were banded. One with a blue band on the left leg X-? and 1 with a blue band on the right leg E-?. All 5 flew N.
1545: 1 goose landed on a ridge near Tasca Pond, then flew N.
1615: 3 geese landed on the hillside near the cabin. The geese flew before bands could be seen.
2100: 3 geese flew over the cabin. 2 landed on the hillside. Of the 2 that landed 1 was unbanded and one had blue band X-46.

Main Camp:

The crew from the main camp hiked to Cape Sabak today.

1100: 4 geese were seen by N Thomas Lake. All 4 were unbanded. 1 goose flew N.
3 geese were seen on Cape Sabak. All 3 were unbanded. 2 may have been from the Thomas Lakes group.
1500-1800: 10 geese were seen on Cape Sabak. 8 were unbanded. The observer could not read one band, the other was E-62.
5 other geese were seen on the tip of Cape Sabak (two nests were found).
1830: 3 geese were seen near Newt Ponds.

6/9/85

The crew of two at Aga Cove split up and hiked to McDonald Cove so two different areas could be covered.

Route A

1015: 2 geese were seen flying N towards Goose Creek.
1030: 2 more geese were seen flying N towards Goose Creek.
1800: 2 geese were seen at North Point (ended up being a nesting pair). Both were unbanded.

Route B

1000: 2 geese were seen in the McDonald Cove area.
1 was unbanded and 1 had a blue band E-45.
1200: 2 geese were seen but observer could not see if they were banded.
1215: 5 geese were seen in the McDonald Cove area. The observer could not see if they were banded.
1220: 2 geese were seen in the McDonald Cove area. 1 was unbanded and one had a blue band on the left leg E-45.
1900: 5 geese were seen at the Goose Creek area. 2 were unbanded, 1 the observer could not see if banded or not, and 2 had blue bands one that could not be read and X-62.

The observers in the Aga Cove area estimated they saw 9 geese today that had not been seen before.

Main Camp:

The main camp hiked toward the radio tower and east to Cape Sabak along the shore.

1000: 2 geese were seen near the camp on the beach. X-20 and X-62.
1300: 2 unbanded geese were seen at Kite Point.
1700: 2 geese were seen on a peninsula W of Cape Sabak. Observers were not able to see if they were banded.

1730: 5 geese were seen flying in the Cape Sabak area. 6 unbanded geese were seen W of Donny Lake. They may have been some of the 5 birds from the Cape Sabak area.

6/10/85

The Aga Cove crew hiked down to the main camp today to discuss further search strategies.

Observations from the hike to the main camp and back.

1130: 2 geese were seen west of Tasca Pond. 1 flushed from a nest. 1 was unbanded and 1 had blue band C26.
1215: 1 goose was seen near the main camp. It had a yellow leg band #14 (a nesting goose).
2015: 2 geese were seen from the cabin flying N toward the Goose Creek area.

6/11/85

The main camp joined the Aga Cove crew at Aga Cove to intensify the search for geese.

1125: 1 goose was seen near the drainage just past the first lake on the way to McDonald Cove. It flew N before the observer could see if it was banded.
1145: 1 goose was seen flying S toward the Goose Creek area. Observer believes this is the same goose seen at 1125.
1150 1 goose was seen flying S over the Goose Creek area.
1420: 2 unbanded geese were seen at North Head. 1 flushed from a nest and flew N.
1440: 2 unbanded geese were seen flying S to North Head. They were probably the pair that flushed at 1420.
1445: 3 geese were seen in the Bee Dee lake area. One was unbanded, one the observer could not see if it had a band, and 1 had a blue band X-62.
1500: 2 geese were seen near Tasca Pond. 1 was unbanded and 1 had a blue band C-26.
1600: 2 geese were seen in the Goose Creek area. 1 was unbanded and one had a blue band X-62.

6/12/85

The Aga Cove crew joined the main camp today. While walking to the main camp the pair at Tasca Pond were seen and yellow 14 was seen near the nest. The crew at the main camp hiked inland to the radio tower and then east where they made a small loop and hiked back to camp. No geese were seen.

6/13/85

Found Yellow 14's nest today. Then saw C-26 and unbanded goose again near nest.

6/14/85

The whole group hiked to Cape Sabak today.

1100: 3 geese were seen .5 miles N of Nursery Pond. 2 were unbanded and one had blue band E-96.
1115: 2 geese were seen SW of Nursery Pond, one flushed from a nest. Observers could not see if they were banded.
1130: 5 geese were seen S of Nursery Pond. 2 were unbanded and observers could not see if the other 3 were banded.
1300: 2 geese were seen near Thomas Lakes. Observers could not see if they had bands.
1600: 5 geese were seen 1/4 mile S of Thomas Lakes.
1615: 2 geese were seen on a ridge on the E side of Cape Sabak. 1 was unbanded and 1 had a metal FWS band but no blue band. 4 geese flushed from a near ridge and flew to the N side of Donny Lake. Observers could not see if they were banded or not.
1630: 7 geese were seen flying by Donny Lake. 2 were unbanded. 2 landed on a ridge near Donny Lake, one was unbanded and one had a blue band E-62. Observers could not see if the others were banded.

A total of 12 geese were seen at one time together at Cape Sabak.

6/16/85

The crew hiked down to Lucky Pond and back.

7 geese were seen together near Thomas Lakes. 5 were unbanded. One had blue band E-96 and one had red band J05.
2 geese (a pair) flushed from a nest NW of N Thomas Lake, both were unbanded.
1 goose was seen flying S toward Cape Sabak.

After 16 June the emphasis switched from finding geese to searching for nests.

6/22/85

Read blue band 932 at Cape Sabak. This goose was paired with an unbanded bird.

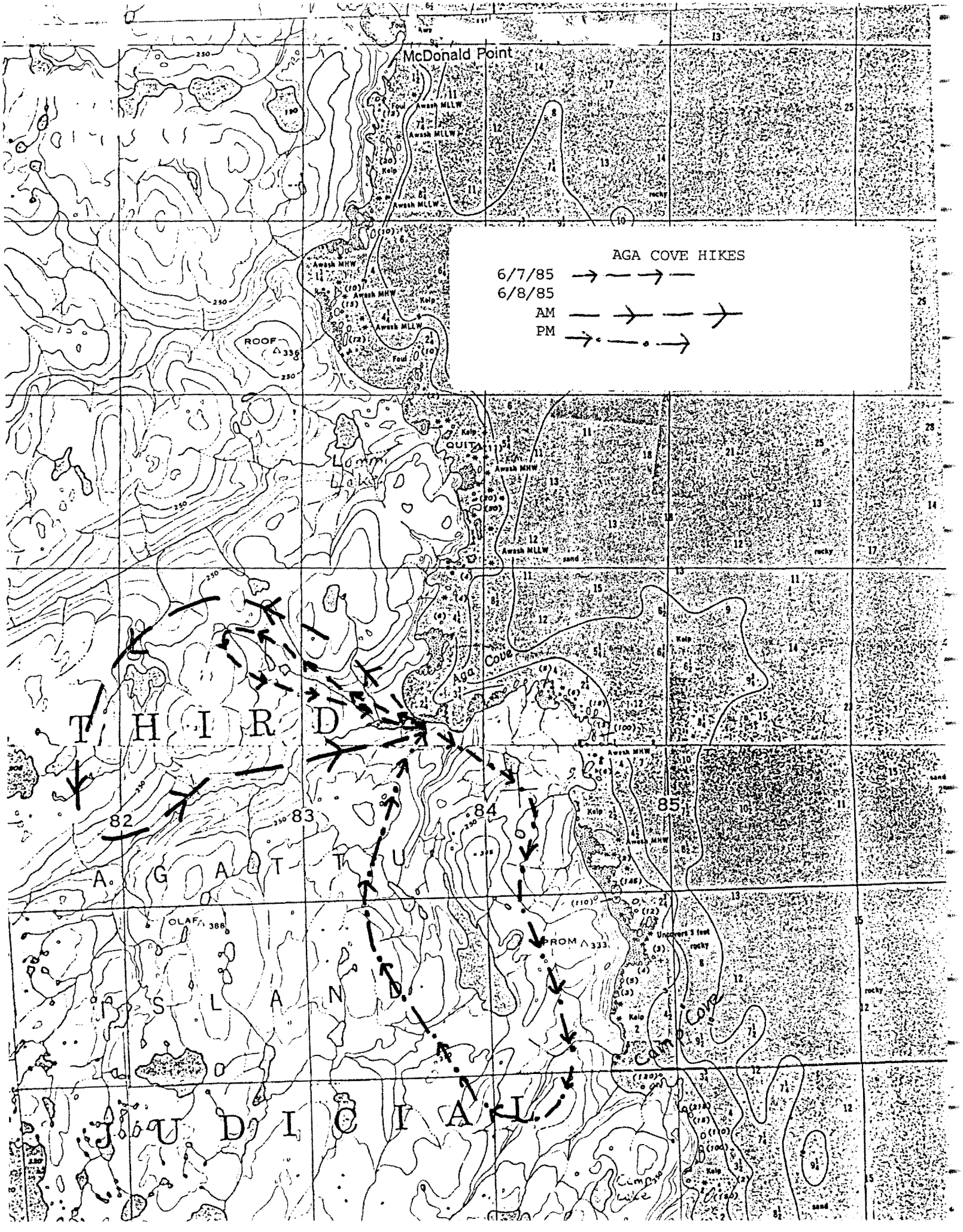
6/23/85

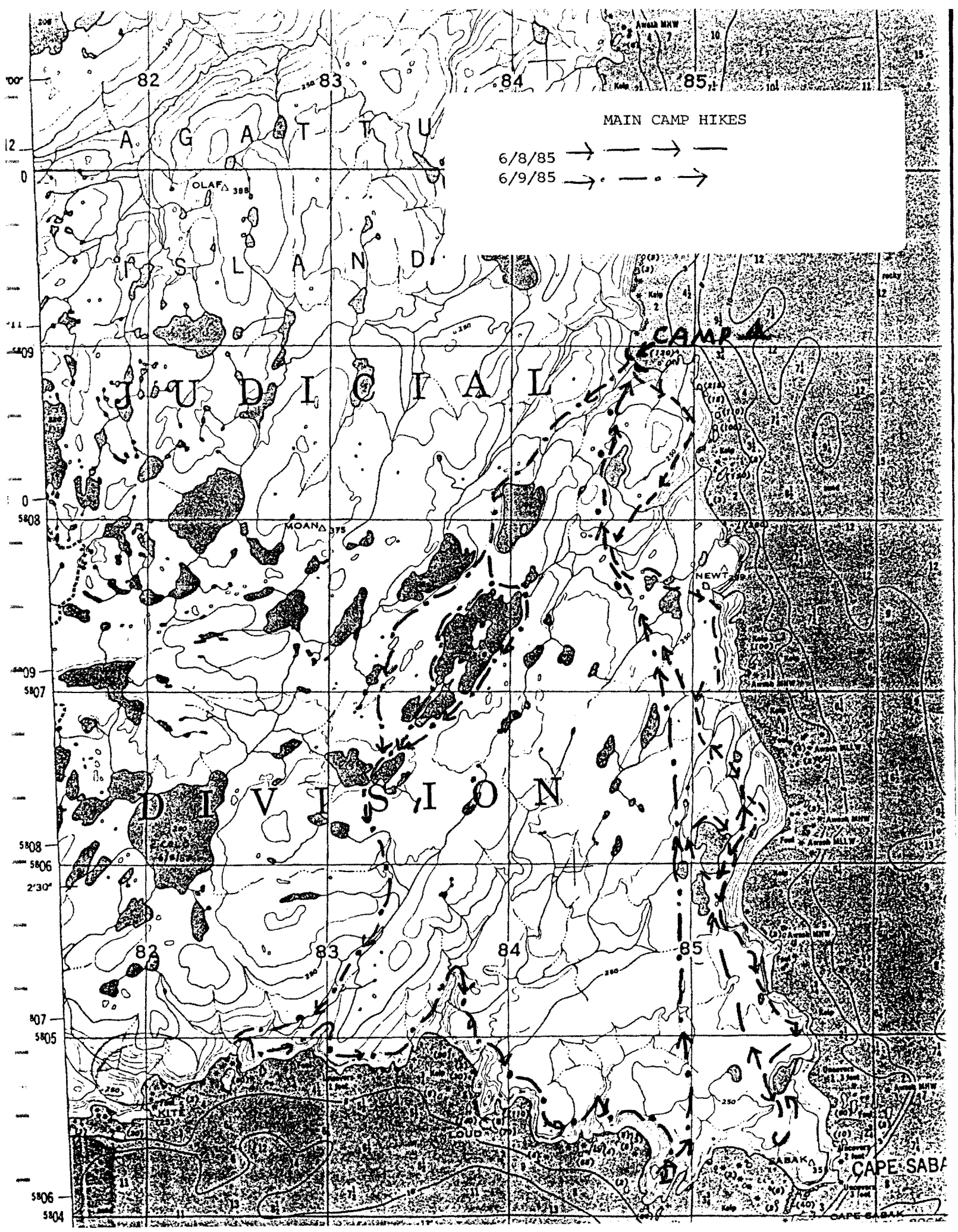
6 geese were seen at Aga Cove. 4 were unbanded and 2 had blue bands X-61 and E-45.

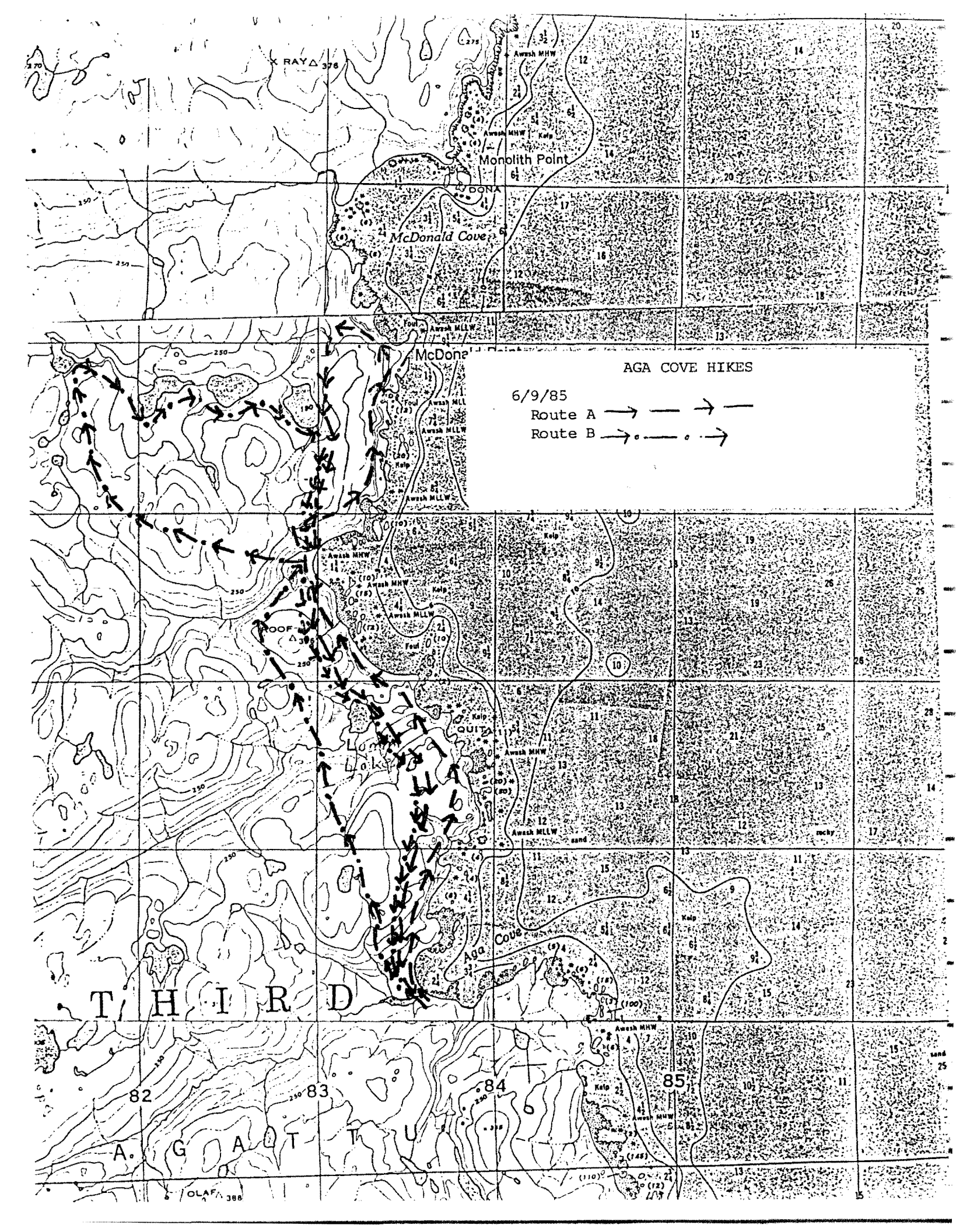
One leg with a blue band was found 1/4 mile N of the Moan benchmark.

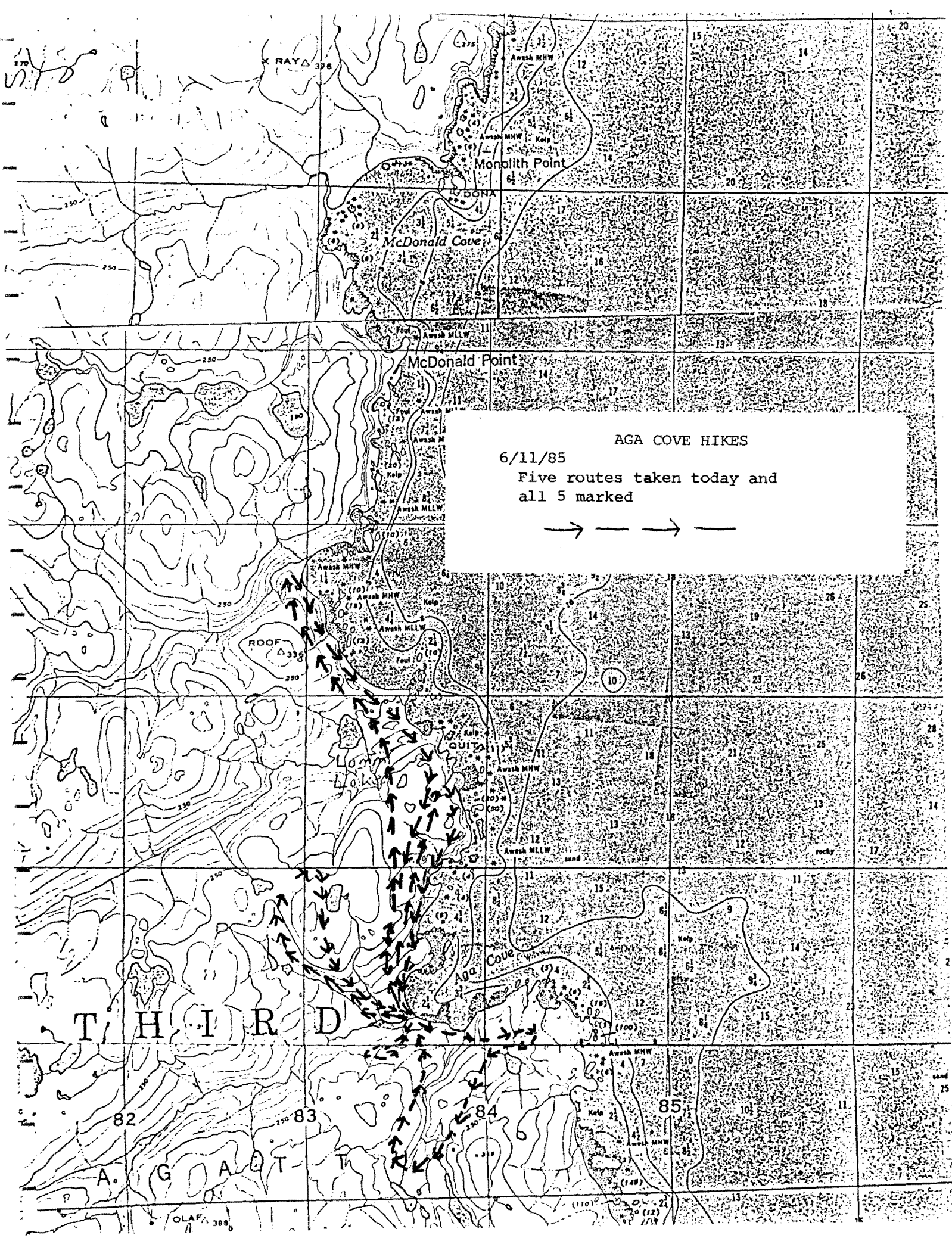
APPENDIX III

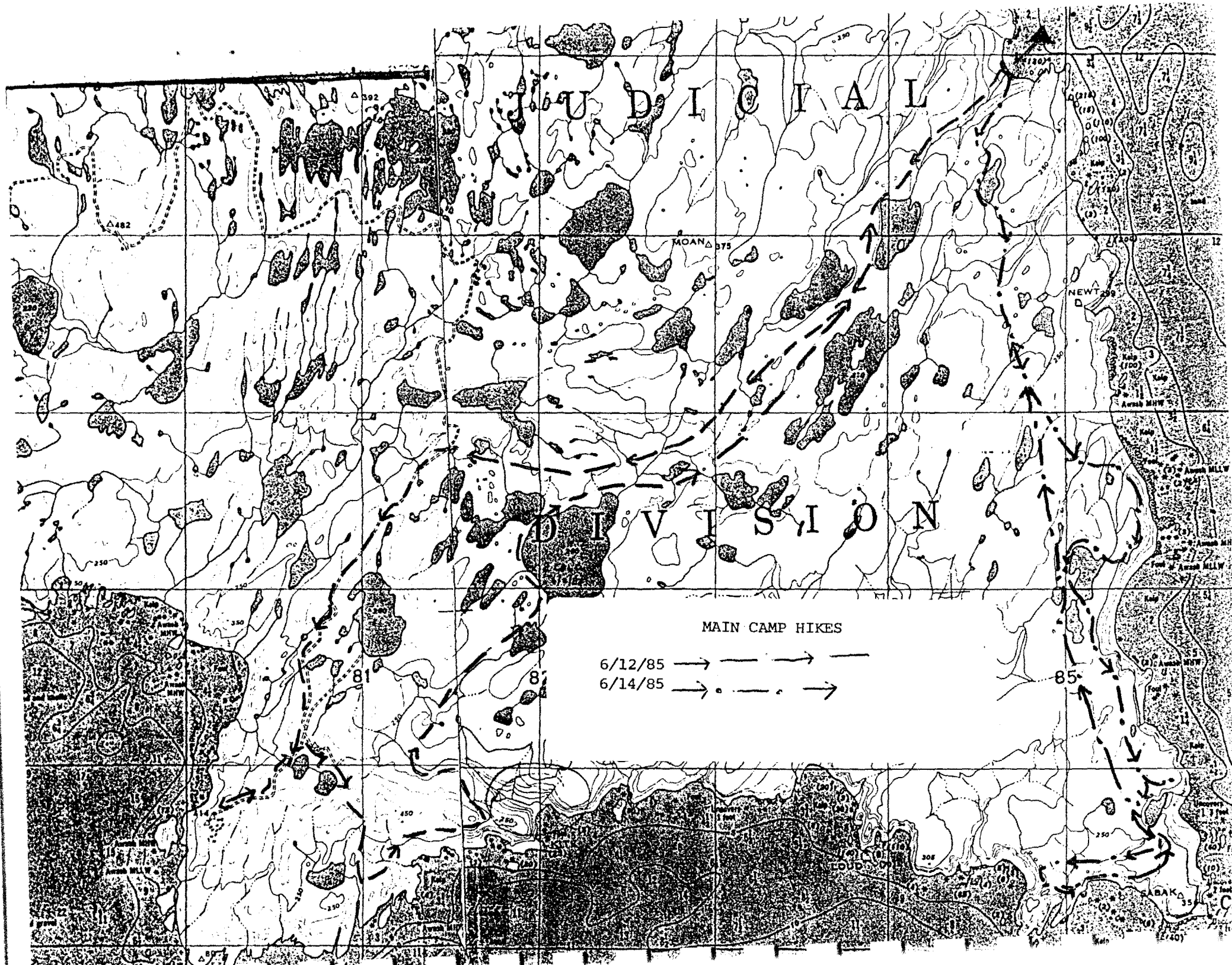
Hiking routes followed by investigators on Agattu Island June 1985.

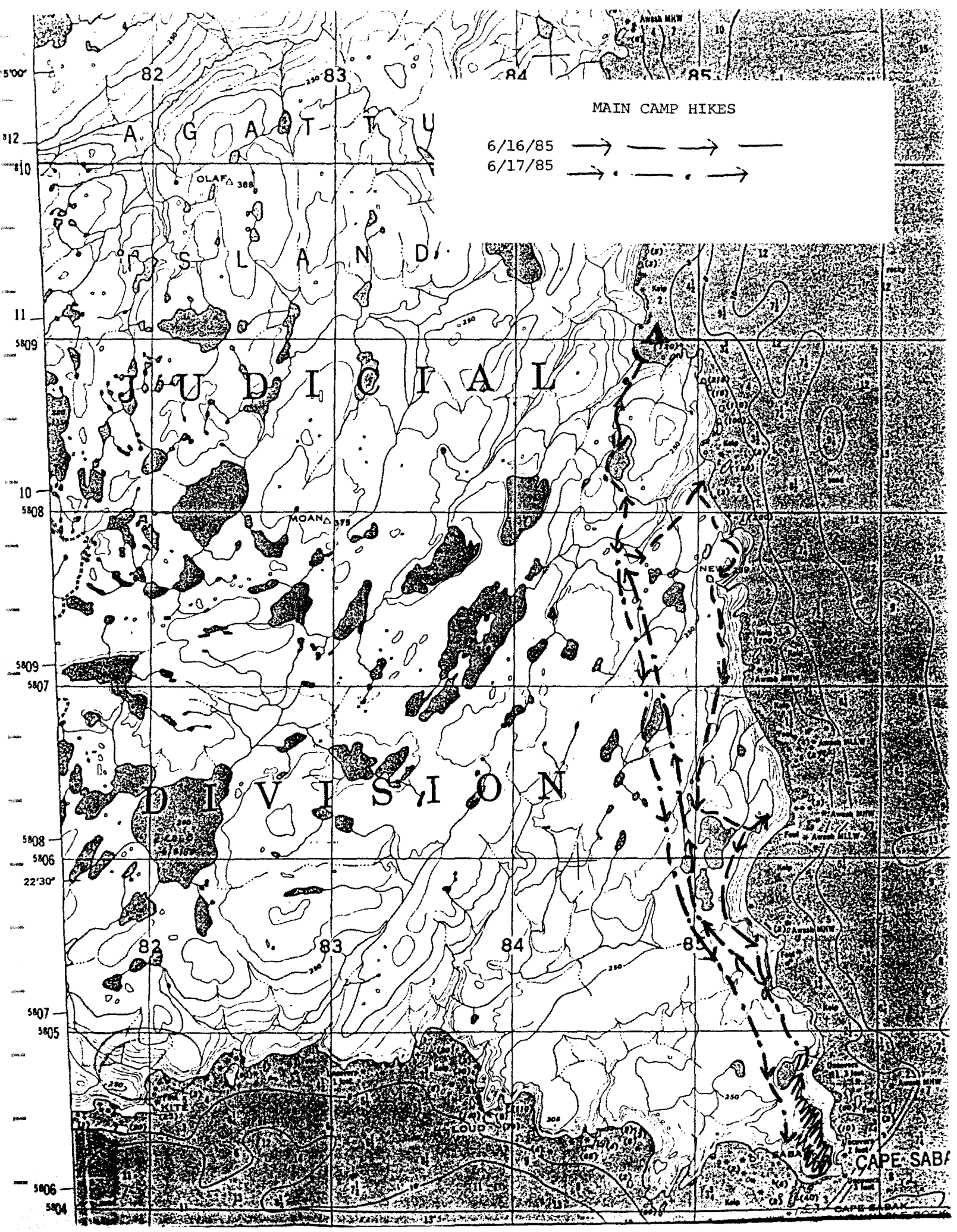

McDonald Point
AGA COVE HIKES
6/7/85
6/8/85
AM
PM
ROOF
QUIT
Lomm
Lake
Aga
Cove
THIRD
82
83
84
85
AGATTU
ISLAND
JUDICIAL
OLAF
PROM
Camp Cove
Camp Lake

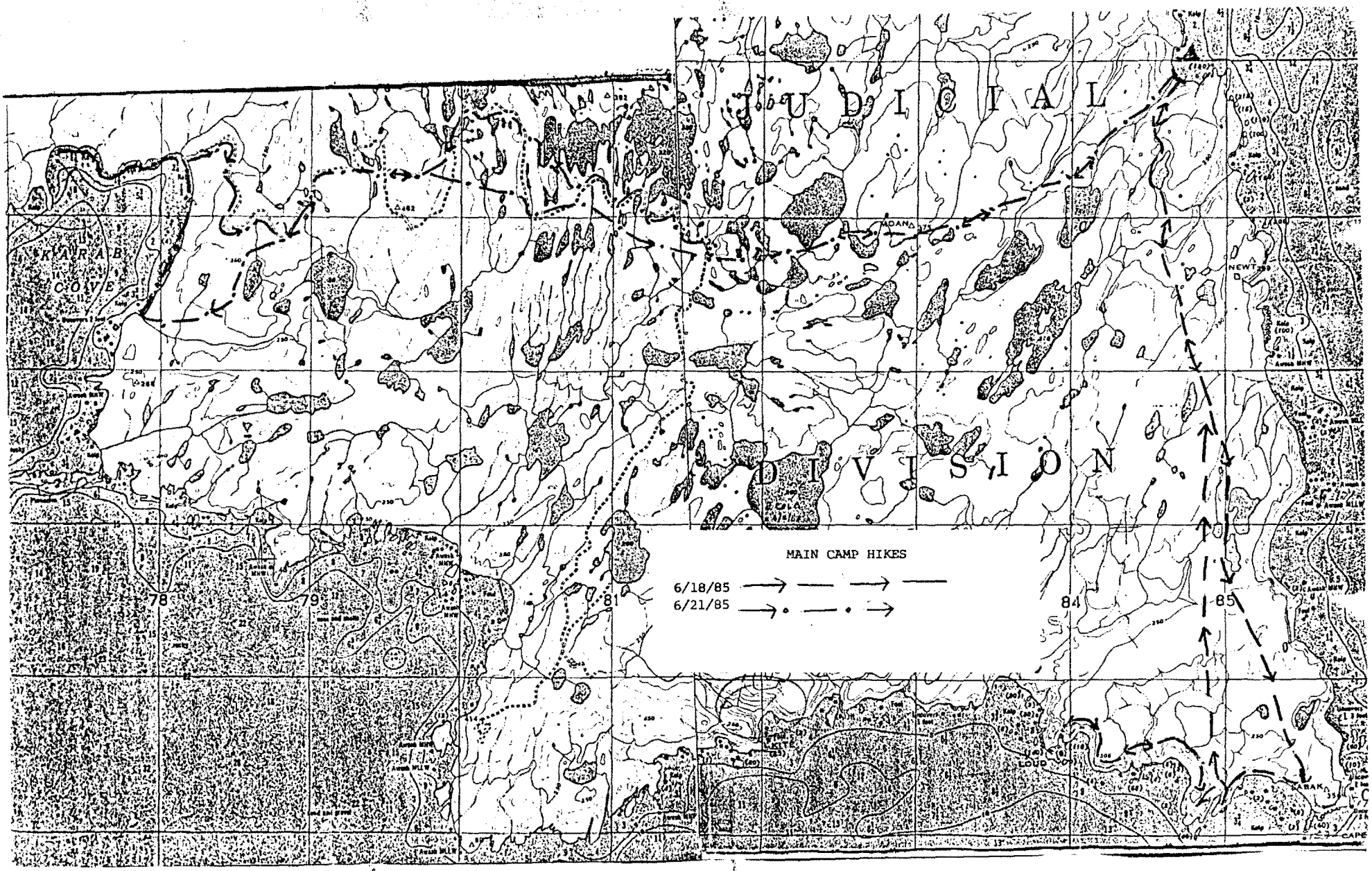

MAIN CAMP HIKES
6/8/85
6/9/85
A G A T T U
I S L A N D
J U D I C I A L
D I V I S I O N
CAMP
OLAF
MOAN
NEWT
KLTE
LOUD
SABAK
CAPE SABA
82
83
84
85


AGA COVE HIKES
6/9/85
Route A
Route B
Monolith Point
McDonald Cove
Aga Cove
THIRD
AGATU
82
83
84
85


AGA COVE HIKES
6/11/85
Five routes taken today and
all 5 marked
Monolith Point
McDonald Cove
McDonald Point
Lone Lake
Aga Cove
THIRD
AGATE
82
83
84
85


J U D I C I A L
D I V I S I O N
MAIN CAMP HIKES
6/12/85
6/14/85
MOAN
NEWT
81
85
LOUD
SABAK


MAIN CAMP HIKES
6/16/85
6/17/85
AGATTU
ISLAND
JUDICIAL
DIVISION
OLAF
MOAN
KITE
LOUD
CAPE SABA
82
83
84
85


J U D I C I A L
D I V I S I O N
KARAB COVE
MAIN CAMP HIKES
6/18/85
6/21/85
78
79
81
84
85
ADANA
NEWT
LOUD
KARAK
CAPE

APPENDIX IV

Weather conditions on Agattu Island June 1985.

AGATTU BASE CAMP - WEATHER 1985 (June)

Date	Time	Location	Rel. Hum.	Cloud Cover	Temp. max.	Temp. min.	Wind speed	Wind direct.	Bar. Pres.	Ceiling Level	Snow	Rain	Comments
6-07-85	2100	Agattu Base		99%	-	-	-	NE	29.70	-	0"	0"	Weather station not set up yet
6-08-85	2100			40%	-	-	-	NNE	29.95	1500'	0	0	
6-09-85	0830			20%	52°F	44°F	10 mph	NW	29.90	700'	0	0	Clear sky in a.m. - cloudy by 1100
	2000			85%					29.80				
6-10-85	0930			99%	52°	39°	8	NW	29.70	700'	0	0	Cloud cover variable, sunny after 2200
	2200			25%						1100'			
6-11-85	0930			80%	50°	42°	10-20	NW	29.80	1700'	0	0	
	2030								29.90			Drizzle	Drizzle throughout afternoon.
6-12-85	0930			80-20%	48°	40°	10-20	W	29.99	1700'	0	0	Cloud cover variable, clear skies most of day.
	1900								30.00				
6-13-85	0930			0%	51°	42°	18-30	W	29.93	--	0	0	Sunny all day long.
	2000			0%									
6-14-85	0915			100%	53°	39°	8-10	W	29.89	1900	0	Drizzle	Cloud cover variable, some drizzle, rain.
6-15-85	0900			100%	--	38°	8	SSE	29.66	700-	0	.47	Steady drizzle and rain all day.
									29.50	1100'			
6-16-85	1000			100%	--	36°	8-20	SE	29.50	1100'	0	.04	Intermittent rain.
6-17-85	0830			50-05%	51°	36°	10	NE	29.52	3000+'	0	Drizzle	Intermittent rain with some snow.
6-18-85	0825			100-20%	48°	39°	12-20	N	29.71	1100'	0	.07	Cloudy in a.m. with scattered clouds, sunny in p.m. but cloudy again by 2000.
6-19-85	0830			100%	49°	37°	5	S	29.80	1100-	0	0	Cloudy all day -
	1730			100%						1200'			almost no wind.
6-20-85	0845			100%	47°	38°	05-15	S	29.44			.70	Rain and fog.
	2030			100%									

AGATTU BASE CAMP - WEATHER 1985 (June - Continued)

Date	Time	Location	Rel. Hum.	Cloud Cover	Temp. max.	Temp. min.	Wind speed	Wind direct.	Bar. Pres.	Ceiling Level	Snow	Rain	Comments
06-21-85	0830	Agattu Base	--	70-30%	52°F	39° F	07-21 mph	NE	29.58	1000'	0"	0"	Partly cloudy with some sunshine
	2115								29.76				
06-22-85	0900			100-50%	52°	40°	05-10	NE	29.90	1100'	0	0	Partly cloudy with some sunshine.
	2050								30.06				
06-23-85	0830			100%	45°	38°	10	S	30.06	500'	0	0	Overcast all day.
	2125								30.04				

APPENDIX V

Nest data forms for Aleutian Canada geese on Agattu Island June 1985.

ALEUTIAN CANADA GOOSE

Nest Data Form
Agattu Island

NEST NO. 1

Date Found: 8 June 1985

General Location: 85.65 x 04.85 (see Third Judicial Map, Agattu Island) - N. of Cape Sabal

Elevation: 225 ft. ASL

Slope: 15°

Aspect (N,S,E,W): South

Description of Nest Site

Vegetation: Elymus arenarius

Physical Characteristics: On grassy slope between clumps of Elymus

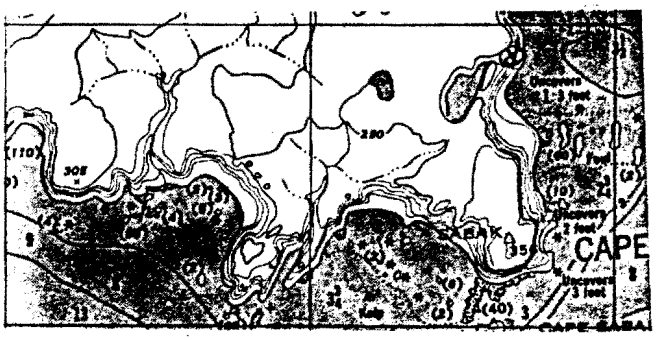
Clutch Size: 6

Egg Measurements: Not taken.

Flushing distance of parents: Parents not present.

Remarks:

Plot Map:



Film Roll #_____ Photo #_____

ALEUTIAN CANADA GOOSE

Nest Data Form
Agattu Island

NEST NO. 2

Date Found: 8 June 1985

General Location: 85.70 x 04.35- Cape Sabak

Elevation: 200 ft. ASL

Slope: 5°

Aspect (N,S,E,W): West

Description of Nest Site

Vegetation: Elymus arenarius

Physical Characteristics: Nest made of moss/lichens in Elymus-umbel community.

Clutch Size: 6

Egg Measurements: Not taken.

Flushing distance of parents: 6 ft. - one parent only.

Remarks:

Plot Map:

Film Roll #_____ Photo #_____

ALEUTIAN CANADA GOOSE

Nest Data Form
Agattu Island

NEST NO. 3

Date Found: 9 June 1985

General Location: 84.83 x 04.25 - west of Cape Sabak

Elevation: 250 ft. ASL

Slope: 15°

Aspect (N,S,E,W): South

Description of Nest Site

Vegetation: Elymus arenarius , Angelica lucida

Physical Characteristics: Behind grassy hummock, surrounded by dead vegetation.

Clutch Size: 4 (one egg abnormally small)

Egg Measurements: 95 mm x 60 mm (small egg: 65 mm x 45 mm)

Flushing distance of parents: 14 ft. - one parent only.

Remarks:

Plot Map:

Film Roll # _____ Photo # _____

ALEUTIAN CANADA GOOSE

Nest Data Form
Agattu Island

NEST NO. 4

Date Found: 10 June 1985

General Location: 84.10 x 10.35 - Asa Cove (Tasoa Pond)

Elevation: 255 ft. ASL

Slope: Nest was on a small, level plateau on side of hill with 15° slope.

Aspect (N,S,E,W): East

Description of Nest Site

Vegetation: Upland tundra: Empetrum nigrum, lichen, a few blades Elymus arenarius.

Physical Characteristics: Depression in a small knobby plateau.

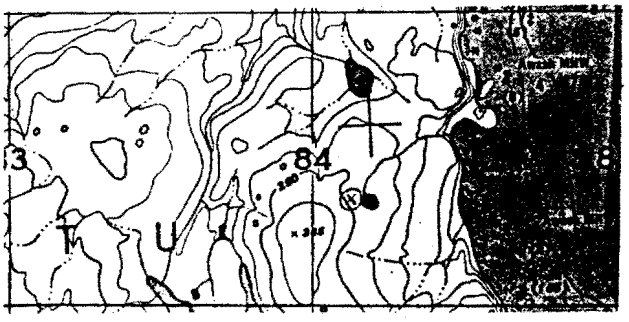
Clutch Size: 6

Egg Measurements: 80 mm x 45 mm

Flushing distance of parents: 15 ft.

Remarks: A few minutes after flushing female from nest, both parents returned and landed east of the lake near the nest. Female unbanded; male is Blue leg band C26.

Plot Map:



Film Roll #_____ Photo #_____

ALEUTIAN CANADA GOOSE

Nest Data Form
Agattu Island

NEST NO. 5

Date Found: 11 June 1985

General Location: 83.85 x 12.20 - Aga Cove (North Head)

Elevation: 240 Ft. ASL

Slope: 10 - 15°

Aspect (N,S,E,W): Northeast

Description of Nest Site

Vegetation: Elymus arenarius , Fritillaria camschatcensis, Conioselinum chinense

Physical Characteristics: In a bowl between four clumps of Elymus.

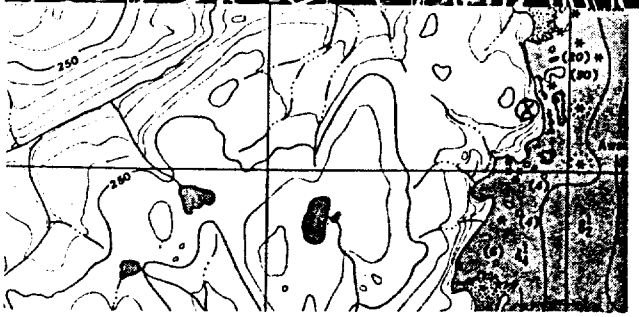
Clutch Size: 6

Egg Measurements: 75 mm x 50 mm

Flushing distance of parents: 7 ft. - One parent only

Remarks: Nest was 15-20 yds. from a little knob on top of "North Head" in a direct line from the top of the knob to McDonald Point. The nest was among tall wind-blown grass, only about 10 yds. from cliff face.

Plot Map:



Film Roll #_____ Photo #_____

ALEUTIAN CANADA GOOSE

Nest Data Form
Agattu Island

NEST NO. 6

Date Found: 13 June 1985

General Location: 84.60 x 09.10 - Base camp area

Elevation: 50 ft. ASL

Slope: 5°

Aspect (N,S,E,W): East

Description of Nest Site

Vegetation: Elymus arenarius

Physical Characteristics: Nest on grassy slope, very small, not in bowl (shallow).

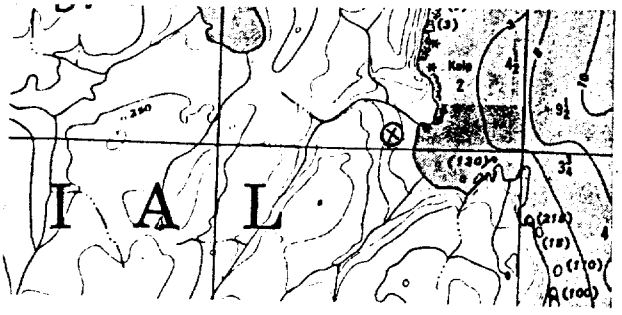
Clutch Size: 6

Egg Measurements: 85 mm x 50 mm

Flushing distance of parents: 5 ft - one parent only

Remarks: One of the parents is probably Yellow leg band 14. Nest was directly above camp at west edge of midden site. It was between two small drainages There were no large clumps of Elymus nor any visible projections forming a windbreak. The nest was a very small, shallow depression.

Plot Map:



Film Roll #_____ Photo #_____

ALEUTIAN CANADA GOOSE

Nest Data Form
Agattu Island

NEST NO. 7

Date Found: 14 June 1985

General Location: 35.35 - 06.60 - Between Thomas Lakes and Newt Ponds

Elevation: 225 ft. ASL

Slope: 8°

Aspect (N,S,E,W): West

Description of Nest Site

Vegetation: Elymus arenarius

Physical Characteristics: Bowl between two hummocks of Elymus

Clutch Size: 6

Egg Measurements: 92 mm x 60 mm

Flushing distance of parents: 10 ft. - one parent only.

Remarks: Nest was in an area where one was found last year. It was about 50 yds. southeast of Nursery Pond, next to a small drainage. The nest was 20 yds. west of the cliff edge.

Plot Map:

Film Roll #_____ Photo #_____

ALEUTIAN CANADA GOOSE

Nest Data Form
Agattu Island

NEST NO. 8

Date Found: 16 June 1985

General Location: 85.10 x 07.60 - Newt Ponds

Elevation: 240 ft. ASL

Slope: 5°

Aspect (N,S,E,W): West

Description of Nest Site

Vegetation: Elymus arenarius, Angelica lucida, Conioselinum chinense

Physical Characteristics: Nest in a "horseshoe" of Elymus clumps

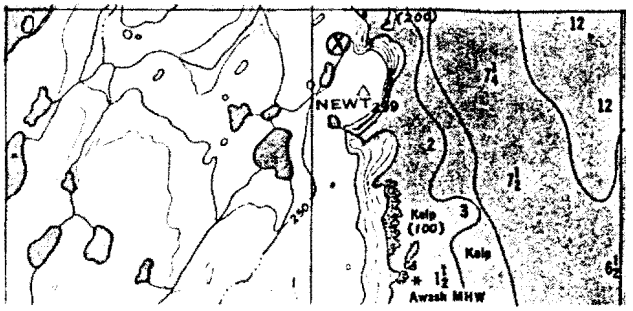
Clutch Size: 6

Egg Measurements: 87 mm x 63 mm

Flushing distance of parents: Parents not in immediate area

Remarks: Nest was in a level area of short Elymus, about 30 yds. northeast of the northernmost "Newt" pond. The nest was west of a small drainage, and over 100 yds. from the cliff edge. The "horseshoe" of Elymus clumps opened

Plot Map:



Film Roll #_____ Photo #_____

ALEUTIAN CANADA GOOSE

Nest Data Form
Agattu Island

NEST NO. 9

Date Found: 16 June 1985

General Location: 85.35 x 06.30 - North Thomas Lake

Elevation: 150 ft. ASL

Slope: 50°

Aspect (N,S,E,W): East - facing the sea

Description of Nest Site

Vegetation: Elymus arenarius, Ligusticum scoticum, Conioselinum chinense, Epilobium angustifolium

Physical Characteristics: Steep grassy slope at edge of sea.

Clutch Size: 5

Egg Measurements: 83 mm. x 55 mm.

Flushing distance of parents: 25 ft. directly above nest - one parent only.

Remarks: Both parents in area; neither were banded.

Plot Map:

Film Roll #_____ Photo #_____

ALEUTIAN CANADA GOOSE

Nest Data Form
Agattu Island

NEST NO. 10

Date Found: 17 June 1985

General Location: 85.75 x 04.25 - Cape Sabak

Elevation: 300 ft. ASL

Slope: 2°

Aspect (N,S,E,W): South east

Description of Nest Site

Vegetation: Elymus arenarius and Angelica lucida

Physical Characteristics: Shallow depression in short Elymus (not clumped)

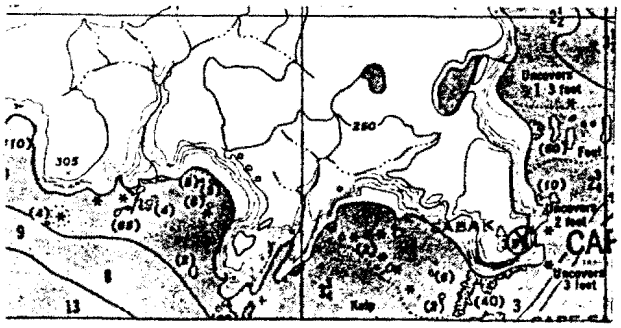
Clutch Size: 5

Egg Measurements: 35 mm x 56 mm

Flushing distance of parents: 30 ft. - one parent only

Remarks: Both parents in the area. Nest was about 1/4 mile from fresh water, and about 40 yds. from the cliff edge. It was in a flat area of short Elymus.

Plot Map:



Film Roll #_____ Photo #_____

ALEUTIAN CANADA GOOSE

Nest Data Form
Agattu Island

NEST NO. 11

Date Found: 17 June 1985

General Location: 85.60 x 04.25 - Cape Sabak

Elevation: 250 ft. ASL

Slope: 5°

Aspect (N,S,E,W): West-Southwest

Description of Nest Site

Vegetation: Elymus arenaria and Angelica lucida

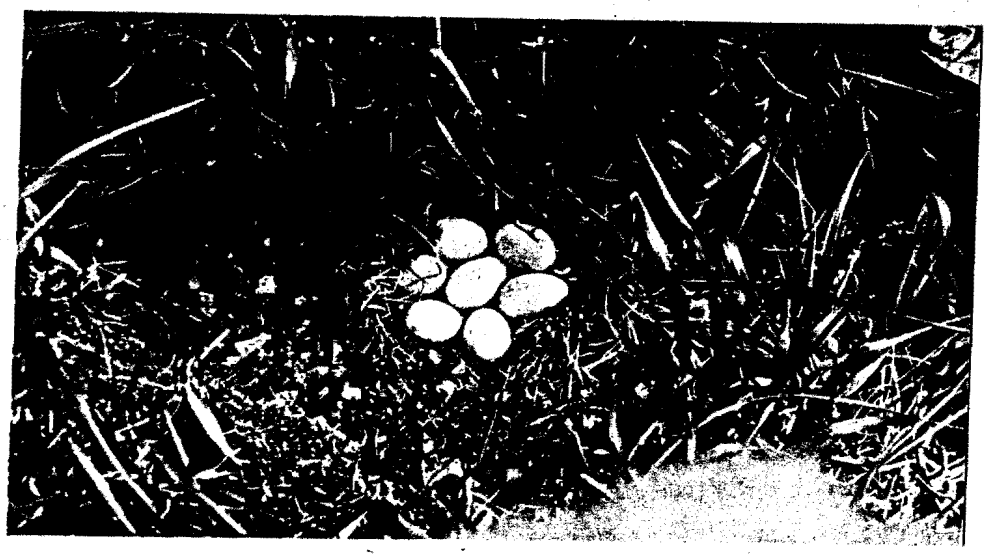
Physical Characteristics: Adjacent to Elymus clump

Clutch Size: 7

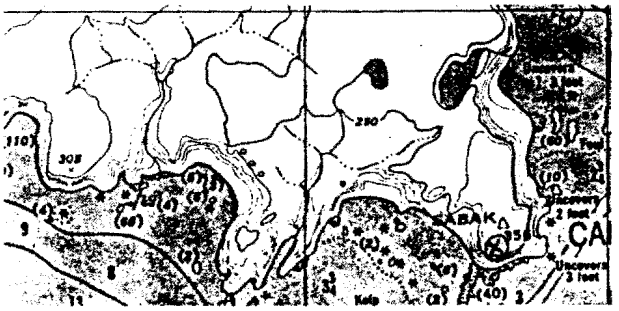
Egg Measurements: 92 mm x 56 mm

Flushing distance of parents: 12 feet - one parent only

Remarks:



Plot Map:



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