ARCTIC AND ALEUTIAN TERNS
AMCHITKA ISLAND, ALASKA,

by Kevin Brennan

Key Words: Arctic terns
Aleutian terns
Aleutian Islands
Breeding Biology

ALEUTIAN ISLANDS UNIT
ALASKA MARITIME NATIONAL WILDLIFE REFUGE
U.S. FISH AND WILDLIFE SERVICE
ADAK, ALASKA
ALASKA REGION

December 1980

ARCTIC AND ALEUTIAN TERNS AMCHITKA ISLAND, ALASKA,

by Kevin Brennan

Key Words: Arctic terns
Aleutian terns
Aleutian Islands
Breeding Biology

ALEUTIAN ISLANDS UNIT
ALASKA MARITIME NATIONAL WILDLIFE REFUGE
U.S. FISH AND WILDLIFE SERVICE
ADAK, ALASKA
ALASKA REGION

December 1980

11p.

INTRODUCTION

Baird (1980) has recently reported on the ecology of Arctic terns (Sterna paradisaea) and Aleutian terns (Sterna aleutica) from 4 areas of mainland Alaska. However, prior to 1964 only notes on the occurence of terns in the Aleutian Islands were available (ie. Bent 1921, Murie 1959, Kenyon 1961). In 1968 the Aleutian tern was first discovered nesting in the western Aleutians, on Amchitka Island (Williamson 1968). In the next 5 years, 1968-1973, census and ecological study of terns on Amchitka was conducted under support of the Atomic Energy Commission. Since that time only reports of sightings of terns on Amchitka have been made. It was attempted in 1980 to determine the status of the tern colonies studied by the A.E.C. Also, since Arctic terns make extremely long migrations and the migratory habits of the Aleutian tern are not well known (Bent 1921) all terns encountered were banded. Unfortunately, higher priority projects on Amchitka (ie. the Aleutian Canada goose project) allowed only a minimum expenditure of the time and manpower on the study.

METHODS

First, the 5 colonies located by White, Williamson, and Emison (Figure 1) had to be relocated. The only available means was to search on foot. Because of time and manpower constraints, these searches were often conducted as 'sidelines' to other endeavors in the areas. The adult terns were normally aloft when the colony was reached. Once located, the area was systematically searched. Numbered flags, constructed from a 2' piece of stiff wire with a 3" by 6" piece of flagging attached, were placed 2' east of each nest. Colonies were then revisited as often as possible. All nests were rechecked and the number of chicks and the number of eggs left was recorded. Young terns encountered were banded. Aleutian terns received size 1A bands and Arctic terns size 2 bands. The number of adults present was estimated by counting the birds aloft.

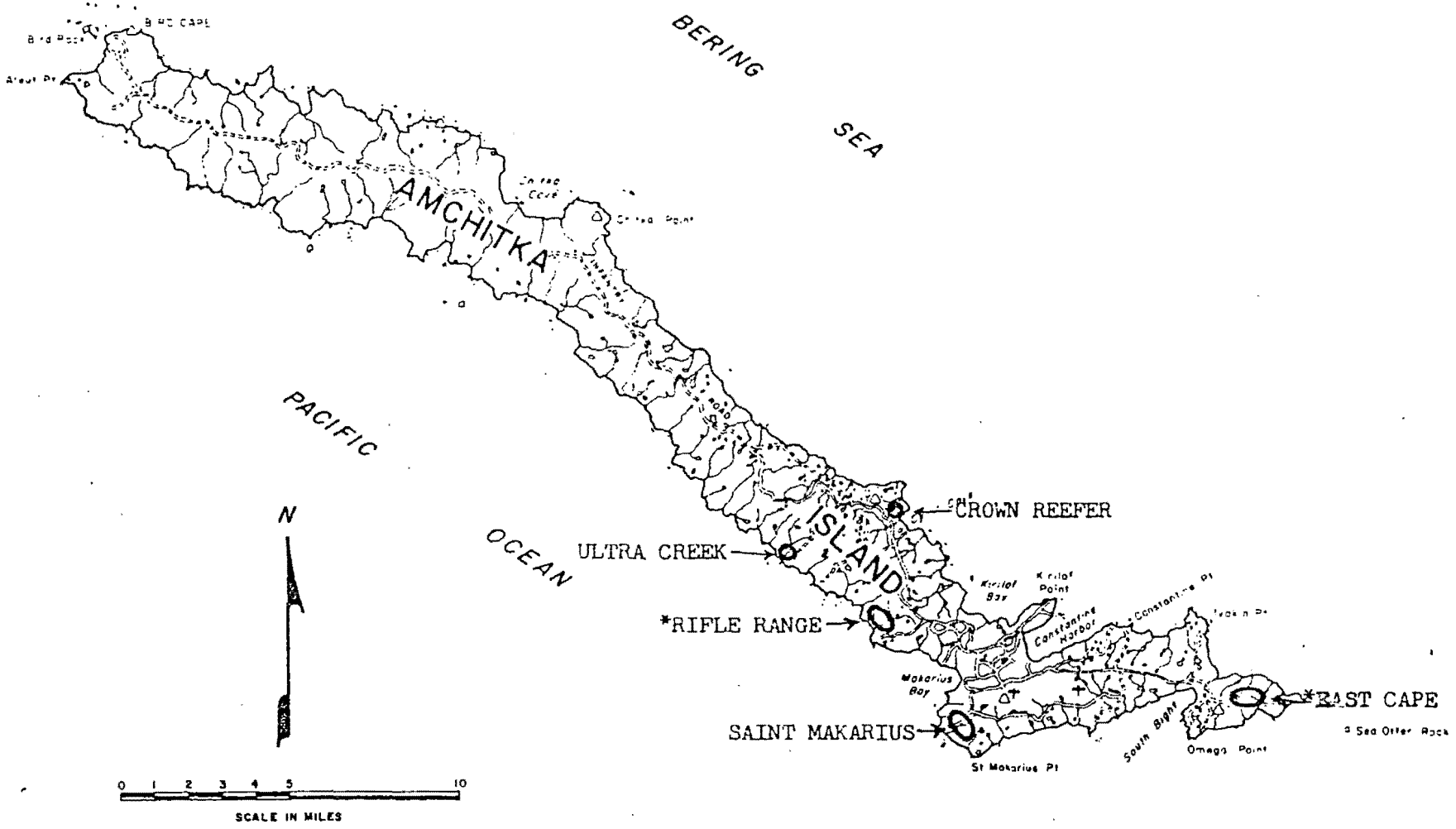
Because Arctic and Aleutian terns often nest within the same colony, a method of distinguishing nests was necessary. It was not feasible to set up blinds and watch for incubating adults so a system proposed by White (1973) for determining nesting species by nest and egg characteristics was used (Table 1).

RESULTS

I. The Colonies

Ultra Creek - On May 29 the first tern (spp. unknown) of 1980 was seen near Ultra Creek during searches for Aleutian Canada geese released. However, because the area is approximately 18 kilometers from camp and was out of the circle of normal activity, it was not visited again.

FIGURE 1



O- Colonies identified 1968-1972 (White 1973)

* - Colonies relocated 1980

AMCHITKA ISLAND
LOCATION OF TERN COLONIES
ALEUTIAN ISLANDS NATIONAL WILDLIFE REFUGE
ALASKA

TABLE 1

CHARACTERISTICS OF ARCTIC AND ALEUTIAN TERN NESTS AND EGGS

(White 1973)

ARCTIC TERN	ALEUTIAN TERN
Nest usually lined with lichens detached from soil. Thamnolia vermicularis normally used, but Cladonia spp. common. Grasses rarely used and if so, relatively scantily.	Nest usually lined with dried grasses, and only rarely with lichens (though the nest is situated in Cladonia).
Ground color of eggs considerably darker (conforming to Bent 1921). Egg markings small and diffuse over the egg.	Ground color of eggs lighter (conforming to Bent 1921). Egg markings bold and tending to concentrate in wreaths near large end of egg.
Egg size generally slightly smaller (Avg. 41 x 29 mm).	Egg size generally slightly larger (Avg. 43 x 30 mm

Crown Reefer - The presence of terns was first noted in this area on 1 June when hiking out to a beached whale on Crown Reefer Point. Ten terns (spp. unknown) were observed on 9 June when hiking out to take some measurements on the whale. However, on 25 June, 2 observers spent 3 hours searching the area for a colony and found none. They only saw 3 terns, so efforts were ceased.

Rifle Range - This colony was discovered on 24 June and was the most intensively studied (Table 2). Twenty-five Aleutian tern nests, containing 41 eggs, and 6 Arctic tern nests, containing 9 eggs, were located within a 3 hectare area. Between 26 June and 4 July, 14 Aleutian and 3 Arctic tern chicks were banded. The number of adult terns observed averaged 127.

Saint Makarius - Several individual terns (spp. unknown) were seen from 9 to 12 June in the St. Makarius area while observing the released Aleutian Canada geese. However, on 27 June, 2 observers searched the area and though a concentration of 40 terns was noted, only 1 nest (that of an Arctic tern) was found. The area was again surveyed on 29 June, with the same results. Terns were present, but nests were not found.

East Cape - This colony was discovered on 9 June when returning from sea lion counts. But because of the remoteness of the area and time constraints, it was not revisited until 1 July. A search of approximately 4 hectares turned up only a tight group of 13 Arctic tern nests, containing 23 eggs. An average of 76 adults were seen in the area. Between 7 and 22 July, 10 Arctic tern chicks were banded (Table 3).

II. General

The number of eggs per nest and the overall clutch size was compared between the species, and with the data gathered by White and Baird (Table 4). Arctic terns did show a higher mean clutch size than Aleutian terns. But the difference between the species was not as pronounced as in past studies.

Overall breeding, hatching and fledging success rates could not be determined. About 1/2 of the eggs of both species (15 of 32 Arctic and 20 of 41 Aleutian) could not be accounted for. When revisiting the nests these eggs were not present, and chicks or sign of predation could not be found. Two basic approaches can be taken: 1) assume all unaccounted for eggs hatched; of 2) assume all unaccounted for eggs did not hatch (Table 5).

TABLE 2 RIFLE RANGE OBSERVATIONS (ARCTIC TERNS IN PARENTHESES)

	June				July				
DATE	24	26	28	30	2	4	7	9	11
No. Chicks	0	1(1)	2(1)	4(3)	4	5	0	0	0
No. Eggs Unaccounted for	0	0	(1)	0	4	8(1)	2	6(1)	0
No. Unhatched	0	0	0	1	0	1	0	0	3(1)
No. Chicks found dead	0	0	0	0	3(2)*	0	0	0	0
No. Adults	130	145	135	180	120	140	100	110	80

*All fresh chicks, found dead after 2 day storm with high winds and driving rain.

TABLE 3 EAST CAPE OBSERVATIONS (ALL ARCTIC)

	July			
Date	1	7	17	22
No. Chicks	0	6	4	0
No. Eggs Unaccounted for	0	4	4	4
No. Unhatched	0	0	0	1
No. Adults	75	95	85	50

Table 4. Comparison of Clutch Size

	Amchitka Arctic	1980 Aleutian	Amchitka 1968 - 1972 (White 1973)		Gulf of Alaska 1976 - 1978* (Baird 1980)	
			Arctic	Aleutian	Arctic	Aleutians
Total Nests	19	25	30	25	349	83
Number of Nests with:						
1 egg	7 (36.8%)	9 (36%)	3 (10%)	7 (28%)	**	**
2 eggs	11 (57.9%)	16 (64%)	26 (86.7%)	18 (72%)	**	**
3 eggs	1 (6.3%)	0	1 (3.3%)	0	**	**
Total eggs	32	41	58	43	720	139
Mean Clutch Size	1.68	1.64	1.93	1.72	2.06	1.67

* - Combines data collected at Hichinbrook Island, Naked Island, Chiniak Bay, and Sitkalidak Straight(Sheep Islan

** - Specific Breakdowns unknown. Modal Clutch Size 2; Range 1 to 3 eggs per nest

Table 5 Hatch Success (% of Eggs Hatching)

	Amchitka 1980	Amchitka 1968 - 1972 (White 1973)	Gulf of Alaska 1977 - 1978 (Baird 1980)
Arctic	46.9% - 93.8% *	- **	53% - 91% +
Aleutians	35.7% - 83.3% *	- **	43% - 91% +

*- Fate of all eggs unaccounted for. Figure represents lower and upper possibilities.
** No data available
+- Represents maximum and minimum success rates found in the 2 year period. Lows were in 1977 and highs in 1978

Realistically, the actual rate falls somewhere in between. Some chicks were likely not located. Only about 3 meters around each nest was searched. White (1978) noted that young terns rarely remained at the nest past 3 days of age. The tern chick's plummage is extremely cryptic and chicks were rarely found once they left the nest. Predation was also likely yet was unobserved. Glaucous-winged gull (Larus glaucescens) colonies were present within 1 kilometer of both the Rifle Range and East Cape colony but these birds were rarely seen within the colonies. Parasitic jaegers (Stercorarius parasiticus) were commonly seen in flight near or within both colonies. Several pairs were always observed around the East Cape colony and 1 jaeger chick was discovered. It is not known to what extent these parasitic birds may prey on the eggs and young of terns. It has been suggested that Norway rats (Rattus norvegicus) may have played some part in the loss of the eggs (Garrett, personal communication). However, both colonies were 1/2 to 3/4 of a kilometer inland, while Norway rats concentrate along the beaches (Brechbill 1977). No sign of rats was ever found near the colonies. Disturbance could have had an effect. Garret (Personal communication) reported that disturbance of a tern colony could lead to lessened defense of the nest, increasing the losses to predation. Revisits to the colonies took little time, usually less than 1 hour. Locating the nests took some time though. Another problem could have been caused by the flags used to mark the nests. Besides the possibility that the flags were disturbing, a quickly associating gull or jaeger could have discovered a meal near each flag.

The peak of the hatch appeared to have been around the end of June and the beginning of July for Aleutian terns, and slightly later for Arctic terns. This falls within the time frame given by Baird (1980) for Kodiak Island (early July) and by White (1973) for Amchitka (the last week of June for Aleutians and the 1st week of July for Arctic terns).

CONCLUSIONS

While only the Rifle Range and East Cape colonies were located, the location of terns at the 3 other sites indicates that other colonies are likely present. Searching for colonies only occasionally, as time constraints permitted, was not sufficient. It is likely that some nests within the study areas were not found. If the specifics of tern ecology or abundance in the Aleutians are to be gathered, it is advisable to have a colony, or colonies, watched regularly by an observer in a blind, preferably over several seasons. Also the use of a good bird dog would be invaluable in locating nests and chicks. Further verification of White's nest characteristics needs to be accomplished. This study was meant to be preliminary to future field work on Amchitka, as it affords an excellent opportunity to study terns.

ACKNOWLEDGEMENTS

The efforts of YACC enrollees, Patricia Heglund and Beth Wojtowych were invaluable in setting up the transects and in observing and banding the terns. Assistant Refuge Manager, Barry Reiswig's guidance and help with editting was greatly appreciated, as were the comments of Wildlife Biologists, Ron Garrett and Patricia Baird.

LITERATURE CITED

Baird P.A. Arctic and Aleutian Terns. Unpublished draft in AINWR files. 35pp.

Bent A.C. 1921. The Life Histories of North American Gulls and Terns. U.S. Nat. Mus. Bull. 113.

Brechbill R.A. 1977. Status of the Norway Rat. in The Environment of Amchitka Island, Alaska. Ed. M.L. Merritt and R.G. Fuller. Publ. Technical Information Center, Energy Research and Development Administration. pp. 261-268.

Kenyon K.W. 1961. Birds of Amchitka Island, Alaska. Auk 78(3):305-326

Murie O.J. 1959. Fauna of the Aleutian Islands and Alaska Peninsula. Wash. D.C., U.S. Fish and Wildl. Serv. N. Am. Fauna No. 61, 406pp.

White C.M. 1973. Avian Biology of Amchitka Island. Unpublished draft in AINWR files. 120pp.

Williamson F.S.L. 1968. Studies on the Avifauna of Amchitka Island, Alaska. Annual progress report, Aug. 1967-June 1968. Battelle Memorial Institute, Columbus Laboratories, U.S. AEC report BMI 171-102. 53pp.