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UNITED STATES GOVERNMENT

memorandum

U. S. FISH AND WILDLIFE SERVICE

TO: Refuge Manager, Maritime NWR RF

FROM: Refuge Ecologist, Regional Office RLG DATE: 11 JAN 1982

SUBJECT: Cruise Report NOAA Ship Miller Freeman R-223 during the period of October 11 through November 7, 1981

Because the Fish and Wildlife Service is responsible for wildlife and wildlife habitat throughout the Maritime NWR, the Refuge Manager was invited by NOAA officials to send a Service representative to join the NOAA Ship Miller Freeman ("Freeman") Scientific Party during the Leg II cruise. Subsequently, I was selected to participate as the Service representative. Clearly, this was a good opportunity to become more familiar with the wintering ecology of insular fauna of the Aleutian Islands as well as the pelagic fauna of the Bering Sea. Further, I was particularly pleased with this assignment because it afforded me the potential opportunity to collect rarely obtained observations of the fall-winter behavior of wildlife and their use of the marine environment.

In this report I endeavor to briefly present the salient observations which were made while aboard the "Freeman". These observations were generally opportunistically obtained while the "Freeman" was addressing the primary purpose of the cruise.

The primary purpose of Leg II was to conduct marine mammal feeding selectivity experiments per field conditions along the shelf slope to shallower waters corresponding to the 40-60 fathom contour. The "Freeman" conducted its second leg (Leg II) of scientific investigation between October 11 - November 7 in the southern Bering Sea (Figure 1). During the study, 17 northern fur seals and 6 northern sealions were collected; in addition to basic analysis of stomach contents, standard biological data were gathered from each seal collected (Chief Scientists Cruise Report MF-81-03). Collection activities were orderly and well coordinated. Night sampling of aquatic organisms followed collection of marine mammals; fish samples were obtained from the same region where marine mammals were secured. Theortically, the potential prey species populations occurring in a fur seal or sealion foraging area could be assessed satisfactorily from the numerous years of past sampling; with site specific sampling, NOAA researches could reasonably estimate the current biomass of potential marine mammal prey species for any given local. Coupling these data with stomach contents data as well as knowledge of age, sex, physiological state, etc. a general profile of marine mammal population biology emerges. For more specifics of experimental design and logistics refer to the Chief Scientists report identified above.

In the main, the weather of the open Bering Sea was unforgiving. The "Freeman" served twice as the primary rescue vessel at sea. First, on October 22, F/V Karen June issued a "MAYDAY" (taking on water), and on October 29, F/V Vesfjied requested assistance (the Captain was killed when heavy seas burst thru the pilot house windows). The "Freeman" responded quickly to these calls as a matter of routine. The crew worked very hard and long hours. They did an excellent job in carrying out the details of the rescue, and escorting the vessels and crew to safety.

At every opportunity marine mammal and pelagic bird transects were conducted; however, such efforts were either stiffled because of heavy seas and wind or simply not conducted because the emphasis was on successful completion of the marine mammal studies. Nonetheless, several pelagic and coastal faunal surveys were made; salient observation are recorded here as a matter of record, and are as follows:

> 13 October, Tuesday: Chirikof Island to Mitrofania Island (0800-1200). Observed sooty shearwaters -- typically in groups of 10-20, 3-4 and as singles. Seas were heavy; nonetheless, from cruise counts 300-400 shearwaters were estimated to have passed the Freeman's forward left quarter every 10 minutes. Cormorants were observed in groups of 2 or 3 intermittently; while kittiwakes were relatively common, they were not abundant. The frequency of shearwaters to cormorants to kittiwakes averaged 300:20:50 per 10 minutes between 0800 and 0900. Several small groups of auklets were observed in groups of 3-4 as well as six murres; both murres and auklets were observed irregularly during the count

period. Note: See Attachments ("Marine Operations Abstracts" NOAA Ship Miller Freeman R-223 Cruise MF-81-03, Leg II 12 October - 7 November 1981) for specifics concerning position, course, speed, depth, time, etc.; a copy of the "Marine Operations Abstract" is on file at Maritime NWR headquarters.

15 October, Thursday: Approximately 20 miles north of Unamak Pass (0845-1100). Both sooty and slender-billed shearwaters were present; they were common but were not encountered as frequently as they were 13 October. About 50 shearwaters per 10 minute interval were observed off the forward left quarter of the Freeman. Fulmars were less frequently observed than shearwaters, between 25-30 per 10 minutes; while Glaucous-winged gulls occurred at a frequency of 20 per 10 minute (less than 10% were adults). A total of 5 kittiwakes were observed. The frequency of shearwaters to fulmars to gulls averaged 50:30:20 per 10 minute period between 0900 and 1000.

16 October, Friday: At about 1600 NOAA/V Freeman circumnavigated Sealion Rock (North of Amak Island) and conducted a faunal survey of the rock; the results are as follows:

2000 ± 200	Northern sealions
250 ± 50	cormorants (double-crested or red-faced)
175 ± 25	glaucous-winged gulls
6 - 10	kittiwakes
1	sea otter

17 October, Saturday: The weather was outstanding for high seas marine mammal work. No marine bird transects were conducted, but a species list was kept for the period of 0900-1500. The species list is as follows:

900 ± 100	shearwaters;
400 ± 50	light phase fulmars;
2	horned puffins;
10	murres (thick-billed);
10	murrelet (spp. ?); and
2	auklets (spp?).

20 October, Tuesday: The calm seas which were with us since the 17th have deteriorated substantially. The winds "picked-up" and "continued" above the 40 knot level night and day.

About 1230 the "Freeman" entered Akun Bay, Akun Island (Krenitzen Island group); the vessel "held" approximately 1 1/2 miles off-shore, crusing roughly parallel to the shore. The weather was thick. That is, the sky was foggy and drizzly; visability changed moment-by-moment. Off toward the shoreline, was a "dark line" just above the water possible extending two to three miles in length and about one half mile in breadth and probably 10-12 feet high.

The "dark line" was shearwaters. There were literally thousands upon thousands of birds in that first flock; the birds were feeding. The prey species, however was not identified positively. It was suggested by the fisheries technician that small pollack or pacific cod would be a reasonable guess. (see subject memo: Problems with delineating parameters for make first approximation estimates of marine bird flocks.)

After leaving Akun Bay, the "Freeman" passed on the inside of Tanginak Island heading between Poa and Tangik Islands. (The weather was poor and visibility was limited.) The number of auklets observed increased sharply, e.g. 200 per five minutes to 1000 + per five minutes. Although, there were many small groups flying close by, I could not regularly determine which species of auklet I was seeing. On several occasions, however, I did observe crested and whiskered auklets in "summer plumage." Numerically, there were many auklets, more than 25,000. This "estimate" is low in my view.

23-26 October. The scientific party "pressed" the marine mammal study effort. The situation was difficult because the weather was miserable.

27 October, Tuesday. Marine bird surveys initiated, but were terminated because of poor visability and rough sea.

2 November, Monday. Initiated a faunal survey between Cape Morgan and Green Bight, Akutan Island. But the first order of business was to locate northern sealion haulout areas. With the aid of a small boat numerous sealions were observed on beaches located between Cape Morgan and the western end of Cascade Bight Bay. From approximately 100 meters off shore we counted a total of 1385 adults and 290 young of the year.

From our small boat we also observed several species of birds utilizing the coastal waters and back bays; the species were Harlequin, Old Squaw, Emperor geese, auklets, (on several occassions I felt certain that the auklets were whiskered; nonetheless, I have deferred to my doubt as the final judge) cormorants, kittiwakes, and murres. The frequency of birds observation along the coast was relatively low, perhaps one bird per hundred meters of shoreline on the average. In fact,

the impressive thing was the fact that the birds were distributed widely and somewhat uniformly along the shoreline edge (within 20 meters of shore). The single exception was Harlequin flocks (10-15); they were located 75-150 meters off-shore.

Some distance from the coastline (approximately two kilometers), large numbers of auklets were flying westerly towards the Akutan Pass area. (Between 0900 and 1300, literally hundreds of auklets flocks were observed flying in the same general direction, wave after wave of auklets.) My gross estimate of individual flock size ranged between 30-40 individual in the smaller groups and up to 3000-5000 birds in the larger flocks. These flocks maintained a flight pattern roughly two kilometers off shore; however, there were occassional groups closer to shore, and there were many groups of auklets that were three and four and five kilometers from our small boat. I made several counts of birds per ten minute interval flying past the small boat. The average was a conservative 3000 Auklets per ten minutes based on an average of seven counts. I counted all groups within roughly 1000 meters of the small boat. This calculated out to be 72,000 auklets. This is a very conservative estimate of auklets flying by the small boat during the four hours of survey. I did not adjust the calculation to account for the range of observations, nor did I attempt to account for auklets which were beyond 1000 meters.

My impression was that the auklets were concentrated in the Krenitzen Island group (see subject memo: Potential high vulnerability of the fall-winter "trophic guilds.") during a period of storm. The observed movement was probably associated with currents and tidal actions along the oceanographic frenges of Akutan Pass. The auklets appeared to be "working" the tidal rifts of Akutan Pass. I did not see them foraging; nor did I detect any odor which one might attribute to a particular food source. All in all the number of auklets was most impressive while not as striking an observation as "shearwaters at Akun Bay". I believe numerically speaking, however, that these two populations were probably quite similar in size; but behaviorially speaking, auklet flocking characteristics tended, in my view, to dampen the dramatics of the biological event!

In summary, there are four points I wish to underscore:

1. Late fall and winter usage of back bays and harbors of islands and island groups throughout the Aleutian Chain are reasonably assumed to be critical to a significant proportion of the Bering Sea fauna -- e.g. pelagic marine birds, coastal sea birds, sea ducks, sea geese, marine mammals, etc.

2. In at least two instances, e.g. shearwaters and auklets, spectacular numbers (tens of thousands) of these species were concentrated in the coastal waters of the Aleutian Chain. In these two instances, the marine birds appear to have:

   i. retired to protect waters of the Aleutian Islands to avoid the brunt of a storm;

   ii. exploited the prey species resources either fortuitously or "intentionally" as an inherent part of their life cycle; and lastly,

   iii. provisioned for catastrophy unwitingly because of their natural disposition to congregate in staggering numbers in very small areas, specifically, areas which are potential and probable sites of man caused "environmental impacts."

3. Very little field work has been completed which illuminates adequately our understanding of the ecological importance (particularly during late fall and winter) of the Aleutian Chain to the fauna of the North Pacific and the Bering Sea. The little we do know, however, points to the urgent need to re-think Region VII priorities relative to essential highly utilized habitat by tens of millions of birds and mammals. There are several basic questions:

   i. What species utilize the island shoreline and coastal water during late fall and throughout the winter;

   ii. When do such species utilize the island shoreline and coastal waters, i.e. is there a pattern or strategy for habitat utilization by the various marine birds and mammals during late fall and throughout the winter; and

   iii. Where do these species occur and under what environmental circumstances has habitat utilization occurred?

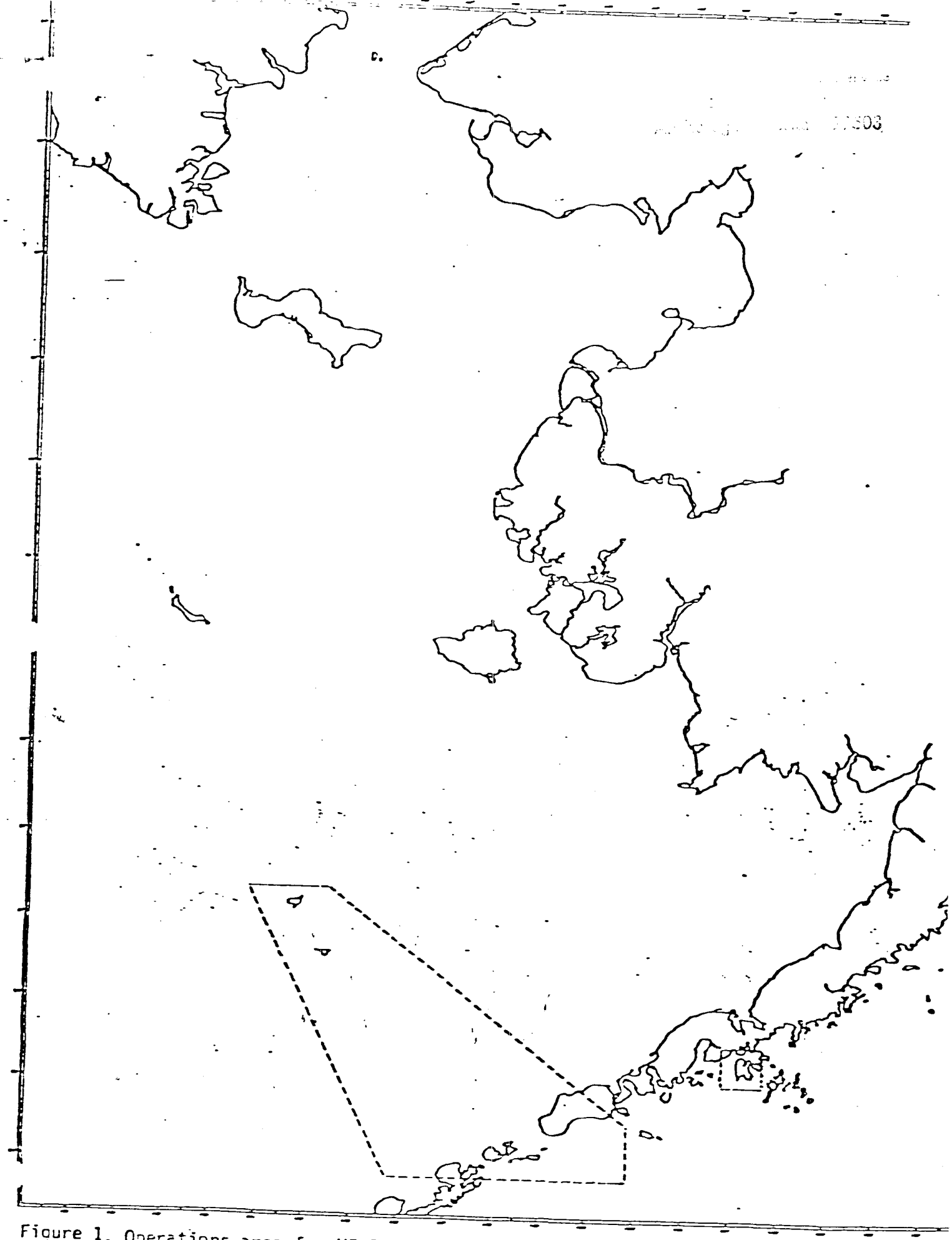

Figure 1. Operations area for MF-81-03, Leg II, indicated by outlined areas.