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by

Patrick J. Gould

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DISTRIBUTION AND ABUNDANCE OF SEABIRDS OVER MARINE WATERS OF THE EASTERN ALEUTIAN ISLANDS

Patrick J. Gould
Migratory Bird Section
National Fisheries Research Center
Anchorage, Alaska

Like the Pribilof Islands, the eastern Aleutian Islands are located rather strategically in an area where seabirds have short flying time access to a variety of marine environments including a broad continental shelf, rather precipitous shelfbreak areas, and deep oceanic expanses. Unlike the Pribilofs, the eastern Aleutians have many deep and protected bays and inlets, and a tidal flow which creates rip tide areas within an abundance of straits and passes. The variety of marine habitats available in the eastern Aleutian Islands is reflected in a wide range of spatial and temporal distribution patterns between the local marine bird species. There are 31 species of marine birds which are common breeders in the eastern Aleutian Islands and 27 others which are common in winter or during migration (Table 1).

ENDANGERED SPECIES

Two species of endangered marine birds have been found within the Unimak Pass-Eastern Aleutian Islands area; the Aleutian Canada Goose and the Short-tailed Albatross. Neither species breeds in the area nor does the area contain critical marine habitat for them.

ENDEMIC SPECIES

No species of marine bird is restricted to the eastern Aleutian Islands. The Whiskered Auklet, however, is endemic to the Komandorskie and Aleutian Islands area and a significant portion of the world population occurs in the eastern Aleutian Islands (Byrd and Gibson 1980). Byrd (1973) found 7,000 of these birds congregated in Baby Pass and in rip tide areas to the northwest of the Baby Islands in early July. Nysewander and Forsell (pers. comm.) found 1,000 to 3,000 congregated in Avatanak Strait and Umnak Pass in late June and early July. Whiskered Auklets are rarely found far from islands or island passes and their concentration in rip tide areas may make this species particularly vulnerable to oil spills.

Red-legged Kittiwakes are endemic to the Pribilof, Komandorskie, and Aleutian Islands, but only a few hundred breed in the eastern Aleutian Islands and most of these probably forage in deep waters to the north of Bogoslof Island. The eastern Aleutians do not provide critical winter habitat for this species.

Table 1. Common marine birds of Unimak Pass and Nearby eastern Aleutian Islands

Breeding Species	Nonbreeding Species
Common Loon	Yellow-billed Loon
Arctic Loon	Horned Grebe
Red-throated Loon	Black-footed Albatross
Red-necked Grebe	Laysan Albatross
Northern Fulmar	Short-tailed Shearwater
Fork-tailed Storm-Petrel	Sooty Shearwater
Leach's Storm-Petrel	Canada Goose
Double-crested Cormorant	Brant
Pelagic Cormorant	Emperor Goose*
Red-faced Cormorant	Common Goldeneye
Whistling Swan	Harlequin Duck*
Greater Scaup	Oldsquaw
Common Eider	Steller's Eider
Red-breasted Merganser	King Eider
Northern Phalarope	White-winged Scoter
Parasitic Jaeger	Surf Scoter
Glaucous-winged Gull	Black Scoter
Black-legged Kittiwake	Common Merganser
Red-legged Kittiwake	Red Phalarope
Aleutian Tern	Pomarine Jaeger
Common Murre	Long-tailed Jaeger
Thick-billed Murre	Glaucous Gull
Pigeon Guillemot	Bonaparte's Gull*
Marbled Murrelet	Sabine's Gull
Kittlitz's Murrelet	Arctic Tern*
Ancient Murrelet	Crested Auklet*
Cassin's Auklet	Least Auklet
Parakeet Auklet	
Whiskered Auklet	
Horned Puffin	
Tufted Puffin	

* These species may breed in the area but there are no verified or recent records.

COMMON SPECIES

Northern Fulmar

This species is a permanent resident in the area of Unimak Pass although many individuals from northern colonies use the area as a major migration corridor. Fulmar numbers are generally lower in the pass area then in the shelfbreak waters to the northwest and southeast. The major exception to this was Arnold's (1948) finding of 38,000 fulmars in 1.5 hours of survey in Unimak Pass on 9 June, 1944. Byrd (1973) found 1,000 to 2,000 fulmars in both Unimak and Umnak Passes in late June. Murie (1959) suggests that fulmars in the Aleutian Islands are most abundant in rip tide areas and offshore of their breeding colonies. At-sea densities may reach up to 17 birds/km^2 in Unimak Pass in the fall (Table 2).

Murie (1959) reports that Cecil Williams, on 21 May 1936, found light and dark phase fulmars in a 50:50 ratio in Unimak Pass which suggests northern birds on migration. Most observers have reported dark phase birds to far outnumber light phase birds in the eastern Aleutian Islands.

Sooty and Short-tailed Shearwaters

Both of these species are nonbreeding visitors to the eastern Aleutian Islands and either species outnumbers any other marine bird species in that area during the boreal summer. Figure 1 indicates the location of aggregations of 10,000 or more shearwaters cited in published and unpublished reports. The earliest of these sightings was a group of 18,000 milling and feeding about 1,000 m from the shore at Cape Sarichef, Unimak Island, on 20 May 1976, and the latest was of 12,000 northeast of Billings Head, Akun Island, on 24 October 1975 (U.S. Fish and Wildlife Service unpublished data). Thousands of these birds move back and forth between the north Pacific and Bering Sea throughout the summer and it is difficult to separate these birds from pure migrants (Figure 2). Trapp (1975) observed 750-1,000 shearwaters per minute moving south southeast through Baby Pass on 27 September, and later that day found 65-132 per minute moving south through Derbin Strait. Military personnel at Cape Sarichef reported a heavy southward migration of shearwaters on about 1 September 1976 (Jay Nelson, pers. comm.). Rich MacIntosh (per. comm.) watched shearwaters flying east northeast through Unimak Pass at the rates of 600 to 6,000 per minute flying the same pattern in early July and mid-August respectively. Which of the above records reflects true migration and which reflects local movements is uncertain at the present time. Shipboard surveys (Table 2) suggest a mean density at any one time in the pass during fall of 354 birds/km^2. This translates to about 1.1 million shearwaters.

The hundreds of thousands of Sooty and Short-tailed Shearwaters which occur in the Unimak Pass area make up only a small portion of the world populations for the two species. They represent, however, a substantial part of the biomass of primary and secondary carnivores in the local marine exosystem.

Table 2. Weighted mean densities of selected species and species groups of marine birds in Unimak Pass.[a] Based on unbulished data of the U.S. Fish and Wildlife Service

	Shipboard Surveys			Aerial Surveys		
Species-Species Group	Spring	Summer	Fall	Spring	Summer	Fall
Northern Fulmar	+[b]	8[b]	17	+	+	4
Shearwaters	+	164	351	0	1	3
Storm-Petrels	0	12	1	0	5	+
Glaucous-winged Gull	1	1	1	6	7	2
Kittiwakes	1	2	4	1	+	5
Murres	28	7	9	10	1	2
Tufted Puffins	1	22	5	+	11	0
(Total Alcids)	(43)	(34)	(36)	(11)	(12)	(4)
Total Birds	47	224	400	20	26	17
Total Transects	24	39	29	15	6	12

[a] Unimak Pass for this purpose is defined as: 54°00'N by 164°30'W - 164°30'W.

[b] Birds per square kilometer, + = less than 0.5.

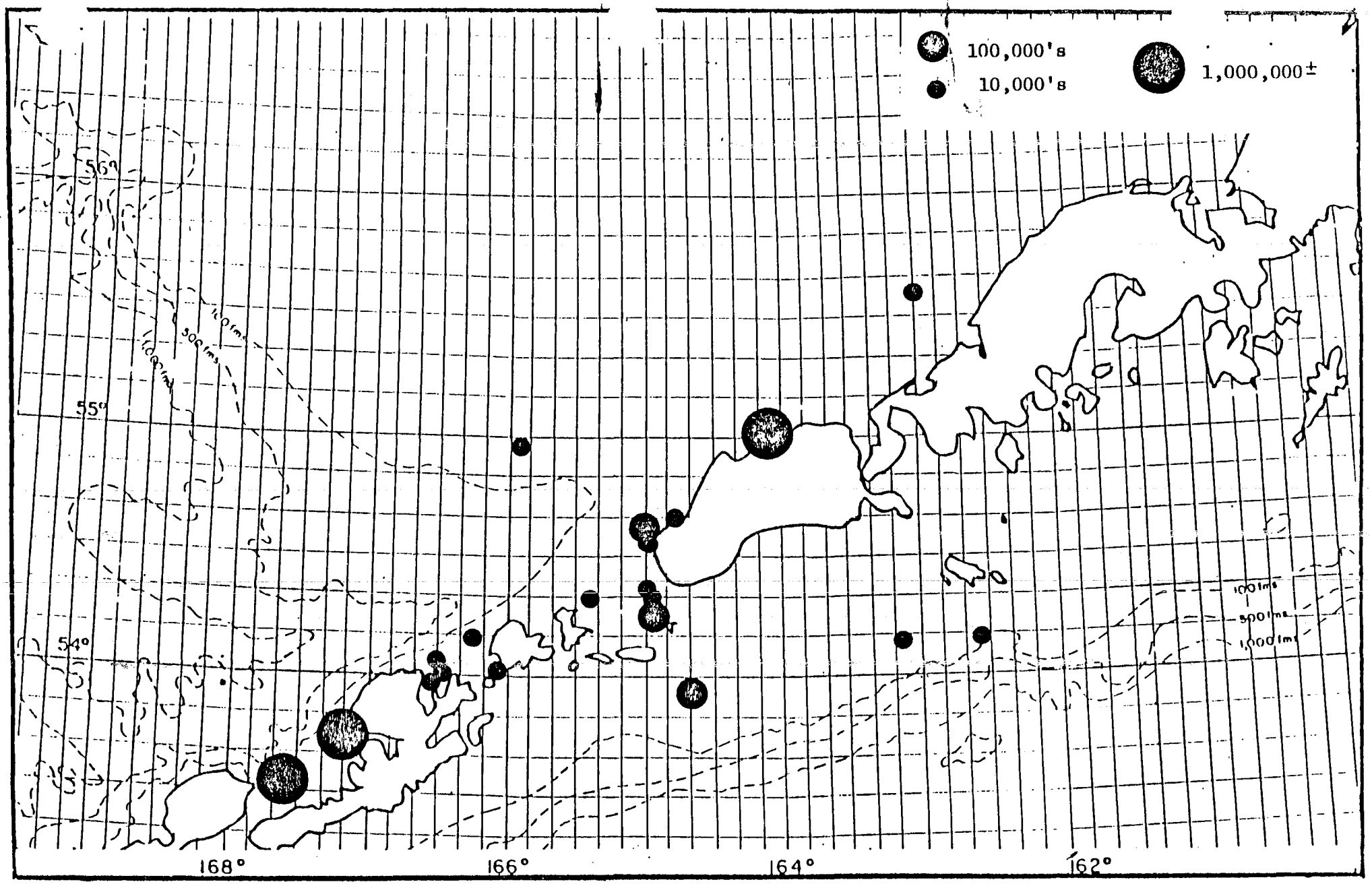

Figure 1. Feeding and resting flocks of 10,000 or more shearwaters in the Eastern Aleutian Islands.

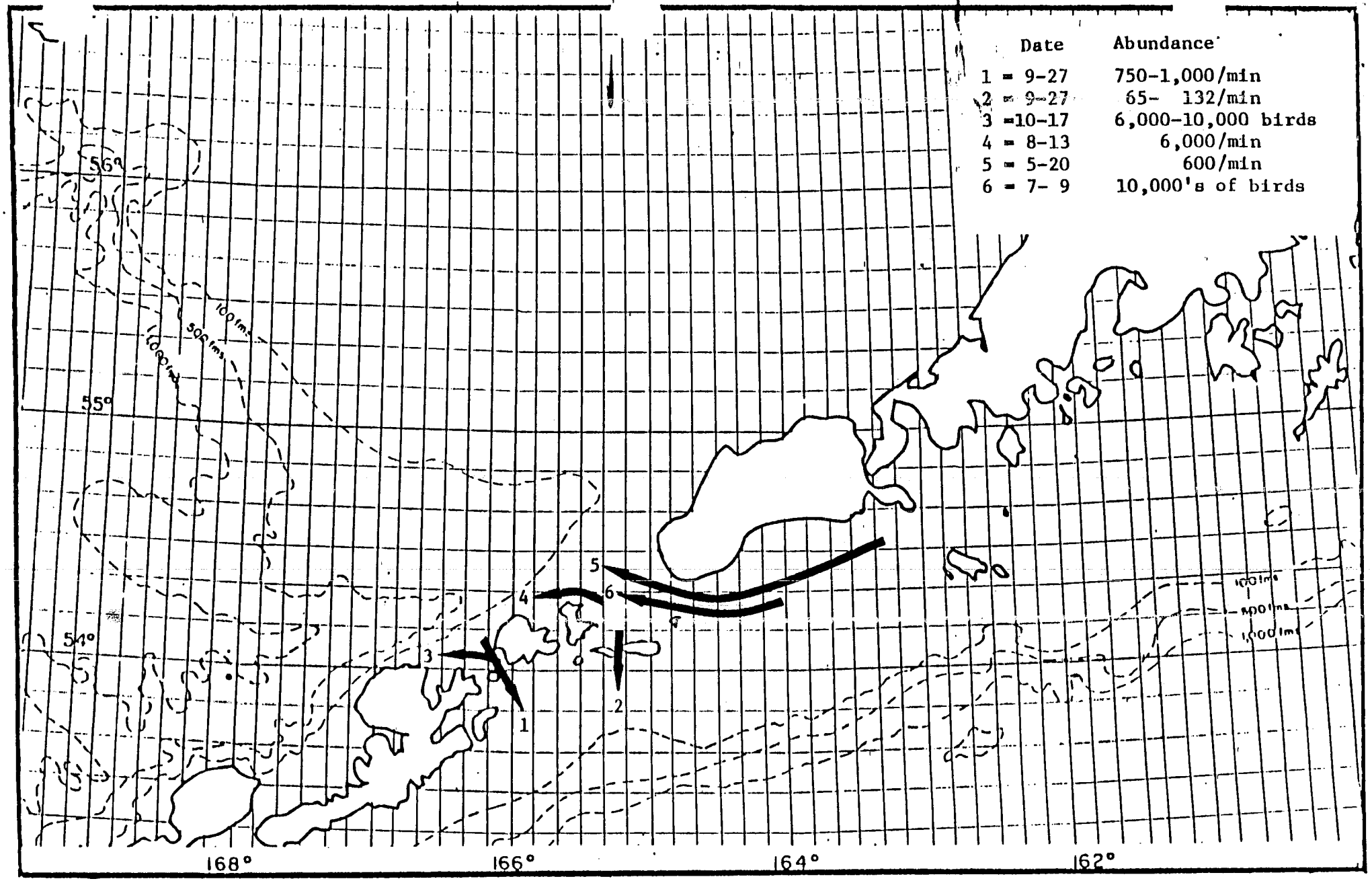

Figure 2. Flying flocks of 10,000 or more shearwaters in the Eastern Aleutian Islands.

Fork-tailed and Leach's Storm-Petrels

These two species breed abundantly in the area but forage principally in the deeper waters of the Bering Sea (Fork-tailed) and North Pacific Ocean (Leach's). Within the eastern Aleutian Islands area proper, storm-petrels are most abundant at dusk and dark in the immediate vacinity of their colonies. Densities within Unimak Pass may reach 12 birds/km^2 during the summer (Table 2).

Red and Northern Phalaropes

Both species are abundant migrants in the area but their numbers and the timing of their movements are not well documented in Unimak Pass. Both species occur over deeper waters throughout the area and will frequently rest on the water surface in large and compact flocks. Northern Phalaropes breed in the eastern Aleutian Islands and small numbers are scattered in nearshore waters during the summer.

Glaucous-winged Gull and Black-legged Kittiwake

Both of these species are scattered in moderate numbers throughout the eastern Aleutian Islands. Either species may reach mean densities within Unimak Pass of 5-7 birds/km^2 (Table 2) which represents about 16,00022,000 birds.

Common and Thick-billed Murres

Murres are common breeding birds west of Unalaska Island and east of Unimak Island, but within the Unimak Pass area they are generally scattered in relatively low numbers. Extremely large numbers, however, have been observed during migration off of Cape Sarichef. Harrison and Hatch (1975) obtained an average count of 4,804 murres per hour "rounding Cape Sarichef" in mid-August. Phillips (1976) found a group of 20,000 sitting on the water off Cape Sarichef on 14 May. Nelson (per. comm.) observed a peak flight of 3,400 murres per hour heading north on 21 April the following year at Cape Sarichef. MacIntosh (per. comm.) saw hundreds of murres flying northwest on the north end of Unimak Pass on 20 May. Mean at-sea densities may reach 10-28 birds/km^2 in Unimak Pass during the spring migration (Table 2) which represents 32,000 to 90,000 murres over the water at any one time.

Tufted Puffin

The eastern Aleutian Islands are the center of abundance for Tufted Puffins in the world. These birds are ubiquitous in the area and may reach mean densities of 11-22 birds/km^2 in Unimak Pass during the summer (Table 2). Largest numbers occur near breeding islands and in the tide rip areas of all major passes and straits; 5,000 in June and 10,000 in September in the tide rips of Analga Pass, and 10,000 in May in tide rips between Rootok and Akun Islands (U.S. Fish and Wildlife Service unpublished data).

DISCUSSION

The straits and passes of the eastern Aleutian Islands support a large and diverse community of marine birds during the summer and serve as passages for migrants moving between the northern Pacific Ocean and Bering Sea in the fall. We have very little information on the species composition and numbers of marine birds in the eastern Aleutian Islands during the winter.

The mean density for total marine birds in summer in Unimak Pass is 224 birds/km^2 (Table 2). This density equates to about 720,000 birds distributed over 3,212 square kilometers of water surface in Unimak Pass. Figure 3 shows the importance of the area in summer in terms of birds per square kilometer recorded by 20 minutes of latitude and 30 minutes of longitude from shipboard surveys of the U.S. Fish and Wildlife Service.

Floating or suspended oil in tide rip areas of the eastern Aleutian Islands would result in heavy mortality levels for many species, especially alcids. The bird species which would be most seriously threatened is the Whiskered Auklet whose numbers within the area represent a significant portion of the world population and whose foraging pattern and behavior results in highly clumped distributions on and under the water in tide rip areas. Locations of particularly high densities of alcids are Umnak Pass, Baby Pass, Analga Pass, and Avatanak Strait. Tide rip areas along the western end of Unimak Island may also be of special importance but more information is needed to evaluate the latter area in this regard.

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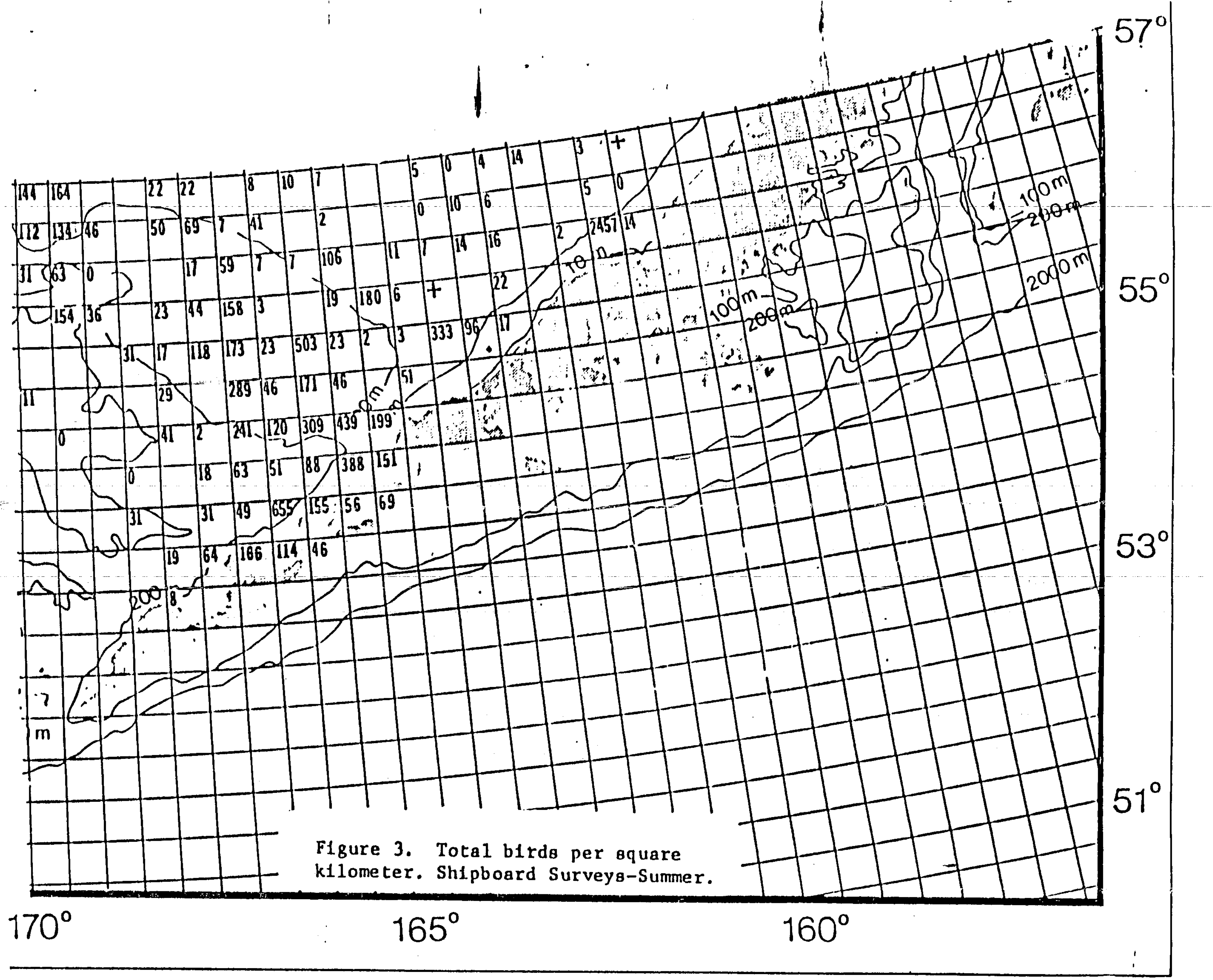

Figure 3. Total birds per square kilometer. Shipboard Surveys-Summer.

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