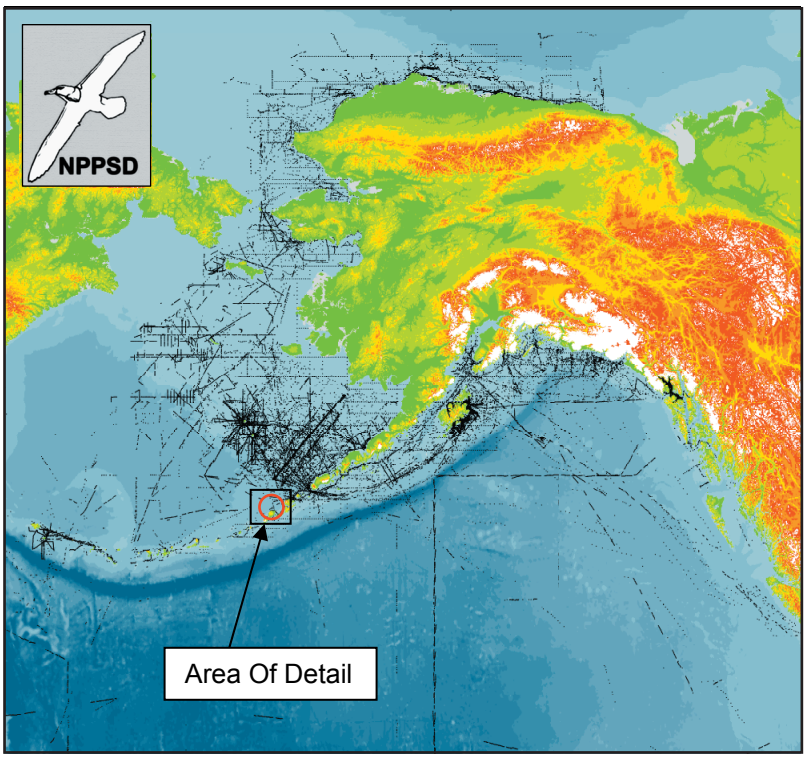


Preliminary assessment of marine bird abundance and species composition in the vicinity of the *Selendang Ayu* grounding, based on historical data from the North Pacific Pelagic Seabird Database

John Piatt and Gary Drew
USGS Alaska Science Center
1011 E. Tudor Road
Anchorage, AK 99503

December 17, 2004

Preliminary assessment of marine birds *at sea* in the area of the *Selendang Ayu* spill

On December 8, 2004, the M/V *Selendang Ayu* broke in half near Spray Cape, Unalaska Island, spilling more than 100,000 gallons of Bunker C oil. The nearshore marine waters, bays, and coastal habitats of Unalaska Island are important wildlife habitats for seabirds, marine waterfowl, shorebirds and marine mammals. Much of Unalaska Island, including areas near the spill, is part of Alaska Maritime National Wildlife Refuge.

Because they spend all their time at sea during winter, marine birds in the area are extremely vulnerable to oil pollution. To prepare for possible impacts to marine birds, and to provide a preliminary assessment of birds at risk, we extracted marine bird data from the North Pacific Pelagic Seabird Database (NPPSD) and summarized it for this brief assessment.

The NPPSD is an ongoing project of the USGS, FWS and other collaborators. It is a work in progress. To date, we have compiled data from two major sources: archives of the FWS Region 7, and the National Ocean Data Center. At present, the NPPSD contains results from 456 independent surveys, comprising 65,642 transects throughout the North Pacific but concentrated in Alaskan waters (see cover image). More than 190 species are documented, including observations of 6, 900,000 seabirds and 29,000 marine mammals.

We extracted data from a 100 km circle around the grounding site of the *Selendang Ayu*. Owing to a scarcity of surveys during winter, we used data collected during the months of October (46%), November (19%), February (1%) and March (34%), and during years spanning 1975-1982. This is necessarily biased, but should provide an estimate of pelagic bird densities in the region during winter.

Pelagic bird densities are typical for this shelf environment during winter, supporting about 24 birds/km^2, or about half a million birds in a 25,000 km^2 area (Table 1). The most common six bird species in this sample comprised about 80% of the total marine avifauna, and included: 1) Northern Fulmars (abundant and widespread in offshore waters, see Map), 2) Emperor Goose (one large aggregation spotted near the coast, see Map), 3) phalarope (concentrated on north side of Unalaska (see Map), probably in association with convergent fronts there and in passes), 4) Black-legged Kittiwake (low to moderate densities, and dispersed among both coastal and offshore waters, see Map), 5) murres (mostly Common Murre, fairly uniformly dispersed across coastal and offshore waters, see Map), and, 6) Crested Auklet (few, high density patches, very localized in turbulent passes, see Map). Other common species included shearwaters, cormorants, eiders and scoters, gulls, and puffins (Table 1).

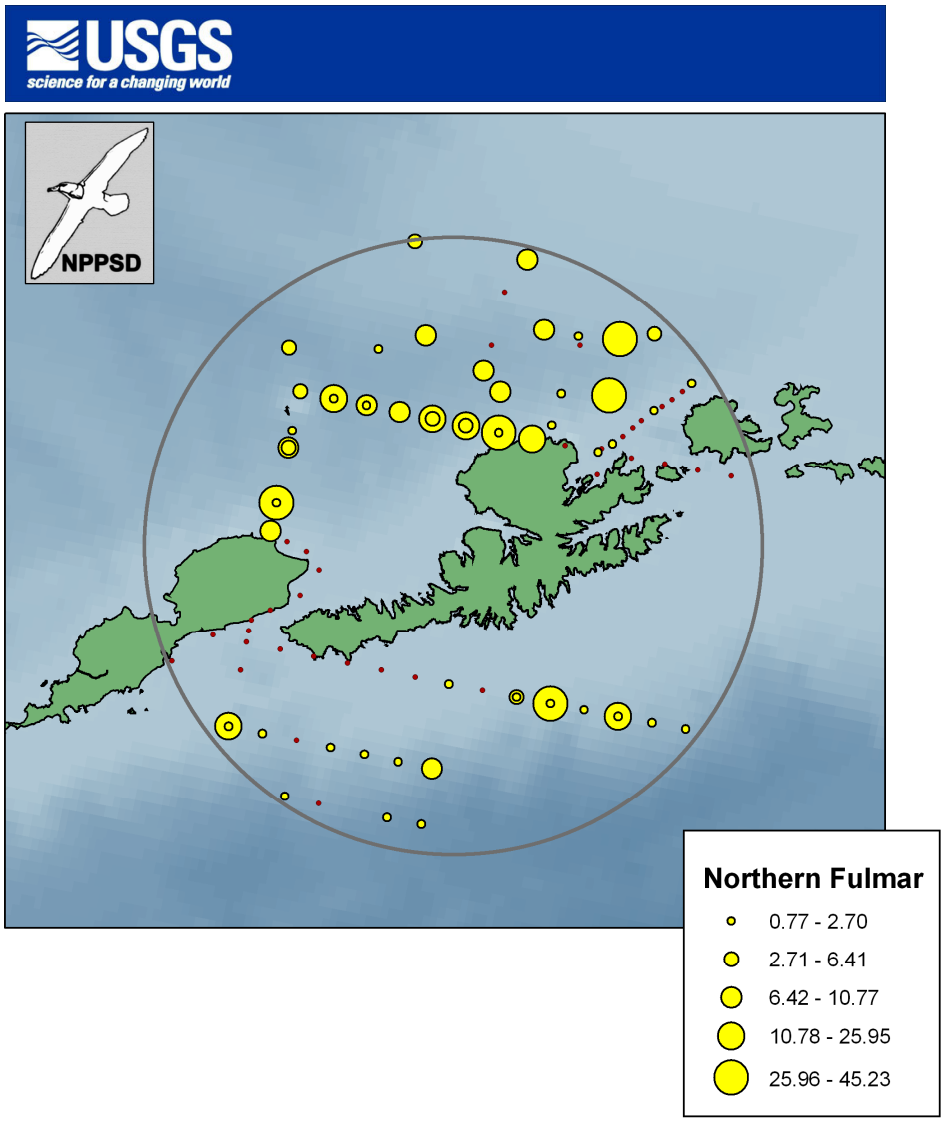
This list is by no means comprehensive, and somewhat dated. More recent data from surveys conducted during the 1990s and 2000s from the Aleutians have not been added to the NPPSD yet. However, this list does provide some indication of what to expect: Some

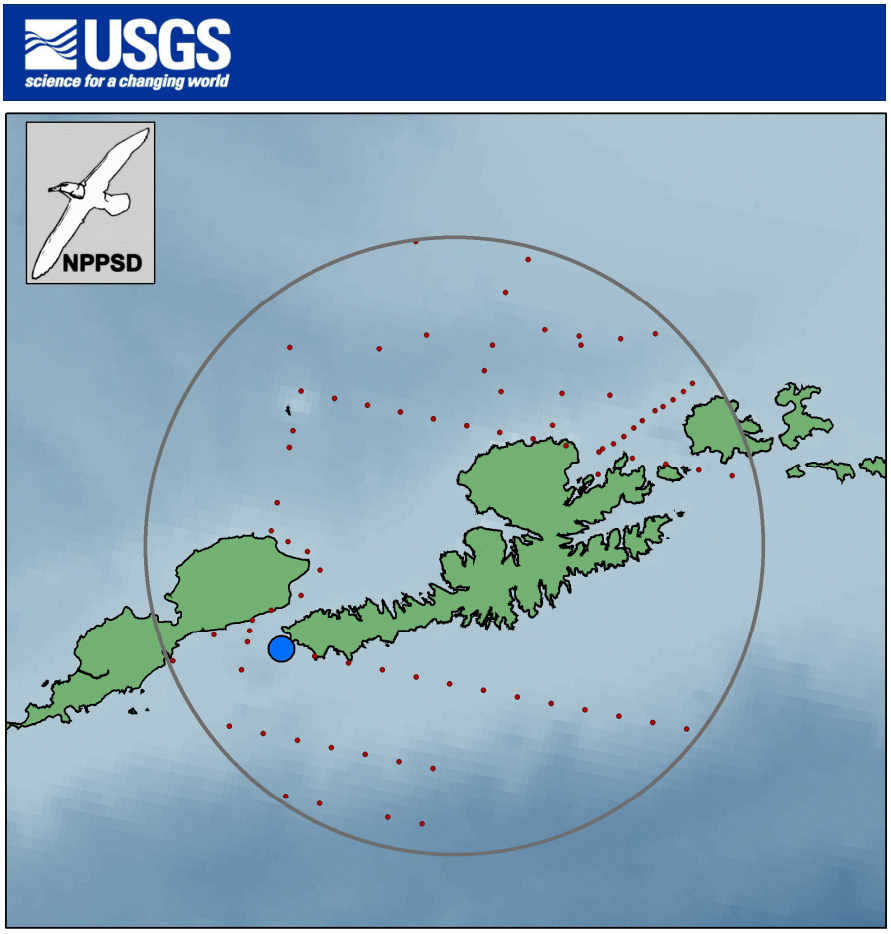
widely distributed species with moderately high densities and high vulnerability to oil (such as murres and seaducks) are almost certainly going to be subject to oil mortality. Highly aggregated species, such as Emperor Geese, or Crested Auklets, have a greater chance of avoiding oil than not— but if exposed, could suffer high losses. More offshore (fulmar) and aerial (kittiwake, gull) species are much less likely to be affected.

We can flag certain species for special attention or concern. Those most vulnerable to oil pollution because they spend so much time swimming at the sea surface (Table 1), and those that are uncommon, rare or even threatened throughout their range (Table 1). Because these surveys are limited, and cover a broad time window, we caution against reading too much into this list. For example, phalaropes and puffins may actually be fairly scarce in December, compared to Oct/Nov when they are migrating through in abundance. Crested Auklets may be much more abundant during mid-winter. Other species known to occur in the area include Rock Sandpiper, Bufflehead, Green-winged Teal (Aleutian subspecies), Greater Scaup and Common Goldeneye (Paul Flint, pers. comm.). This list may complement those available from other sources (Christmas Bird Counts, FWS surveys, etc.).

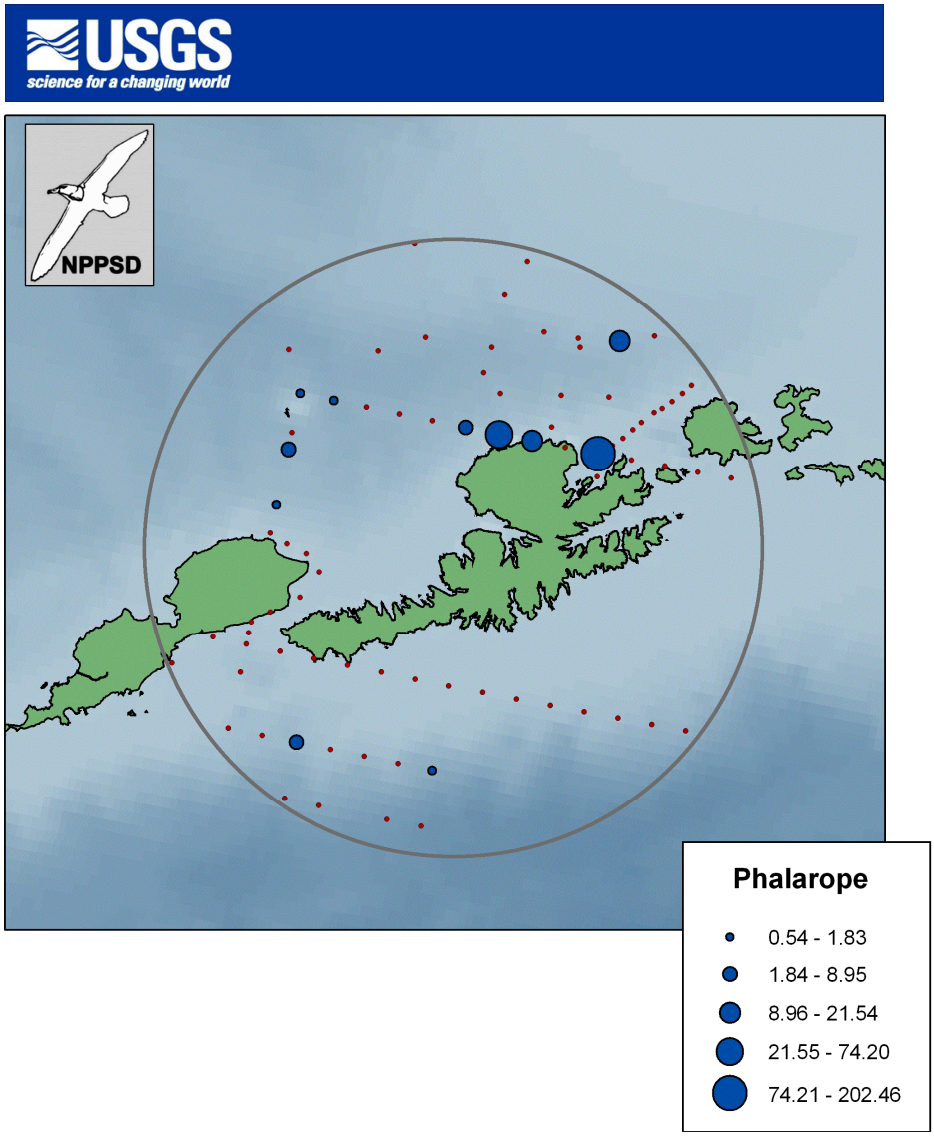
Table 1. Marine birds at risk within a 100 km radius of the Selendang Ayu wreck, Unalaska Island. Data from the North Pacific Pelagic Seabird Database (NPPSD). Densities (birds/km2) estimated from 111 transects conducted within a time window of October - March, 1975-1982. Species marked with ** asterisks should be of special concern because they are more vulnerable to oil pollution and relatively abundant in the area, or they are a rare or threatened species throughout their range.

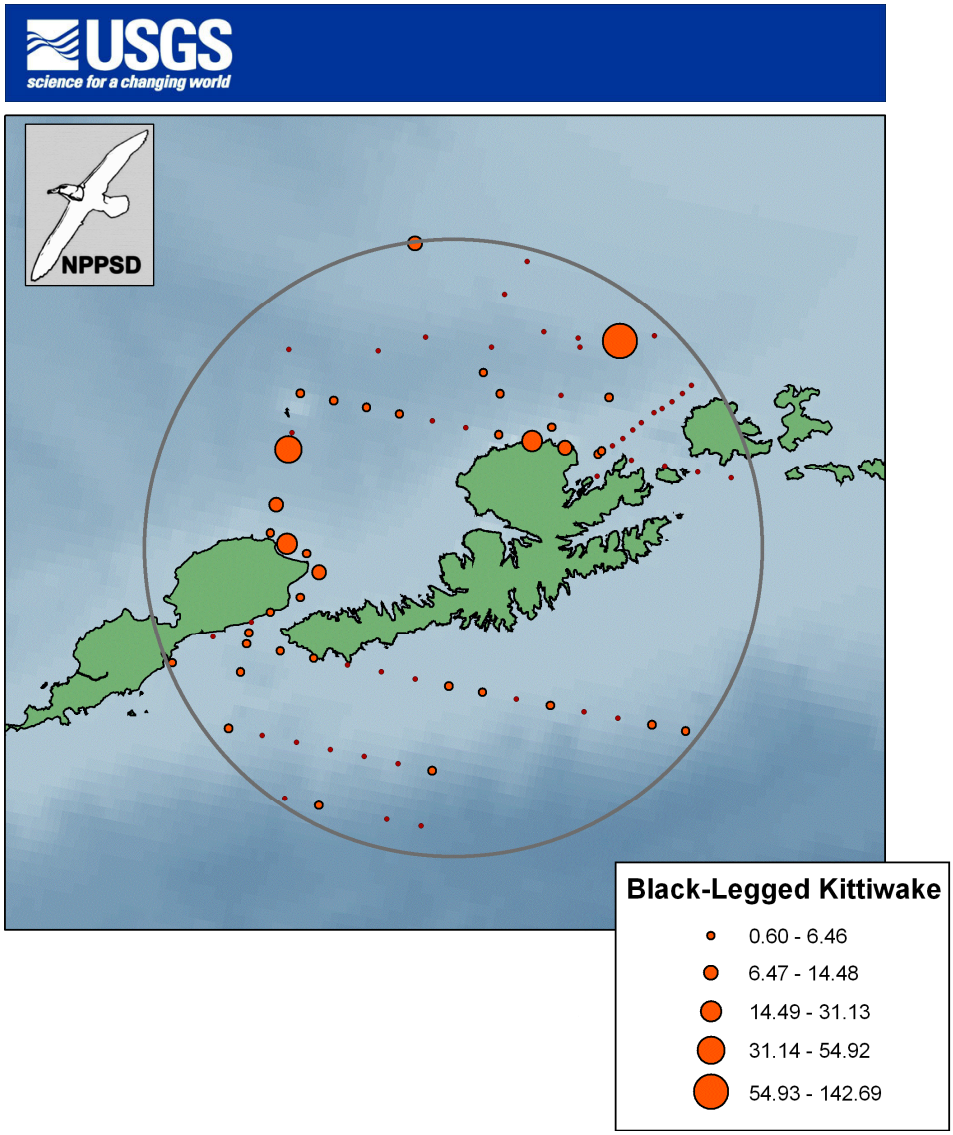
Species group	% of total	Species	birds/km^2	Est. total in area
Loon	0.04%	Loon (spp.)	0.01	214
Tube-nose	21.22%	Black-footed Albatross	0.02	625
		Northern Fulmar	4.21	105,195
		Shearwater (spp.)	0.52	13,094
		Sooty Shearwater	0.09	2,154
		Leach's Storm-petrel	0.01	195
		Fork-tailed Storm-petrel	0.17	4,297
Cormorant	2.57%	Cormorant (spp.)	0.59	14,775
		Red-faced Cormorant	0.02	460
Waterfowl	12.68%	Waterfowl (spp.)	0.03	811
		Emperor Goose **	2.10	52,553
		Harlequin Duck	0.03	768
		Scoter (spp.)	0.12	3,024
		White-winged Scoter	0.16	3,994
		Black Scoter	0.03	667
		Eider (spp.)	0.06	1,525
		Common Eider **	0.34	8,411
		Steller's Eider **	0.12	2,943
		King Eider	0.01	180
		Long-tailed Duck	0.01	154
Eagle	0.04%	Bald Eagle	0.01	210
Shorebird	13.56%	Phalarope (spp.)	3.21	80,221
Gull	20.51%	Glaucous-winged Gull	1.36	34,086
		Kittiwake (spp.)	0.06	1,532
		Red-legged Kittiwake **	0.01	126
		Black-legged Kittiwake	3.42	85,586
Alcid	29.53%	Alcid (spp.)	0.07	1,756
		Murre species **	1.84	46,030
		Common Murre **	0.03	631
		Thick-billed Murre **	0.23	5,846
		Crested Auklet **	3.60	89,895
		Small Dark Alcid (spp.)	0.25	6,215
		Least Auklet	0.03	780
		Parakeet Auklet	0.06	1,550
		Tufted Puffin **	0.78	19,593
		Horned Puffin	0.10	2,401
		Unidentified Bird	0.06	1,591
TOTAL		All birds	23.67	594086

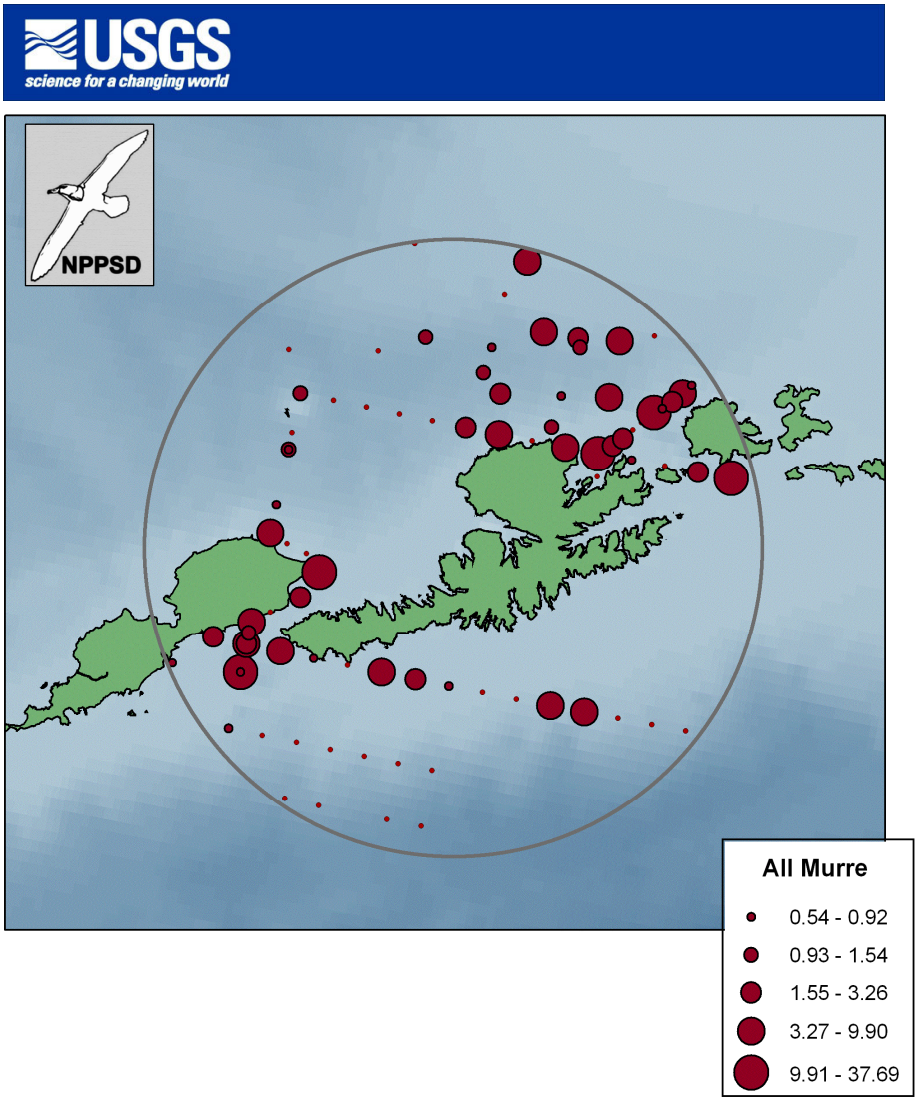

USGS
science for a changing world
NPPSD
Northern Fulmar
0.77 - 2.70
2.71 - 6.41
6.42 - 10.77
10.78 - 25.95
25.96 - 45.23

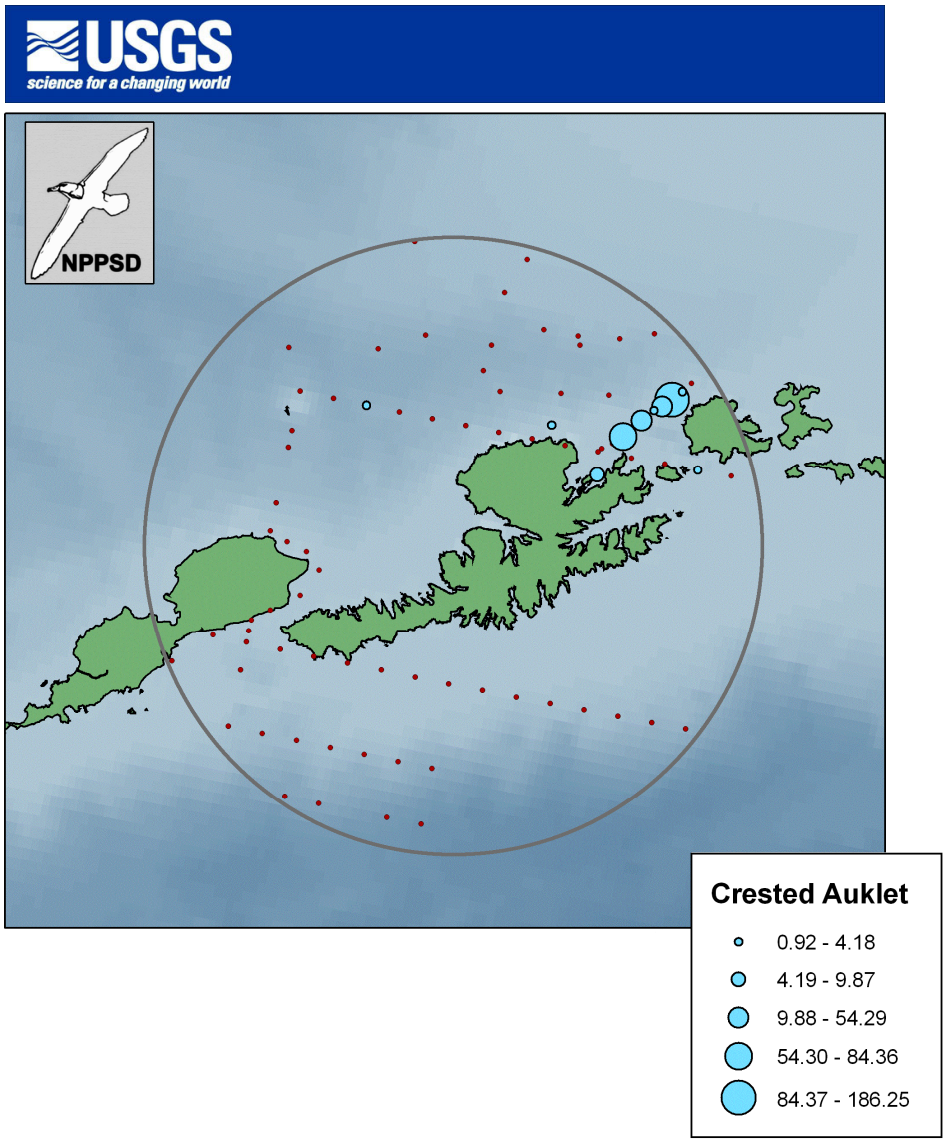


All Emperor Geese were seen on a single aircraft survey transect in March of 1976. We estimated a density of 225 birds per square km over that transect.


USGS
science for a changing world
NPPSD
Phalarope
0.54 - 1.83
1.84 - 8.95
8.96 - 21.54
21.55 - 74.20
74.21 - 202.46


USGS
science for a changing world
NPPSD
Black-Legged Kittiwake
0.60 - 6.46
6.47 - 14.48
14.49 - 31.13
31.14 - 54.92
54.93 - 142.69


USGS
science for a changing world
NPPSD
All Murre
0.54 - 0.92
0.93 - 1.54
1.55 - 3.26
3.27 - 9.90
9.91 - 37.69


USGS
science for a changing world
NPPSD
Crested Auklet
0.92 - 4.18
4.19 - 9.87
9.88 - 54.29
54.30 - 84.36
84.37 - 186.25