

SEABIRD, FISH, MARINE MAMMAL AND OCEANOGRAPHY COORDINATED
INVESTIGATIONS (SMMOCI) IN THE PRIBILOF ISLANDS, ALASKA, JULY 2005



By
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Executive Summary

SMMOCI investigators conducted a survey of seabirds, fishes, marine mammals and oceanographic conditions in the Pribilof Islands, Alaska from the *M/V Tiġlaġ* during 20-26 July 2005 as part of the Seabird, Fish, Marine Mammal and Oceanography Coordinated Investigations (SMMOCI) project. The objective was to characterize the marine environment in the vicinity of the Pribilof Islands, whose seabird colonies are monitored annually by the Alaska Maritime National Wildlife Refuge, and to repeat a 1997 SMMOCI survey of the area.

In addition to surveying seabirds and marine mammals on transects, we characterized local oceanography by taking profiles of the water column at numerous stations on a series of CTD transects. We measured the relative abundance of zooplankton and fish biomass using a dual-frequency echosounder. We sampled with a mid-water trawl net to help associate species with observed acoustic sign. We set long-lines to catch large demersal fish species, used bottom trawls to describe the bottom fauna and sampled zooplankton.

In 2005, we counted a total of 23,026 birds on 10 transects that covered approximately 791 linear km of surveys, resulting in an average density of approximately 101 birds/km² over an area of some 228 km². We also counted 10,268 birds during a circumnavigation of St. George Island. Bird density observed during circumnavigation was about 538 birds/km².

The study area for our 2005 Pribilof Island SMMOCI cruise was similar to that surveyed by us in 1997 except that in 2005, due to time constraints, we concentrated our efforts mainly on the transects south of St. George Island and added a circumnavigation survey of St. George Island. The overall density of seabirds encountered on linear transects in 2005 was nearly twice what we observed in 1997.

Similar to 1997, northern fulmars, murre, fork-tailed storm-petrels and kittiwakes were the most numerous birds seen on surveys in 2005. We counted a few glaucous-winged gulls in 2005, whereas none were seen during the 1997 surveys. As in 1997, fin whales, Dall's porpoises and northern fur seals were the most numerous marine mammals observed.

Sculpins were the most numerous fishes caught in bottom trawls in both 1997 and 2005. Walleye pollock dominated the fish component of the mid-water trawl catch in both years. Similar numbers of Pacific cod, yellow Irish lord and Pacific halibut were caught on long-line gear in both surveys, even though we set the gear fewer times in 2005. New size records were set for great sculpin and northern sculpin.

CTD profiles indicated a highly stratified water column in the survey area.

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Introduction

We conducted a survey of seabirds, fishes, marine mammals and oceanographic conditions near the Pribilof Islands, Alaska (Fig. 1) from the *M/V Tiġlaġ* during 20-26 July 2005 as part of the Seabird, Fish, Marine Mammal and Oceanography Coordinated Investigations (SMMOCI) project. The objective was to characterize the marine environment in the vicinity of the Pribilof Islands, whose seabird colonies are monitored annually by the Alaska Maritime National Wildlife Refuge (Dragoo et al. 2008), and to repeat a 1997 SMMOCI survey of the area (Dragoo and Byrd 1998).

In addition to surveying seabirds and marine mammals on transects, we characterized local oceanography by taking profiles of the water column at numerous stations on a series of CTD (conductivity, temperature and depth) transects. We measured the relative abundance of zooplankton and fish biomass using a dual-frequency echosounder. We sampled with a mid-water trawl net to help associate species with observed acoustic sign. We set long-lines to catch large demersal fish species, used bottom trawls to describe the bottom fauna and sampled zooplankton at two sites. This report summarizes data collected during the 2005 SMMOCI cruise to the Pribilof Islands and briefly compares the 1997 and 2005 SMMOCI surveys of this region.

Personnel

Bird Crew: Jeff Williams (FWS, Homer), Martin Renner (Vol., Homer), John Piatt (USGS, Anchorage), Marc Romano (USGS, Anchorage), Deb Rudis (FWS, Juneau), Karen Sullivan (FWS, Anchorage)

Fish Crew: Yumi Arimitsu (USGS, Juneau), Kitty Mecklenburg (Point Stephens Lab, Auke Bay), Jeff Anderson (King Salmon FRO), Martin Robards (Vol., Anchorage)

Hydroacoustics Crew: Don Dragoo

Tiġlaġ Crew: Kevin Bell, Dan Erickson, John Farris, Joe Isenhour, Dan McNulty, Mike Hiller

Others: Shiway Wang and Caitlin Warbelow also were on board and assisted the fish crew.

Methods

Bird and Marine Mammal Observations

We counted birds using strip transect methods described by Gould and Forsell (1989), and employed on previous SMMOCI cruises. Two observers, stationed on the flying bridge of the *M/V Tiġlaġ* (one on each side of the ship), continuously recorded all birds observed on the water within 150 meters on either side of, and 300 meters in front of, the vessel while the vessel traveled at 9-10 knots. Distances were estimated based on the angle of view from the ship's flying bridge to the object on the water. We counted flying birds on 360° "scans" every three minutes. We radioed observations to a data recorder who entered the data into a logging computer using dLog2 (R. G. Ford Consulting, Portland, OR), which assigned all records GPS positions in real time.

We conducted surveys on 10 linear transects about 10 nm (18.5 km) apart as well as one circumnavigation of St. George Island at approximately one nm (1.85 km) offshore (Table 1, Fig. 2). We counted marine mammals on the same transects as birds, mapped bird and marine mammal distributions, and estimated densities from these data. Distribution maps include observations from all linear transects and the St. George Island circumnavigation.

Hydroacoustic Surveys

We recorded acoustics data along the same transects and concurrently with marine bird and mammal observations (Fig. 2). We determined relative prey abundance on all transects using a dual frequency (38 and 120 kHz) Simrad EK500 echosounder. The threshold for data collection was set at -80 dB. We echo integrated acoustic data to a maximum depth of 250 m, excluding the surface bubble layer, bad data regions and the bottom. Data were exported in 600 m long by 5 m deep bins. Only data from the 120 kHz transducer were integrated and summarized for this report because this frequency tends to highlight the size range of typical seabird prey species; 38 kHz data were archived but are not reported. Data are reported as Nautical Area Scattering Coefficient (NASC), a measure of acoustic energy returned by unit area.

Fishing

Trawls and Tows.—We conducted several types of trawls to relate mid-water and surface community composition with the hydroacoustic record of biomass. We conducted bottom trawls using a 3.05 m plumb staff beam trawl with 4 mm mesh at the cod end which was towed for 5 to 10 minutes in the direction of the water current at approximately 1.5 kts. We identified samples to the lowest practical taxonomic level, counted them, measured total lengths of a sample of fishes (to the nearest mm) and preserved some specimens for later use.

Mid-water tows utilized a 6 m modified herring trawl (with a PVC collecting bucket containing 1 mm mesh at the end), towed for about 10 to 20 minutes at 2-3 kts speed through the water. A depth sounder attached to the foot rope of the mid-water trawl was intended to give real-time feedback on fishing depth. Unfortunately, this system failed to work during the 2005 Pribilofs cruise. As a result, mid-water trawl depth was estimated based on the length and angle of wire deployed. We identified mid-water trawl collections to the lowest practical taxonomic level, counted invertebrates and fishes, and measured total length of fishes to the nearest mm (a subsample only).

To evaluate surface zooplankton we towed a neuston net (0.3 m by 0.5 m mouth opening; 505 micron mesh size) for about 10 min at 2-3 kts. We sampled zooplankton in the upper water column with a paired 60 cm diameter bongo trawl with 505 micron mesh. This net was deployed vertically while the vessel drifted, and it collected zooplankton while being retrieved from a depth of 50 m to the surface. Plankton from the neuston and vertical nets was preserved for later identification. After removing the noticeably larger or less common animals in the sample (100% split), the remaining sample was split using a Folsom splitter to achieve a target of at least 100 individuals per haul. We probably underestimated abundance of some of the zooplankton species, since the larger animals (e.g., shrimps, euphausiids) swim strongly enough that they are not expected to be caught quantitatively with the gear we used (Pers. Comm., Brenda Holladay, Institute of Marine Science/University of Alaska Fairbanks).

Long-line Sets.—For each long-line set, we deployed a single skate of about 100 hooks (sizes 3.0 and 5.0) baited with salted herring and soaked for about 2-3 hours. We identified fishes to species, measured them to the nearest mm (total length), weighed them, and removed stomachs of Pacific halibut, Pacific cod and yellow Irish lord for diet analysis.

Oceanography

Water Column Temperature and Salinity Profile.—We deployed a portable CTD (Sea-Bird Seacat SBE-19 Profiler) approximately every 10 nautical miles (18.5 km) along three transect lines (03, 05 and 07, Fig. 2), at the beginning and end of each transect and at the end of each fishing event. In this way we obtained a vertical record of temperature and salinity from the surface to near the bottom in shallower waters and up to approximately 300 m in deep water. We used Ocean Data View[®] (Schlitzer 2004) to produce water column temperature and salinity profiles (using the VG gridding algorithm).

Sea Surface Temperature and Salinity.—The thermosalinograph did not work during this cruise and therefore no sea surface temperature and salinity data were gathered.

Results

Bird and Marine Mammal Observations

In 2005, we counted a total of 23,026 birds on 10 transects that covered approximately 791 linear km of surveys (Table 2, Fig. 2). This translated into an average density of approximately 101 birds/km² over an area of some 228 km². We also counted 10,268 birds during a circumnavigation of St. George Island, approximately 1 nm (1.85 km) offshore (Fig. 2). Bird density observed during circumnavigation was about 538 birds/km² (Table 3).

Procellariids.—Most Laysan albatrosses were observed over the shelf break, slope and Pribilof Canyon areas (Fig. 3). The single black-footed albatross was on the shelf. Northern fulmars were distributed throughout the study area, with highest numbers seen near St. George Island and along Transect 8 over the outer shelf (Fig. 4). Shearwaters and fork-tailed storm-petrels also were found over the entire study area but occurred in higher numbers over the outer shelf, shelf break and oceanic domains (Figs. 5 & 6).

Cormorants.—The few red-faced cormorants we observed were seen during the circumnavigation of St. George Island (Table 3).

Shorebirds.—Nearly all phalaropes were seen in the relatively shallow water of the middle shelf domain and near the islands (Fig. 7).

Gulls and Kittiwakes.—Glaucous-winged gulls were seen throughout the survey area but were most numerous over the shelf (Fig. 8). Higher numbers of kittiwakes also were observed in shallower shelf waters, primarily in the outer shelf domain and near the islands (Fig. 9).

Murres—Murres were distributed throughout the study area but highest numbers were observed on the shelf, particularly near St. George Island (Fig. 10).

Murrelets and Auklets.—We observed ancient murrelets in both shelf and oceanic domains (Fig. 11), whereas auklets were mostly seen in the middle shelf domain, especially near St. George Island (Fig. 12).

Puffins.—Both horned and tufted puffins were most numerous on the middle and outer shelf but also were observed in the oceanic domain (Fig. 13).

Marine Mammals.—Dall's porpoises and northern fur seals were the most commonly seen marine mammals during surveys (Tables 2 and 3). Porpoises were observed only over the deeper waters of the shelf break and Pribilof Canyon area whereas seals were more evenly distributed (Fig. 14). Fin and humpback whales also were seen, mainly in the middle and outer shelf domains.

Hydroacoustic Surveys

In general, acoustic biomass was greatest near the islands and elsewhere over the shelf, and lower over the shelf break, slope and oceanic domain (Fig. 15).

Fishing

Bottom and Mid-water Trawls.—We conducted eight bottom trawls in 2005 (Table 4, Fig. 16). The most numerous fish caught was the northern sculpin (Table 5). One specimen of this species was the largest (at 114 mm total length) ever recorded (Table 6, Appendix A, Mecklenburg et al. 2002). Invertebrates were dominated by large numbers of Pandalid shrimp and Alaskan glass scallop captured during bottom trawls 1 and 2, respectively (Table 7).

We conducted six mid-water trawls in 2005 (Table 4, Fig. 16). Walleye pollock (mostly age 0) were by far the most numerous fish caught, followed by flathead sole (Table 8). Mean total lengths of fishes captured during mid-water trawls are presented in Table 9. Invertebrates were dominated by euphausiids and pteropods (Table 10). Brittle stars and other benthic organisms were captured when one mid-water trawl (MW-5) briefly touched the bottom (Table 10).

Long-line Sets.—We set the long-line gear three times in 2005 (Table 4, Fig. 16). Pacific cod and yellow Irish lord were the most numerous fishes caught (Table 11). Total lengths and weights of long-line caught fishes are presented in Table 12. A new size record (775 mm total length) was set by the great sculpin we captured in long-line set 3 (Table 12, Appendix A). No particular prey type dominated the diet of Pacific halibut (Table 13, Fig. 17). Walleye pollock was the largest component by weight in the stomachs of Pacific cod (Table 14, Fig. 18), whereas crabs dominated in yellow Irish lord diets (Table 15, Fig. 19).

Plankton Tows.—We conducted two neuston (surface) plankton tows and two vertical plankton tows in 2005 (Table 4, Fig. 16). Copepods were abundant in both neuston and vertical tows, along with pteropods (especially in surface tows) and arrowworms (Table 16).

Oceanography

Water Column Profile.—We conducted 38 CTD casts in 2005, most of which were at stations along CTD lines and which were used to generate water column profiles (Table 17, Fig. 20), and all of which indicated a highly stratified water column (Figs. 21 and 22). Profiles from Transects 3, 5 and 7 (Fig. 21) showed a fresher signal from the shelf waters and intrusion of colder, more saline waters at the shelf break, indicating a front between the outer shelf and oceanic domains. Profiles from both the northeast and northwest lines (Fig. 22 top and middle) indicate an upwelling of cooler, more saline oceanic domain water near St. George Island.

Discussion

The study area for our 2005 Pribilof Island SMMOCI cruise was similar to that surveyed by us in 1997 except that in 2005, due to time constraints, we concentrated our efforts mainly on the transects south of St. George Island, and added a circumnavigation survey of St. George Island itself. The overall density of seabirds encountered on linear transects in 2005 was nearly twice what we observed in 1997 (Table 18).

Similar to 1997 (Dragoo and Byrd 1998), northern fulmars, murrelets, fork-tailed storm-petrels and kittiwakes were the most numerous birds seen on surveys in 2005. Red-faced cormorants were seen only during the circumnavigation of St. George Island, highlighting the nearshore distribution of this species. We counted a few glaucous-winged gulls in 2005, whereas none were seen during the 1997 surveys. As in 1997, fin whales, Dall's porpoises and northern fur seals were the most numerous marine mammals observed.

Sculpins were the most numerous fishes caught in bottom trawls in both 1997 and 2005. Walleye pollock dominated the fish component of the mid-water trawl catch in both years, although numbers were lower in 2005. This may be due, in part, to the fact that we were “fishing blind” (without the trawl depth sounder system) in 2005 and so were not able to as accurately target strong acoustic sign as during the 1997 cruise. Similar numbers of Pacific cod, yellow Irish lord and Pacific halibut were caught on long-line gear in both surveys, even though we set the gear fewer times in 2005.

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I would like to thank all of the people who helped gather data during the 2005 Pribilof Island SMMOCI cruise. Their perseverance, professionalism and good cheer were much appreciated. Brenda Holladay (University of Alaska Fairbanks) identified the zooplankton samples. Invertebrate identifications of bottom and mid-water trawl catches were provided by T. Anthony Mecklenburg and Catherine W. (Kitty) Mecklenburg. Mei-Sun Yang (NOAA, NMFS) analyzed fish stomach samples. Bird, marine mammal and acoustic data were summarized and analyzed by Martin Renner. The cover photo was taken by Karen Sullivan. Yumi Arimitsu, Vernon Byrd, Brenda Holladay and Kitty Mecklenburg reviewed drafts of this report. I appreciate their thoughtful comments. I would also like to thank the staff of Alaska Maritime

National Wildlife Refuge for their help and support. Finally, I would like to express my sincere thanks to the captain and crew of *M/V Tiġlaġ* without whose enthusiasm, professionalism and patience this work would not have been possible.

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Table 1. Locations, dates and times of surveys used for bird and marine mammal observations, and hydroacoustics surveys near the Pribilof Islands, Alaska, July 2005.

Transect	Start Latitude (°N)	Start Longitude (°W)	Stop Latitude (°N)	Stop Longitude (°W)	Date	Start Time ^a	Stop Time ^a
1	55.6105°	169.1707°	55.9217°	168.9497°	7/22	20:29	22:29 ^b
2	56.4677°	168.8771°	55.6630°	169.4542°	7/22	12:55	18:42
3	55.7154°	169.7276°	56.5231°	169.1656°	7/21	16:07	22:28
4	56.5814°	169.4441°	55.7708°	170.0162°	7/21	08:33	13:49
5S ^c	55.8192°	170.2942°	56.3495°	169.9058°	7/23	17:26	23:00
5N ^c	56.3418°	169.9128°	56.5712°	169.7430°	7/25	08:42	10:11
6	56.6835°	170.0162°	55.8787°	170.5731°	7/23	10:19	15:30
7	55.9341°	170.8617°	56.7389°	170.3048°	7/24	08:16	14:55
8	56.7943°	170.5883°	55.9895°	171.1402°	7/24	17:12	20:35
16	56.6372°	169.7378°	57.1854°	170.1041°	7/26	08:39	12:13
Q	56.6158°	169.4522°	56.4672°	168.8802°	7/22	10:30	12:39
Circ. ^d	56.5543°	169.7002°	56.5582°	169.6977°	7/25	10:57	14:15

^aAll times are Alaska Daylight (Universal Coordinated Time minus 8 hours).

^bHalted due to low light conditions.

^cTransect was done in two parts: southern part on 7/23 and northern portion on 7/25.

^dCircumnavigation of St. George Island.

Table 2. Species composition and numbers of seabirds and marine mammals observed on 10 linear transects^a near the Pribilof Islands, Alaska, July 2005.

Species	Scientific Name	No. Observed	Density ^b	% Total
All bird species total		23,026	100.85	100
Laysan albatross	<i>Phoebastria immutabilis</i>	38	0.17	0.2
Black-footed albatross	<i>Phoebastria nigripes</i>	1	<0.01	<0.1
Northern fulmar	<i>Fulmarus glacialis</i>	9362	41.00	40.7
Sooty shearwater	<i>Puffinus griseus</i>	4	0.02	<0.1
Short-tailed shearwater	<i>Puffinus tenuirostris</i>	317	1.39	1.4
Unidentified shearwater	<i>Puffinus</i> spp.	29	0.13	0.1
Fork-tailed storm-petrel	<i>Oceanodroma furcata</i>	3959	17.34	17.2
Leach's storm-petrel	<i>Oceanodroma leucorhoa</i>	6	0.03	<0.1
Ruddy turnstone	<i>Arenaria interpres</i>	5	0.02	<0.1
Red-necked phalarope	<i>Phalaropus lobatus</i>	7	0.03	<0.1
Red phalarope	<i>Phalaropus fulicarius</i>	124	0.54	0.5
Unidentified phalarope	<i>Phalaropus</i> spp.	1	<0.01	<0.1
Herring gull	<i>Larus argentatus</i>	1	<0.01	<0.1
Glaucous-winged gull	<i>Larus glaucescens</i>	47	0.21	0.2
Black-legged kittiwake	<i>Rissa tridactyla</i>	917	4.02	4.0
Red-legged kittiwake	<i>Rissa brevirostris</i>	1165	5.10	5.1
Unidentified kittiwake	<i>Rissa</i> spp.	296	1.30	1.3
Common murre	<i>Uria aalge</i>	1013	4.44	4.4
Thick-billed murre	<i>Uria lomvia</i>	2674	11.71	11.6
Unidentified murre	<i>Uria</i> spp.	1958	8.58	8.5
Ancient murrelet	<i>Sinthliboramphus antiquus</i>	166	0.73	0.7
Cassin's auklet	<i>Ptychoramphus aleuticus</i>	1	<0.01	<0.1
Parakeet auklet	<i>Aethia psittacula</i>	118	0.52	0.5
Least auklet	<i>Aethia pusilla</i>	196	0.86	0.9
Crested auklet	<i>Aethia cristatella</i>	11	0.05	<0.1
Unidentified auklet	<i>Aethia/Ptychoramphus</i> spp.	5	0.02	<0.1
Unidentified Small Dark Alcid	Alcidae	46	0.20	0.2
Horned puffin	<i>Fratercula corniculata</i>	207	0.91	0.9
Tufted puffin	<i>Fratercula cirrhata</i>	352	1.54	1.5
Fin whale	<i>Balaenoptera physalus</i>	14	0.06	12.3
Humpback whale	<i>Megaptera novaeangliae</i>	1	<0.01	0.9
Dall's porpoise	<i>Phocoenides dalli</i>	42	0.18	36.8
Northern fur seal	<i>Callorhinus ursinus</i>	57	0.25	50.0

^aNot including the circumnavigation of St. George Island (See Table 3).

^bIndividuals/km². A total of 228.3 km² was surveyed.

Table 3. Species composition and numbers of seabirds and marine mammals observed during circumnavigation of St. George Island, Alaska, July 2005.

Species	Scientific Name	No. Observed	Density ^b	% Total
All bird species total		10,268	538.26	100.0
Northern fulmar	<i>Fulmarus glacialis</i>	2480	130.01	24.2
Short-tailed shearwater	<i>Puffinus tenuirostris</i>	6	0.32	0.1
Red-faced cormorant	<i>Phalacrocorax urile</i>	15	0.77	0.1
Red phalarope	<i>Phalaropus fulicarius</i>	296	15.52	2.9
Glaucous-winged gull	<i>Larus glaucescens</i>	14	0.73	0.1
Black-legged kittiwake	<i>Rissa tridactyla</i>	107	5.61	1.0
Red-legged kittiwake	<i>Rissa brevirostris</i>	172	9.02	1.7
Unidentified kittiwake	<i>Rissa</i> spp.	1	0.05	<0.1
Common murre	<i>Uria aalge</i>	691	36.22	6.7
Thick-billed murre	<i>Uria lomvia</i>	1161	60.86	11.3
Unidentified murre	<i>Uria</i> spp.	3691	193.49	35.9
Ancient murrelet	<i>Sinthliboramphus antiquus</i>	1	0.05	<0.1
Parakeet auklet	<i>Aethia psittacula</i>	615	32.24	6.0
Least auklet	<i>Aethia pusilla</i>	648	33.97	6.3
Crested auklet	<i>Aethia cristatella</i>	3	0.16	<0.1
Unidentified Small Dark Alcid	<i>Alcidae</i>	6	0.32	0.1
Rhinoceros auklet	<i>Cerorhinca monocerata</i>	1	0.05	<0.1
Horned puffin	<i>Fratercula corniculata</i>	94	4.93	0.9
Tufted puffin	<i>Fratercula cirrhata</i>	266	13.94	2.6
Northern fur seal	<i>Callorhinus ursinus</i>	11	0.58	100.0

^aIndividuals/km². A total of 19.1 km² was surveyed.

Table 4. Locations (decimal degrees), times ^a and depths of fishing efforts near the Pribilof Islands, Alaska, July 2005.

Tow ^b	Date	Start Latitude (N)	Start Longitude (W)	Time	Maximum Depth (m)
MW-1	7/22	56.5960°	169.3987°	01:27	30 ^c
MW-2	7/23	56.2849°	169.1345°	01:27	40 ^c
MW-3	7/23	56.6888°	170.0352°	07:57	20 ^c
MW-4	7/23	56.1087°	170.0997°	20:14	>90 ^c
MW-5	7/24	56.7411°	170.3089°	15:20	100 ^c
MW-6	7/25	56.4956°	169.7072°	17:17	81 ^c
BT-1	7/21	56.6448°	169.7338°	04:29	80
BT-2	7/23	56.3060°	169.1302°	03:05	143
BT-3	7/24	56.4132°	169.8515°	00:12	95
BT-4	7/24	56.5653°	169.7374°	01:43	51
BT-5	7/25	56.1070°	170.0836°	05:30	124
BT-6	7/25	56.2708°	169.9491°	07:40	112
BT-7	7/25	56.5309°	169.4717°	19:58	75
BT-8	7/26	56.5582°	169.5067°	21:03	24
LL-1	7/22	56.6338°	169.5017°	07:35	63
LL-2	7/23	56.6828°	170.0120°	07:30	92
LL-3	7/25	56.5210°	169.7210°	10:32	79
NU-1	7/23	55.8770°	170.5754°	15:34	3
NU-2	7/26	56.6370°	169.7455°	08:05	3
VT-1	7/23	55.8770°	170.5754°	15:34	50
VT-2	7/26	56.6370°	169.7455°	08:05	50

^aAll times are Alaska Daylight (Universal Coordinated Time minus 8 hours).

^bMW = Mid-water trawl, BT = Bottom trawl, LL = Long-line set, NU = Neuston tow, VT = Vertical bongo net tow.

^cMid-water trawl net depth sounder not working. Depths are approximate.

Table 5. Count of fishes caught by bottom trawls near the Pribilof Islands, Alaska, July 2005^a.

Scientific Name	Common Name	BT-1	BT-2	BT-3	BT-4	BT-5	BT-6	BT-7	Species
									Total
<i>Aspidophoroides monopterygius</i>	Alligatorfish	1	--	--	--	--	--	--	1
<i>Atheresthes stomias</i>	Arrowtooth flounder	--	--	1	--	--	--	--	1
<i>Bathyagonus alascanus</i>	Gray starsnout	--	1	--	--	1	1	--	3
<i>Bathymaster signatus</i>	Searcher	3	--	--	--	--	--	--	3
<i>Bryozoichthys lysimus</i>	Nutcracker prickleback	--	--	--	--	--	--	1	1
<i>Dasycottus setiger</i>	Spineyhead sculpin	--	--	--	--	--	2	--	2
<i>Gadus macrocephalus</i>	Pacific cod	--	--	--	9	--	--	--	9
<i>Gymocanthus galeatus</i>	Armorhead sculpin	1	--	--	--	--	--	--	1
<i>Hemilepidotus jordani</i>	Yellow Irish lord	11	--	--	--	--	--	1	12
<i>Hippoglossoides elassodon</i>	Flathead sole	--	--	1	--	--	--	--	1
<i>Hippoglossoides robustus</i>	Bering flounder	--	--	--	--	1	--	--	1
<i>Hippoglossus stenolepis</i>	Pacific halibut	--	--	--	6	2	--	--	8
<i>Hypsagonus quadricornis</i>	Fourhorn poacher	2	--	--	--	--	--	--	2
<i>Icelinus borealis</i>	Northern sculpin	70	6	--	1	--	--	3	80
<i>Lepidopsetta polyxstra</i>	Northern rock sole	2	--	--	7	--	--	--	9
<i>Liparis</i> spp.	Snailfish, unid.	2	--	--	--	1	--	--	3
<i>Lycodes palearis</i>	Wattled eelpout	--	--	--	--	--	1	--	1
<i>Nautichthys pribilovius</i>	Sailfin sculpin	1	--	--	--	--	--	--	1
<i>Sarritor frenatus</i>	Sawback poacher	--	--	--	--	1	--	--	1
<i>Sebastes</i> sp.	Unidentified rockfish	1	--	--	--	--	--	--	1
<i>Theragra chalcogramma</i>	Walleye pollock	--	--	--	--	--	--	2	2
<i>Triglops forficatus</i>	Scissor tail sculpin	5	--	--	--	--	--	--	5
<i>Triglops macellus</i>	Roughspine sculpin	--	--	--	2	--	--	--	2
<i>Triglops pingelii</i>	Ribbed sculpin	--	--	--	2	--	--	--	2
	Trawl Total	99	7	2	27	6	4	7	152

^aNo fishes were caught during bottom trawl #8.

Table 6. Total lengths (mm) of fishes caught by bottom trawls near the Pribilof Islands, Alaska, July 2005.

Species	Mean	SD ^a	Range	n ^a
Alligatorfish	121.0	--	--	1
Armorhead sculpin	296.0	--	--	1
Arrowtooth flounder	304.0	--	--	1
Bering flounder	113.0	--	--	1
Flathead sole	140.0	--	--	1
Fourhorn poacher	46.0	0.0	--	2
Gray starsnout	80.3	35.2	59-121	3
Northern rock sole	276.2	93.7	95-401	9
Northern sculpin	62.6	14.6	37-114	70
Nutcracker prickleback	123.0	--	--	1
Pacific cod	63.1	5.1	59-74	9
Pacific halibut	39.0	4.7	34-48	8
Ribbed sculpin	69.5	0.7	69-70	2
Roughspine sculpin	61.0	1.4	60-62	2
Sailfin sculpin	58.0	--	--	1
Sawback poacher	76.0	--	--	1
Scissortail sculpin	152.8	10.3	136-161	5
Searcher	127.3	24.2	105-153	3
Spinyhead sculpin	50.0	35.4	25-75	2
Walleye pollock	43.5	10.6	36-51	2
Wattled eelpout	205.0	--	--	1
Yellow Irish lord	266.9	156.8	36-441	12

^aSD = Standard deviation, n = Sample size.

Table 7. Counts of invertebrates caught by bottom trawls near the Pribilof Islands, Alaska, July 2005. Asterisks (*) indicate species that were present but not quantified.

Invertebrate Group	Scientific Name	Common Name	BT-1	BT-2	BT-3	BT-4	BT-5
Amphipod		Amphipod, unid.	--	12	--	--	--
Anemone	<i>Epiactis</i> sp.		--	--	18	1	3
Anemone	<i>Metridium</i> sp.		43	--	--	--	--
Anemone	<i>Urticina crassicornis</i>	Christmas anemone	--	--	--	--	1
Anemone		Anemone, unid	--	--	--	--	--
Barnacle	<i>Balanus evermanni</i>	Giant barnacle	--	--	--	--	--
Barnacle		Barnacle, unid	--	--	15	--	--
Basket star		Basket star, unid.	--	--	--	--	2
Bivalve		Mussel, unid.	--	--	--	--	--
Bivalve		Scallop, unid.	--	--	13	--	2
Bivalve	<i>Chlamys pseudoislandica</i>	Arctic pink scallop	--	--	--	--	--
Bivalve	<i>Chlamys rubida</i>	Hinds' scallop	--	--	--	--	--
Bivalve	<i>Chlamys</i> sp.		2	--	--	--	--
Bivalve	<i>Hiatella arctica</i>	Arctic nestler	--	--	--	--	--
Bivalve	<i>Pododesmus macroschisma</i>	Rock jingle	--	--	--	--	--
Bivalve	<i>Propaemussium alaskense</i>	Alaskan glass scallop	--	905	--	--	--
Bivalve	<i>Serripes groenlandicus</i>	Greenland cockle	--	--	--	--	--
Brittle star	<i>Ophiopholis aculeatus</i>	Ubiquitous brittle star	--	--	--	--	--
Brittle star	<i>Ophiura sarsi</i>	Notched brittle star	--	--	--	1	--
Brittle star		Brittle star, unid.	1	--	--	81	1
Bryzoan	<i>Disporella alaskensis</i>	Prickly sea mat	--	--	--	1	--
Bryzoan	<i>Escharopsis sarsi</i>	Crusty bryozoan	--	--	--	--	--
Bryzoan	<i>Eucratea loricata</i>	Bushy bryozoan	--	--	--	--	--
Bryzoan	<i>Heteropora alaskensis</i>	Alaskan staghorn bryozoan	--	--	--	--	--
Bryzoan	<i>Heteropora magna</i>	Northern staghorn bryozoan	--	--	--	--	--
Bryzoan		Bryozoa, unid.	*	*	--	--	--

Table 7. Counts of invertebrates caught by bottom trawls near the Pribilof Islands, Alaska, July 2005 (continued). Asterisks (*) indicate species that were present but not quantified.

Invertebrate Group	Scientific Name	Common Name	BT-1	BT-2	BT-3	BT-4	BT-5
Chaetognath		Arrow worm, unid.	--	--	--	--	--
Crab		Crab, unid.	1	--	--	--	--
Crab	<i>Cancer oregonensis</i>	Pygmy rock crab	3	--	--	--	--
Crab	<i>Chionoecetes bairdi</i>	Tanner crab	--	5	12	1	29
Crab	<i>Chionoecetes opilio</i>	Snow crab	--	--	2	--	--
Crab	<i>Hyas lyratus</i>	Lyre crab	1	--	--	1	--
Crab	<i>Oregonia gracilis</i>	Graceful decorator crab	6	--	--	1	--
Crab	<i>Telmessus cheiragonus</i>	Helmet crab	--	--	--	4	--
Crab		Crab, Unid.	1	--	--	--	--
Euphausiid		Euphausiid, unid.	--	--	--	--	6
Gastropod	<i>Cholus</i> sp.		--	--	--	--	--
Gastropod	<i>Fusitriton oregonensis</i>	Hairy triton	4	--	--	--	--
Gastropod	<i>Gastropteron pacificum</i>	Pacific wingfoot snail	--	--	--	1	--
Gastropod	<i>Natica clausa</i>	Arctic moon snail	--	--	--	--	--
Gastropod	<i>Neptunea lyrata</i>	Ribbed neptune	--	--	3	--	--
Gastropod	<i>Pyrulofusus deformis</i>	Smooth sinistral snail	--	--	--	--	--
Gastropod	<i>Pyrulofusus melonis</i>	Large melon snail	--	1	--	--	--
Gastropod	<i>Solariella varicosa</i>	Varicose solarelle	--	--	--	--	1
Gastropod	<i>Velutina prolongata</i>	Smooth velvet snail	--	--	--	--	--
Gastropod		Snail, unid.	--	--	--	--	--
Hermit Crab	<i>Elassochirus gilli</i>	Pacific red hermit	--	--	--	2	--
Hermit Crab	<i>Labidochirus spendescens</i>	Splendid hermit	--	4	--	--	7
Hermit Crab	<i>Pagurus aleuticus</i>	Aleutian hermit crab	--	--	--	--	4
Hermit Crab	<i>Pagurus armatus</i>	Blackeyed hermit	--	--	--	--	1
Hermit Crab	<i>Pagurus confragosus</i>	Knobbyhand hermit	--	--	--	--	--
Hermit Crab	<i>Pagurus kennerlyi</i>	Bluespine hermit	--	--	--	--	--

Table 7. Counts of invertebrates caught by bottom trawls near the Pribilof Islands, Alaska, July 2005 (continued). Asterisks (*) indicate species that were present but not quantified.

Invertebrate Group	Scientific Name	Common Name	BT-1	BT-2	BT-3	BT-4	BT-5
Hermit Crab	<i>Pagurus</i> spp.	Pagurid hermit crab	2	1	12	--	--
Hermit Crab	<i>Pagurus tanneri</i>	Longhand hermit	--	--	--	--	1
Hydroid	<i>Plumularia</i> sp.	Sea pen, unid.	--	--	--	--	9
Hydroid	<i>Sertularella tricuspidata</i>		--	--	--	--	--
Jellyfish	<i>Chrysaora</i> sp.		--	--	--	--	--
Jellyfish		Jellyfish, unid.	--	--	*	37	--
Nudibranch	<i>Archidoris odhneri</i>	White knight doris	2	--	--	--	--
Nudibranch	<i>Dendronotus dalli</i>	Dall's frond-aeolis	--	--	--	--	--
Nudibranch	<i>Flabellina trophina</i>	Red-gilled aeolid	--	--	--	1	--
Nudibranch	<i>Triopha catalinae</i>	Sea-clown triopha	--	--	--	--	--
Polychaete		Serpulid worm, unid.	--	--	--	--	1
Polychaete		Tube worm, unid.	--	8	--	--	*
Polychaete	<i>Arctonoe vittata</i>	Red-banded commensal scale worm	2	--	--	3	--
Polychaete	<i>Serpula vermicularis</i>	Red tube worm	--	--	--	--	--
Polychaete	<i>Serpula vermicularis</i>	Red tube worm	--	1	--	--	--
Polychaete		Scale worm, unid.	2	--	--	--	--
Sand dollar	<i>Echninarachnius parma</i>	Greenspined sand dollar	--	--	2	--	--
Scaphopod	<i>Rhabdus rectius</i>	Western straight tuskshell	--	--	1	--	--
Scaphopod		Tuskshell, unid.	--	--	--	--	--
Sea cucumber	<i>Cucumaria falax</i>	Sea football	131	--	--	--	--
Sea cucumber		Cucumber, unid.	--	--	--	--	--
Sea star	<i>Asterias amurensis</i>	North Pacific sea star	--	--	--	13	--
Sea star	<i>Ctenodiscus crispatus</i>	Mud sea star	--	--	--	--	1
Sea star	<i>Diplopteraster multipes</i>	Pincushion sea star	1	--	--	--	--
Sea star	<i>Evasterias echinosoma</i>		--	--	--	2	--
Sea star	<i>Evasterius</i> sp.		1	--	--	--	--

Table 7. Counts of invertebrates caught by bottom trawls near the Pribilof Islands, Alaska, July 2005 (continued). Asterisks (*) indicate species that were present but not quantified.

Invertebrate Group	Scientific Name	Common Name	BT-1	BT-2	BT-3	BT-4	BT-5
Sea star	<i>Henricia leviuscula</i>	Blood sea star	--	--	--	--	--
Sea star	<i>Leptasterias groenlandica</i>	Greenland sea star	--	--	--	17	--
Sea star	<i>Pteraster tessellatus</i>	Cushion star	--	--	--	--	--
Sea urchin	<i>Strongylocentrotus droebachiensis</i>	Green sea urchin	68	6	1	2	1
Sea urchin	<i>Strongylocentrotus purpuratus</i>	Purple sea urchin	1	--	--	--	--
Shrimp	<i>Argis dentata</i>	Arctic argid	--	--	--	2	--
Shrimp	<i>Argis lar</i>	Kuro shrimp	--	--	--	--	2
Shrimp	<i>Crangon communis</i>	Twospine crangon	--	93	--	--	--
Shrimp	<i>Crangon septemspinosus</i>	Sand shrimp	--	--	--	1	--
Shrimp	<i>Crangon</i> spp.	Crangonid shrimp, unid.	--	--	41	--	68
Shrimp	<i>Eualus macilentus</i>	Greenland shrimp	--	--	1	--	--
Shrimp	<i>Eualus suckleyi</i>	Shortscale eualid	--	--	--	--	--
Shrimp	<i>Lebbeus grandimanus</i>	Candy-striped shrimp	--	--	--	--	--
Shrimp	<i>Lebbeus groenlandicus</i>	Spiny lebbeid	--	--	--	--	--
Shrimp	<i>Pandalus borealis</i>	Northern shrimp	--	27	--	--	8
Shrimp	<i>Pandalus hypsinotus</i>	Coonstriped shrimp	--	--	--	--	--
Shrimp	<i>Pandalus</i> spp.	Pandalid shrimp	1207	--	--	--	--
Shrimp	<i>Pandalus stenolepis</i>	Roughpatch shrimp	--	1	--	--	--
Sipuncula	<i>Phascolosoma cf. agassizii</i>	Peanut worm	--	--	--	--	--
Sponge	<i>Halichondria panicea</i>	Bread crumb sponge	--	--	--	--	--
Sponge	<i>Suberites ficus</i>	Hermit sponge	--	--	--	--	--
Sponge		Sponge, unid.	--	--	--	--	--
Tunicate		Tunicate, unid.	--	--	--	--	--
Worm		Worm, unid.	1	--	--	--	--
Trawl Total			1480	1064	121	172	148

Table 7. Counts of invertebrates caught by bottom trawls near the Pribilof Islands, Alaska, July 2005 (continued). Asterisks (*) indicate species that were present but not quantified.

Invertebrate Group	Scientific Name	Common Name	BT-6	BT-7	BT-8	Species Total
Amphipod		Amphipod, unid.	--	--	--	12
Anemone	<i>Epiactis</i> sp.		32	--	--	54
Anemone	<i>Metridium</i> sp.		--	--	--	43
Anemone	<i>Urticina crassicornis</i>	Christmas anemone	--	--	1	2
Anemone		Anemone, unid	--	2	2	4
Barnacle	<i>Balanus evermanni</i>	Giant barnacle	--	--	9	9
Barnacle		Barnacle, unid	--	--	--	15
Basket star		Basket star, unid.	--	1	--	3
Bivalve		Mussel, unid.	--	--	71	71
Bivalve		Scallop, unid.	--	--	--	15
Bivalve	<i>Chlamys pseudoislandica</i>	Arctic pink scallop	--	--	2	2
Bivalve	<i>Chlamys rubida</i>	Hinds' scallop	--	25	--	25
Bivalve	<i>Chlamys</i> sp.		--	--	--	2
Bivalve	<i>Hiatella arctica</i>	Arctic nestler	--	--	7	7
Bivalve	<i>Pododesmus macroschisma</i>	Rock jingle	--	--	72	72
Bivalve	<i>Propaemussium alaskense</i>	Alaskan glass scallop	--	--	--	905
Bivalve	<i>Serripes groenlandicus</i>	Greenland cockle	2	--	--	2
Brittle star	<i>Ophiopholis aculeatus</i>	Ubiquitous brittle star	--	--	55	55
Brittle star	<i>Ophiura sarsi</i>	Notched brittle star	--	--	--	1
Brittle star		Brittle star, unid.	--	--	--	83
Bryozoan	<i>Disporella alaskensis</i>	Prickly sea mat	--	--	--	1
Bryozoan	<i>Escharopsis sarsi</i>	Crusty bryozoan	--	*	--	*
Bryozoan	<i>Eucratea loricata</i>	Bushy bryozoan	--	*	--	*
Bryozoan	<i>Heteropora alaskensis</i>	Alaskan staghorn bryozoan	--	--	*	*
Bryozoan	<i>Heteropora magna</i>	Northern staghorn bryozoan	--	*	--	*
Bryozoan		Bryozoa, unid.	--	--	*	*

Table 7. Counts of invertebrates caught by bottom trawls near the Pribilof Islands, Alaska, July 2005 (continued). Asterisks (*) indicate species that were present but not quantified.

Invertebrate Group	Scientific Name	Common Name	BT-6	BT-7	BT-8	Species Total
Chaetognath		Arrow worm, unid.	--	--	1	1
Crab		Crab, unid.	--	--	--	1
Crab	<i>Cancer oregonensis</i>	Pygmy rock crab	--	--	13	16
Crab	<i>Chionoecetes bairdi</i>	Tanner crab	3	--	--	50
Crab	<i>Chionoecetes opilio</i>	Snow crab	--	--	--	2
Crab	<i>Hyas lyratus</i>	Lyre crab	--	--	--	2
Crab	<i>Oregonia gracilis</i>	Graceful decorator crab	--	2	22	31
Crab	<i>Telmessus cheiragonus</i>	Helmet crab	--	--	--	4
Crab		Crab, Unid.	--	--	--	1
Euphausiid		Euphausiid, unid.	--	--	--	6
Gastropod	<i>Cholus</i> sp.		3	--	--	3
Gastropod	<i>Fusitriton oregonensis</i>	Hairy triton	--	--	22	26
Gastropod	<i>Gastropteron pacificum</i>	Pacific wingfoot snail	--	--	--	1
Gastropod	<i>Natica clausa</i>	Arctic moon snail	1	--	--	1
Gastropod	<i>Neptunea lyrata</i>	Ribbed neptune	1	--	--	4
Gastropod	<i>Pyrulofusus deformis</i>	Smooth sinistral snail	1	--	--	1
Gastropod	<i>Pyrulofusus melonis</i>	Large melon snail	--	--	--	1
Gastropod	<i>Solariella varicosa</i>	Varicose solarelle	--	--	--	1
Gastropod	<i>Velutina prolongata</i>	Smooth velvet snail	--	--	1	1
Gastropod		Snail, unid.	2	--	--	2
Hermit Crab	<i>Elassochirus gilli</i>	Pacific red hermit	--	--	8	10
Hermit Crab	<i>Labidochirus spendescens</i>	Splendid hermit	--	--	--	11
Hermit Crab	<i>Pagurus aleuticus</i>	Aleutian hermit	1	--	--	5
Hermit Crab	<i>Pagurus armatus</i>	Blackeyed hermit	--	--	2	3
Hermit Crab	<i>Pagurus confragosus</i>	Knobbyhand hermit	2	--	--	2
Hermit Crab	<i>Pagurus kennealyi</i>	Bluespine hermit	--	--	2	2

Table 7. Counts of invertebrates caught by bottom trawls near the Pribilof Islands, Alaska, July 2005 (continued). Asterisks (*) indicate species that were present but not quantified.

Invertebrate Group	Scientific Name	Common Name	BT-6	BT-7	BT-8	Species Total
Hermit Crab	<i>Pagurus</i> spp.	Pagurid hermit crab	--	--	--	15
Hermit Crab	<i>Pagurus tanneri</i>	Longhand hermit	--	--	--	1
Hydroid	<i>Plumularis</i> sp.	Sea pen, unid.	--	--	--	9
Hydroid	<i>Sertularella tricuspadata</i>		--	*	--	*
Jellyfish	<i>Chrysaora</i> sp.		--	1	--	1
Jellyfish		Jellyfish, unid.	1	2	--	40
Nudibranch	<i>Archidoris odhneri</i>	White knight dorid	--	--	--	2
Nudibranch	<i>Dendronotus dalli</i>	Dall's frond-aeolis	--	1	--	1
Nudibranch	<i>Flabellina trophina</i>	Red-gilled aeolid	--	--	--	1
Nudibranch	<i>Triopha catalinae</i>	Sea-clown triopha	--	--	1	1
Polychaete		Serpulid worm, unid.	1	--	--	2
Polychaete		Tube worm, unid.	--	--	--	8
Polychaete	<i>Arctonoe vittata</i>	Red-banded commensal scale worm	--	--	--	5
Polychaete	<i>Serpula vermicularis</i>	Red tube worm	--	--	3	3
Polychaete	<i>Serpula vermicularis</i>	Red tube worm	--	--	1	2
Polychaete		Scale worm, unid.	--	--	--	2
Sand dollar	<i>Echninarachnius parma</i>	Greenspined sand dollar	--	--	--	2
Scaphopod	<i>Rhabdus rectius</i>	Western straight tuskshell	--	--	--	1
Scaphopod		Tuskshell, unid.	3	--	--	3
Sea cucumber	<i>Cucumaria falax</i>	Sea football	--	--	17	148
Sea cucumber		Cucumber, unid.	--	3	--	3
Sea star	<i>Asterias amurensis</i>	North Pacific sea star	--	--	--	13
Sea star	<i>Ctenodiscus crispatus</i>	Mud sea star	28	--	--	29
Sea star	<i>Diplopteraster multipes</i>	Pincushion sea star	--	--	--	1
Sea star	<i>Evasterias echinosoma</i>		--	--	--	2
Sea star	<i>Evasterius</i> sp.		--	--	--	1

Table 7. Counts of invertebrates caught by bottom trawls near the Pribilof Islands, Alaska, July 2005 (continued). Asterisks (*) indicate species that were present but not quantified.

Invertebrate Group	Scientific Name	Common Name	BT-6	BT-7	BT-8	Species Total
Sea star	<i>Henricia leviuscula</i>	Blood sea star	--	--	1	1
Sea star	<i>Leptasterias groenlandica</i>	Greenland sea star	--	--	--	17
Sea star	<i>Pteraster tessellatus</i>	Cushion star	--	1	--	1
Sea urchin	<i>Strongylocentrotus droebachiensis</i>	Green sea urchin	--	22	42	142
Sea urchin	<i>Strongylocentrotus purpuratus</i>	Purple sea urchin	--	--	--	1
Shrimp	<i>Argis dentata</i>	Arctic argid	--	--	--	2
Shrimp	<i>Argis lar</i>	Kuro shrimp	1	--	--	3
Shrimp	<i>Crangon communis</i>	Twospine crangon	--	--	--	93
Shrimp	<i>Crangon septemspinosus</i>	Sand shrimp	--	--	--	1
Shrimp	<i>Crangon</i> sp.	Crangonid shrimp, unid.	37	--	--	146
Shrimp	<i>Eualus macilentus</i>	Greenland shrimp	--	--	4	5
Shrimp	<i>Eualus suckleyi</i>	Shortscale eualid	--	12	2	14
Shrimp	<i>Lebbeus grandimanus</i>	Candy-striped shrimp	--	--	1	1
Shrimp	<i>Lebbeus groenlandicus</i>	Spiny lebbeid	--	1	--	1
Shrimp	<i>Pandalus borealis</i>	Northern shrimp	2	--	--	37
Shrimp	<i>Pandalus hypsinotus</i>	Coonstriped shrimp	--	83	--	83
Shrimp	<i>Pandalus</i> spp.	Pandalid shrimp	--	--	--	1207
Shrimp	<i>Pandalus stenolepis</i>	Roughpatch shrimp	--	--	--	1
Sipuncula	<i>Phascolosoma cf. agassizii</i>	Peanut worm	--	--	1	1
Sponge	<i>Halichondria panicea</i>	Bread crumb sponge	--	--	14	14
Sponge	<i>Suberites ficus</i>	Hermit sponge	--	--	1	1
Sponge		Sponge, unid.	--	--	6	6
Tunicate		Tunicate, unid.	--	1	3	4
Worm		Worm, unid.	--	--	--	1
Trawl Total			121	157	387	3650

Table 8. Count of fishes caught by mid-water trawls near the Pribilof Islands, July 2005.

Scientific Name	Common Name	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	Species Total
<i>Atheresthes stomias</i>	Arrowtooth flounder	1	19	2	--	1	1	24
<i>Bathyraja parmifera</i> ^a	Alaska skate	--	--	--	--	1	--	1
<i>Gadus macrocephalus</i>	Pacific cod	8	--	2	2	1	6	19
<i>Hemilepidotus jordani</i>	Yellow Irish lord	1	--	--	--	1	2	4
<i>Hippoglossoides elassodon</i>	Flathead sole	9	12	20	--	29	29	99
<i>Hippoglossoides robustus</i>	Bering flounder	--	--	--	1	--	--	1
<i>Icelinus borealis</i>	Northern sculpin	1	--	--	--	--	--	1
<i>Lycodes brevipes</i> ^a	Shortfin eelpout	--	--	--	--	3	--	3
<i>Dasycottus setiger</i>	Spinyhead sculpin	--	--	1	--	--	--	1
<i>Malacocottus zonurus</i>	Darkfin sculpin	--	--	--	1	--	--	1
<i>Sarrior frenatus</i> ^a	Sawback poacher	--	--	--	--	4	--	4
<i>Theragra chalcogramma</i>	Walleye pollock	107	21	52		70	456	706
<i>Zaprora silenus</i>	Prowfish	--	--	--	--	--	2	2
<i>Myctophidae</i>	Lanternfish larvae, unid.	--	--	--	--	--	1	1
Grand Total		127	52	77	4	110	497	867

^aBenthic species that was collected during a mid-water trawl (5) that fished briefly on the bottom.

Table 9. Total lengths (mm) of fishes caught by mid-water trawls near the Pribilof Islands, Alaska, July 2005.

Species	Mean	SD ^a	Range	n ^a
Arrowtooth flounder	32.3	5.8	26-46	24
Bering flounder	23.0	--	--	1
Darkfin sculpin	13.0	--	--	1
Flathead sole	58.6	66.5	16-439	96
Northern sculpin	22.0	--	--	1
Pacific cod	46.9	4.4	39-55	19
Prowfish	46.0	21.2	31-61	2
Sawback poacher	242.8	12.4	225-253	4
Shortfin eelpout	243.0	27.4	212-264	3
Spinyhead sculpin	29.0	--	--	1
Walleye pollock	42.9	35.8	26-511	233
Yellow Irish lord	28.3	1.5	27-30	4

^aSD = Standard deviation, n = Sample size.

Table 10. Counts of invertebrates caught by mid-water trawls near the Pribilof Islands, July 2005. Asterisks (*) indicate species that were present but not quantified. Note, MW-5 invertebrate catch was dominated by benthic species that were collected while the net fished on the bottom momentarily.

Invertebrate Group	Scientific Name	Common Name	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	Species Total
Amphipod		Amphipod, unid.	--	--	2	--	1	--	3
Anemone	<i>Urticina crassicornis</i>	Christmas anemone	--	--	--	--	1	--	1
Anemone	<i>Metridium</i> sp.		--	--	--	--	1	--	1
Brittle star	<i>Ophiura sarsi</i>	Notched brittle star	--	--	--	--	988	--	988
Chaetognath	<i>Eukrohnia hamata</i>	Arrow worm	--	--	--	1	--	--	1
Copepod	<i>Neocalanus plumchrus</i> and/or <i>flemengeri</i>		--	--	--	27	--	--	27
Crab	<i>Chionoecetes bairdi</i>	Tanner crab	--	--	--	--	27	--	27
Crab	<i>Chionoecetes opilio</i>	Snow crab	--	--	--	--	2	--	2
Crab		Crab, unid. megalops	*	--	--	--	--	--	*
Crab		Brachyuran crab, unid. zoea	--	--	--	6	--	--	6
Ctenophore		Ctenophore, unid.	--	--	--	1	--	--	1
Euphausiid		Euphausiid, unid.	--	3276	--	--	--	--	3276
Gastropod	<i>Limacina</i> sp.	Shelled pteropod, unid.	*	179	1521	--	--	~250	1700
Gastropod		Pteropod, unid.	--	21	--	--	--	--	21
Gastropod	<i>Clione</i> sp.	Naked pteropod, unid.	--	--	3	2	--	--	5
Gastropod	<i>Aforia circinata</i>	Keeled aforia	--	--	--	--	11	--	11
Gastropod	<i>Neptunea lyrata</i>	Lyre Whelk	--	--	--	--	6	--	6
Gastropod	<i>Buccinum scalariforme</i>	Silky buccinum	--	--	--	--	2	--	2
Gastropod	<i>Colus halibrectus</i>	Silky colus	--	--	--	--	1	--	1
Hermit Crab	<i>Pagurus aleuticus</i>	Aleutian hermit	--	--	--	--	17	--	17
Hermit Crab	<i>Pagurus tanneri</i>	Longhand hermit	--	--	--	--	5	--	5
Hermit Crab	<i>Labidochirus splendescens</i>	Splendid hermit	--	--	--	--	6	--	6
Hermit Crab	<i>Pagurus</i> sp.	Hermit crab, unid. megalops	--	--	--	8	--	--	8
Jellyfish	<i>Chrysaora</i> sp.		18	1	--	--	3	39	61
Jellyfish		Jellyfish, unid.	--	--	--	*	--	*	*
Jellyfish/Ctenophore		Jellyfish & ctenophores, unid.	*	--	*	--	--	--	*

Table 10. Counts of invertebrates caught by mid-water trawls near the Pribilof Islands, July 2005 (continued). Asterisks (*) indicate species that were present but not quantified. Note, MW-5 invertebrate catch was dominated by benthic species that were collected while the net fished on the bottom momentarily.

Invertebrate Group	Scientific Name	Common Name	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	Species Total
Shrimp		Shrimp, unid.	--	--	--	1	--	--	1
Shrimp	<i>Crangon</i> sp.	Crangonid shrimp	--	--	--	--	35	--	35
Shrimp	<i>Pandalus borealis</i>	Northern shrimp	--	--	--	--	1	--	1
Shrimp		Shrimp zoea, unid.	--	--	--	1	--	--	1
Squid	<i>Berryteuthis magister</i>	Majestic squid	--	1	--	--	--	--	1
Squid	<i>Rossia pacifica</i>	Bobtail squid	--	--	5	3	3	--	11
Trawl Total			18	3478	1531	50	1110	39	6226

Table 11. Count of fishes caught by long-line near the Pribilof Islands, Alaska, July 2005.

Scientific Name	Common Name	LL-1	LL-2	LL-3	Species Total
<i>Bathyraja parmifera</i>	Alaska skate	--	2 ^a	--	2
<i>Gadus macrocephalus</i>	Pacific cod	5	8	8	21
<i>Hemilepidotus jordani</i>	Yellow Irish lord	23 ^a		10	33
<i>Hippoglossus stenolepis</i>	Pacific halibut	2	2	6	10
<i>Myoxocephalus polyacanthocephalus</i>	Great sculpin	--	--	1 ^a	1
Set Total		7	10	24	67

^aFishes were released without retaining stomachs.

Table 12. Total lengths and weights of fishes caught by long-line near the Pribilof Islands, Alaska, July 2005.

Species	Sex	Length (mm)				Weight (g)			
		Mean	SD ^a	Range	n ^a	Mean	SD ^a	Range	n ^a
Alaska skate	Female	999.5	7.8	994-1005	2				
Great sculpin	All	775.0	--	--	1				
Pacific cod	All	699.9	95.6	547-892	21	3855.0	1985.9	1100-8100	20
	Male	677.7	105.5	547-825	7	3300.0	2216.6	1100-8000	7
Pacific halibut	Female	702.3	90.0	590-892	13	4153.8	1873.8	2000-8100	13
	All	924.5	238.1	630-1395	10	3291.5	2693.5	1015-9500	10
	Male	840.0	169.7	720-960	2	2300.0	1697.1	1100-3500	2
Yellow Irish lord	Female	945.6	257.3	630-1395	8	3539.4	2926.7	1015-9500	8
	All	411.3	28.8	354-476	33	833.3	353.6	500-1500	9
	Male	436.3	38.2	403-476	4	875.0	478.7	500-1500	4
	Female	400.4	16.3	382-425	5	800.0	273.9	500-1000	5

^aSD = Standard deviation, n = Sample size.

Table 13. Prey composition of stomach samples taken from Pacific halibut caught by long-line near the Pribilof Islands, Alaska, July 2005 (n = 7 non-empty stomachs).

Prey Name	% Frequency ^a	% Weight ^a
<i>Chionoecetes</i> spp. (snow and Tanner crab)	16.67	8.93
<i>Chionoecetes bairdi</i> (Tanner crab)	33.33	23.88
Teleostei (fish)	38.89	31.48
<i>Theragra chalcogramma</i> (walleye pollock)	27.78	35.18
Cottoidei (sculpin)	16.67	0.51

^a% Frequency = Percent frequency of occurrence, % Weight = Percent total weight.

Table 14. Prey composition of stomach samples taken from Pacific cod caught by long-line near the Pribilof Islands, Alaska, July 2005 (n = 22 non-empty stomachs).

Prey Name	% Frequency ^a	% Weight ^a
Polychaeta (worm)	7.41	0.09
Gastropoda (snail)	7.41	0.24
Bivalvia (clam)	4.17	0.01
Gammaridea (amphipod)	23.7	0.11
Natantia (shrimp)	20.74	0.54
Hippolytidae (shrimp)	20.74	0.27
Crangonidae (shrimp)	8.33	0.14
<i>Crangon</i> sp. (shrimp)	7.87	0.1
<i>Crangon dalli</i> (shrimp)	4.17	0.23
Reptantia (crab)	7.87	2.82
Paguridae (hermit crab)	20.83	4.75
<i>Chionoecetes</i> sp. (snow and Tanner crab)	33.98	6.5
<i>Chionoecetes bairdi</i> (Tanner crab)	31.48	21.76
Atelecyclidae (crab)	7.41	0.13
<i>Telmessus cheiragonus</i> (hair crab)	11.11	1.72
<i>Cancer oregonensis</i> (pygmy Cancer crab)	6.67	0.92
Echiura (marine worm)	15.28	0.34
Teleostei (fish)	4.17	0
Non-gadoid fish remains	12.04	0.88
<i>Theragra chalcogramma</i> (walleye pollock)	39.44	47.08
<i>Pleurogrammus monopterygius</i> (Atka mackerel)	6.67	5.29
Agonidae (poacher)	7.41	0.32
Pleuronectoidei (flatfish)	15.28	1.44
Pleuronectidae (flatfish)	3.7	3.71
<i>Hippoglossoides elassodon</i> (flathead sole)	4.17	0.61

^a% Frequency = Percent frequency of occurrence, % Weight = Percent total weight.

Table 15. Prey composition of stomach samples taken from yellow Irish lord caught by long-line near the Pribilof Islands, Alaska, July 2005 (n = 9 non-empty stomachs).

Prey Name	% Frequency	% Weight
Polychaeta (worm)	22.22	0.29
Polynoidae (polychaete)	11.11	0.01
Onuphidae (polychaete)	11.11	0.05
Gastropoda (snail)	11.11	0.47
<i>Pododesmus macrochisma</i> (Rock Jingle)	11.11	4.45
Amphipoda (amphipod)	11.11	0.13
Natantia (shrimp)	22.22	0.89
Hippolytidae (shrimp)	11.11	0.12
Reptantia (crab)	22.22	2.53
Anomura (crab)	11.11	2.67
Paguridae (hermit crab)	33.33	8.69
<i>Hapalogaster grebnitzkii</i>	22.22	6.55
<i>Decapoda brachyura</i> (crab)	11.11	0.38
<i>Oregonia</i> sp. (decorator crab)	11.11	0.89
<i>Oregonia gracilis</i> (decorator crab)	11.11	1.45
<i>Hyas</i> sp. (lyre crab)	11.11	1.92
<i>Chionoecetes bairdi</i> (Tanner crab)	11.11	0.82
<i>Telmessus cheiragonus</i> (hair crab)	11.11	0.62
<i>Cancer oregonensis</i> (pygmy Cancer crab)	33.33	39.79
Echiura (marine worm)	11.11	3.44
Ophiurida (brittle star)	44.44	23.52
Teleostei (fish)	11.11	0.22
Aves (bird part)	11.11	0.09

^a% Frequency = Percent frequency of occurrence, % Weight = Percent total weight.

Table 16. Count of individuals captured with plankton nets during SMMOCI near the Pribilof Islands, Alaska, July 2005.

Taxa	Haul ^a	NU-1	NU-2	VT-1		VT-2		
	Split (%)	100	100	3.1	1.6	6.3	25	100
Phylum Cnidaria, Class Hydrozoa, Subclass Hydromedusae (jellyfishes)								
Order Anthomedusae								
	<i>cf. Perigonimus yoldia</i>	--	--	--	--	--	1	--
Order Leptomedusae								
	<i>Aequorea</i> sp.	--	5	--	--	1	--	1
	Unid. Leptomedusae	--	--	--	--	--	1	5
Phylum Cnidaria, Class Hydrozoa, Subclass Siphonophorae (jellyfishes / siphonophores)								
	<i>Chrysaora</i> sp.	--	1	--	--	--	--	--
	Subclass Siphonophorae (bract)	1	--	--	--	--	--	--
Phylum Mollusca, Class Gastropoda, Order Gymnosomata (pteropods)								
	<i>Clione limacina</i>	--	1	--	--	--	--	1
Phylum Mollusca, Class Gastropoda, Order Thecosomata (pteropods)								
	<i>Limacina helicina</i>	1	345	13	--	9	10	--
Phylum Arthropoda, Class Insecta								
	Insect fragment	--	1	--	--	--	--	--
Phylum Arthropoda; Subphylum Crustacea								
Class Copepoda, Order Calanoida								
	<i>Acartia clausi</i>	--	1	--	--	--	--	--
	<i>Acartia longiremus</i>	2	4	--	--	--	--	--
	<i>Acartia tumida</i>	--	4	3	--	2	--	--
	<i>Centropages abdominalis</i>	1	37	--	--	--	--	--
	<i>Epiladocera longipedata</i>	--	79	--	--	--	--	--
	<i>Eucalanus bungii</i>	4	90	121	--	18	--	--
	<i>Metridia pacifica</i>	--	--	--	--	3	--	--
	<i>Neocalanus cristatus</i>	--	--	--	--	--	--	2
	<i>Neocalanus plumchrus</i> and/or <i>flemengeri</i>	1	1	32	--	177	--	--
	<i>Pseudocalanus</i> spp.	--	28	--	--	28	--	--
	<i>Tortanus discaudatus</i>	--	6	--	--	1	--	--

Table 16. Count of individuals captured with plankton nets during SMMOCI near the Pribilof Islands, Alaska, July 2005 (cont).

Taxa	Haul ^a	NU-1	NU-2	VT-1		VT-2		
	Split (%)	100	100	3.1	1.6	6.3	25	100
Phylum Arthropoda; Subphylum Crustacea (continued)								
Class Copepoda, Order Harpacticoida								
	<i>Harpacticus</i> sp.	1	--	--	--	--	--	--
Class Malacostraca								
Order Amphipoda, Suborder Hyperiidea								
	<i>Hyperia medusarum</i>	--	--	--	--	1	--	--
	<i>Parathemisto pacifica</i>	--	10	2	3	--	--	1
Order Amphipoda, Suborder Gammaridea								
	Unid. Gammaridea	3	--	--	--	--	--	--
Order Decapoda, Section Anomura (crabs)								
	Paguridae (zoea; hermit crab)	--	--	--	--	4	--	--
Order Decapoda, Section Brachyura (crabs)								
	Family Atelecyclidae (megalops)	1	--	--	--	--	--	--
	Cancriidae (zoea)	--	--	--	--	1	--	--
	Oregoninae (zoea)	--	--	1	1	5	--	--
	Brachyryncha (zoea)	--	44	--	--	1	--	--
Order Euphausiacea (euphausiids / krill)								
	<i>Thysanoessa raschii</i> (juvenile)	--	17	6	7	12	--	--
	<i>Thysanoessa spinifera</i> (juvenile)	--	19	--	1	--	--	--
Phylum Chaetognatha (arrowworms)								
	<i>Eukhronia hamata</i>	--	--	--	--	--	2	--
	<i>Sagitta elegans</i>	1	2	9	18	11	11	--
Phylum Chordata, Subphylum Urochordata, Class Larvacea (larvaceans / tunicates)								
	<i>Oikopleura</i> sp.	2	1	2	2	--	--	--
Phylum Chordata, Subphylum Vertebrata, Class Osteichthyes (bony fishes)								
	<i>Hexagrammos decagrammus</i> (kelp greenling)	1	--	--	--	--	--	--
	Unid. Fish larva	1	--	--	--	--	--	--

^a NU = Neuston tow, VT = Vertical bomgo net tow.

Table 17. Locations, times and dates of CTD casts made near the Pribilof Islands, Alaska, July 2005.

Station	Latitude (N)	Longitude (W)	Date	Time ^a	Depth ^b (m)	Notes ^c
1	56.6449°	169.7210°	21 July	05:06	63 (81)	BT-1
2	56.5771°	169.4465°	21 July	08:14	18 (25)	N. end TX 04
3	55.7695°	170.0152°	21 July	13:53	303 (>2500)	S. end TX 04
4	55.7156°	169.7292°	21 July	15:43	200 (>2500)	TX 03, Sta. 1 (S. end)
5	55.9015°	169.6013°	21 July	17:35	188 (2000)	TX 03, Sta. 2
6	56.0573°	169.4903°	21 July	18:45	257 (258)	TX 03, Sta. 3
7	56.2117°	169.3842°	21 July	20:03	177 (499)	TX 03, Sta. 4
8	56.3681°	169.2746°	21 July	21:18	99 (125)	TX 03, Sta. 5
9	56.5254°	169.1597°	21 July	22:35	81 (93)	TX 03, Sta. 6 (N. end)
10	56.5855°	169.3936°	22 July	02:08	39 (48)	MW-1
11	56.6328°	169.5081°	22 July	10:10	39 (45)	LL-1
12	56.4671°	168.8746°	22 July	12:43	83 (104)	N. end TX 02
14	55.6620°	169.4578°	22 July	18:50	172 (>2500)	S. end TX 02
15	55.6113°	169.1695°	22 July	20:20	190 (2000)	S. end TX 01
16	56.2998°	169.1345°	23 July	02:30	127 (145)	MW-2
17	56.3085°	169.1328°	23 July	03:25	107 (142)	BT-2
18	56.6938°	170.0437°	23 July	08:25	79 (90)	MW-3
19	56.6830°	170.0058°	23 July	09:25	86 (88)	LL-2 / N. end TX 06
25	56.4170°	169.8578°	23 July	23:45	76 (95)	TX 05, Sta. 5 / BT-3
26	56.5604°	169.7302°	24 July	01:57	46 (50)	TX 05, Sta. 7 (N. end) / BT-4
27	55.9327°	170.8640°	24 July	08:55	187 (~3000)	TX 07, Sta. 1 (S. end)
28	56.1170°	170.7333°	24 July	09:36	191 (1160)	TX 07, Sta. 2
29	56.2718°	170.6326°	24 July	10:56	100 (120)	TX 07, Sta. 3
30	56.4282°	170.5237°	24 July	12:12	92 (110)	TX 07, Sta. 4
31	56.5814°	170.4172°	24 July	13:35	85 (107)	TX 07, Sta. 5
32	56.7389°	170.3041°	24 July	14:56	100 (101)	TX 07, Sta. 6 (N. end) /MW-4
33	56.7949°	170.5897°	24 July	17:03	91 (101)	N. end TX 08
34	55.9887°	171.1429°	24 July	22:40	180 (~3000)	S. end TX 08
35	55.8784°	170.5716°	25 July	00:01	176 (7200)	S. end TX 06
36	55.8231°	170.2872°	25 July	02:35	186 (4500)	TX 05, Sta. 1 (S. end)
37	55.9541°	170.1963°	25 July	03:40	159 (4200)	TX 05, Sta. 2
38	56.1081°	170.0847°	25 July	05:11	80 (123)	TX 05, Sta. 3 / BT-5
39	56.2683°	169.9473°	25 July	08:00	83 (112)	TX 05, Sta. 4 / BT-6
40	56.5181°	169.7186°	25 July	15:35	60 (79)	TX 05, Sta. 6 / LL-3
41	56.4855°	169.7011°	25 July	17:56	59 (82)	MW-6
42	56.5312°	169.4790°	25 July	19:40	56 (73)	BT-7
43	56.5590°	169.5008°	25 July	21:15	9 (22)	BT-8
44	56.6370°	169.7455°	26 July	08:05	46 (66)	VT-2 / NU-2

^aAll times are Alaska Daylight (Universal Coordinated Time minus 8 hours).

^bDepth of cast. Values in parentheses are bottom depth at cast location.

^cTX = Transect, BT = Bottom trawl, MW = Mid-water trawl, LL = Long-line set, VT = Vertical plankton tow, NU = Neuston (surface) plankton tow.

Table 18. Estimates of summer at-sea densities of seabirds near colonies at several Alaskan sites. Data are from cruises similar to the 2005 cruise discussed here and were gathered using similar procedures.

Colony Area (Observation Year)	# birds/km ²	Reference
Cape Thompson / Chukchi Sea (1988)	54	Piatt et al. 1990
Norton Sound / Northeastern Bering Sea (2002)	13	Dragoo 2006 <i>b</i>
Pribilof Islands / Southeast Bering Sea (1997)	51	Dragoo and Byrd 1998
Pribilof Islands / Southeast Bering Sea (2005)	101^a	This study
Buldir Island / Western Aleutians (1998)	145	Dragoo and Byrd 1999
Kasatochi Island / Central Aleutians (1996)	110	Drew et al. 2003
Kasatochi Island / Central Aleutians (2003)	118	Dragoo 2007
Aiktak Island / Unimak Pass, Eastern Aleutians (1995)	38	Byrd et al. 1997
Semidi Islands / Northern Gulf of Alaska (2001)	93 ^b	Dragoo 2006 <i>a</i>
Semidi Islands / Northern Gulf of Alaska (2004)	68	Dragoo 2006 <i>a</i>
Barren Islands / Lower Cook Inlet (1992)	174	Piatt 1994
Barren Islands / Lower Cook Inlet (1996)	126	Piatt 2003
Glacier Bay/ Southeast Alaska (1999/2000)	21	Robards et al. 2003
St. Lazaria/ Sitka Sound, Southeast Alaska (2000)	18	Piatt and Dragoo 2005

^aDoes not include the circumnavigation of St. George Island. Bird density including St. George Island circumnavigation was 135 birds/km².

^bDoes not include a flock of approximately 50,000 shearwaters observed on transect. Bird density including this large flock of shearwaters was 476 birds/km².

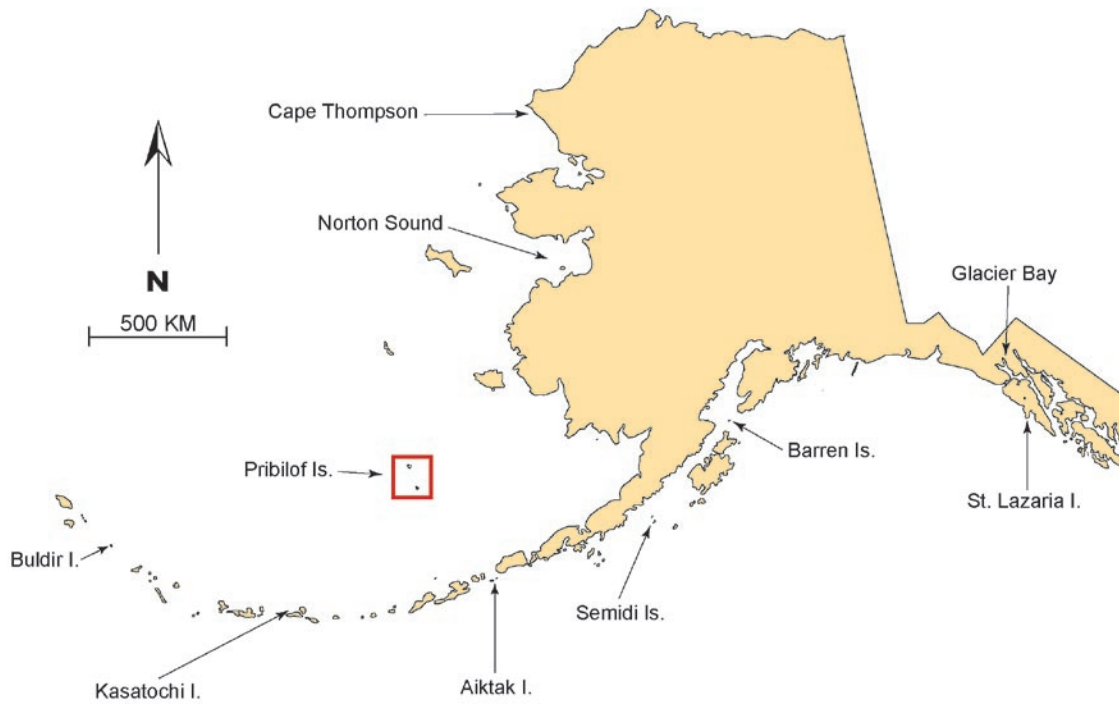


Figure 1. Map of Alaska showing the location of the Pribilof Island study area (red box).

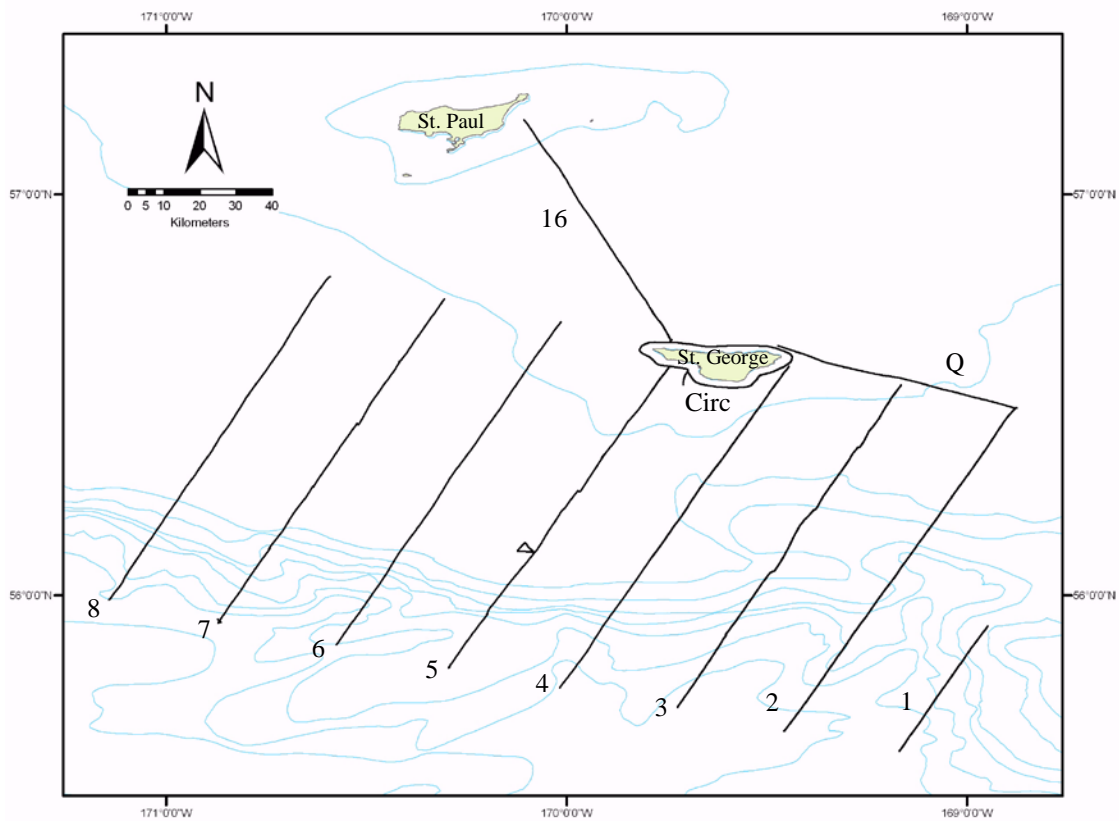


Figure 2. Map of transects surveyed near the Pribilof Islands, Alaska, July 2005.

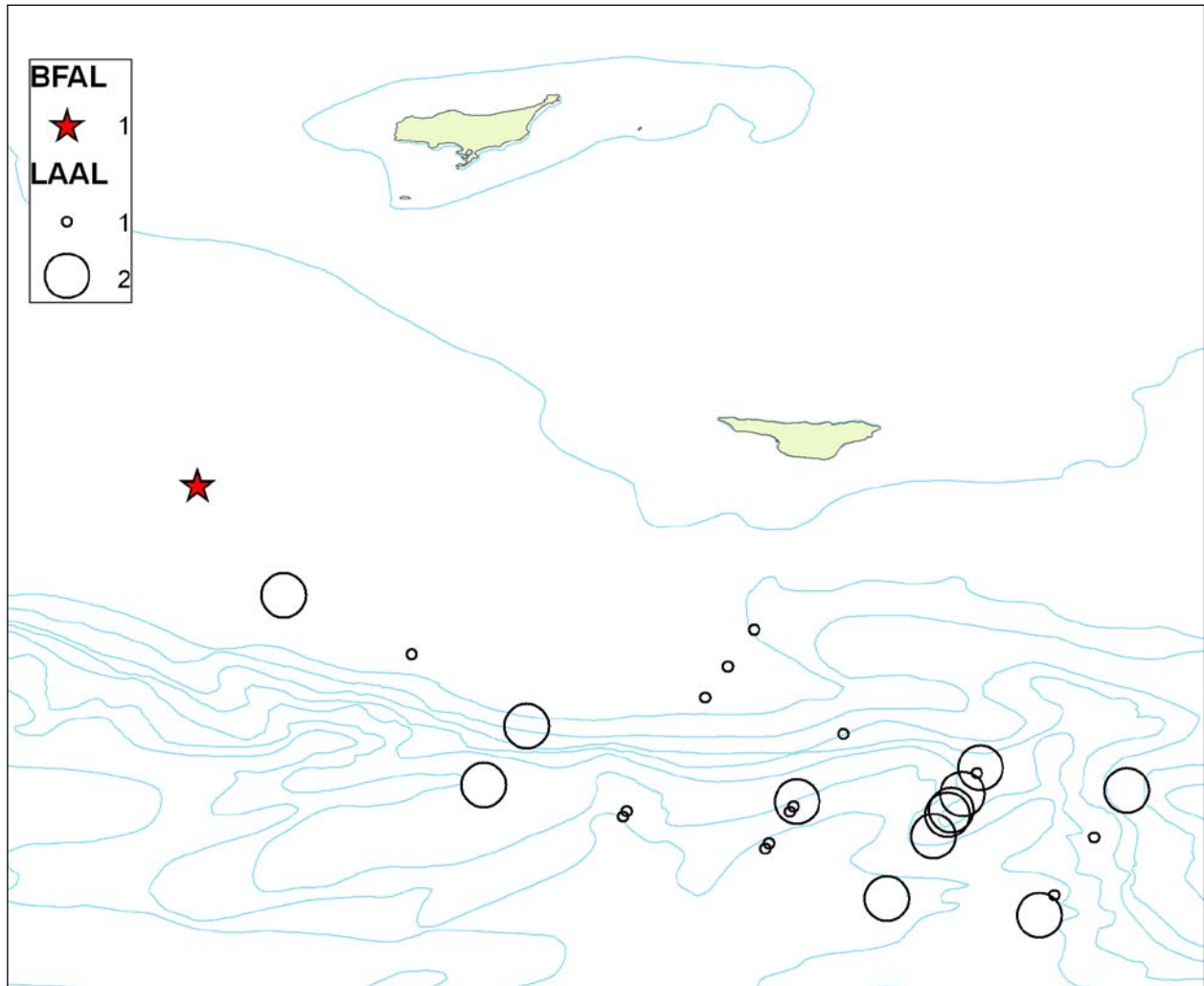


Figure 3. Distribution of black-footed (BFAL) and Laysan (LAAL) albatrosses on transects surveyed near the Pribilof Islands, Alaska, July 2005. Includes birds on the water and flying.

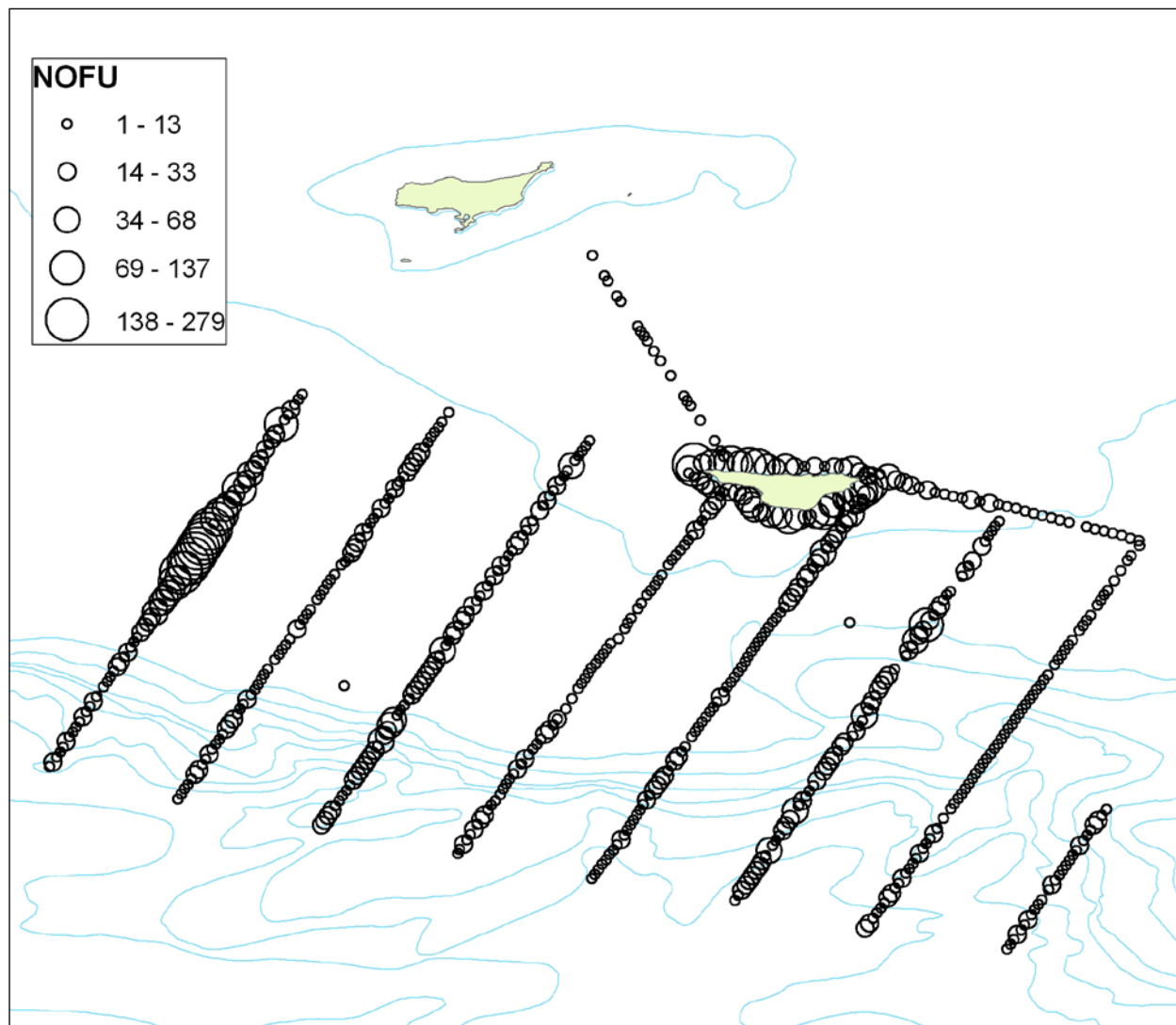


Figure 4. Distribution of northern fulmar (NOFU) on transects surveyed near the Pribilof Islands, Alaska, July 2005. Includes birds on the water and flying.

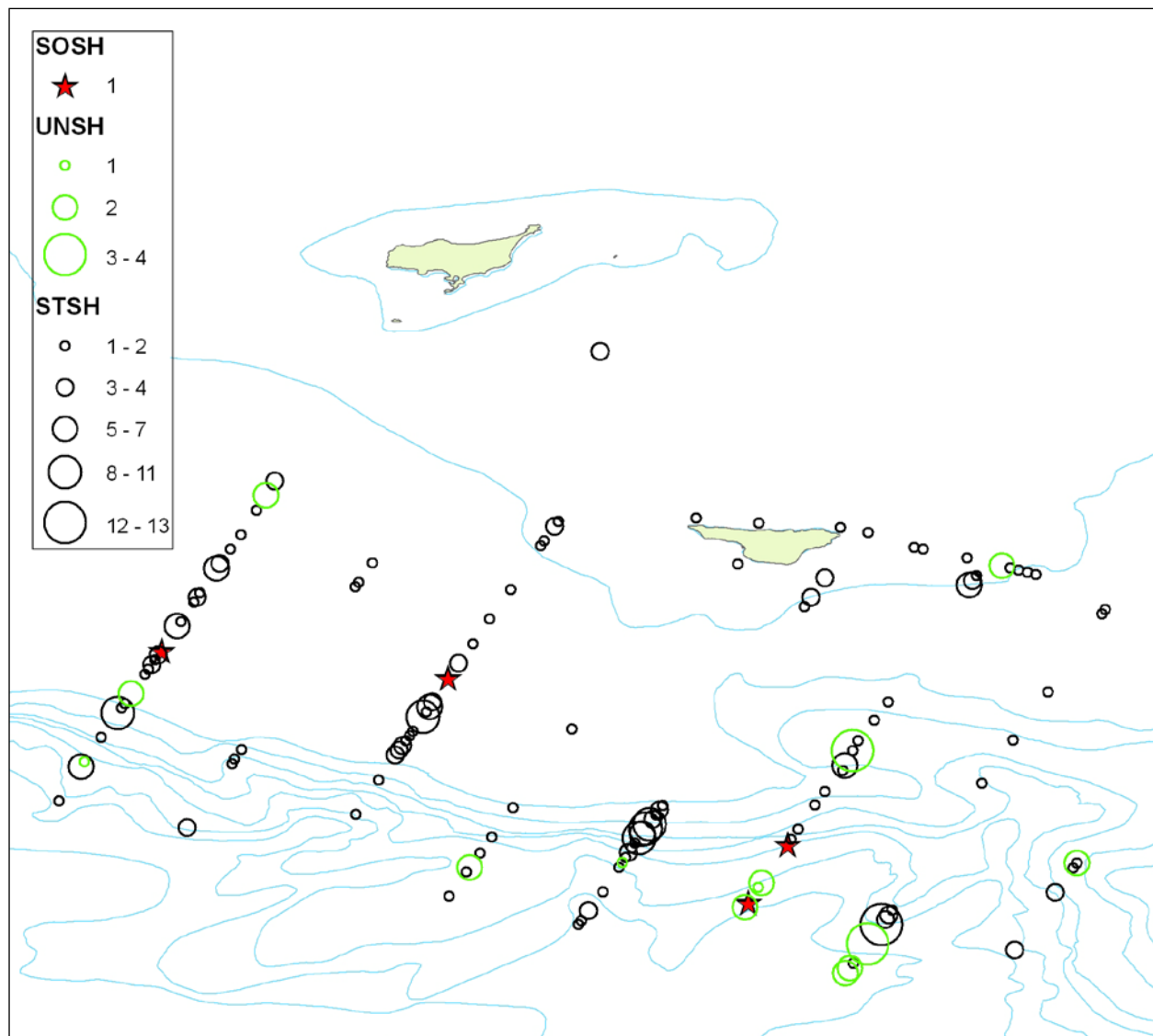


Figure 5. Distribution of sooty (SOSH), short-tailed (STSH) and unidentified (UNSH) shearwaters on transects surveyed near the Pribilof Islands, Alaska, July 2005. Includes birds on the water and flying.

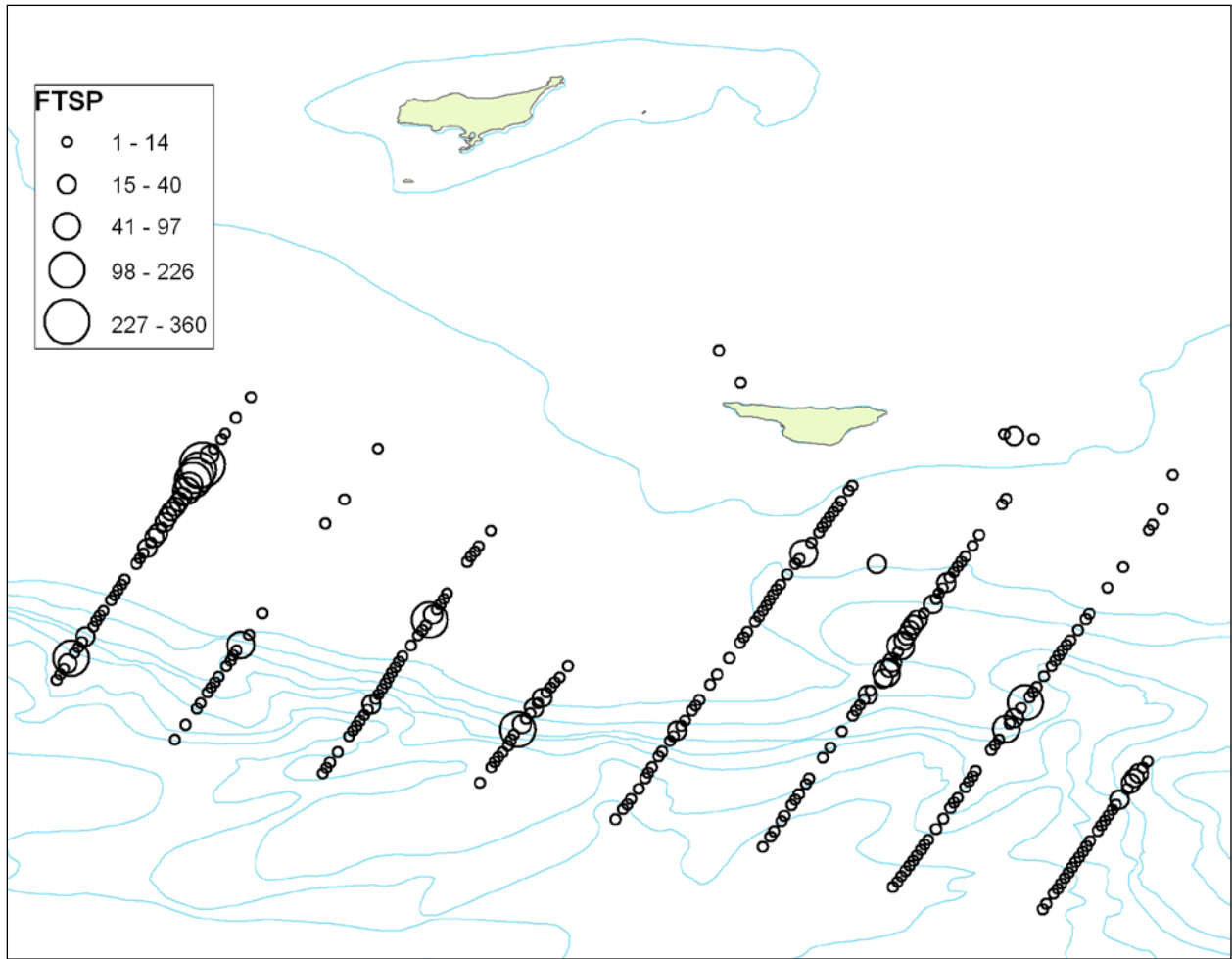


Figure 6. Distribution of fork-tailed storm-petrels (FTSP) on transects surveyed near the Pribilof Islands, Alaska, July 2005. Includes birds on the water and flying.

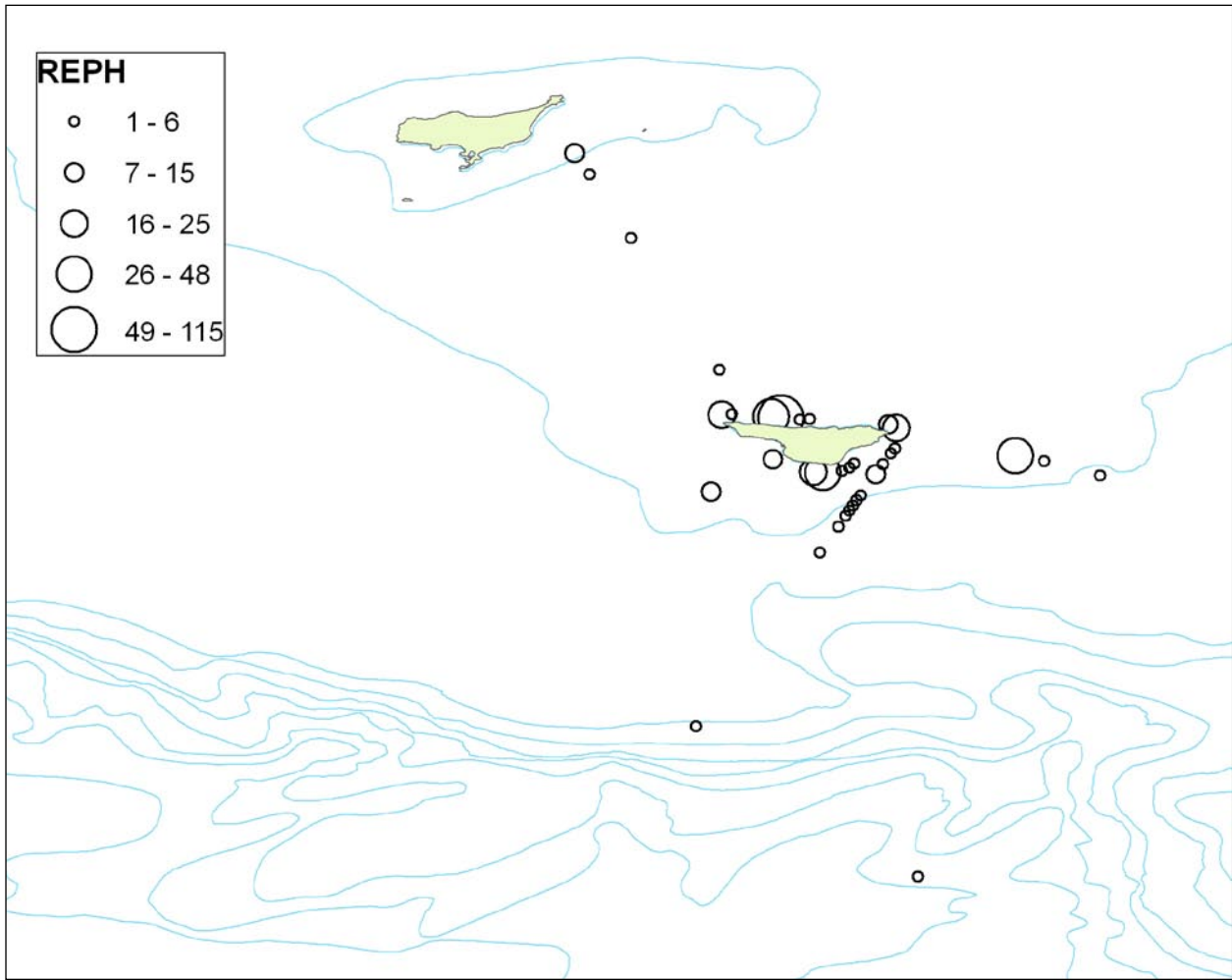


Figure 7. Distribution of red phalaropes (REPH) on transects surveyed near the Pribilof Islands, Alaska, July 2005. Includes birds on the water and flying.

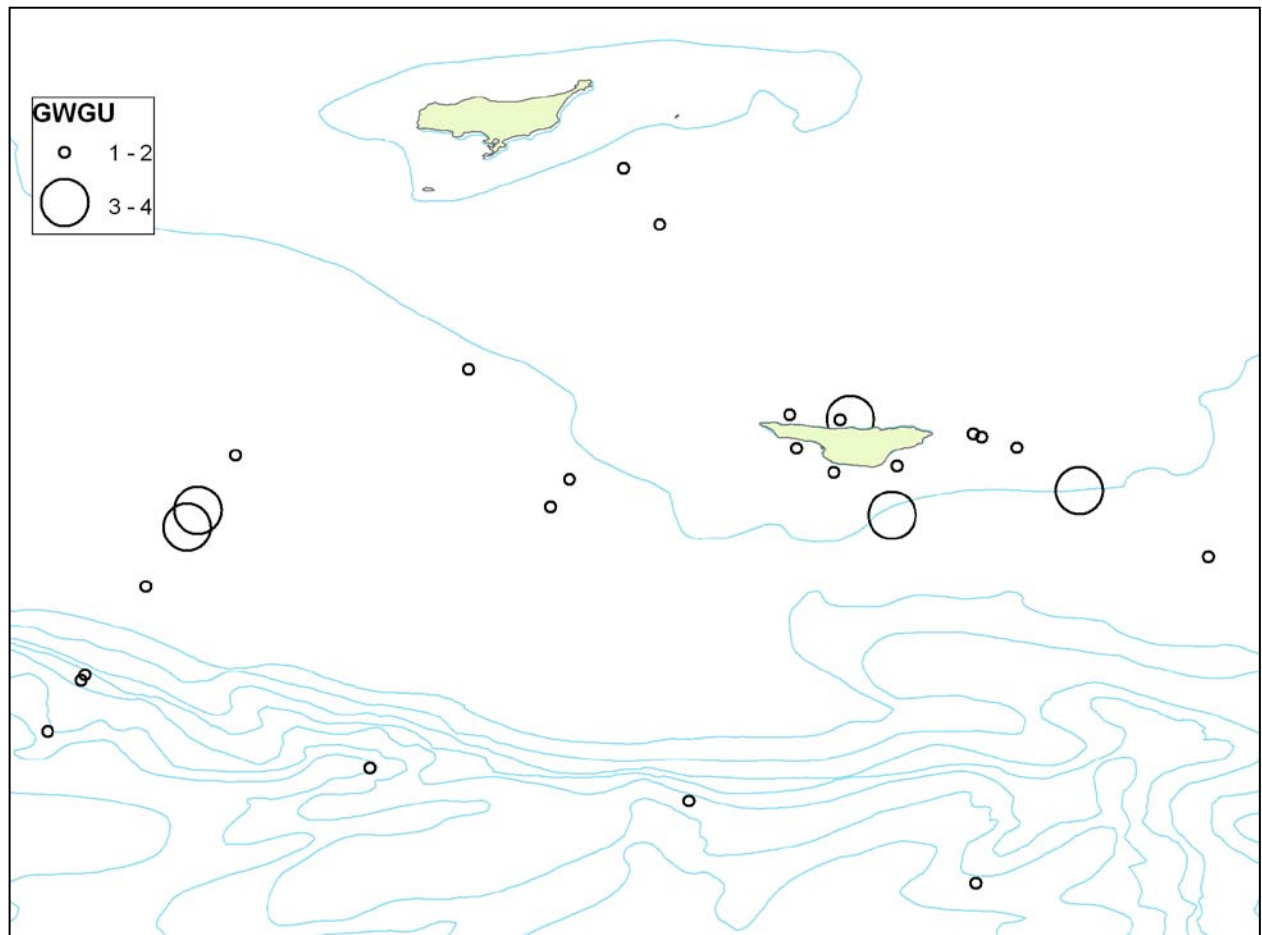


Figure 8. Distribution of glaucous-winged gulls (GWGU) on transects surveyed near the Pribilof Islands, Alaska, July 2005. Includes birds on the water and flying.

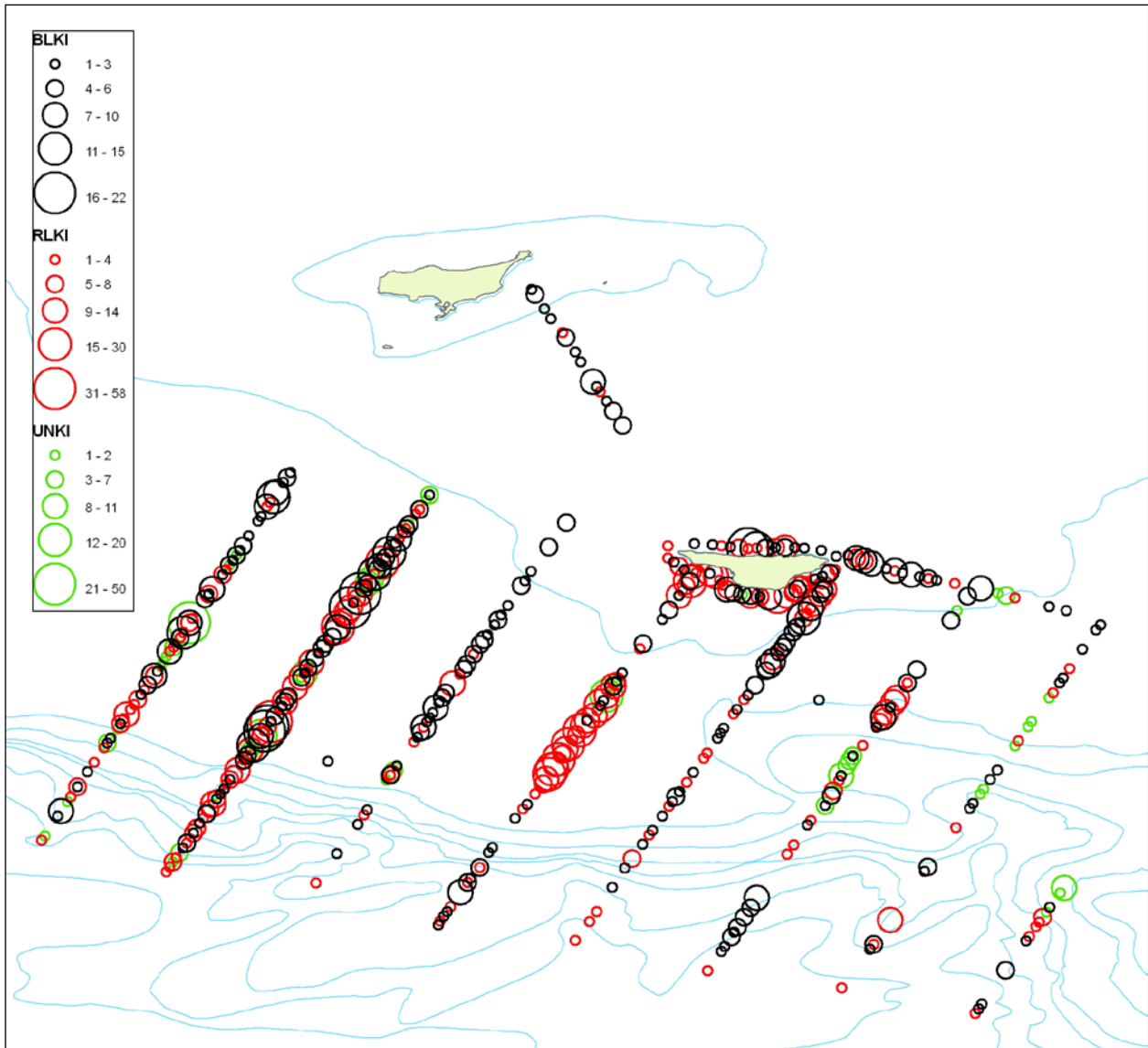


Figure 9. Distribution of black-legged (BLKI), red-legged (RLKI) and unidentified (UNKI) kittiwakes on transects surveyed near the Pribilof Islands, Alaska, July 2005. Includes birds on the water and flying.

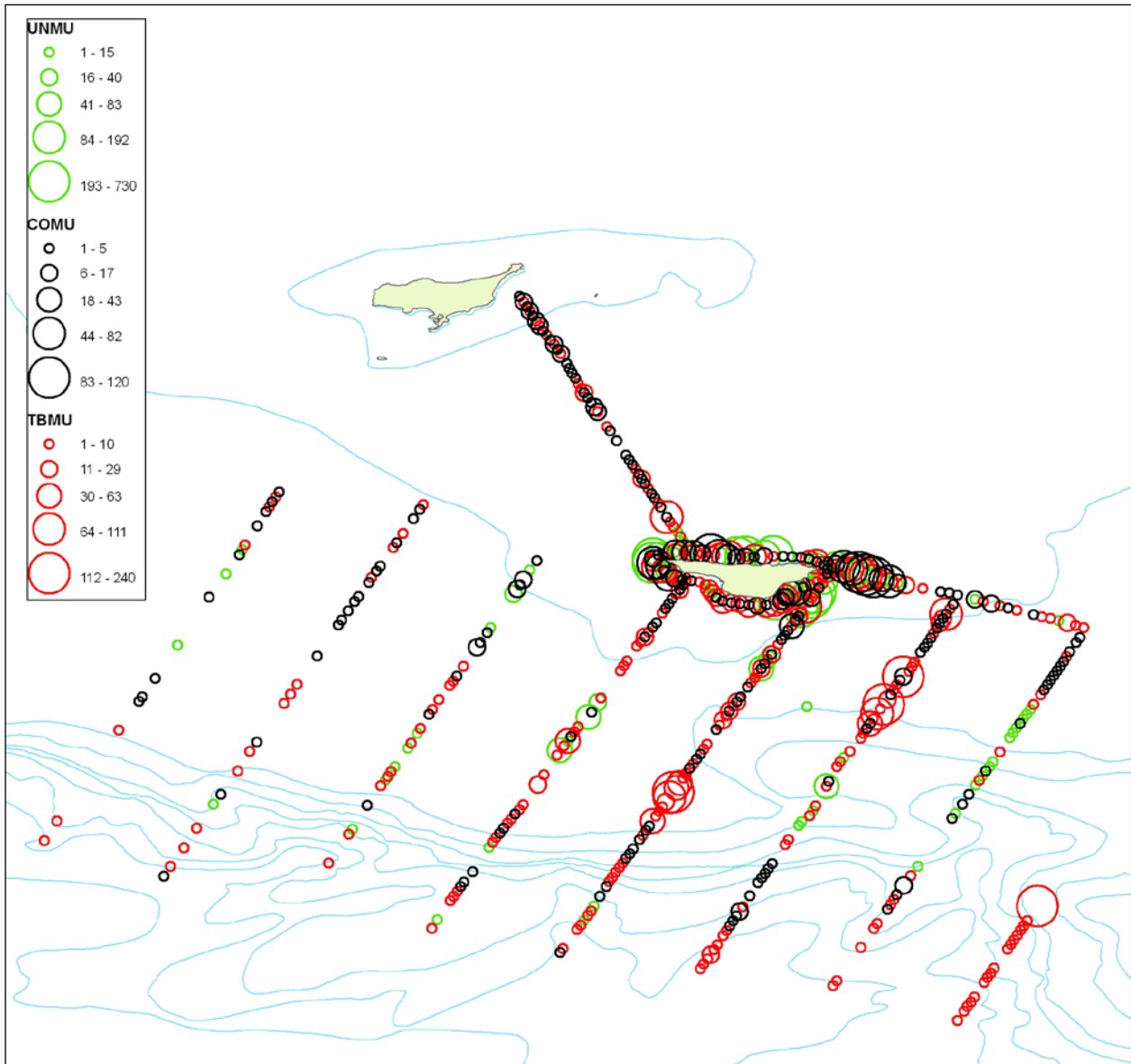


Figure 10. Distribution of common (COMU), thick-billed (TBMU) and unidentified (UNMU) murre on transects surveyed near the Pribilof Islands, Alaska, July 2005. Includes birds on the water and flying.

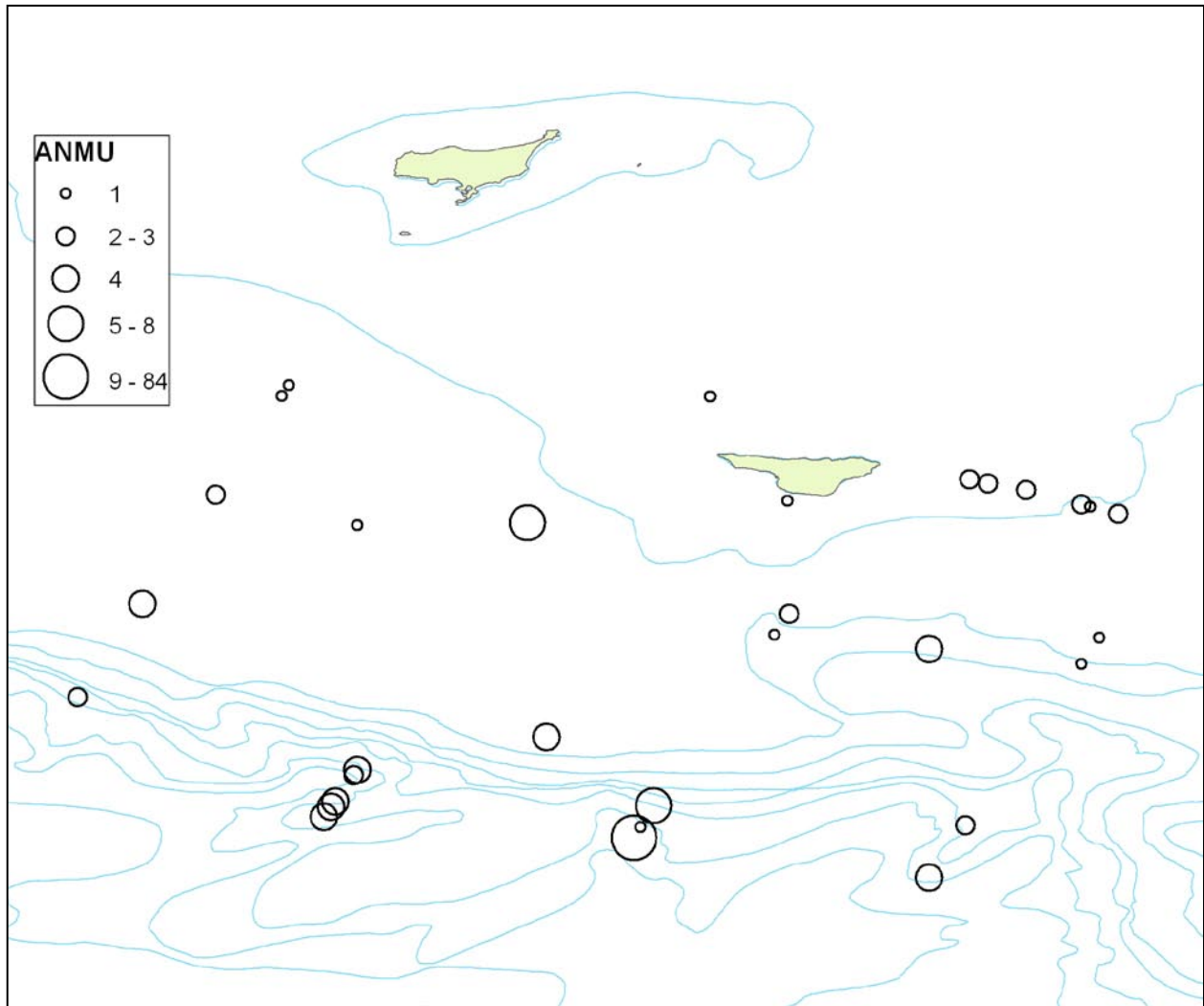


Figure 11. Distribution of ancient murrelets (ANMU) on transects surveyed near the Pribilof Islands, Alaska, July, 2005. Includes birds on the water and flying.

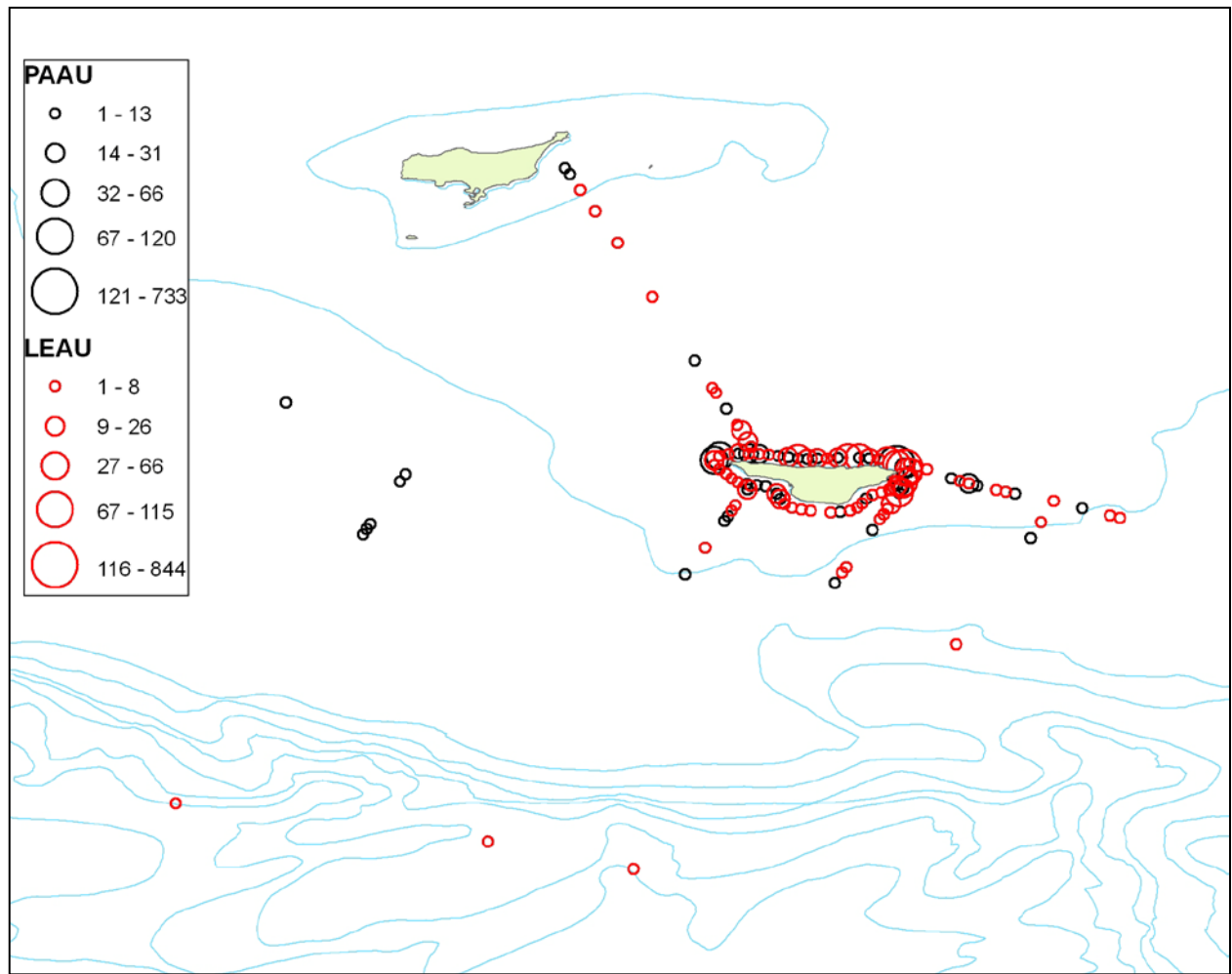


Figure 12. Distribution of parakeet (PAAU) and least (LEAU) auklets on transects surveyed near the Pribilof Islands, Alaska, July 2005. Includes birds on the water and flying.

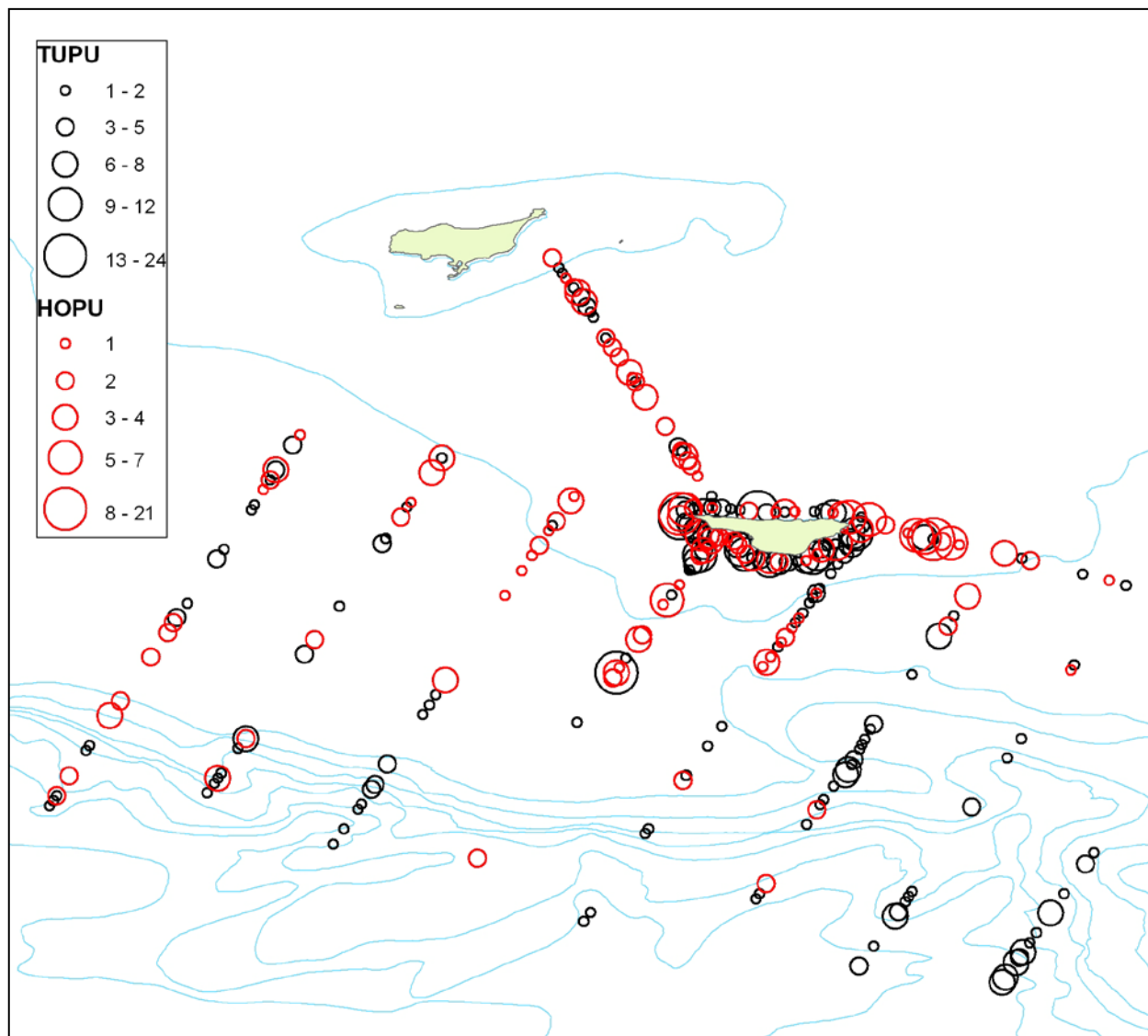


Figure 13. Distribution of horned (HOPU) and tufted (TUPU) puffins on transects surveyed near the Pribilof Islands, Alaska, July 2005. Includes birds on the water and flying.

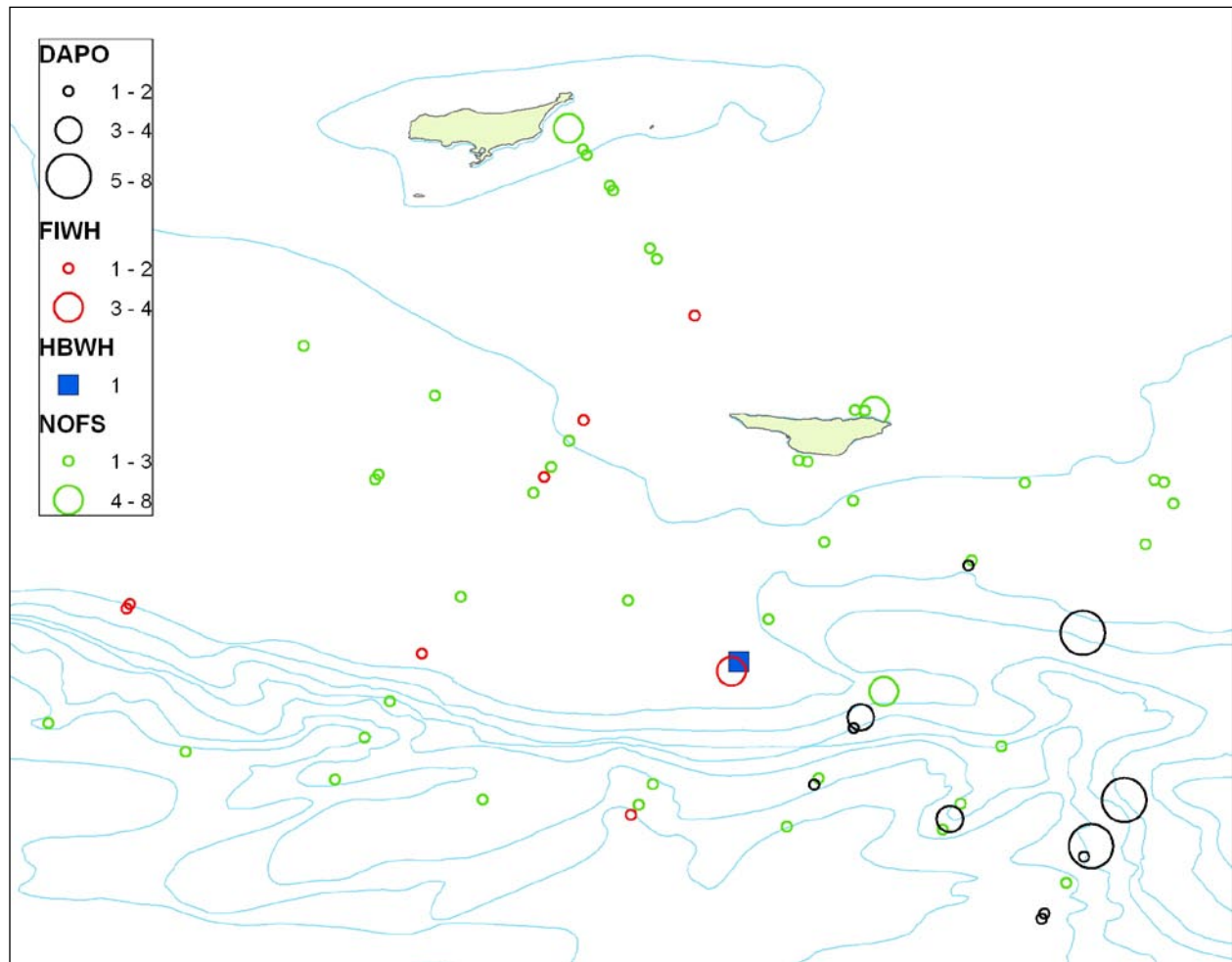


Figure 14. Distribution of Dall's porpoise (DAPO), fin (FIWH) and humpback (HBWH) whales, and northern fur seals (NOFS) on transects surveyed near the Pribilof Islands, Alaska, July 2005.

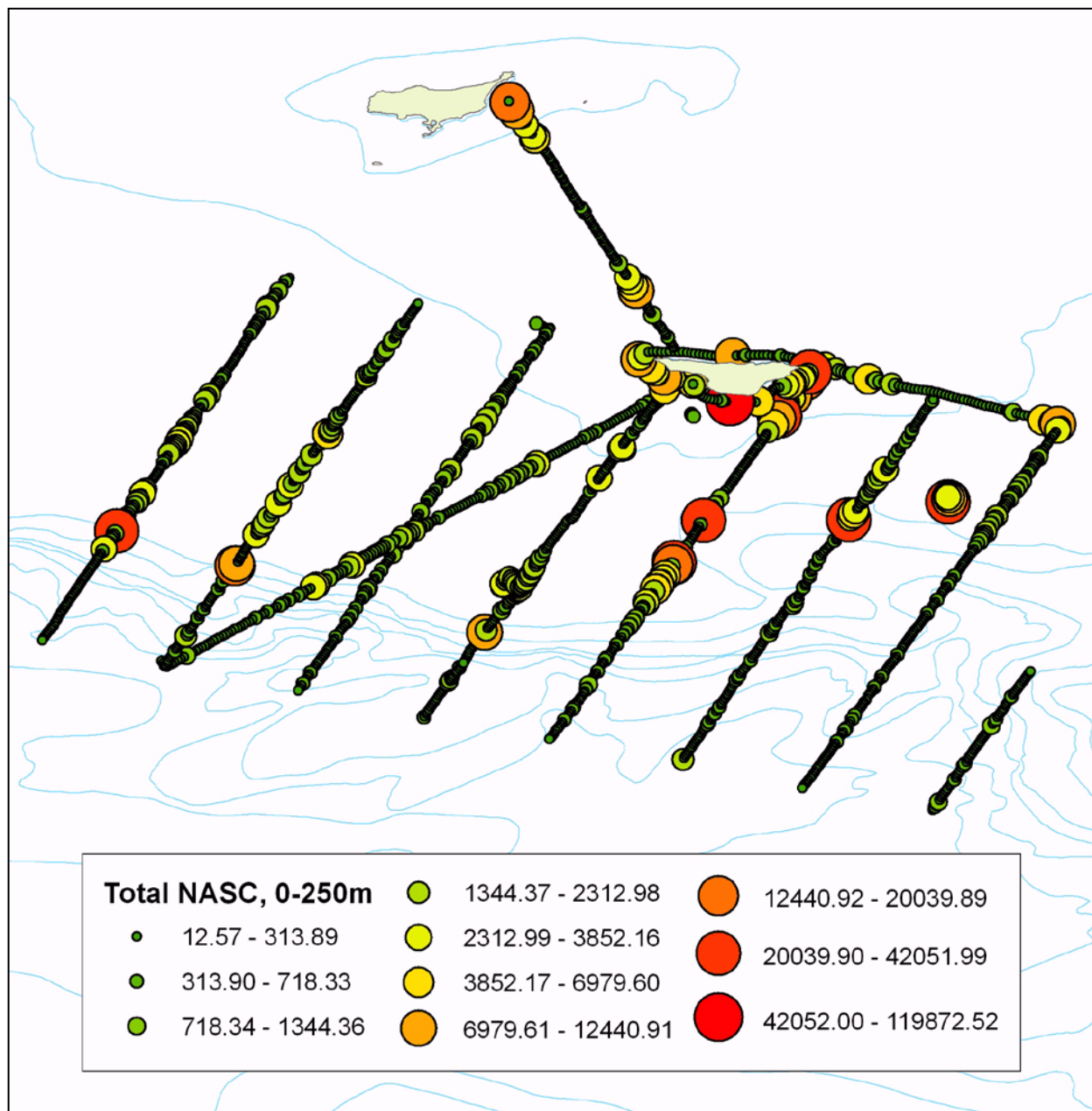


Figure 15. Distribution of prey in the water column (0-250 m) based on acoustic surveys near the Pribilof Islands, Alaska, July 2005. NASC is the Nautical Area Scattering Coefficient.

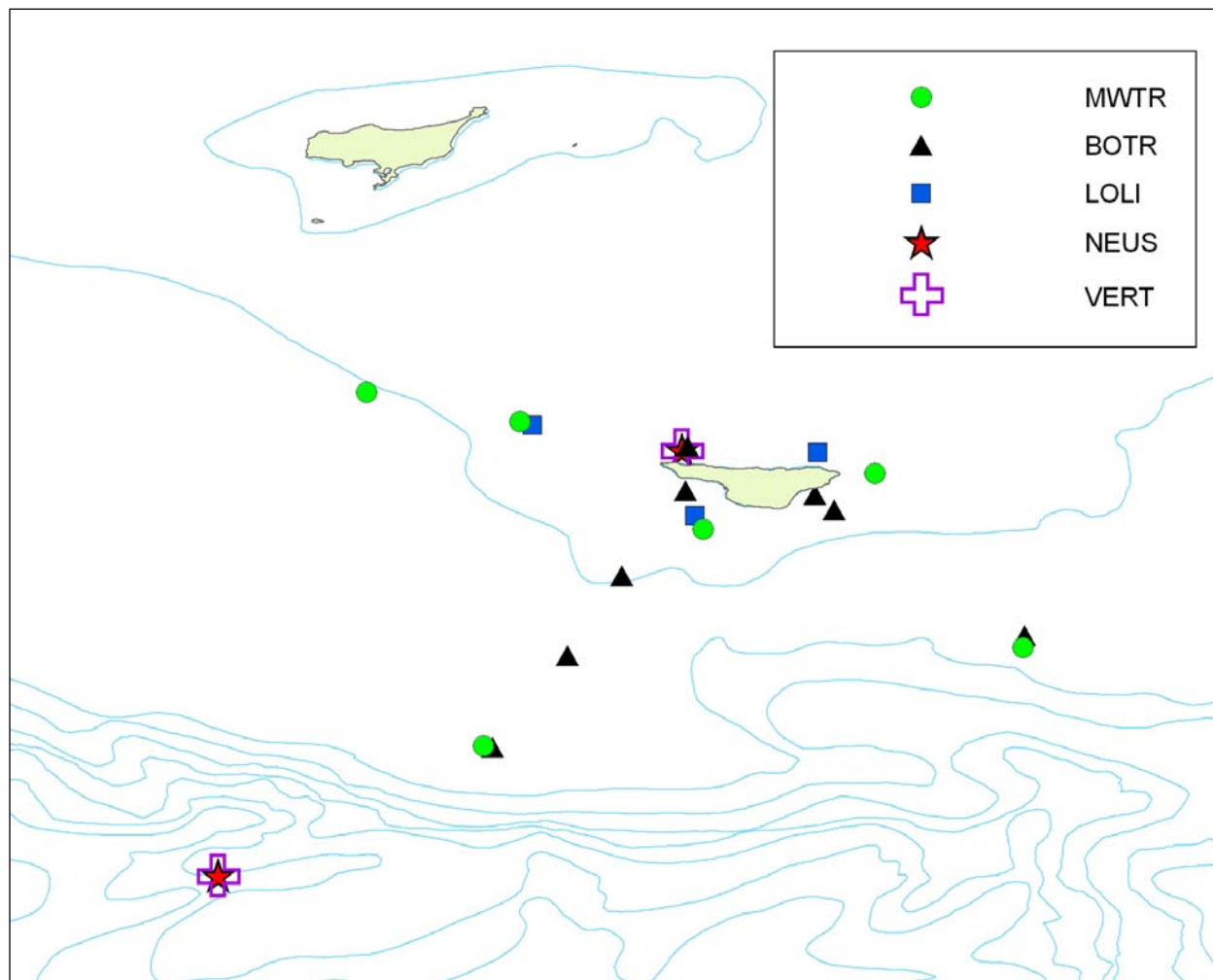


Figure 16. Locations of mid-water (MWTR) and bottom (BOTR) trawls, long-line sets (LOLI), and vertical (VERT) and neuston (surface, NEUS) plankton tows near the Pribilof Islands, Alaska, July 2005.

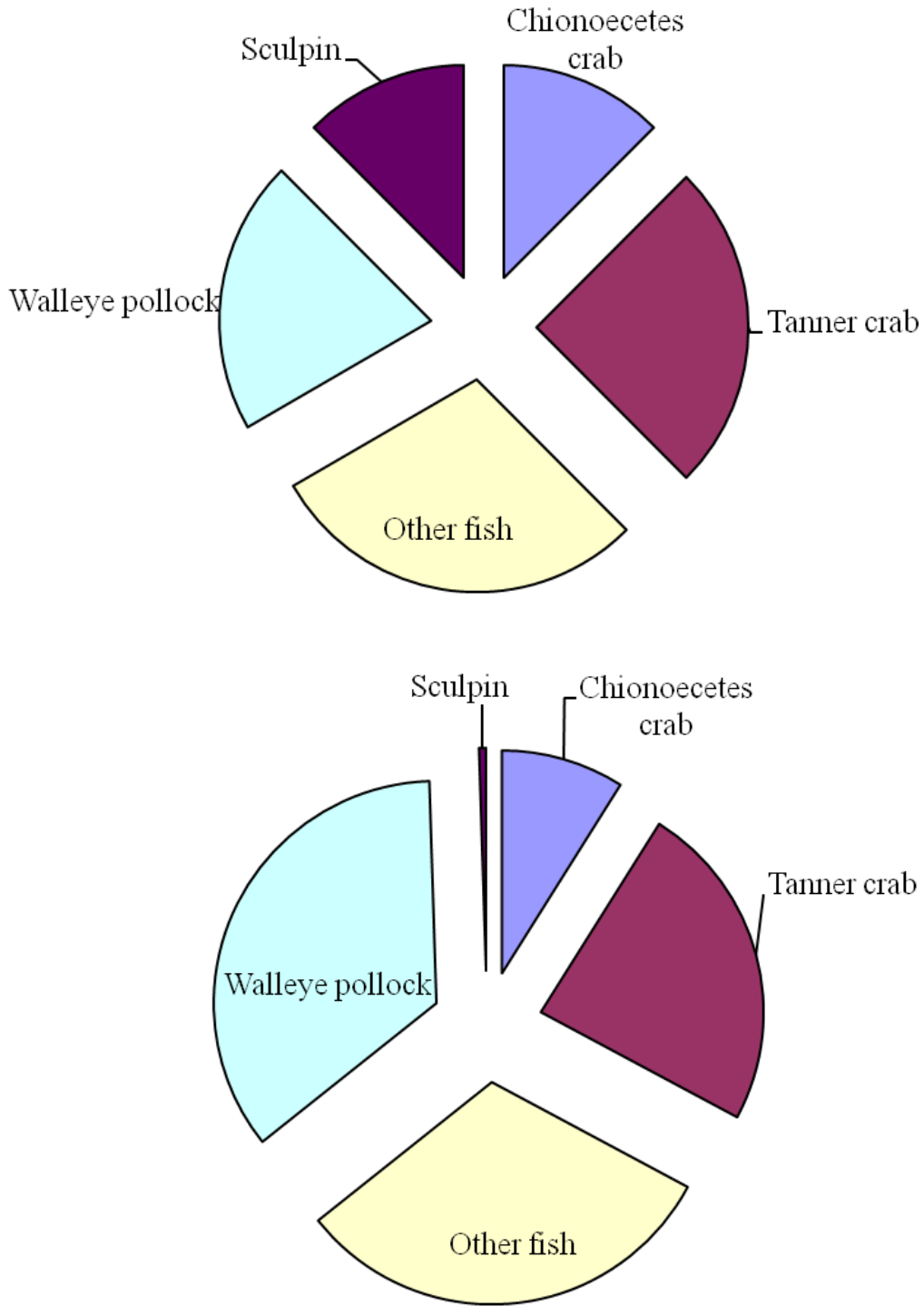


Figure 17. Percent frequency of occurrence (top) and percent total weight (bottom) of prey taken from stomach contents of Pacific halibut caught on long-line gear near the Pribilof Islands, Alaska, July 2005 ($n = 7$ non-empty stomachs).

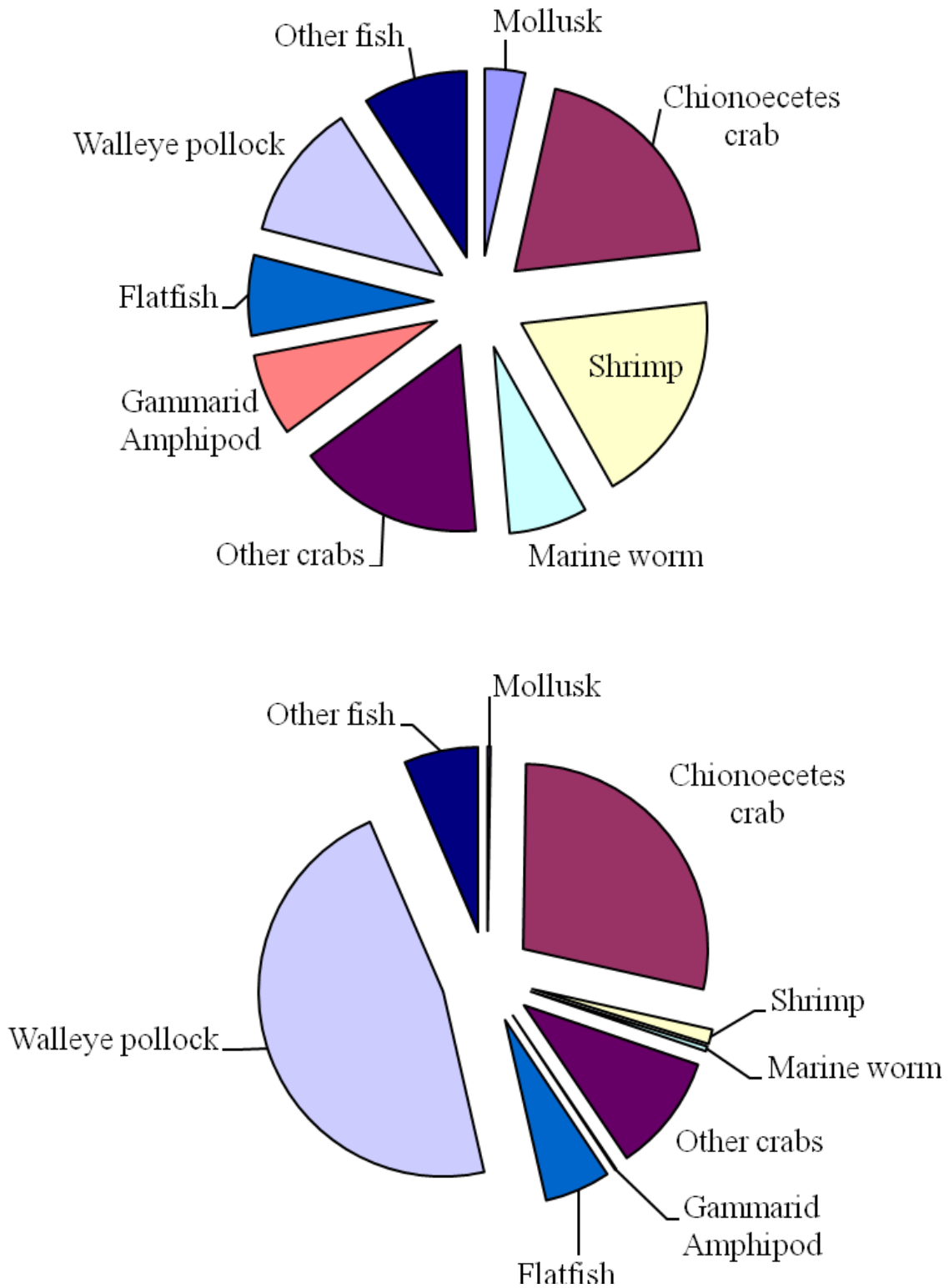


Figure 18. Percent frequency of occurrence (top) and percent total weight (bottom) of prey taken from stomach contents of Pacific cod caught on long-line gear near the Pribilof Islands, Alaska, July 2005 ($n = 22$ non-empty stomachs).

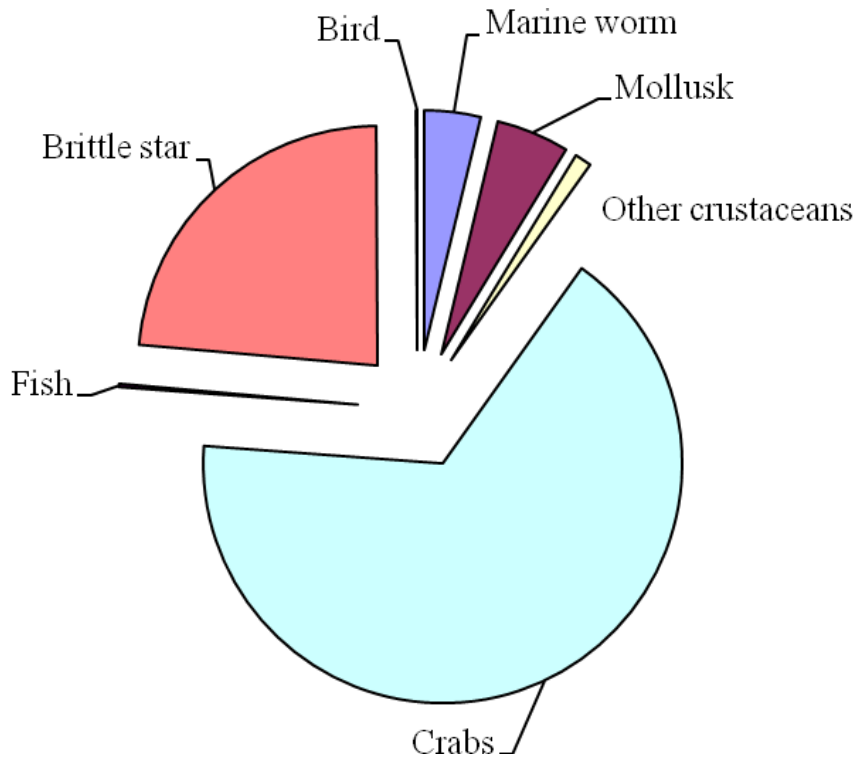
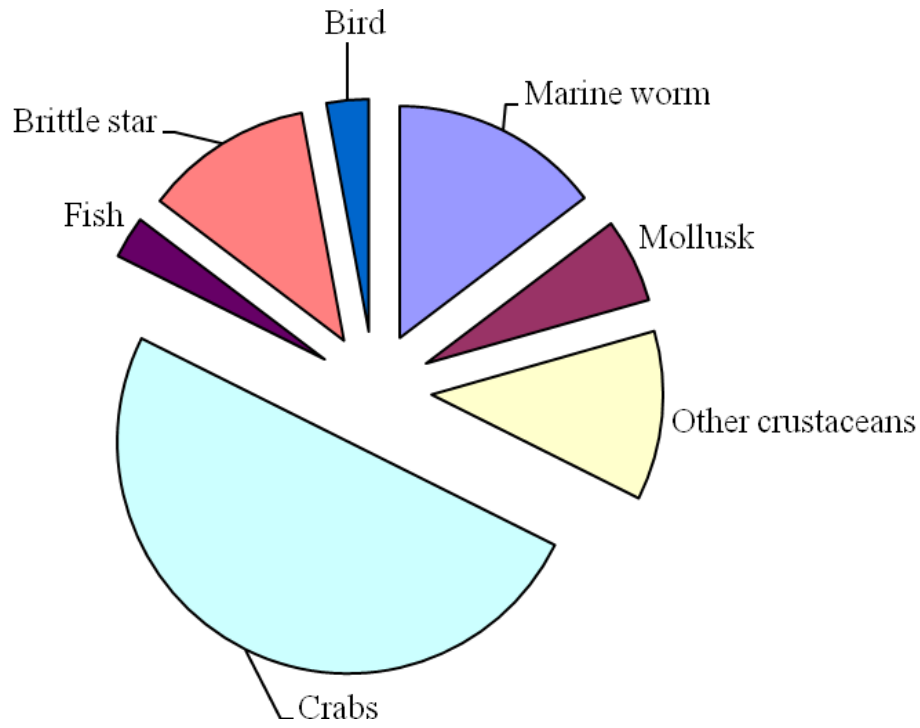


Figure 19. Percent frequency of occurrence (top) and percent total weight (bottom) of prey taken from stomach contents of yellow Irish lord caught on long-line gear near the Pribilof Islands, Alaska, July 2005 ($n = 9$ non-empty stomachs).

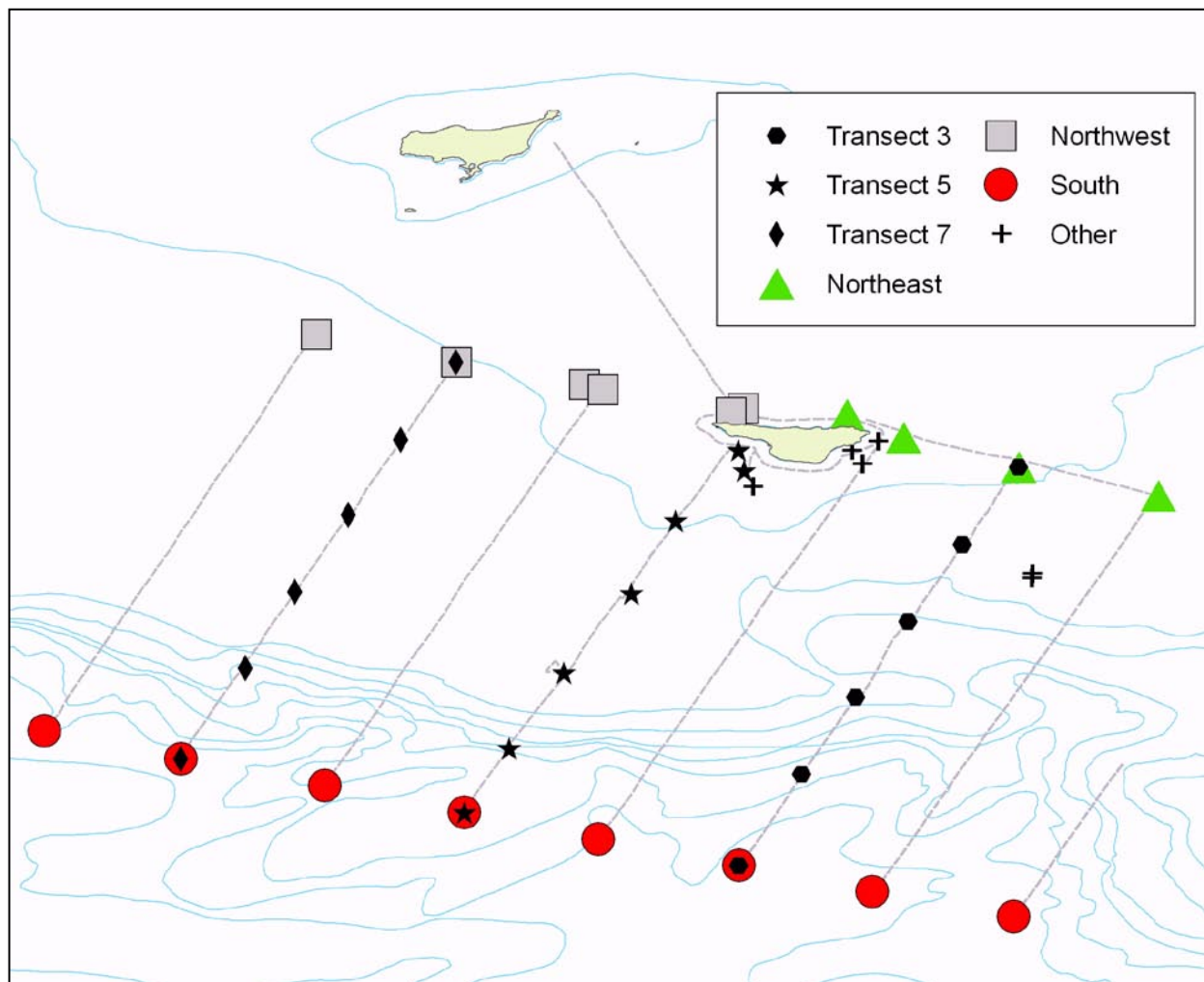


Figure 20. Locations of CTD stations sampled near the Pribilof Islands, Alaska, July 2005, indicating which were used to generate which temperature and salinity profile. Data from stations denoted by crosses (“Other”) were not used to generate profiles.

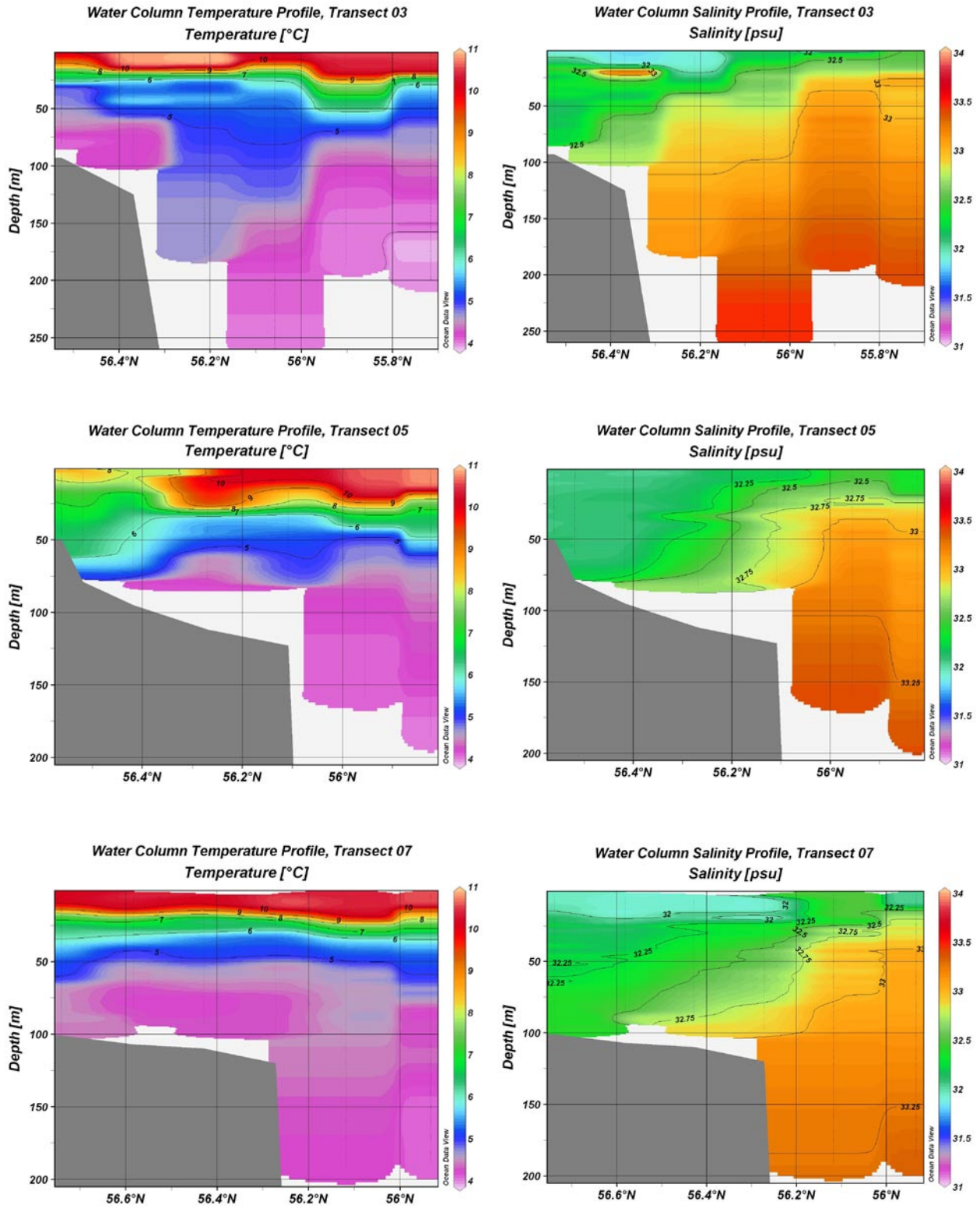


Figure 21. CTD temperature (left) and salinity (right) profiles obtained from Pribilof Island, Alaska transect 3 (top), transect 5 (middle) and transect 7 (bottom), July 2005.

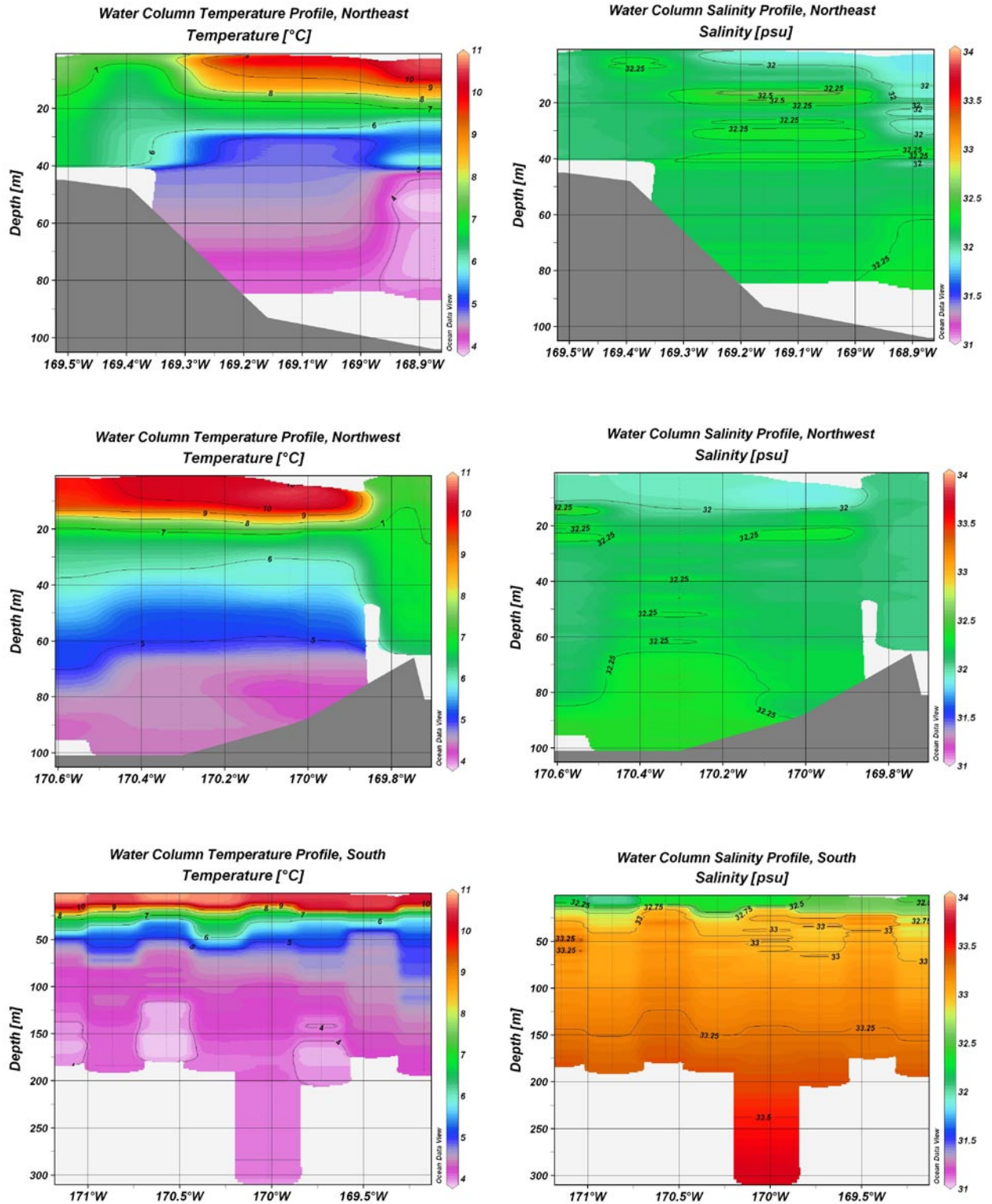


Figure 22. CTD temperature (left) and salinity (right) profiles obtained from Pribilof Island, Alaska northeast line (top), northwest line (middle) and south line (bottom), July 2005.

Appendix A. Photographs of some species caught during the SMMOCI cruise near the Pribilof Islands, Alaska, July 2005 (all by Kitty Mecklenburg).



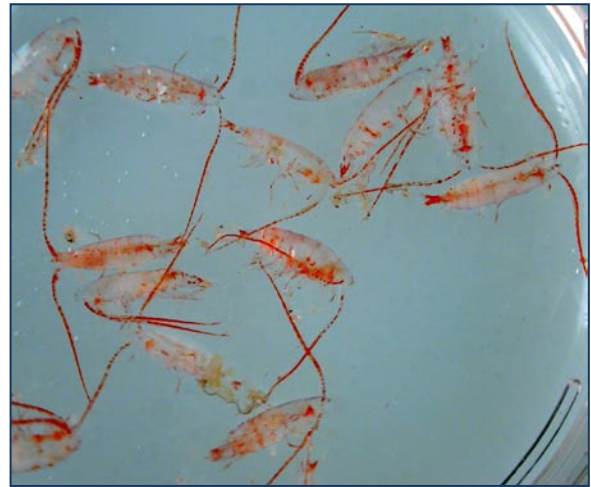
New size record for *Myoxocephalus polyacanthocephalus*, great sculpin (775 mm TL vs. the previous record of about 760 mm).



Icelinus borealis (northern sculpin): The adult specimen pictured is the largest ever recorded, at 114 mm TL vs. the previous record of 101 mm TL.



Greenland sea star (*Leptasterias groenlandica*)



Copepod (*Neocalanus* spp.)



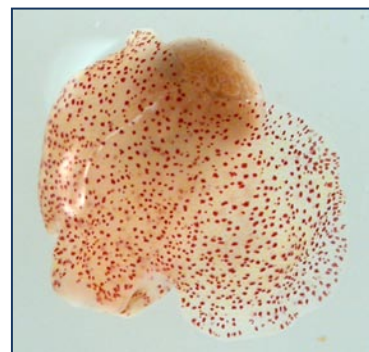
Nutcracker prickleback (*Bryozoichthys lysimus*)



Large melon snail (*Pyrulofusus melonis*)



Dall's frond-aeolis (*Dendronotus dalli*)



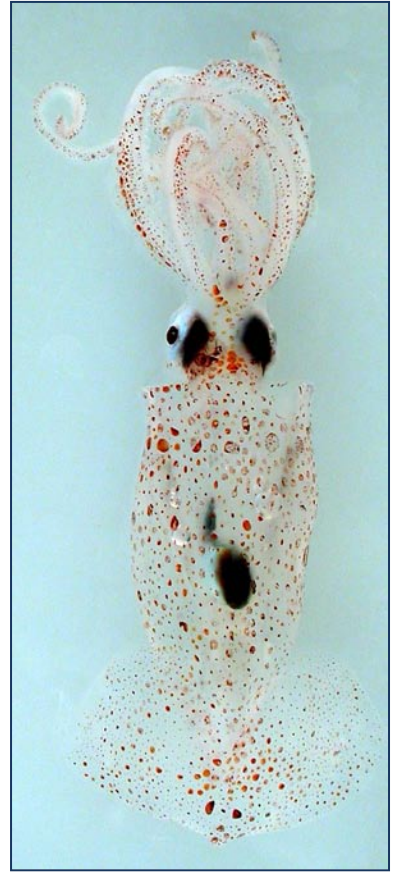
Pacific wingfoot snail
(*Gastroteron pacificum*)



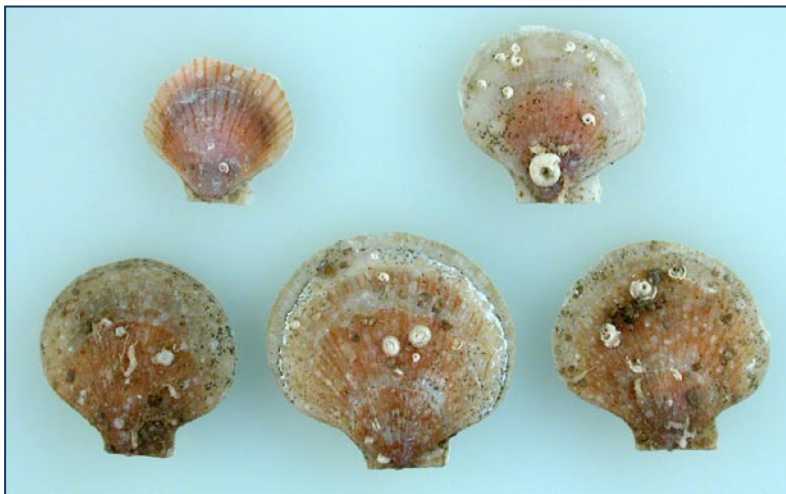
Roughpatch shrimp (*Pandalus stenolepis*)



Sawback poacher (*Sarritor frenatus*)



Majestic squid
(*Berryteuthis magister*)



Alaskan glass scallop (*Propaemussium alaskense*)



Arctic nestler
(*Hiatella arctica*)