

# ***Seabirds on the CalCOFI/CCE-LTER Surveys, 2014 Annual Data Report***

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## **Introduction**

Seabird studies are now an integral part of the California Cooperative Oceanic Fisheries Investigation (CalCOFI), California Current Ecosystem - Long-term Ecological Research (CCE-LTER), and Southern California Coastal Ocean Observing System (SCCOOS) programs. The seabird data is valuable for several reasons. First, information on seabird distribution and abundance provides an upper trophic level perspective which complements the lower trophic level plankton and hydrographic data collected by others. Second, estimates of seabird abundance, diversity and distribution contribute to understanding the spatial ecology of the Southern California Bight, a region characterized by substantial habitat heterogeneity and major oceanographic and biogeographic boundaries associated with Point Conception. Third, by extending our existing records (now 27 years and building; 1987-present) and coupling this information with long-term hydrographic and plankton data, seabird data contributes to understanding the effects of natural climate variability and anthropogenic effects on the southern sector of the California Current ecosystem. Anthropogenic impacts include habitat changes due to global warming, coastal development, and contaminants as well as biotic changes due to fishing and other extractive uses of marine life in the region.

This data report summarizes observations made during 3 seasonal CalCOFI/CCE-LTER cruises (winter, spring, and fall 2014). Herein, we present basic data on survey effort as well as summary information on seabird distribution and abundance. A total of 39 days of survey effort, covering 3,354 km (1,006 km<sup>2</sup>) of ocean habitat is summarized.

These data are made available for use by the scientific and marine management and policy communities. These data should not to be used by for-profit consulting firms or in

litigation. We request that anyone planning to use these data contact the PI by email, [wsydeman@comcast.net](mailto:wsydeman@comcast.net). Data quality is the responsibility of the data user, not the PI, Farallon Institute, CalCOFI/CCE-LTER or other project funders.

## **Methods**

Observations of seabirds are made continuously during daylight ship transits between oceanographic and plankton sampling stations. The observer, located on the bridge approximately 15 meters above sea level, uses hand-held binoculars to assist in the identification and enumeration of birds. The observer records all birds seen within a 300 meter strip transect to one side and front of the vessel while the ship is underway at > 5 knots. Observations are entered into a portable computer using the dedicated application “Dlog”; the ship’s position is automatically recorded every 10 seconds from an external GPS. Each observation includes the species, the number of individuals observed, and their behavior (mostly flying or sitting). At-sea observation data are post-processed using standardized species codes, validation of positioning data, and binning of observations into along-track sections of 3 km in length. The data are then integrated into a survey database which includes data from May 1987 to the present. This data is used to derive summary statistics.

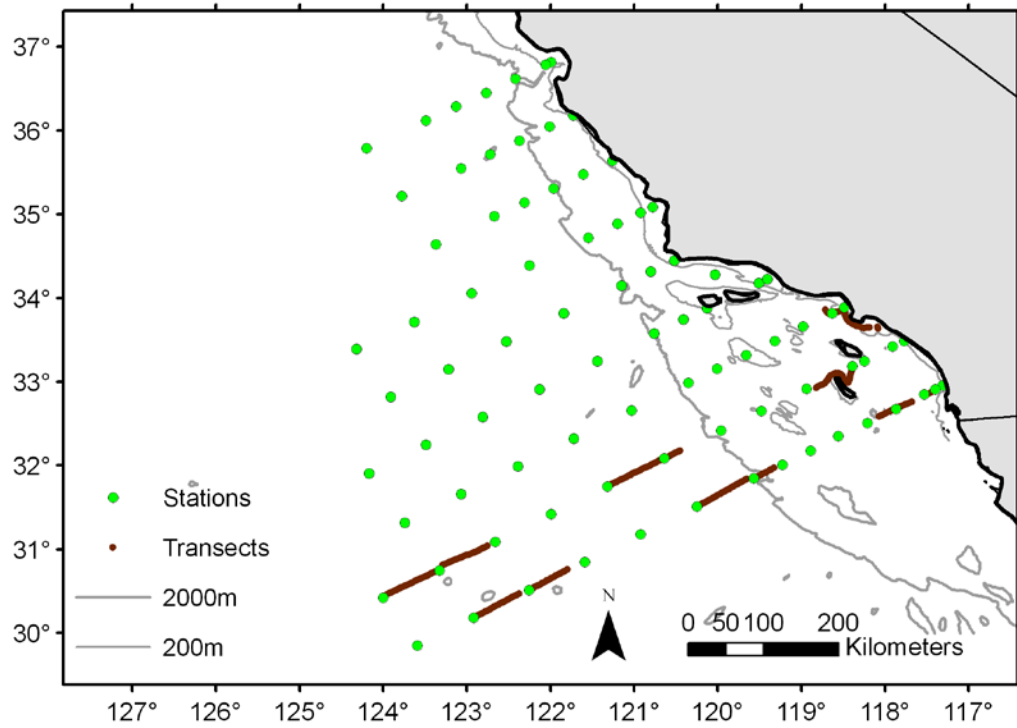
This report summarizes observations for all seasonal surveys conducted in 2014 and is limited to the region covered by CalCOFI lines 76 to 93; the seabird species summarized are listed in Table 2. Taxa excluded from this summary include all mammals, fish, terrestrial birds and most shorebirds except phalaropes which are largely pelagic. Species density is calculated as the total number of individuals observed per species divided by the area (km<sup>2</sup>) surveyed. The overall distribution of seabirds is illustrated by plotting density at each bin’s center position. The density is represented by a circle whose diameter is scaled using the Jenks method in ArcGIS version 9.3.

## **Results**

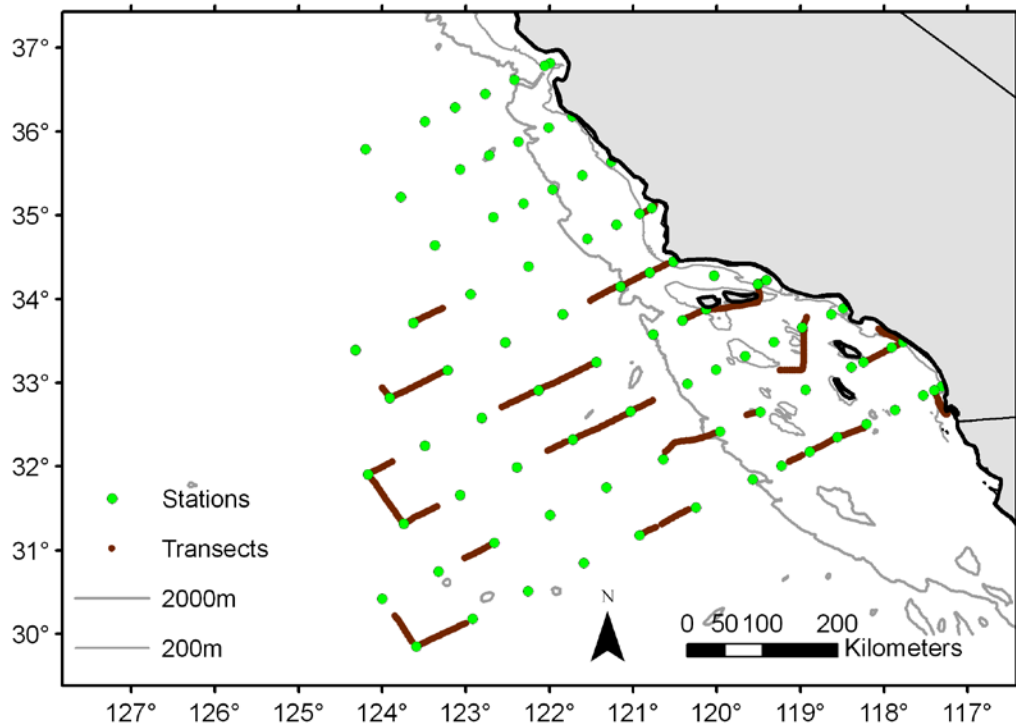
A summary of survey effort is shown in Table 1. Seasonal and overall transects surveyed are shown in Figure 1-4. A summary of species observations is shown in Table 2. Distribution maps for overall seabird density (all species) are shown in Appendix 1 (Figures 5-12). A detailed species list is provided in Appendix 2.

**Table 1. Summary of survey effort and seabird statistics, 2014 and 2013.**

| <b>Annual Survey 2014</b>                   | <u>Winter</u> | <u>Spring</u> | <u>Fall</u>   | <b>Total</b> |
|---|---------------|---------------|---------------|--------------|
| Survey Vessel                               | BM Shimada    | Ocean Starr   | New Horizon   | -            |
| Start Date                                  | 1/29/2014     | 3/28/2014     | 11/8/2014     | -            |
| End Date                                    | 2/4/2014      | 4/16/2014     | 11/22/2014    | -            |
| Number Survey Days                          | 7             | 17            | 15            | 39           |
| Distance Surveyed (km)                      | 609           | 1345          | 1400          | 3354         |
| Area Surveyed (km <sup>2</sup> )            | 183           | 404           | 420           | 1006         |
| Number of Bird Species                      | 25            | 34            | 45            | 49           |
| Overall Bird Density (per km <sup>2</sup> ) | 8.02          | 10.63         | 6.34          | 8.39         |
| Total Individuals Counted                   | 1466          | 4290          | 2688          | 8444         |
| <b>Annual Survey 2013</b>                   | <u>Winter</u> | <u>Spring</u> | <u>Summer</u> | <b>Total</b> |
| Survey Vessel                               | BM Shimada    | BM Shimada    | New Horizon   | -            |
| Start Date                                  | 1/11/2013     | 4/6/2013      | 7/6/2013      | -            |
| End Date                                    | 1/25/2013     | 4/27/2013     | 7/21/2013     | -            |
| Number Survey Days                          | 14            | 15            | 16            | 45           |
| Distance Surveyed (km)                      | 1149          | 1085          | 1525          | 3759         |
| Area Surveyed (km <sup>2</sup> )            | 345           | 326           | 457           | 1128         |
| Number of Bird Species                      | 29            | 38            | 20            | 46           |
| Overall Bird Density (per km <sup>2</sup> ) | 5.41          | 7.95          | 2.43          | 4.93         |
| Total Individuals Counted                   | 1867          | 2591          | 1111          | 5569         |
|   |               |               |               |              |



**Figure 1. CalCOFI/CCE-LTER hydrographic and plankton sampling stations (green). 2014 transects, winter survey.**



**Figure 2. 2014 transects, spring survey.**

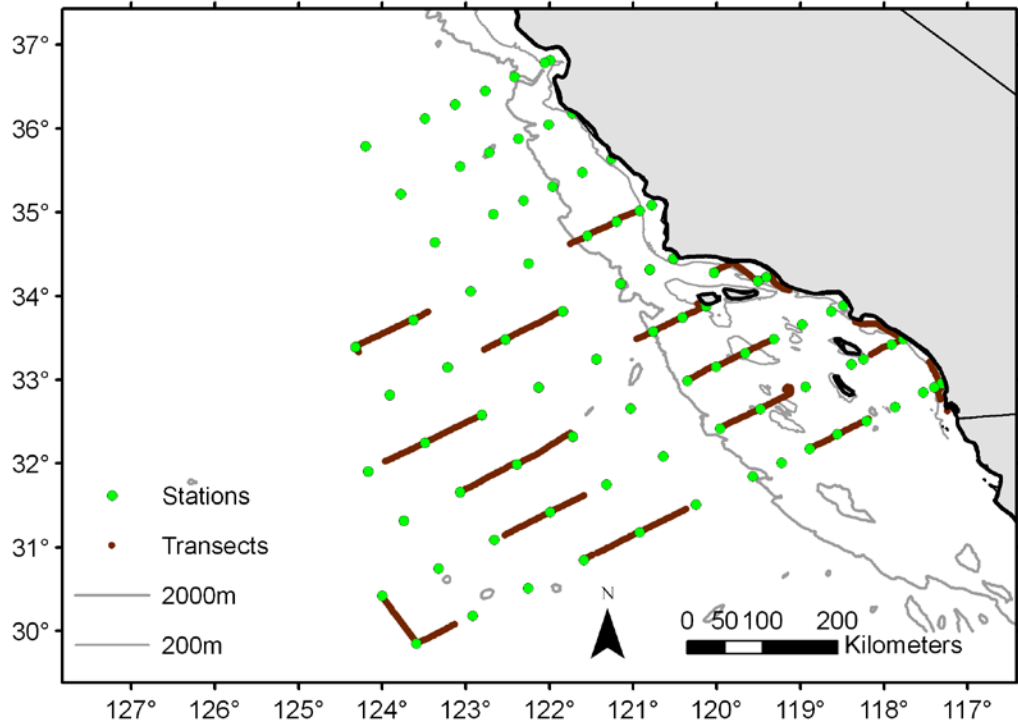


Figure 3. 2014 transects, fall survey.

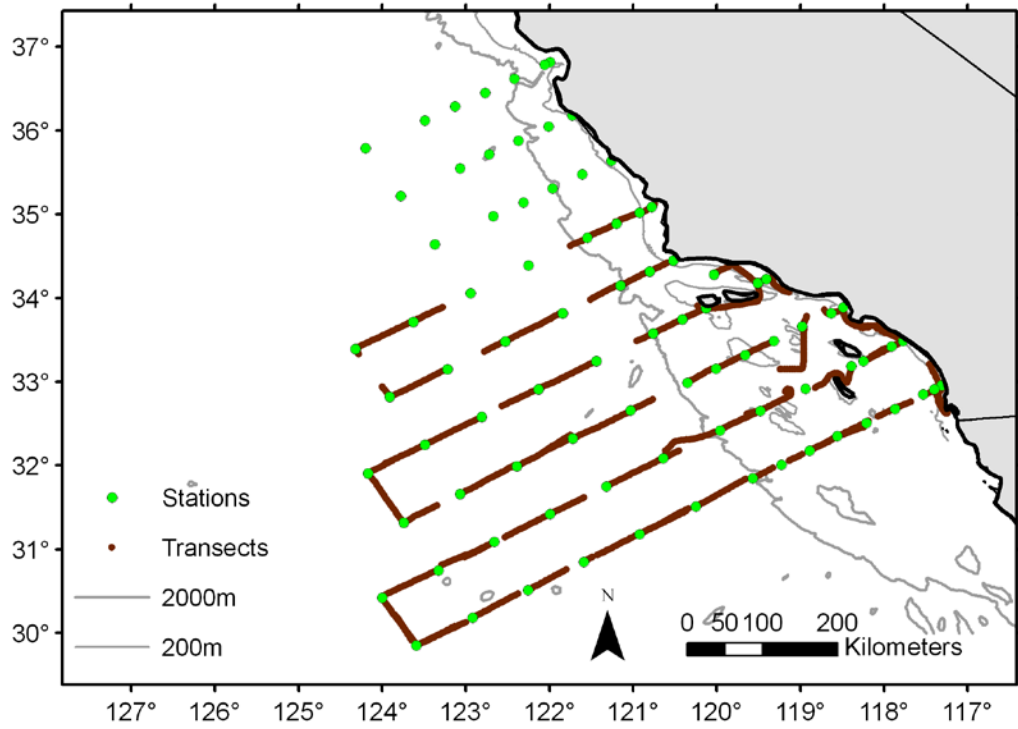


Figure 4. 2014 transects, all seasons.

**Table 2. 2014 observations by season and species. Cell values represent: the total number of individuals (ind.) / the number of observations per species (obs.) / species density (dens.) in individuals per km<sup>2</sup>.**

| <b>Common Name</b>      | <b>Latin Name</b>                 | <b>Winter<br/>( ind. / obs. / dens.)</b> | <b>Spring<br/>( ind. / obs. / dens.)</b> | <b>Fall<br/>( ind. / obs. / dens.)</b> |
|-------------------------|-----------------------------------|--|--|--|
| American White Pelican  | <i>Pelecanus erythrorhynchos</i>  |  |  |  |
| Ancient Murrelet        | <i>Synthliboramphus antiquus</i>  |  |  |  |
| Arctic Loon             | <i>Gavia arctica</i>              |  |  |  |
| Arctic Tern             | <i>Sterna paradisaea</i>          |  |  |  |
| Ashy Storm-Petrel       | <i>Oceanodroma homochroa</i>      |  |  | 10 / 1 / 0.02                          |
| Black Scoter            | <i>Melanitta nigra</i>            |  |  |  |
| Black Storm-Petrel      | <i>Oceanodroma melania</i>        |  |  |  |
| Black-Footed Albatross  | <i>Phoebastria nigripes</i>       | 5 / 5 / 0.03                             | 11 / 11 / 0.03                           | 3 / 3 / 0.01                           |
| Black-Legged Kittiwake  | <i>Rissa tridactyla</i>           |  |  |  |
| Black-Vented Shearwater | <i>Puffinus opisthomelas</i>      | 640 / 80 / 3.5                           | 18 / 7 / 0.04                            | 513 / 157 / 1.22                       |
| Bonaparte's Gull        | <i>Larus philadelphia</i>         | 530 / 16 / 2.9                           | 2257 / 19 / 5.59                         | 187 / 25 / 0.45                        |
| Brandt's Cormorant      | <i>Phalacrocorax penicillatus</i> | 11 / 11 / 0.06                           | 78 / 26 / 0.19                           | 109 / 65 / 0.26                        |
| Brant                   | <i>Branta bernicla</i>            |  | 65 / 1 / 0.16                            |  |
| Brown Booby             | <i>Sula leucogaster</i>           |  |  | 1 / 1 / 0                              |
| Brown Noddy             | <i>Anous stolidus</i>             |  |  |  |
| Brown Pelican           | <i>Pelecanus occidentalis</i>     | 8 / 3 / 0.04                             | 63 / 27 / 0.16                           | 74 / 31 / 0.18                         |
| Buller's Shearwater     | <i>Puffinus bulleri</i>           |  |  | 1 / 1 / 0                              |
| California Gull         | <i>Larus californicus</i>         | 20 / 8 / 0.11                            | 11 / 10 / 0.03                           | 97 / 70 / 0.23                         |
| Caspian Tern            | <i>Sterna caspia</i>              |  |  |  |
| Cassin's Auklet         | <i>Ptychoramphus aleuticus</i>    | 10 / 4 / 0.05                            | 3 / 2 / 0.01                             | 539 / 279 / 1.28                       |
| Clark's Grebe           | <i>Aechmophorus clarkii</i>       |  |  | 3 / 3 / 0.01                           |
| Common Loon             | <i>Gavia immer</i>                |  | 18 / 3 / 0.04                            | 5 / 5 / 0.01                           |

|                          |  |               |                 |                |
|--------------------------|--|---------------|-----------------|----------------|
| Common Murre             | <i>Uria aalge</i>                          | 11 / 4 / 0.06 | 1 / 1 / 0       | 9 / 9 / 0.02   |
| Common Tern              | <i>Sterna hirundo</i>                      |               |                 |                |
| Cook's Petrel            | <i>Pterodroma cookii</i>                   | 7 / 6 / 0.04  | 136 / 95 / 0.34 | 1 / 1 / 0      |
| Craveri's Murrelet       | <i>Synthliboramphus craveri</i>            |               |                 |                |
| Dark Shearwater          | (species group)                            |               |                 | 1 / 1 / 0      |
| Dark-Rumped Petrel       | <i>Pterodroma phaeopygia sandwichensis</i> |               |                 |                |
| Double-Crested Cormorant | <i>Phalacrocorax auritus</i>               | 2 / 2 / 0.01  | 10 / 7 / 0.02   | 2 / 2 / 0      |
| Eared Grebe              | <i>Podiceps nigricollis</i>                |               | 2 / 1 / 0       | 2 / 2 / 0      |
| Elegant Tern             | <i>Sterna elegans</i>                      | 3 / 3 / 0.02  | 202 / 79 / 0.5  | 5 / 5 / 0.01   |
| Flesh-Footed Shearwater  | <i>Puffinus carneipes</i>                  |               |                 |                |
| Fork-Tailed Storm-Petrel | <i>Oceanodroma furcata</i>                 |               |                 |                |
| Forster's Tern           | <i>Sterna forsteri</i>                     |               |                 |                |
| Franklin's Gull          | <i>Larus pipixcan</i>                      |               |                 |                |
| Glaucous Gull            | <i>Larus hyperboreus</i>                   |               |                 |                |
| Glaucous-Winged Gull     | <i>Larus glaucescens</i>                   |               |                 | 4 / 4 / 0.01   |
| Guadalupe Murrelet       | <i>Synthliboramphus hypoleucus</i>         |               |                 | 7 / 4 / 0.02   |
| Hawaiian Petrel          | <i>Pterodroma sandwichensis</i>            |               |                 |                |
| Heermann's Gull          | <i>Larus heermanni</i>                     | 2 / 2 / 0.01  | 7 / 7 / 0.02    | 26 / 25 / 0.06 |
| Herring Gull             | <i>Larus argentatus</i>                    |               |                 | 9 / 8 / 0.02   |
| Horned Puffin            | <i>Fratercula corniculata</i>              |               |                 |                |
| Hybrid Gull              | (species group)                            |               |                 | 1 / 1 / 0      |
| Juan Fernandez Petrel    | <i>Pterodroma externa</i>                  |               |                 |                |
| Kelp Gull                | <i>Larus dominicanus</i>                   |               |                 |                |
| Kermadec Petrel          | <i>Pterodroma neglecta</i>                 |               |                 |                |
| Laughing Gull            | <i>Larus atricilla</i>                     |               |                 |                |

|                        |                          |                |                 |                  |
|------------------------|--------------------------|----------------|-----------------|------------------|
| Laysan Albatross       | Phoebastria immutabilis  | 2 / 2 / 0.01   | 6 / 6 / 0.01    | 1 / 1 / 0        |
| Leach's Storm-Petrel   | Oceanodroma leucorhoa    | 29 / 20 / 0.16 | 88 / 65 / 0.22  | 230 / 149 / 0.55 |
| Least Storm-Petrel     | Oceanodroma microsoma    |                |                 |                  |
| Least Tern             | Sterna antillarum        |                |                 |                  |
| Long-Tailed Jaeger     | Stercorarius longicaudus |                |                 |                  |
| Marbled Murrelet       | Brachyramphus marmoratus |                |                 |                  |
| Mew Gull               | Larus canus              |                |                 |                  |
| Mottled Petrel         | Pterodroma inexpectata   |                |                 |                  |
| Murphy's Petrel        | Pterodroma ultima        |                | 1 / 1 / 0       |                  |
| Northern Fulmar        | Fulmarus glacialis       | 21 / 21 / 0.11 | 33 / 29 / 0.08  | 65 / 59 / 0.15   |
| Osprey                 | Pandion haliaetus        |                |                 |                  |
| Pacific Loon           | Gavia pacifica           | 5 / 3 / 0.03   | 43 / 29 / 0.11  | 8 / 5 / 0.02     |
| Parakeet Auklet        | Aethia psittacula        |                |                 |                  |
| Parasitic Jaeger       | Stercorarius parasiticus |                | 2 / 2 / 0       | 2 / 2 / 0        |
| Parkinson's Petrel     | Procellaria parkinsoni   |                |                 |                  |
| Pelagic Cormorant      | Phalacrocorax pelagicus  |                | 8 / 5 / 0.02    | 1 / 1 / 0        |
| Peregrine Falcon       | Falco peregrinus         |                |                 |                  |
| Pigeon Guillemot       | Cephus columba           |                | 1 / 1 / 0       |                  |
| Pink-Footed Shearwater | Puffinus creatopus       | 7 / 7 / 0.04   | 179 / 25 / 0.44 | 8 / 8 / 0.02     |
| Pomarine Jaeger        | Stercorarius pomarinus   | 1 / 1 / 0.01   | 2 / 2 / 0       | 26 / 21 / 0.06   |
| Red Phalarope          | Phalaropus fulicaria     | 2 / 2 / 0.01   | 54 / 20 / 0.13  | 290 / 126 / 0.69 |
| Red-Billed Tropicbird  | Phaethon aethereus       | 2 / 2 / 0.01   | 3 / 3 / 0.01    | 1 / 1 / 0        |
| Red-Footed Booby       | Sula sula                |                |                 |                  |
| Red-Necked Grebe       | Podiceps grisegena       |                |                 |                  |
| Red-Necked Phalarope   | Phalaropus lobatus       | 3 / 2 / 0.02   | 65 / 10 / 0.16  | 3 / 3 / 0.01     |
| Red-Tailed Tropicbird  | Phaethon rubricauda      |                |                 | 2 / 2 / 0        |



|  |                                   |               |                 |                |
|--|-----------------------------------|---------------|-----------------|----------------|
| Red-Throated Loon                        | <i>Gavia stellata</i>             |               |                 | 3 / 3 / 0.01   |
| Rhinoceros Auklet                        | <i>Cerorhinca monocerata</i>      |               |                 |                |
| Ring-Billed Gull                         | <i>Larus delawarensis</i>         | 55 / 23 / 0.3 |                 |                |
| Royal Tern                               | <i>Sterna maxima</i>              |               |                 |                |
| Ruddy Turnstone                          | <i>Arenaria interpres</i>         |               |                 |                |
| Sabine's Gull                            | <i>Larus sabini</i>               | 1 / 1 / 0.01  | 5 / 3 / 0.01    |                |
| Scripps's Murrelet                       | <i>Synthliboramphus scrippsii</i> | 2 / 1 / 0.01  | 9 / 4 / 0.02    |                |
| Short-Tailed / Slender-Billed Shearwater | <i>Puffinus tenuirostris</i>      |               |                 | 2 / 2 / 0      |
| Short-Tailed Albatross                   | <i>Phoebastria albatrus</i>       |               |                 |                |
| Solander's Petrel                        | <i>Pterodroma solandri</i>        |               |                 |                |
| Sooty Shearwater                         | <i>Puffinus griseus</i>           |               | 607 / 104 / 1.5 | 29 / 27 / 0.07 |
| South Polar Skua                         | <i>Stercorarius maccormicki</i>   |               | 1 / 1 / 0       |                |
| Stejneger's Petrel                       | <i>Pterodroma longirostris</i>    |               |                 |                |
| Surf Scoter                              | <i>Melanitta perspicillata</i>    |               | 3 / 1 / 0.01    | 4 / 2 / 0.01   |
| Thayer's Gull                            | <i>Larus thayeri</i>              |               |                 | 1 / 1 / 0      |
| Tufted Puffin                            | <i>Fratercula cirrhata</i>        |               |                 |                |
| Unidentified Albatross                   | (species group)                   |               |                 |                |
| Unidentified Auklet                      | (species group)                   |               |                 |                |
| Unidentified Cormorant                   | (species group)                   |               |                 |                |
| Unidentified Duck                        | (species group)                   |               |                 |                |
| Unidentified Grebe                       | (species group)                   |               |                 |                |
| Unidentified Gull                        | (species group)                   |               |                 | 4 / 4 / 0.01   |
| Unidentified Jaeger                      | (species group)                   |               |                 |                |
| Unidentified Large Alcid                 | (species group)                   |               |                 |                |
| Unidentified Loon                        | (species group)                   |               |                 |                |

|                             |                                  |                |                  |                 |
|-----------------------------|----------------------------------|----------------|------------------|-----------------|
| Unidentified Murre          | (species group)                  |                |                  | 1 / 1 / 0       |
| Unidentified Petrel         | (species group)                  |                |                  |                 |
| Unidentified Phalarope      | (species group)                  |                |                  | 57 / 10 / 0.14  |
| Unidentified Procellarid    | (species group)                  |                |                  |                 |
| Unidentified Shearwater     | (species group)                  |                |                  |                 |
| Unidentified Skua           | (species group)                  |                |                  |                 |
| Unidentified Small Alcid    | (species group)                  |                |                  |                 |
| Unidentified Storm-Petrel   | (species group)                  |                |                  |                 |
| Unidentified Tern           | (species group)                  |                |                  |                 |
| Unidentified Tropicbird     | (species group)                  |                |                  |                 |
| Wedge-Rumped Storm-Petrel   | <i>Oceanodroma tethys</i>        |                |                  |                 |
| Wedge-Tailed Shearwater     | <i>Puffinus pacificus</i>        |                |                  |                 |
| Western Grebe               | <i>Aechmophorus occidentalis</i> |                |                  | 90 / 27 / 0.21  |
| Western Gull                | <i>Larus occidentalis</i>        | 87 / 71 / 0.48 | 298 / 245 / 0.74 | 251 / 161 / 0.6 |
| Wilson's Storm-Petrel       | <i>Oceanites oceanicus</i>       |                |                  |                 |
| Xantus / Craveri's Murrelet | (species group)                  |                |                  |                 |

# Appendix 1. Overall seabird distribution maps by season for 2014 and 2013.

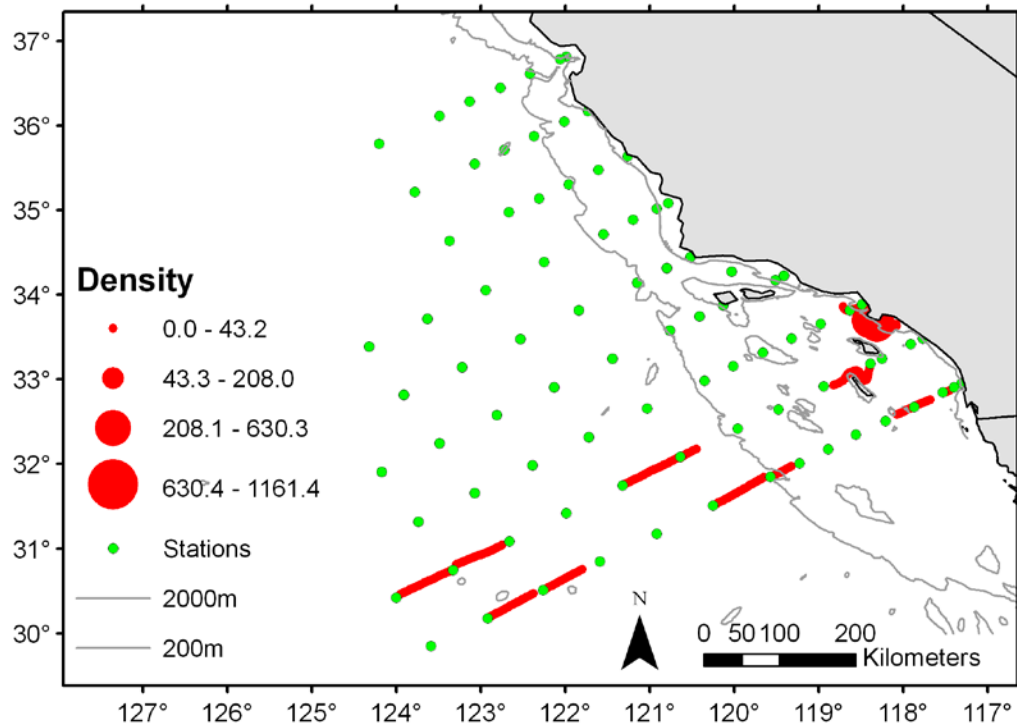


Figure 5. Spatial distribution of all seabird species, winter 2014.

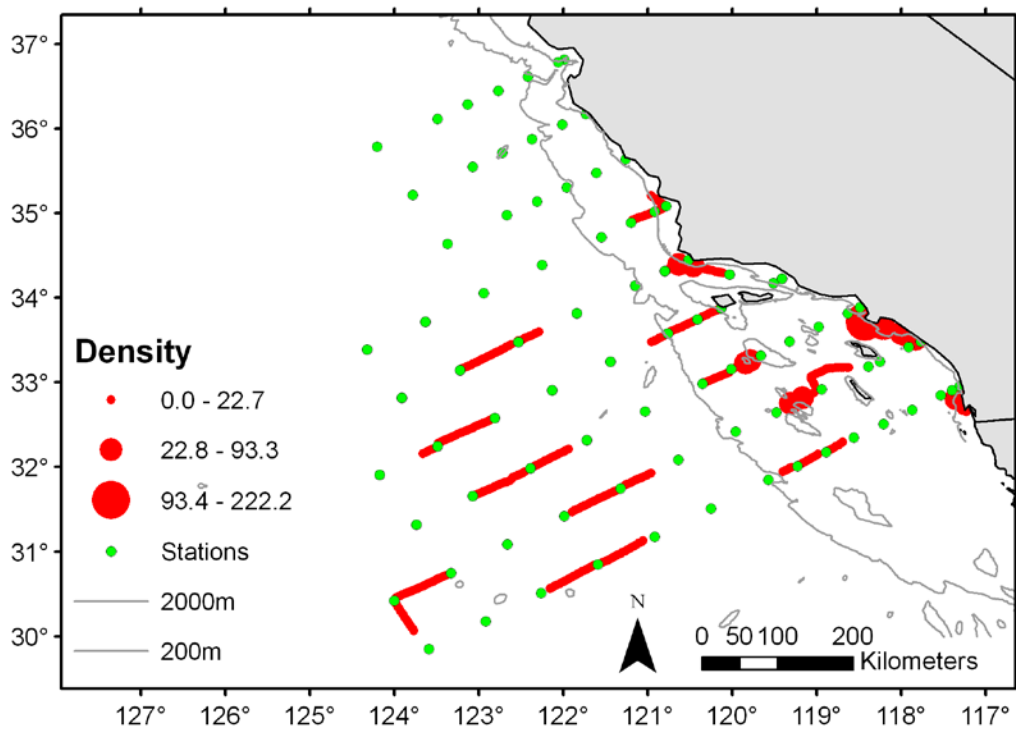


Figure 6. Spatial distribution of all seabird species, winter 2013. Note the difference in scale with 2014.

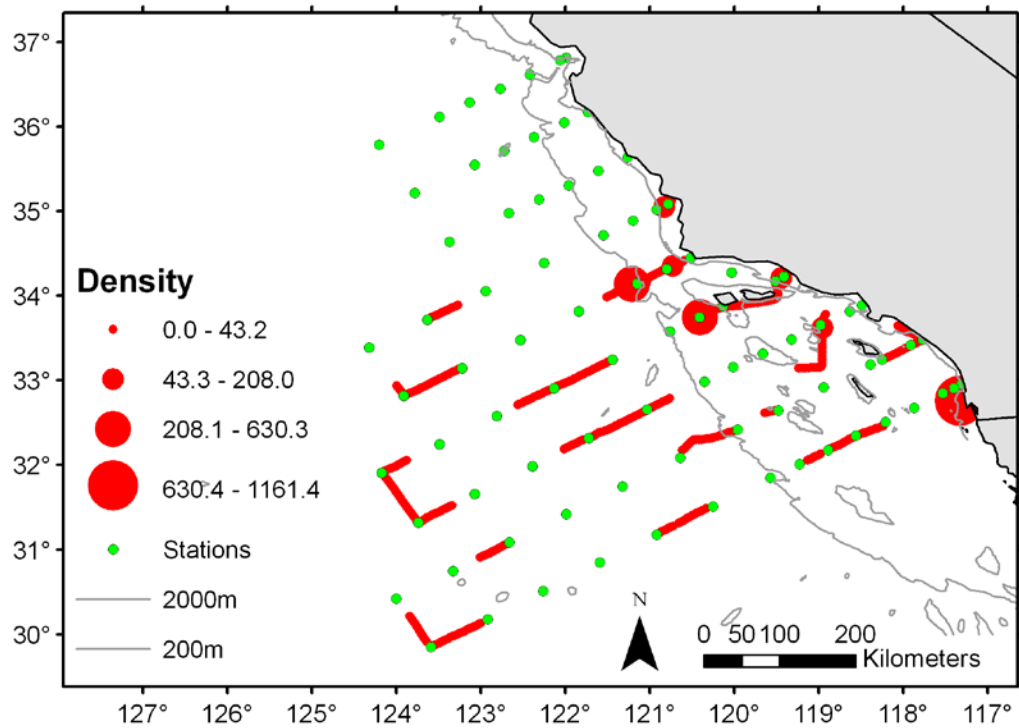


Figure 7. Spatial distribution of all seabird species, spring 2014.

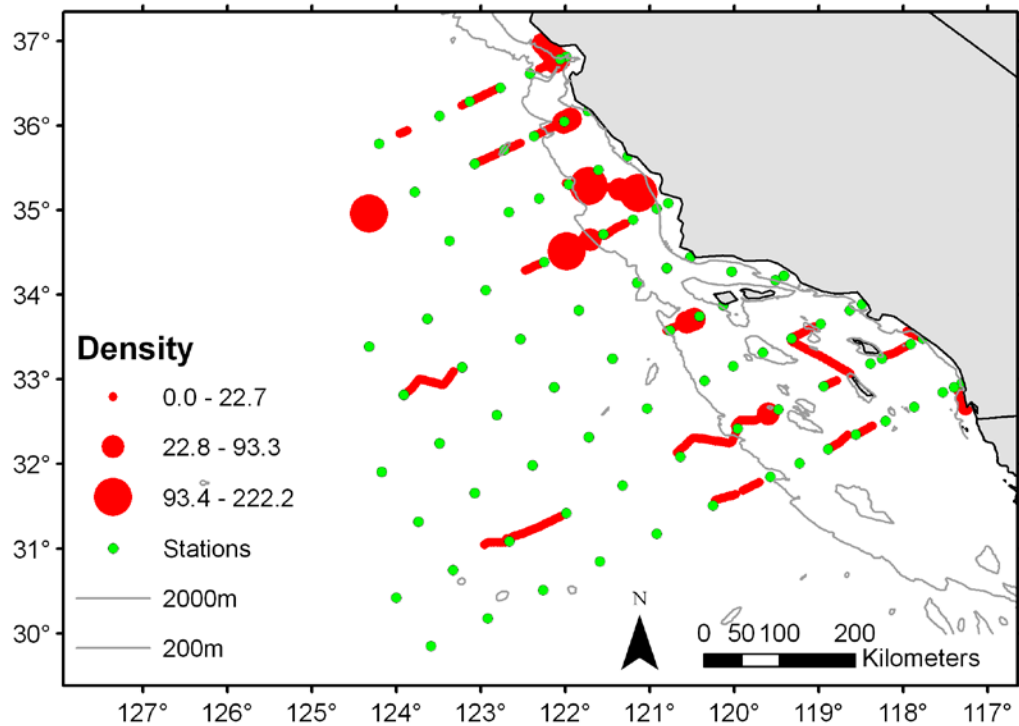


Figure 8. Spatial distribution of all seabird species, spring 2013. Note the difference in scale with 2014.

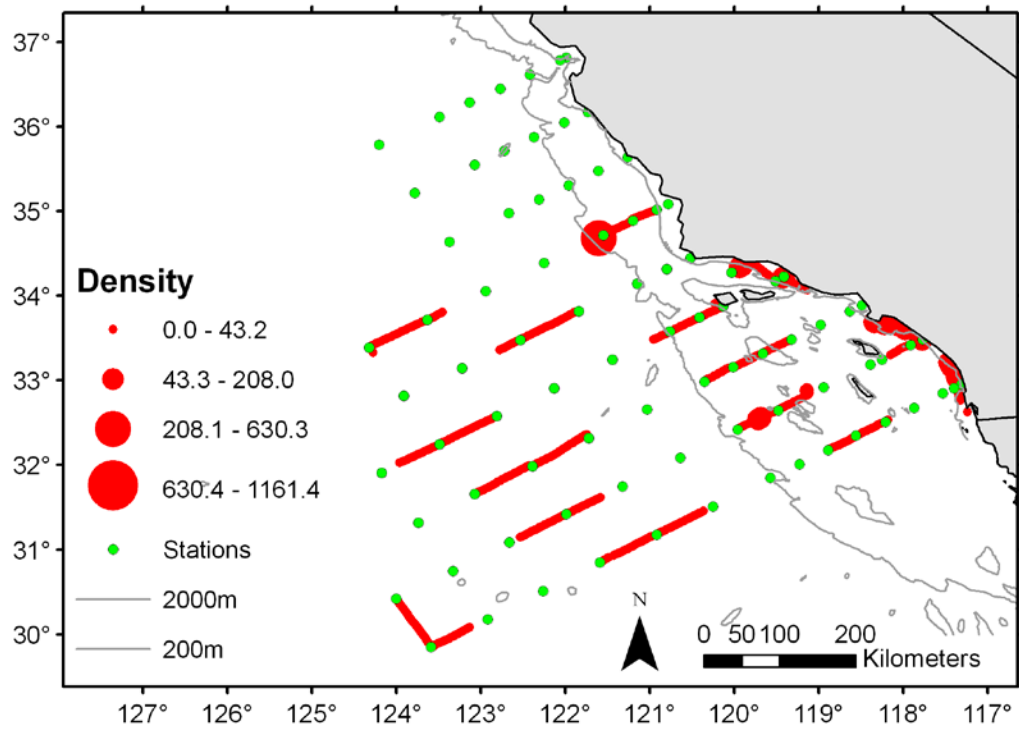


Figure 9. Spatial distribution of all seabird species, fall 2014. Note that there was no fall survey for 2013.

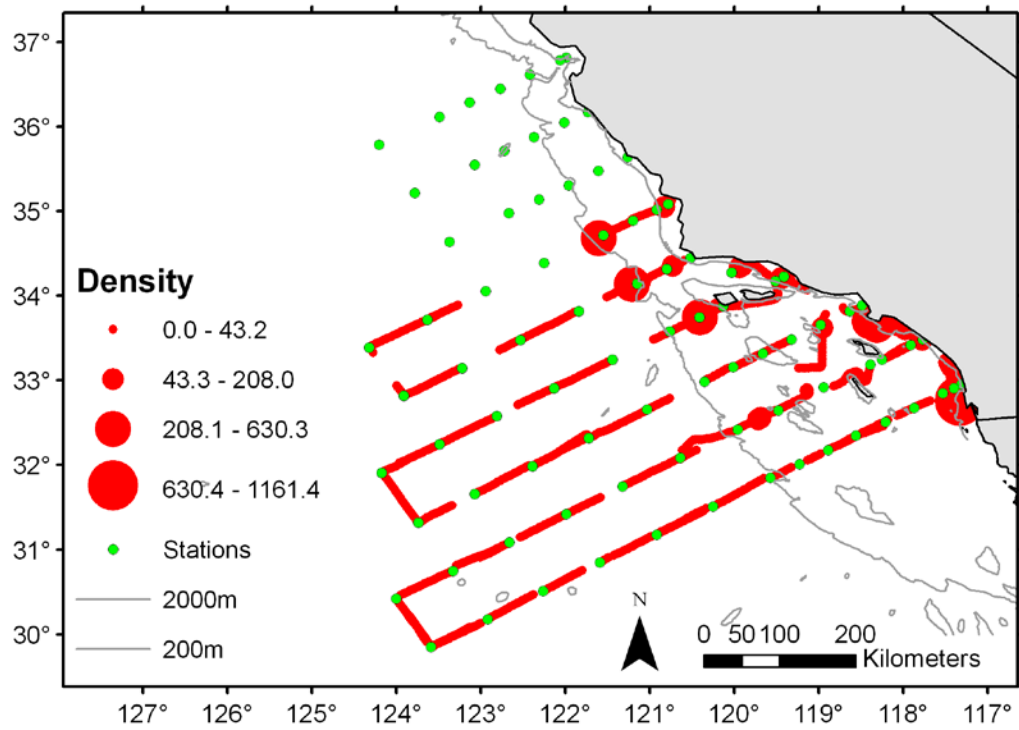


Figure 10. Spatial distribution of all seabird species across all seasons, 2014.

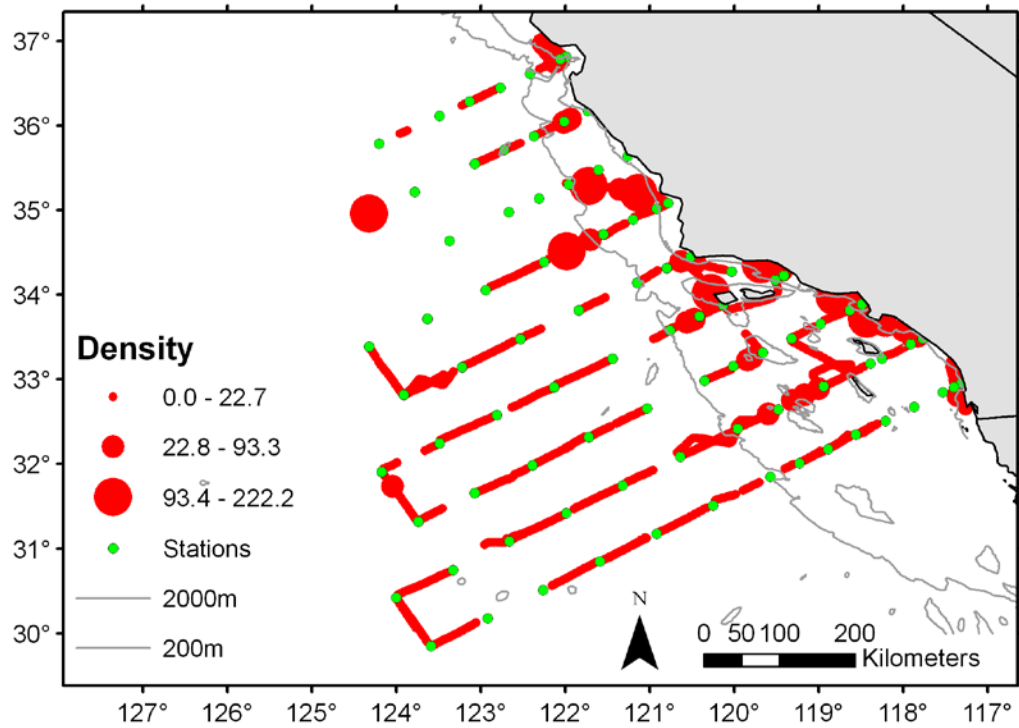


Figure 11. Spatial distribution of all seabird species across all seasons, 2013. Note the difference in scale with 2014.

## Appendix 2. Species Lists

### *Data selection criteria*

The following criteria were applied to the survey database to select data for the summary.

|                             |                                      |
|-----------------------------|--------------------------------------|
| Behavior codes included     | All values                           |
| Species categories included | Birds, Unidentified                  |
| Species categories excluded | Mammals, Fish, Excluded Species List |
| Years                       | 2014                                 |
| Months                      | All months                           |
| Bin length                  | All bins > 0.1km                     |
| Region                      | Lines 76 to 93                       |
| Seasons                     | All seasons                          |

### *Excluded Species List*

The following species were excluded from this analysis.

| <b>Common Name</b>       | <b>Latin Name</b>       |
|--------------------------|-------------------------|
| American Coot            | Fulica americana        |
| Black Oystercatcher      | Haematopus bachmani     |
| Black Skimmer            | Rynchops niger          |
| Black Tern               | Chlidonias niger        |
| Black Turnstone          | Arenaria melanocephala  |
| Brewer's Sparrow         | Spizella breweri        |
| Bufflehead               | Bucephala albeola       |
| European Starling        | Sturnus vulgaris        |
| Great Blue Heron         | Ardea herodias          |
| Great Egret              | Ardea alba              |
| Green Heron              | Butorides virescens     |
| Least Sandpiper          | Calidris minutilla      |
| Long-billed Curlew       | Numenius americanus     |
| Long-billed Dowitcher    | Limnodromus scolopaceus |
| Mallard Duck             | Anas platyrhynchos      |
| Marbled Godwit           | Limosa fedoa            |
| Mourning Dove            | Zenaida macroura        |
| Red-Breasted Merganser   | Mergus serrator         |
| Ruddy Duck               | Oxyura jamaicensis      |
| Sanderling               | Calidris alba           |
| Snow Goose               | Chen caerulescens       |
| Snowy Egret              | Egretta thula           |
| Unidentified Bird        | (species group)         |
| Unidentified Dowitcher   | (species group)         |
| Unidentified Goose       | (species group)         |
| Unidentified Hummingbird | (species group)         |
| Unidentified Passerine   | (species group)         |
| Unidentified Shorebird   | (species group)         |
| Western Sandpiper        | Calidris mauri          |

|                              |                                    |
|------------------------------|------------------------------------|
| Whimbrel                     | <i>Numenius phaeopus</i>           |
| White-Winged Scoter          | <i>Melanitta fusca</i>             |
| Willet                       | <i>Catoptrophorus semipalmatus</i> |
| Yellow-Rumped Warbler        | <i>Dendroica coronata</i>          |
| Baird's Beaked Whale         | <i>Berardius bairdii</i>           |
| Blue Shark                   | <i>Prionace glauca</i>             |
| Blue Whale                   | <i>Balaenoptera musculus</i>       |
| Bottlenose Dolphin           | <i>Tursiops truncatus</i>          |
| California Sea Lion          | <i>Zalophus californianus</i>      |
| Common Dolphin               | <i>Delphinus delphis</i>           |
| Cuvier's Beaked Whale        | <i>Ziphius cavirostris</i>         |
| Dall's Porpoise              | <i>Phocoenoides dalli</i>          |
| False Killer Whale           | <i>Pseudorca crassidens</i>        |
| Fin Whale                    | <i>Balaenoptera physalus</i>       |
| Gray Whale                   | <i>Eschrichtius robustus</i>       |
| Green Sea Turtle             | <i>Chelonia mydas</i>              |
| Guadalupe Fur Seal           | <i>Arctocephalus townsendi</i>     |
| Hammerhead Shark             | <i>Sphyrna</i> spp.                |
| Harbor Porpoise              | <i>Phocoena phocoena</i>           |
| Harbor Seal                  | <i>Phoca vitulina</i>              |
| Hawksbill Sea Turtle         | <i>Eretmochelys imbricata</i>      |
| Humpback Whale               | <i>Megaptera novaeangliae</i>      |
| Killer Whale                 | <i>Orcinus orca</i>                |
| Leatherback Turtle           | <i>Dermochelys coriacea</i>        |
| Long-beaked Common Dolphin   | <i>Delphinus capensis</i>          |
| Mako Shark                   | <i>Isurus oxyrinchus</i>           |
| Minke Whale                  | <i>Balaenoptera acutorostrata</i>  |
| Mola Mola                    | <i>Mola mola</i>                   |
| Northern Elephant Seal       | <i>Mirounga angustirostris</i>     |
| Northern Fur Seal            | <i>Callorhinus ursinus</i>         |
| Northern Right Whale Dolphin | <i>Lissodelphis borealis</i>       |
| Pacific White-Sided Dolphin  | <i>Lagenorhynchus obliquidens</i>  |
| Pilot Whale                  | <i>Globicephala</i> spp.           |
| Pygmy Sperm Whale            | <i>Kogia breviceps</i>             |
| Ridley Sea Turtle            | <i>Lepidochelys olivacea</i>       |
| Risso's Dolphin              | <i>Grampus griseus</i>             |
| Sea Otter                    | <i>Enhydra lutris</i>              |
| Sei Whale                    | <i>Balaenoptera borealis</i>       |
| Short-Beaked Common Dolphin  | <i>Delphinus delphis</i>           |
| Short-Finned Pilot Whale     | <i>Globicephala macrorhynchus</i>  |
| Sperm Whale                  | <i>Physeter macrocephalus</i>      |
| Steller Sea Lion             | <i>Eumetopias jubatus</i>          |
| Striped Dolphin              | <i>Stenella coeruleoalba</i>       |
| Unidentified Balaenoptera    | (species group)                    |
| Unidentified Beaked Whale    | (species group)                    |



|                          |                 |
|--------------------------|-----------------|
| Unidentified Cetacean    | (species group) |
| Unidentified Dolphin     | (species group) |
| Unidentified Large Whale | (species group) |
| Unidentified Mammal      | (species group) |
| Unidentified Pinniped    | (species group) |
| Unidentified Sea Lion    | (species group) |
| Unidentified Seal        | (species group) |
| Unidentified Shark       | (species group) |
| Unidentified Turtle      | (species group) |
| Unidentified Whale       | (species group) |

### ***Included Species List***

For a list of species included in the analysis, please refer to Table 2.