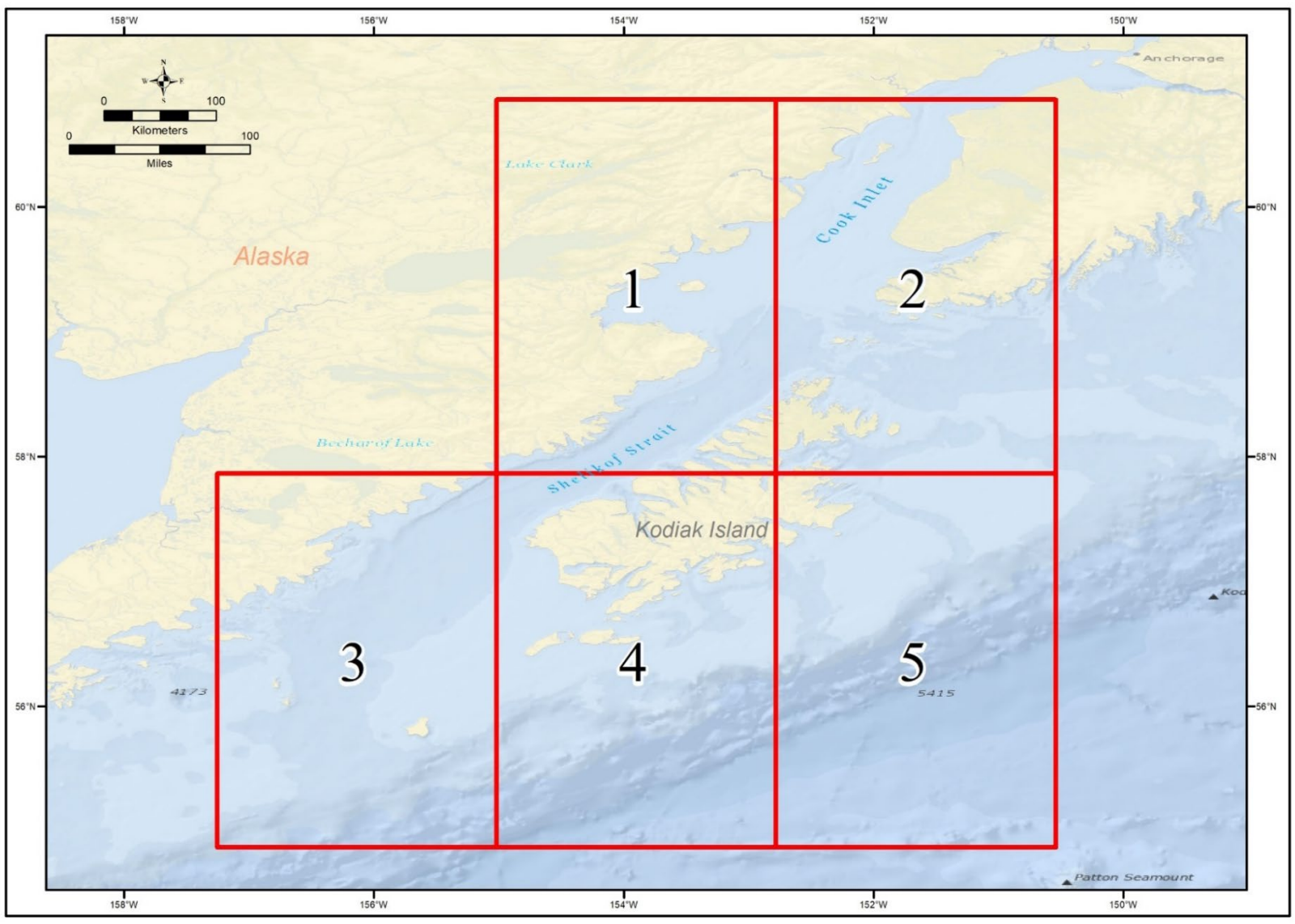
Cook Inlet/Gulf of Alaska Cook Inlet and Kodiak Island Offshore Environmental Sensitivity Index Maps

A Guide to Marine Resources at Risk to Spilled Oil



Bureau of Safety and Environmental Enforcement

15 December 2023

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Sea otter - National Oceanic and Atmospheric Association (NOAA) website
(Source: http://www.publicdomainfiles.com/show_file.php?id=13968757226577)

Beluga Mother and Calf - NOAA Fisheries
(Source: https://www.fisheries.noaa.gov/feature-story/new-model-predicts-potential-effects-prey-availability-and-human-activities-pregnant)

Stellers Sea Lion - photograph taken by Donna A. Dewhurst/ USFWS
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Fin Whale - NOAA Fisheries
(Source: https://www.fisheries.noaa.gov/species/fin-whale)

Horned Puffin - USFWS
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Short-tailed Albatross - USFWS
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Cook Inlet/Gulf of Alaska
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A Guide to Marine Resources at Risk to Spilled Oil

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A Guide to Marine Resources at Risk to Spilled Oil

INTRODUCTION

Environmental Sensitivity Index (ESI) maps have been developed for federal waters of Cook Inlet/Gulf of Alaska (Cook Inlet and Kodiak Island). The ESI atlas is a compilation of information on sensitive biological resources. Though the data will be useful for many natural resource applications, the goal of the ESI data is to present a concise summary of resources that may be particularly vulnerable to spilled oil. The intent of the data should caveat other uses. As an example, the ESI is not intended to present a catalog or comprehensive listing of species present in an area, rather the focus is on species particularly sensitive to oiling and life stages where vulnerability may increase.

SENSITIVE BIOLOGICAL RESOURCES

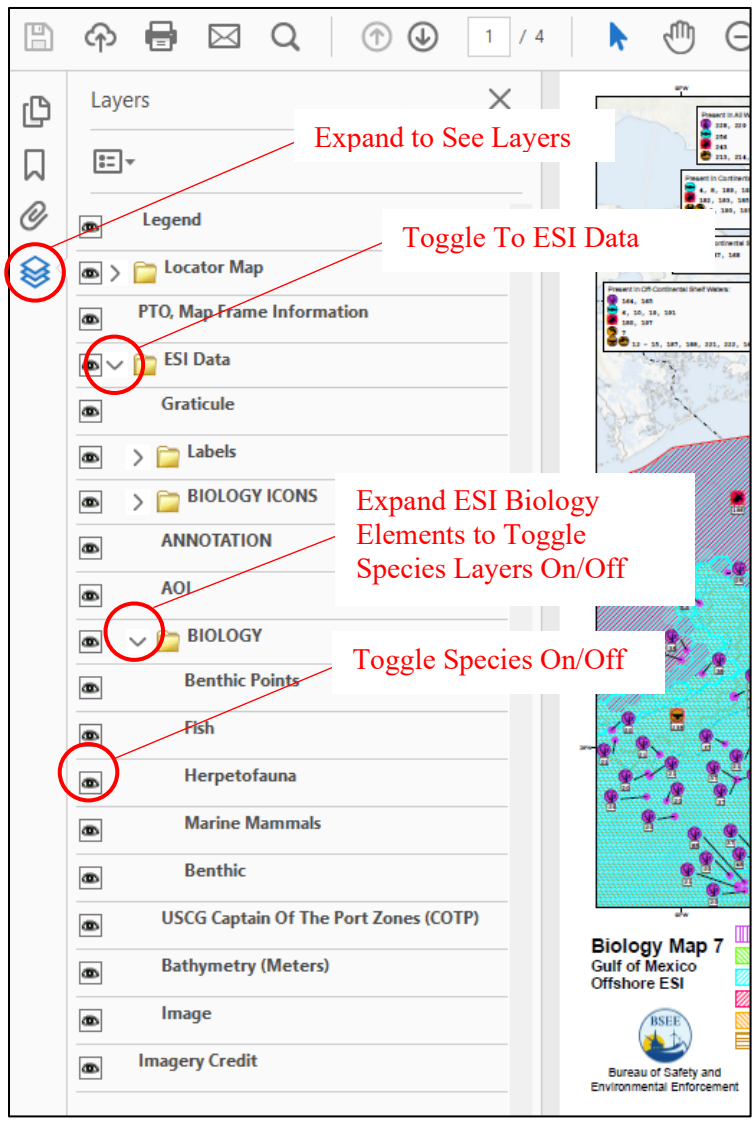
Biological information presented in this atlas was collected, compiled, and reviewed with the assistance of biologists and resource managers from the following agencies:

- Alaska Department of Fish and Game (ADF&G)
- Alaska Whale Foundation
- Audubon Alaska
- Duke University, Nicholas School of the Environment
- Fisheries and Oceans Canada
- Integrated Statistics, Inc.
- National Park Service (NPS), Glacier Bay National Park & Preserve
- NOAA Deep Sea Coral Research and Technology Program (DSCRTP)
- NOAA Fisheries (National Marine Fisheries Service (NMFS))
- NOAA Fisheries, Ted Stevens Marine Research Institute
- NOAA NMFS Alaska Region and West Coast Region
- United States Fish and Wildlife Service (USFWS)
- United States Geological Survey (USGS) Alaska Science Center
- University of Alaska Southeast, Applied Fisheries

The above organizations provided much of the biological information included in the atlas. Other participating organizations will be featured in the sources table and cited in the metadata accompanying the digital product.

The biological resources shown in this atlas were extracted from the ESI GIS data compiled for this region. The biological resources shown on these maps are "layered" in the PDF maps. This allows the user to turn on or off the biological features to create thematic maps or to see more clearly overlapping polygons. Narrative species/taxa profiles that include range maps made from the ESI data accompany this atlas. The range maps in the profiles are layered PDF files, which allow the user to turn on or off selected data layers.

General Instructions on Using Layered PDF



Key Features On ESI Maps

1) Animal and plant species that are at risk during oil spills and/ or spill response are represented in the database by polygons and points.

2) Species have been divided into groups and subgroups based on their behavior, morphology, taxonomic classification, and spill vulnerability and sensitivity. The icons below reflect this grouping scheme.

3) There is a Resources at Risk number (RAR#) associated with each polygonal or point feature. The RAR# references a table in the database that contains species names (common and scientific) associated with the feature.

BIRD
- Diving Bird
- Gull/Tern
- Pelagic
- Waterfowl

BENTHIC
- Coral/Hardbottom/Reef

FISH
- Fish

INVERTEBRATE
- Bivalve
- Cephalopod
- Crab
- Echinoderm

MARINE MAMMALS
- Pinniped
- Sea otter
- Whale

4) Also associated with each species in the table is the federal (F) protected status as threatened (T) or endangered (E) under the Endangered Species Act (ESA) represented on the maps as a red box around the subelement icon shown above, as well as concentration, seasonality, and life-history information. Federal listings were provided by NMFS and USFWS.

5) The table includes a Mapping Qualifier with each species record (see table of mapping qualifiers and guidelines below). The mapping qualifier should help users understand vulnerabilities associated with the map data.

6) Feature-level source information is included for each species within each RAR#, meaning there is a link to a table containing Geographic (G) and Seasonality (S) sources. Full bibliographic information is included for each source in the sources table. Additionally, feature information is included in the GIS database used to create these maps. The GIS data also provides the extent polygons or points for all mapped features; it can be queried, filtered, and used with other GIS datasets.

Mapping Qualifiers and Guidelines

Element	Qualifier	Guidelines
Bird	Concentration Area	Areas where concentrations are considerably higher than other records of the same species in the AOI. Completion of the concentration field is mandatory for records with this qualifier. May be used when other qualifiers do not apply. May indicate concentrations for foraging or other activities not covered by other qualifiers.
Fish	Concentration Area	Areas where concentrations are considerably higher than other records of the same species in the AOI. Completion of the concentration field is mandatory for records with this qualifier.
Invert	Concentration Area	Areas where concentrations are considerably higher than other records of the same species in the AOI. Completion of the concentration field is mandatory for records with this qualifier.
M_Mammal	Concentration Area	Areas where concentrations are considerably higher than other records of the same species in the AOI. Completion of the concentration field is mandatory for records with this qualifier.
Benthic	General Distribution	Used for broad, general distributions of species that are often mapped to landscape- or habitat-scale features (e.g., "coral reef" or "rocky reef") or may indicate species-specific distributions.
Bird	General Distribution	Used for broad, general distributions of species that are often mapped to landscape- or habitat-scale features (e.g., bays or marshes); may or may not include specific life history information.
Fish	General Distribution	Used for broad, general distributions of species that are often mapped to landscape- or habitat-scale features (e.g., bays or marshes). May or may not include specific life history information.
Invert	General Distribution	Used for broad, general distributions of species that are often mapped to landscape- or habitat-scale features (e.g., bays or marshes); may or may not include specific life history information.
Benthic	High Ecological Value	For use in areas where benthic organisms provide high ecological services (e.g., kelp and seagrasses), high quality habitat, or known areas of high biodiversity. Some areas (e.g., highly productive oyster reefs) may be considered "High Ecological Value" compared to less-viable but also mapped reef areas.
M_Mammal	Migration	Potential or known mammal migration corridors in the marine environment.
Bird	Nesting	Applicable to all nesting birds: colonial nesters, solitary nesters, waterfowl, and secretive nesters.
Benthic	Vulnerable Occurrence	Intended for records of rare species with discrete occurrences, where the conservation value of the species should be highlighted for spill response. Can also be used for T/E records that are not mapped as a general distribution of the species.
Bird	Vulnerable Occurrence	Intended for records of rare species with discrete occurrences, where the conservation value of the species should be highlighted for spill response. Can also be used for T/E records that lack discrete life history information or for T/E records that are not mapped as a general distribution of the species.
M_Mammal	Vulnerable Occurrence	Intended for records of rare species with discrete occurrences, where the conservation value of the species should be highlighted for spill response. Can also be used for T/E records that lack discrete life history information or for T/E records that are not mapped as a general distribution of the species.

7) The text in the Present Throughout Box (PTO) describes how the general geographic location is determined for the PTO boxes displayed on the ESI maps. The individual species status (threatened/endangered) is the primary filtering criteria for determining what is displayed on the maps versus what is put in the PTO box. Not every species with a status will be shown on the map and may be shown in the PTO box. Additional filtering for PTO includes the spatial extent of the species or species assemblage polygons relative to the area of interest (AOI) on each map. The purpose of the PTO box is to declutter the map and increase readability.

Present Throughout Box (PTO)

PTO Designation	Description
Present In All Water	Species or species assemblage polygons that cover most, if not all water in the AOI for a map.
Present In Continental Shelf Waters	Species or species assemblage polygons that cover most if not all waters from the state water boundary to the shelf edge in the Gulf of Alaska. A depth of approximately 600-meters was used to help identify the offshore extent of this area.
Present In Continental Shelf Edge Waters	Species or species assemblage polygons that cover most, if not all shelf edge or shelf slope waters in the Gulf of Alaska. A depth of approximately 200 to 1,200 meters was used to help define this area.
Present In Cook Inlet Waters	Species or species assemblage polygons that cover most if not all waters of Cook Inlet.
Present In Waters South Of Cook Inlet	Species or species assemblage polygons that cover most if not all waters south of Cook Inlet on Map 2.
Present In Shelikof Strait Waters	Species or species assemblage polygons that cover most if not all waters of Shelikof Strait.

Birds

Birds displayed in this atlas include alcids, diving birds, gulls, terns, pelagic birds, and waterfowl. Species that are conservation priority are specifically emphasized, including two ESA-listed species: short-tailed albatross (FE) and Steller's eider (FT). Bird occurrence information displayed in this atlas is based on information gathered via phone/email correspondence with resource experts, and hardcopy and digital sources; key data sets are listed below and included in the metadata. This atlas represents offshore waters, so while no birds are technically nesting within the AOI, several species are nesting on islands adjacent to the AOI. Therefore, some nesting seasonalities are included to highlight this critical life-history stage where appropriate.

North Pacific Pelagic Seabird Database (NPPSD): For general distribution coverage of seabirds in the AOI, data from the NPPSD were used. The NPPSD is a USGS-maintained database that contains

point locations of survey transect data that censused seabirds at sea. NPPSD records were clipped to the AOI, and species frequencies from 2000 to present within the AOI were computed. Seabird species with frequencies in the 10s or greater (or in the single digits for conservation priority species) were included in the ESI, with concentration values listed by order of magnitude of record frequency (e.g., "1s", "10s", "100s", "1000s", or "10,000s").

Spatiotemporal seabird density models: Seabirds in Cook Inlet were mapped using model data provided by USGS. Arimitsu et al. (2023) developed joint dynamic species distribution models using five decades of seabird survey data and data on habitat covariates. These models produced gridded (5 x 5 km grid) monthly density predictions for eight species groups, which represented 77% of all birds observed within Cook Inlet. Modeled species groups were: shearwaters, black-legged kittiwake, common murre, pigeon guillemot, Kittlitz's murrelet, marbled murrelet, horned puffin, and tufted puffin. Model output data for each grid cell for each species group were summed for each month to calculate cumulative seabird densities for each grid cell for the eight species groups. Then, the maximum monthly cumulative density for each grid cell was computed. These maximum monthly cumulative density values were divided into three quantiles to designate high, medium, and low ESI concentrations of seabirds throughout Cook Inlet. Because cumulative values were used for the eight species groups, this dataset shows predicted density of seabirds as a general group. Therefore, concentrations were assigned only to the 'Seabirds' records in the ESI data. The individual species groups that comprised the cumulative model values were included in the ESI data without concentration values. For more detailed information about how to interpret the model data and for further information on individual seabird species, please contact the resource experts listed in the table below.

Audubon Important Bird Areas: The Important Bird Area (IBA) Program is a global effort to identify and conserve areas that are essential habitat for birds at global, continental, and state scales. Alaska IBAs are relied on for breeding, nesting, foraging, molting, resting, staging, and/or migration. Alaska IBAs that fell within the Cook Inlet/Gulf of Alaska AOI include: Chirikof Island Marine, Eastern Kodiak Island Marine, Gulf of Alaska Shelf 151W58N and 155W57N, Kachemak Bay, Kamishak Bay, Lower Cook Inlet 153W59N, Semidi Islands Marine and Colonies, Barren Islands Colonies, Flat Island Colony, Marmot Bay Colonies, and Tuxedni Island Colony.

Note that species composition within polygons and particularly concentration values are based on model or other results using observations made over multi-year periods and are not meant to accurately reflect 'current' conditions in the case of an event. Survey and modelling limitations, weather, and other ecological factors contribute to bird concentrations at any given time. Also, note that bird concentrations vary throughout the periods listed in the seasonality table. Please contact resource experts in the event of a spill or if data are to be used for any reason other than spill planning or response.

Expert contacts for Cook Inlet / Gulf of Alaska (Cook Inlet and Kodiak Island) birds* are:

Name	Agency	City	Phone/ Email	Species
Mayumi Arimitsu	USGS	Juneau, AK	marimitsu@usgs.gov; (907) 364-1593	Seabirds
Julian Fischer	USFWS	Anchorage, AK	julian_fischer@fws.gov; (907) 786-3644	Waterfowl; Marine birds
Liz Labunski	USFWS	Anchorage, AK	elizabeth_labunski@fws.gov; (907) 786-3865	Seabirds
Sarah Schoen	USGS	Anchorage, AK	sschoen@usgs.gov; (907) 786-7467	Seabirds
Art Kettle	USFWS	Homer, AK	arthur_kettle@fws.gov; (907) 226-4614	Seabirds
Bill Larned	USFW; retired	Soldotna, AK	Retired	Waterfowl
Robb Kaler	USFWS	Anchorage, AK	robert_kaler@fws.gov; (509) 701-7893	Seabirds
Bridget Crokus	USFWS	Anchorage, AK	Bridget_crokus@fws.gov; (907) 786-3378	AK resources
Kathy Kuletz	USFWS	Anchorage, AK	kathy_kuletz@fws.gov; (907) 830-5378	Seabirds

***Note: this list is not meant to represent all bird experts for the region.**

Major Data Sources Used: Birds

Audubon Alaska. 2007. Alaska Important Bird Areas, vector digital data.

Arimitsu, M.L., J.F. Piatt, J.T. Thorson, K.J. Kuletz, G.S. Drew, S.K. Schoen, D.A. Cushing, C. Kroeger, and W.J. Sydeman. 2023. Joint spatiotemporal models to predict seabird densities at sea. Frontiers in Marine Science 10:1078042.

Drew, G.S., S.K. Schoen, M.D. Hood, M.L. Arimitsu, and J.F. Piatt. 2005. North Pacific Pelagic Seabird Database (NPPSD) (ver 4.1, May 2023): U.S. Geological Survey data release, https://doi.org/10.5066/F7WQ01T3.

Fish

Fish species depicted in this atlas include species of conservation interest, and species of commercial, recreational, or ecological importance. Fish polygons were created based on digital data, published documents and expert opinion provided by resource experts at NOAA Fisheries.

Juveniles and adults of five species of salmon occur in marine waters of the Cook Inlet and Shelikof Straits. No populations of salmon in Alaska are listed as threatened or endangered. However, some of the populations that spawn in rivers in the lower 48 states are protected, and it is possible that some of those animals can occur in Cook Inlet and Shelikof Straits. Salmon presence was mapped based on Essential Fish Habitat (EFH) polygons.

All other species were mapped based on polygonal representations of their EFH provided by NOAA. If an EFH polygon overlapped with most of the study area, the species was mapped throughout the spatial extent of the atlas. EFH polygons that identified more specific areas were used to map the distributions of those species and life history stages. In some cases, boundaries were generalized for cartographic reasons, with the resulting polygon being more conservative (i.e., encompassing more area) than the original polygon. Additional species were added to the study area based on their presence according to published documents or descriptions.

Expert contacts for Cook Inlet / Gulf of Alaska (Cook Inlet and Kodiak Island) fish * are:

Name	Agency	City	Phone/ Email	Species
Seanbob Kelly	NOAA Fisheries	Anchorage, AK	(907) 271-5195	Managed species and EFH
Jodi Pirtle	NOAA Fisheries	Juneau, AK	(907) 586-7006	Managed species and EFH
Molly Zaleski	NOAA Fisheries	Juneau, AK	(907) 586-7646	Managed species and EFH

***Note: this list is not meant to represent all fish experts for the region.**

Major Data Sources Used: Fish

Alaska Department of Fish and Game (ADFG). 2023. Species profiles. Available at: https://www.adfg.alaska.gov/index.cfm?adfg=animals.listfish. Accessed September 2023.

NOAA. 2018. Alaska Essential Fish Habitat Species Shapefiles, vector digital data.

Invertebrates

Invertebrates depicted in this atlas include species of conservation interest, or species of commercial, recreational, or ecological importance.

Sunflower sea star (*Pycnopodia helianthoides*) is proposed for listing under the Endangered Species Act (ESA) as threatened, due to recent population declines. Sunflower sea star distribution was provided by NOAA. All other invertebrate species were mapped based on EFH polygons or published documents that indicate presence in the area. Concentration areas for crab species were mapped based on the

extent of management areas that are designated to protect areas of high abundance in waters around Kodiak Island.

Expert contacts for Cook Inlet / Gulf of Alaska (Cook Inlet and Kodiak Island) invertebrates * are:

Name	Agency	City	Phone	Species
Seanbob Kelly	NOAA Fisheries	Anchorage, AK	(907) 271-5195	Managed species and EFH
Jodi Pirtle	NOAA Fisheries	Juneau, AK	(907) 586-7006	Managed species and EFH
Sadie Wright	NOAA Fisheries	Juneau, AK	(907) 586-7630	Protected species
Molly Zaleski	NOAA Fisheries	Juneau, AK	(907) 586-7646	Managed species and EFH

***Note: this list is not meant to represent all invertebrate experts for the region.**

Major Data Sources Used: Invertebrates

NOAA. 2018. Alaska Essential Fish Habitat species shapefiles, vector digital data.

NOAA. 2023. Habitat restrictions shapefile, vector digital data.

NOAA. 2023. Sunflower sea star range, vector digital data.

Marine Mammals

Marine mammals mapped in the atlas include cetaceans, pinnipeds, and northern sea otter that are listed under the ESA and/or Marine Mammal Protection Act. Marine mammal occurrence information displayed in this atlas is based on information gathered via phone/email correspondence with resource experts, hardcopy sources, and digital sources; key data sets are listed below and included in the metadata.

Northern sea otter (FT): The northern sea otter subspecies (*Enhydra lutris kenyoni*) is found in the Aleutian Islands, Southern Alaska, British Columbia, and Washington. Within Alaska, there are three stocks. The Southeast stock can be found in the coastal waters of Southeast Alaska (east of the atlas AOI). The Southcentral population spans from west of Glacier Bay to the eastern edge of Cook Inlet (within the atlas AOI). The Southwest population stretches from the western edge of Cook Inlet out to the Aleutian Islands (within the atlas AOI). Globally, sea otters are secure. Within the state of Alaska, the Southeast and Southcentral stocks are stable. The Southwestern stock is listed as federally threatened (FT). Data were provided by USFWS for the current ranges of the two stocks that fell within the atlas AOI. Much of the area is covered by the Southwestern stock; a small sliver of the AOI in the northeastern corner is covered by the Southcentral population.

Steller sea lion (FE): Steller sea lions are typically found in coastal waters on the continental shelf; they also occur and sometimes forage in much deeper continental slope and pelagic waters, especially in the non-breeding season. The western distinct population segment (DPS) includes all Steller sea lions originating from rookeries west of Cape Suckling (144 west longitude). The western DPS's ESA listing status was elevated to endangered when it was established, due to lack of recovery; it remains listed as endangered. Western DPS Steller sea lions also occur east of 144 west longitude in a "mixing zone" in central and northern Southeast Alaska. Data were provided by NMFS for the critical habitat boundaries that fall within the AOI.

Whales: Species mapped include in this atlas include beluga whale: Cook Inlet stock (FE), fin whale (FE), gray whale, humpback whale (FE), north Pacific right whale (FE), and sperm whale (FE). Biologically Important Areas (BIAs) data were provided by NOAA and Duke University for the Gulf of Alaska Region which partially fell within the AOI for this atlas. The following text has been adapted from Wild et. Al. (2023). BIAs are compilations of the best available science and have no inherent regulatory authority. BIAs represent areas and times in which cetaceans are known to concentrate for activities related to reproduction, feeding, and migration, and the known ranges of small and resident populations. Supporting evidence for these BIAs came from aerial-, land-, and vessel-based surveys; satellite-tagging data; passive acoustic monitoring; Indigenous knowledge; photo-identification data; and/or prey studies. BIAs were identified for the six species mapped in this atlas.

Beluga whale: Cook Inlet Stock (FE): Five stocks of belugas are recognized by NOAA Fisheries in U.S. waters, and they are named after the summering areas in which they are found in Alaska. Only Cook Inlet belugas are found within the atlas AOI, and they are mapped as a 'small and resident population' BIA in a small sliver of the northern tip of the atlas AOI. The Cook Inlet beluga whale stock was designated as depleted under the MMPA in 2000 and listed as endangered under the ESA in 2008; therefore, it is considered a strategic stock.

Gray whale: Most of the eastern North Pacific population (ENP) of gray whales migrates along the U.S. west coast and the Gulf of Alaska (GOA) as they transit between winter breeding areas in Baja California and Mexico, along the central California coast, and across the GOA to summer feeding areas in the Bering and Chukchi seas. The GOA portion of the northbound migration generally occurs between March and May. While most gray whales migrate to the Bering and Chukchi seas, some whales spend summer months in feeding aggregations throughout the GOA. In these feeding aggregations they primarily feed on amphipods, gastropods, polychaetes, decapods, and cumaceans. A 'feeding' BIA for gray whale occurs along the east coast of Kodiak Island. The 'migratory' BIA for gray whale encompasses most of the atlas AOI and throughout the entire GOA.

Sperm whale (FE): The GOA provides high-latitude, highly productive feeding grounds frequented by sperm whales in the spring, summer, and fall. Sperm whale occurrence and movement is largely impacted by prey resources. In general, they primarily forage on bathypelagic and mesopelagic prey, at average depths of 200-1,000 m. In the GOA, groundfish and squid are the primary prey of sperm whales and are available year-round in the region. This 'feeding' BIA covers the entire GOA offshore waters of depths 200-2,000 m, which is generally considered the outer continental shelf and the continental slope habitat. This delineation is based on satellite tag records, acoustic data, stable isotope diet analysis, sighting data, and conversations with fishermen, scientists, and fisheries managers finding distributions of sperm whales throughout the GOA across the slope habitat.

Humpback whale (FE): Humpback whales from four DPSs (Western North Pacific (FE), Hawaii, Mexico (FT), and Central America (FE)) have been documented feeding in the GOA. Designated Critical Habitat for humpback whale from two DPSs (Mexico and Western North Pacific) falls within the atlas AOI. The waters surrounding Kodiak Island are a humpback whale 'feeding' BIA.

Fin whale (FE): The region near Kodiak Island is a consistent foraging area for fin whales during summer months due to prey availability in the area. A fin whale 'feeding' BIA occurs from Kodiak Island to Semidi Islands.

North Pacific right whale (FE): The north Pacific right whale Kodiak Island BIA is centered around the current NOAA critical habitat area and is one of the only areas in the GOA where they have been detected or observed. This BIA is one of a few known feeding areas for this species in the eastern North Pacific and Bering Sea. On 23 September 2023, NMFS announced a 12-month determination on a petition to revise the critical habitat designation for the North Pacific right whale under the ESA. Based on their review of the best available information on North Pacific right whale habitat use, they intend to revise the critical habitat. The proposed critical habitat revision is to connect the two existing critical habitat areas by extending the Bering Sea area boundary west and south to the Fox Islands, through Unimak Pass to the edge of the continental slope, and east to the Kodiak Island critical habitat area to encompass a key migratory point and to provide connectivity between two essential foraging grounds.

Expert contacts for Cook Inlet / Gulf of Alaska (Cook Inlet and Kodiak Island) marine mammals * are:

Name	Agency	City	Phone/Email	Species
Paul Schuette	USFWS	Anchorage, AK	paul_schuette@fws.gov	Sea otters
Sarah DeLand	Duke Univ.	Beaufort, NC	sarah.deland@duke.edu	BIAs
Bonnie Easley-Appleyard	NOAA	Anchorage, AK	bonnie.easley-appleyard@noaa.gov	Whales
Carley Lowe	NOAA	Juneau, AK	carley.lowe@noaa.gov	Cook Inlet belugas
Steve Lewis	NOAA	Juneau, AK	steve.lewis@noaa.gov	ESA species

***Note: this list is not meant to represent all marine mammal experts for the region.**

Major Data Sources Used: Marine Mammals

NOAA, National Marine Fisheries Service, Alaska Region and West Coast Region. 1994. Sea lion Steller Western DPS 19940615, vector digital data.

U.S. Fish and Wildlife Service. 2021. A0HK V01 and A0HK V03 *Enhydra lutris kenyoni* current ranges, vector digital data.

**Wild, L.A., H.E. Riley, H.C. Pearson, C.M. Gabriele, J.L. Neilson, A. Szabo, J. Moran, J.M. Straley and S. DeLand. 2023. Biologically Important Areas II for cetaceans within U.S. and adjacent waters – Gulf of Alaska Region. Front. Mar. Sci. 10:1134085. doi: 10.3389/fmars.2023.1134085.

**** Please refer to this publication for author contact information for additional regional marine mammal experts.**

Benthic Habitats

Benthic habitats mapped in the ESI atlas include deep-sea corals and sponges and hardbottom habitat.

Deep-sea corals and sponges: Deep-sea corals and sponges were mapped using both predictive model data and presence data. The model data used were provided by NOAA AFSC and consisted of predicted presence of demosponges, hexactinellids, sea whips, and corals along a 100-m x 100-m grid in Cook Inlet and the Gulf of Alaska, from the continental shelf to the continental slope (to 1,000 m). For each modeled taxon, presence polygons were created from the model output rasters using taxon-specific threshold values. All grid cells with values above the threshold had predicted presence of the taxon. Threshold values for the four models were: sea whips = 0.13; demosponges = 0.16; hexactinellids = 0.28; corals = 0.12. Each presence polygon for each of the modeled taxa was given a concentration of "Predicted presence". Adjacent presence polygons were dissolved to create the final ESI polygons, with a minimum polygon size of 100,000 m^2. This model allowed for the mapping of deep-sea corals and sponges throughout the offshore areas of Cook Inlet and around Kodiak Island and was not limited by sampling or mapping effort in specific geographic areas.

NOAA DSCRTP provided the National Database for Deep-Sea Corals and Sponges, a point database that showed known presence of these taxa throughout the AOI. All records were mapped in the ESI, regardless of age, because these are long-lived organisms that may still be present decades after data collection. Names of coral and sponge taxa in the database were generalized to response-relevant categories (e.g., soft coral, deep sea sponge, sea pens) that were used as the ESI common names. Also, the structural group of each taxon was included in the ESI concentration field as either 'Structure-forming' or 'Solitary'. This designation was made using a crosswalk between taxon name and structural group provided by DSCRTP.

Hardbottom habitat: One of the Gulf of Alaska Slope Habitat Conservation Areas is present within the AOI. This area is a Habitat Areas of Particular Concern (HAPC), designated by the North Pacific Fishery Management Council to protect high relief hardbottom and coral communities from damage by bottom trawling. A polygon depicting this conservation area was provided by NOAA Fisheries and included in the benthic layer as species 'hardbottom' and concentration 'HAPC'.

Expert contacts for Cook Inlet / Gulf of Alaska (Cook Inlet and Kodiak Island) benthic habitats* are:

Name	Agency	City	Phone/ Email	Species/ Program
Chris Rooper	Fisheries and Oceans Canada	Nanaimo, BC, Canada	chris.rooper@dfo-mpo.gc.ca	Deep-sea corals and sponges
Robert McGuinn	NOAA DSCRTP	Charleston, SC	(843) 631-7202	Deep-sea corals and sponges
Tom Hourigan	NOAA DSCRTP	Silver Spring, MD	tom.hourigan@noaa.gov	Deep-sea corals and sponges

***Note: this list is not meant to represent all benthic habitat experts for the region.**

Major Data Sources Used: Benthic Habitats

NOAA DSCRTP. 2023. National database for deep-sea corals and sponges (version 20221213-0), tabular digital data.

NOAA. 2023. Habitat restrictions shapefile, vector digital data.

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GEOGRAPHIC INFORMATION SYSTEM

The entire atlas product is stored in digital form in a Geographic Information System (GIS) as spatial data layers and associated databases. The format for the data varies depending on the type of information or features for which the data are being stored.

Under separate cover is a metadata document that details the data dictionary, processing techniques, data lineage, and other descriptive information for the digital datasets and maps that were used to create this atlas. Below is a brief synopsis of the information contained in the digital version. Refer to the metadata embedded in each feature class in the BSEE Cook Inlet/Gulf of Alaska ESI geodatabase for a full explanation of the data and its structure.

Biological resources are stored as points and polygons. Associated with each feature is a unique identification number that is linked to a series of data tables that further identify the resources. The main biological resource table consists of a list of species identification numbers for each site, the concentration of each species at each site, a mapping qualifier, and identification codes for seasonality and source information. This data table is linked to other tables that describe the seasonality and life-history time periods for each species (at month resolution) for the specified map feature. Other data tables linked to the first table include: the species identification table, which includes common and scientific names; the species status table, which gives information for federal threatened or endangered listings; and the source database, which provides source metadata at the feature-species level (specific sources are listed for each species occurring at each mapped feature in the biology feature classes).

ACKNOWLEDGMENTS

This project was funded by the Bureau of Safety and Environmental Enforcement (BSEE), U.S. Department of the Interior. We want to acknowledge the great support by Bryan Rogers and Steven Pearson (BSEE), Gabrielle McGrath (RPS), and all who assisted greatly in all aspects of the project's completion.

The biological data included on the maps were provided by numerous individuals and agencies. The individuals and agencies are listed in detail throughout the introductory pages of the ESI atlas. Staff at these organizations contributed a vast amount of information to this effort, including first-hand expertise, publications, maps, and digital data.

At Research Planning, Inc. in Columbia, South Carolina, numerous scientific, GIS, and graphic staff were involved with different phases of the project. Mark White, GIS Director, and Christine Boring, Biology Dept. Manager, were co-Project Managers. The biological data were collected and compiled onto base maps by Lauren Szathmary, Christine Boring, and Jennifer Weaver. Lee Diveley, Katy Beckham, Mark White, and Jeff Dahlin processed and produced the GIS data and metadata. Mark White, Katy Beckham, Jacqueline Michel, Christine Boring, Lauren Szathmary, and Jen Weaver prepared the species profiles. Wendy Early produced the final documents.

APPROPRIATE USE OF ATLAS AND DATA

This atlas and the associated database were developed to provide summary information on sensitive natural resources for the purposes of oil and chemical spill planning and response. Although the atlas and database should be very useful for other environmental and natural resource planning purposes, it should not be used in place of data held by any contributing agencies. Likewise, information contained in the atlas and database cannot be used in place of consultations with natural resource agencies, or in place of field surveys. Also, this atlas should not be used for navigation.

SPECIES LIST

Common Name	Scientific Name
BENTHIC	
CORAL	
Black coral	*Antipathes spp.*
Deep sea coral	
Gorgonian corals	*Alcyonacea*
Lace coral	*Stylasteridae*
Sea pens	*Pennatulacea*
Sea whip	
Soft coral	
Stony coral	*Scleractinia*
HARDBOTTOM	
Hardbottom reef	
REEF	
Deep sea sponge	
Demosponge	
Glass sponge	*Hexactinellida*
BIRDS	
ALCID	
Ancient murrelet	*Synthliboramphus antiquus*
Cassin's auklet	*Ptychoramphus aleuticus*
Common murre	*Uria aalge*
Horned puffin	*Fratercula corniculata*
Kittlitz's murrelet	*Brachyramphus brevirostris*
Marbled murrelet	*Brachyramphus marmoratus*
Parakeet auklet	*Aethia psittacula*
Pigeon guillemot	*Cepphus columba*
Thick-billed murre	*Uria lomvia*
Tufted puffin	*Fratercula cirrhata*
DIVING	
Pelagic cormorant	*Phalacrocorax pelagicus*
GULL_TERN	
Aleutian tern	*Onychoprion aleuticus*
Glaucous-winged gull	*Larus glaucescens*
PELAGIC	
Black-footed albatross	*Phoebastria nigripes*
Black-legged kittiwake	*Rissa tridactyla*
Buller's shearwater	*Puffinus bulleri*
Fork-tailed storm-petrel	*Oceanodroma furcata*
Laysan albatross	*Phoebastria immutabilis*
Leach's storm-petrel	*Oceanodroma leucorhoa*
Northern fulmar	*Fulmarus glacialis*
Pomarine jaeger	*Stercorarius pomarinus*
Seabirds	
Shearwaters	
Short-tailed albatross	*Phoebastria albatrus*
Short-tailed shearwater	*Puffinus tenuirostris*
Sooty shearwater	*Puffinus griseus*
WATERFOWL	
Black scoter	*Melanitta americana*
Long-tailed duck	*Clangula hyemalis*
Scoters	*Melanitta spp.*
Steller's eider	*Polysticta stelleri*
White-winged scoter	*Melanitta fusca*
FISH	
Alaska plaice	*Pleuronectes quadrituberculatus*
Arrowtooth flounder	*Atheresthes stomias*
Atka mackerel	*Pleurogrammus monopterygius*
Blackspotted rockfish	*Sebastes melanostictus*
Capelin	*Mallotus villosus*
Chinook salmon	*Oncorhynchus tshawytscha*
Chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
Dover sole	*Microstomus pacificus*
Dusky rockfish	*Sebastes ciliatus*
Eulachon	*Thaleichthys pacificus*
Flathead sole	*Hippoglossoides elassodon*
Northern rock sole	*Lepidopsetta polyxystra*
Northern rockfish	*Sebastes polyspinis*
Pacific cod	*Gadus macrocephalus*
Pacific halibut	*Hippoglossus stenolepis*
Pacific herring	*Clupea pallasii*

Common Name	Scientific Name
FISH, cont.	
Pacific ocean perch	*Sebastes alutus*
Pink salmon	*Oncorhynchus gorbuscha*
Rex sole	*Glyptocephalus zachirus*
Rockfish	*Sebastes spp.*
Rougheye rockfish	*Sebastes aleutianus*
Sablefish	*Anoplopoma fimbria*
Sculpin	*Cottidae*
Shortraker rockfish	*Sebastes borealis*
Shortspine thornyhead	*Sebastolobus alascanus*
Skates	*Raja spp.*
Sockeye salmon	*Oncorhynchus nerka*
Southern rock sole	*Lepidopsetta bilineata*
Walleye pollock	*Theragra chalcogramma*
Yellowfin sole	*Limanda aspera*
INVERTEBRATES	
BIVALVE	
Weathervane scallop	*Patinopecten caurinus*
CEPHALOPOD	
Octopus	*Octopus spp.*
CRAB	
Dungeness crab	*Cancer magister*
Golden king crab	*Lithodes aequispinus*
Red king crab	*Paralithodes camtschaticus*
Tanner crab	*Chionoecetes bairdi*
ECHINODERM	
Sunflower sea star	*Pycnopodia helianthoides*
MARINE MAMMALS	
PINNIPED	
Steller sea lion	*Eumetopias jubatus*
SEA OTTER	
Northern sea otter	*Enhydra lutris kenyoni*
WHALE	
Beluga whale	*Delphinapterus leucas*
Fin whale	*Balaenoptera physalus*
Gray whale	*Eschrichtius robustus*
Humpback whale	*Megaptera novaeangliae*
North Pacific right whale	*Eubalaena japonica*
Sperm whale	*Physeter macrocephalus*

* Threatened and endangered species are designated by underlining

BSEE
COOK INLET/GULF OF ALASKA
COOK INLET AND KODIAK ISLAND
OFFSHORE
ENVIRONMENTAL SENSITIVITY
INDEX MAPS

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155°W 154°W 153°W

60°N 59°N 58°N

Lake Clark

Alaska

Kamishak Bay

Katmai Bay

Shelikof Strait

Refer to
NOAA Cook Inlet and Kenai Peninsula Summary Maps
for nearshore/onshore resources in the area.

Present In Cook Inlet Waters:
5
5, 2, 3

Present In All Water:
18, 25
33
49

Present In Shelikof Strait Waters:
68
66
66
38, 40
72
73, 43
45

Refer to
NOAA Kodiak Island and Shelikof Strait Summary Maps
for nearshore/onshore resources in the area.

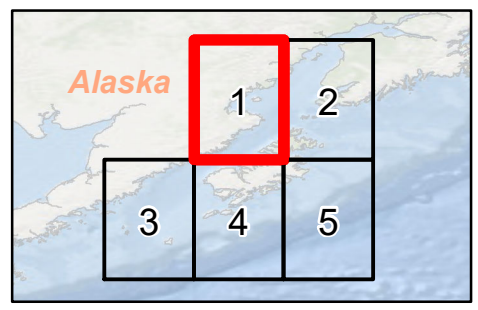
Map 2

Map 4

Biology Map 1
Cook Inlet/Gulf of Alaska Offshore ESI
Cook Inlet and Kodiak Island

Bureau of Safety and Environmental Enforcement

Benthic
Benthic Points
Birds
Fish
Bathymetry (Meters)
Invertebrates
AOI
Marine Mammals



SEE MAP DATA TABLE
for Status, Seasonality, and Breed information about mapped species.
Published: December 2023

0 Not for Navigation 20 Miles
0 25 Kilometers

N

1:1,000,000

Cook Inlet/Gulf of Alaska Offshore ESI: Biology Map 1

BIOLOGICAL RESOURCES:

BENTHIC:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)
6	Deep sea coral			Predicted Presence	General Distribution	J F M A M J J A S O N D
10	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
18	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
19	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
25	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
32	Demosponge			Predicted Presence	General Distribution	J F M A M J J A S O N D
46	Glass sponge			Predicted Presence	General Distribution	J F M A M J J A S O N D
68	Sea whip			Predicted Presence	General Distribution	J F M A M J J A S O N D

BIRD:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Nesting	Migrating		Molting
1	Black-legged kittiwake			-	General Distribution	J F M A M J J A S O N D	-	Aug-Mar	-	Mar-Apr Aug-
	Common murre			-	General Distribution	J F M A M J J A S O N D	-	Mar-May	Aug-Oct	Sep-Nov
	Horned puffin			-	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
	Kittlitz's murrelet			-	General Distribution	M A M J J A S O	-	Mar-May	Jul-Aug	Apr-May Jul-
	Marbled murrelet			-	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Aug-Oct	Mar-Apr Aug-
	Pigeon guillemot			-	General Distribution	J F M A M J J A S O N D	-	Feb-Oct	-	Feb-Jun Aug-
	Seabirds			High Density	General Distribution	J F M A M J J A S O N D	-	-	-	-
	Shearwaters			-	General Distribution	M J J A S O N	-	-	-	-
	Tufted puffin			-	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
2	Black-legged kittiwake			-	General Distribution	J F M A M J J A S O N D	-	Aug-Mar	-	Mar-Apr Aug-
	Common murre			-	General Distribution	J F M A M J J A S O N D	-	Mar-May	Aug-Oct	Sep-Nov
	Horned puffin			-	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
	Kittlitz's murrelet			-	General Distribution	M A M J J A S O	-	Mar-May	Jul-Aug	Apr-May Jul-
	Marbled murrelet			-	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Aug-Oct	Mar-Apr Aug-
	Pigeon guillemot			-	General Distribution	J F M A M J J A S O N D	-	Feb-Oct	-	Feb-Jun Aug-
	Seabirds			Low Density	General Distribution	J F M A M J J A S O N D	-	-	-	-
	Shearwaters			-	General Distribution	M J J A S O N	-	-	-	-
	Tufted puffin			-	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
3	Black-legged kittiwake			-	General Distribution	J F M A M J J A S O N D	-	Aug-Mar	-	Mar-Apr Aug-
	Common murre			-	General Distribution	J F M A M J J A S O N D	-	Mar-May	Aug-Oct	Sep-Nov
	Horned puffin			-	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
	Common murre			-	General Distribution	J F M A M J J A S O N D	-	Mar-May	Aug-Oct	Sep-Nov
	Horned puffin			-	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
	Kittlitz's murrelet			-	General Distribution	M A M J J A S O	-	Mar-May	Jul-Aug	Apr-May Jul-
	Marbled murrelet			-	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Aug-Oct	Mar-Apr Aug-
	Pigeon guillemot			-	General Distribution	J F M A M J J A S O N D	-	Feb-Oct	-	Feb-Jun Aug-
	Seabirds			Medium Density	General Distribution	J F M A M J J A S O N D	-	-	-	-
	Shearwaters			-	General Distribution	M J J A S O N	-	-	-	-
	Tufted puffin			-	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
5	Ancient murrelet			-	General Distribution	M A M J J A S O N	-	Mar-Apr	Sep-Nov	Mar-Apr Aug-
	Black-footed albatross			-	General Distribution	A M J J A S O N	-	Jun-Oct	-	Jun-Oct
	Buller's shearwater			-	General Distribution	A S O N	-	-	-	-
	Cassin's auklet			-	General Distribution	J J A S O N	-	-	-	Jul-Oct
	Fork-tailed storm-petrel			-	General Distribution	A M J J A S O N	-	-	-	-
	Glaucous-winged gull			-	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Sep-Oct	May-Oct
	Laysan albatross			-	General Distribution	M J J A S O N	-	-	-	-
	Long-tailed duck			-	General Distribution	J F M A M J S O N D	-	May-Jun	Oct-Dec	Sep-Nov
	Northern fulmar			-	General Distribution	J A M J J A S O N D	-	Apr-Apr	Sep-Sep	Jul-Nov
	Parakeet auklet			-	General Distribution	M J J A S	-	May-May	Aug-Sep	Jun-Sep
	Pomarine jaeger			-	General Distribution	M J J A S O	-	May-May	Oct-Oct	Sep-Oct
	Short-tailed albatross		E	-	General Distribution	M A M J J A S O	-	-	-	-
	Short-tailed shearwater			-	General Distribution	M J J A S O N	-	-	-	-
	Steller's eider		T	-	General Distribution	J F M A N D	-	-	-	-
	Thick-billed murre			-	General Distribution	M J J A S O N D	-	-	-	-
55	Glaucous-winged gull			Up To 9,460 Indiv	Concentration Area	J F M A M J J A S O N D	May-Aug	Mar-Apr	Sep-Oct	May-Oct
56	Glaucous-winged gull			Up To 9,445 Indiv	Concentration Area	J F M A M J J A S O N D	-	Mar-Apr	Sep-Oct	May-Oct
66	Ancient murrelet			100S	General Distribution	M A M J J A S O N	-	Mar-Apr	Sep-Nov	Mar-Apr Aug-
	Black-footed albatross			100S	General Distribution	A M J J A S O N	-	Jun-Oct	-	Jun-Oct
	Black-legged kittiwake			1,000S	General Distribution	J F M A M J J A S O N D	-	Aug-Mar	-	Mar-Apr Aug-
	Buller's shearwater			100S	General Distribution	A S O N	-	-	-	-
	Cassin's auklet			100S	General Distribution	J J A S O N	-	-	-	Jul-Oct
	Common murre			1,000S	General Distribution	J F M A M J J A S O N D	-	Mar-May	Aug-Oct	Sep-Nov
	Fork-tailed storm-petrel			100S	General Distribution	A M J J A S O N	-	-	-	-
	Glaucous-winged gull			100S	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Sep-Oct	May-Oct
	Horned puffin			100S	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
	Laysan albatross			100S	General Distribution	M J J A S O N	-	-	-	-
	Long-tailed duck			100S	General Distribution	J F M A M J S O N D	-	May-Jun	Oct-Dec	Sep-Nov
	Marbled murrelet			100S	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Aug-Oct	Mar-Apr Aug-
	Northern fulmar			1,000S	General Distribution	J A M J J A S O N D	-	Apr-Apr	Sep-Sep	Jul-Nov
	Parakeet auklet			100S	General Distribution	M J J A S	-	May-May	Aug-Sep	Jun-Sep
	Pomarine jaeger			100S	General Distribution	M J J A S O	-	May-May	Oct-Oct	Sep-Oct
	Scoters			100S	General Distribution	J F M A M J J A S O N D	-	May-May	Oct-Nov	Aug-Oct
	Shearwaters			1,000S	General Distribution	M J J A S O N	-	-	-	-
	Short-tailed albatross		E	1S	General Distribution	M A M J J A S O	-	-	-	-
	Short-tailed shearwater			100S	General Distribution	M J J A S O N	-	-	-	-
	Sooty shearwater			100S	General Distribution	M J J A S O N	-	-	-	-
	Steller's eider		T	-	General Distribution	J F M A N D	-	-	-	-
	Thick-billed murre			100S	General Distribution	M J J A S O N D	-	-	-	-
	Tufted puffin			1,000S	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-

FISH:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Spawning	Eggs	Larvae	Juveniles	Adults
33	Alaska plaice			-	General Distribution	J F M A M J J A S O N D	Mar-Apr	-	Mar-Aug	Mar-Aug	Jan-Dec	Jan-Dec
	Arrowtooth flounder			-	General Distribution	J F M A M J J A S O N D	Nov-Mar	-	Nov-Mar	Nov-Mar	Jan-Dec	Jan-Dec
	Atka mackerel			-	General Distribution	J F M A M J J A S O N D	May-Oct	-	May-Oct	Sep-Feb	Jan-Dec	Sep-May
	Blackspotted rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	Dec-Apr	Jan-Dec	Jan-Dec
	Capelin			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	-	-
	Chinook salmon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Chum salmon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Coho salmon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jun-Sep	Jan-Dec
	Dover sole			-	General Distribution	J F M A M J J A S O N D	Jan-Aug	-	Jan-Aug	Jan-Dec	Jan-Dec	Jan-Dec
	Dusky rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	Mar-Aug	Jan-Dec	Sep-May
	Eulachon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Flathead sole			-	General Distribution	J F M A M J J A S O N D	Jan-Apr	-	Jan-Feb	Mar-Aug	Jan-Dec	Jan-Dec
	Northern rock sole			-	Concentration Area	J F M A M J J A S O N D	Dec-Apr	-	Dec-Apr	Dec-Apr	Sep-May	Sep-May
	Northern rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	Mar-May	Jan-Dec	Sep-May
	Pacific cod			-	General Distribution	J F M A M J J A S O N D	Jan-May	-	Jan-May	Jan-May	Jan-Dec	Jan-Dec
	Pacific halibut			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Pacific herring			-	General Distribution	J F M A M J J A S O N D	-	-	-	May-Aug	Jan-Dec	Jan-Dec
	Pacific ocean perch			-	General Distribution	J F M A M J J A S O N D	-	-	-	Apr-May	Sep-May	Jan-Dec
	Pink salmon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jul-Dec	Jan-Dec
	Rex sole			-	General Distribution	J F M A M J J A S O N D	Oct-Jul	-	Oct-Jul	Mar-Aug	Sep-May	Jan-Dec
	Rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Rougheye rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	Dec-Apr	Sep-May	Jan-Dec
	Sablefish			-	General Distribution	J F M A M J J A S O N D	Dec-Apr	-	Dec-Apr	Apr-Jul	Sep-May	Jan-Dec
	Sculpin			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec

Species Threatened/Endangered

Cook Inlet/Gulf of Alaska Offshore ESI: Biology Map 1 (cont.)

BIOLOGICAL RESOURCES: (cont.)

FISH (cont.):

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Spawning		Eggs	Larvae	Juveniles	Adults
	Shortraker rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	Feb-Aug	Jan-Dec	Sep-May
	Shortspine thornyhead			-	General Distribution	J F M A M J J A S O N D	Apr-Jul	-	Apr-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Skates			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Sockeye salmon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jul-Dec	Jan-Dec
	Southern rock sole			-	General Distribution	J F M A M J J A S O N D	Jun-Aug	-	Jun-Aug	Jun-Aug	Sep-May	Jan-Dec
	Walleye pollock			-	General Distribution	J F M A M J J A S O N D	Feb-Apr	-	Feb-Apr	Mar-Jul	Jan-Dec	Jan-Dec
	Yellowfin sole			-	General Distribution	J F M A M J J A S O N D	May-Aug	-	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
35	Dusky rockfish			-	Concentration Area	J J A	-	-	-	-	-	Jun-Aug
38	Rougheye rockfish			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
39	Northern rock sole			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	Jun-Aug
	Southern rock sole			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
40	Rex sole			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
41	Sablefish			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-

INVERTEBRATE:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Spawning		Eggs	Larvae	Juveniles	Adults
49	Dungeness crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	Mar-Nov	Jan-Dec	Jan-Dec
	Golden king crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	Apr-Aug	Jan-Dec	Jan-Dec
	Octopus			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Red king crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Tanner crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	Apr-Aug	Jan-Dec	Jan-Dec
63	Weathervane scallop			-	General Distribution	J F M A M J J A S O N D	May-Jun	-	May-Jun	May-Jun	Jan-Dec	Jan-Dec
72	Sunflower sea star			-	General Distribution	J F M A M J J A S O N D	Mar-Jul	-	-	-	Jan-Dec	Jan-Dec

MARINE MAMMAL:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Mating	Calving	Pupping	Molting
43	Fin whale		E	-	Concentration Area	J J A S	-	-	-	-
45	Gray whale			Migratory Route	Migration	A M J J A S O	-	-	-	-
48	Humpback whale		E	-	Concentration Area	M J J A S	-	-	-	-
69	Northern sea otter		T	-	Vulnerable Occurrence	J F M A M J J A S O N D	-	-	May-Jun	-
73	Steller sea lion		E	-	Concentration Area	J F M A M J J A S O N D	-	-	May-Jul	-

Species Threatened/Endangered

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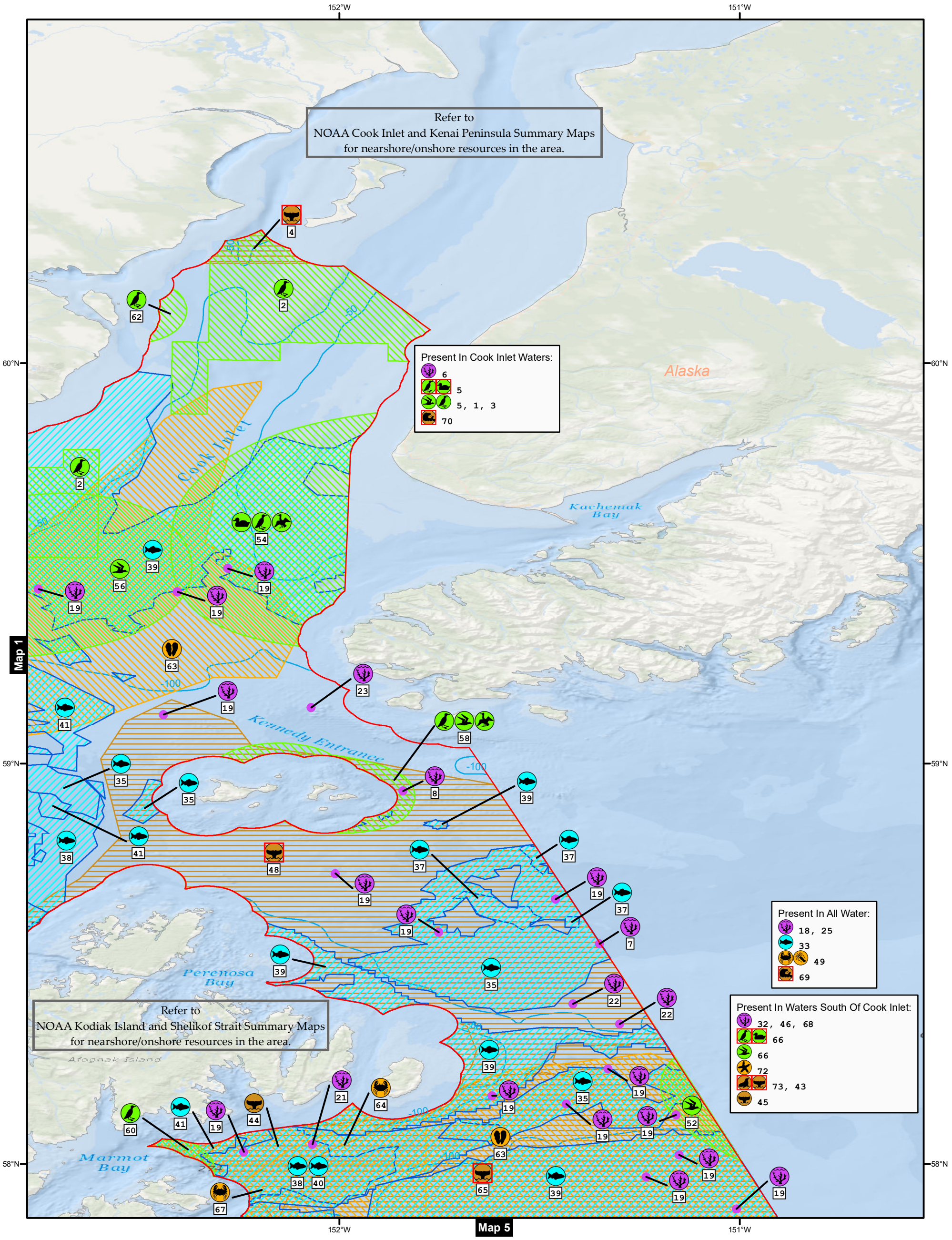


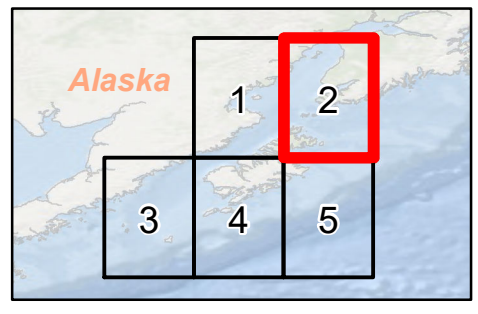
Biology Map 2

Cook Inlet/Gulf of Alaska Offshore ESI

Cook Inlet and Kodiak Island

Benthic
Birds
Fish
Invertebrates
Marine Mammals

Benthic Points
Bathymetry (Meters)
AOI



SEE MAP DATA TABLE
for Status, Seasonality, and Breed information about mapped species.
Published: December 2023

0 Not for Navigation 20 Miles
0 25 Kilometers

N

1:1,000,000

Bureau of Safety and Environmental Enforcement

Cook Inlet/Gulf of Alaska Offshore ESI: Biology Map 2

BIOLOGICAL RESOURCES:

BENTHIC:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)
6	Deep sea coral			Predicted Presence	General Distribution	J F M A M J J A S O N D
7	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Soft coral			Solitary	Vulnerable Occurrence	J F M A M J J A S O N D
8	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
18	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
19	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
21	Stony coral			Solitary	Vulnerable Occurrence	J F M A M J J A S O N D
22	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Stony coral			Solitary	Vulnerable Occurrence	J F M A M J J A S O N D
23	Lace coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
25	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
32	Demosponge			Predicted Presence	General Distribution	J F M A M J J A S O N D
46	Glass sponge			Predicted Presence	General Distribution	J F M A M J J A S O N D
68	Sea whip			Predicted Presence	General Distribution	J F M A M J J A S O N D

BIRD:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Nesting	Migrating		Molting
1	Black-legged kittiwake			-	General Distribution	J F M A M J J A S O N D	-	Aug-Mar	-	Mar-Apr Aug-
	Common murre			-	General Distribution	J F M A M J J A S O N D	-	Mar-May	Aug-Oct	Sep-Nov
	Horned puffin			-	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
	Kittlitz's murrelet			-	General Distribution	M A M J J A S O	-	Mar-May	Jul-Aug	Apr-May Jul-
	Marbled murrelet			-	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Aug-Oct	Mar-Apr Aug-
	Pigeon guillemot			-	General Distribution	J F M A M J J A S O N D	-	Feb-Oct	-	Feb-Jun Aug-
	Seabirds			High Density	General Distribution	J F M A M J J A S O N D	-	-	-	-
	Shearwaters			-	General Distribution	M J J A S O N	-	-	-	-
	Tufted puffin			-	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
2	Black-legged kittiwake			-	General Distribution	J F M A M J J A S O N D	-	Aug-Mar	-	Mar-Apr Aug-
	Common murre			-	General Distribution	J F M A M J J A S O N D	-	Mar-May	Aug-Oct	Sep-Nov
	Horned puffin			-	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
	Kittlitz's murrelet			-	General Distribution	M A M J J A S O	-	Mar-May	Jul-Aug	Apr-May Jul-
	Marbled murrelet			-	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Aug-Oct	Mar-Apr Aug-
	Pigeon guillemot			-	General Distribution	J F M A M J J A S O N D	-	Feb-Oct	-	Feb-Jun Aug-
	Seabirds			Low Density	General Distribution	J F M A M J J A S O N D	-	-	-	-
	Shearwaters			-	General Distribution	M J J A S O N	-	-	-	-
	Tufted puffin			-	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
3	Black-legged kittiwake			-	General Distribution	J F M A M J J A S O N D	-	Aug-Mar	-	Mar-Apr Aug-
	Common murre			-	General Distribution	J F M A M J J A S O N D	-	Mar-May	Aug-Oct	Sep-Nov
	Horned puffin			-	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
	Kittlitz's murrelet			-	General Distribution	M A M J J A S O	-	Mar-May	Jul-Aug	Apr-May Jul-
	Marbled murrelet			-	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Aug-Oct	Mar-Apr Aug-
	Pigeon guillemot			-	General Distribution	J F M A M J J A S O N D	-	Feb-Oct	-	Feb-Jun Aug-
	Seabirds			Medium Density	General Distribution	J F M A M J J A S O N D	-	-	-	-
	Shearwaters			-	General Distribution	M J J A S O N	-	-	-	-
	Tufted puffin			-	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
5	Ancient murrelet			-	General Distribution	M A M J J A S O N	-	Mar-Apr	Sep-Nov	Mar-Apr Aug-
	Black-footed albatross			-	General Distribution	A M J J A S O N	-	Jun-Oct	-	Jun-Oct
	Buller's shearwater			-	General Distribution	A S O N	-	-	-	-
	Cassin's auklet			-	General Distribution	J J A S O N	-	-	-	Jul-Oct
	Fork-tailed storm-petrel			-	General Distribution	A M J J A S O N	-	-	-	-
	Glaucous-winged gull			-	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Sep-Oct	May-Oct
	Laysan albatross			-	General Distribution	M J J A S O N	-	-	-	-
	Long-tailed duck			-	General Distribution	J F M A M J S O N D	-	May-Jun	Oct-Dec	Sep-Nov
	Northern fulmar			-	General Distribution	J A M J J A S O N D	-	Apr-Apr	Sep-Sep	Jul-Nov
	Parakeet auklet			-	General Distribution	M J J A S	-	May-May	Aug-Sep	Jun-Sep
	Pomarine jaeger			-	General Distribution	M J J A S O	-	May-May	Oct-Oct	Sep-Oct
	Short-tailed albatross		E	-	General Distribution	M A M J J A S O	-	-	-	-
	Short-tailed shearwater			-	General Distribution	M J J A S O N	-	-	-	-
	Steller's eider		T	-	General Distribution	J F M A N D	-	-	-	-
	Thick-billed murre			-	General Distribution	M J J A S O N D	-	-	-	-
52	Glaucous-winged gull			Up To 8,135 Indiv	Concentration Area	J F M A M J J A S O N D	-	Mar-Apr	Sep-Oct	May-Oct
54	Black scoter			Up To 6,046 Indiv	Concentration Area	J F M A M J J A S O N D	-	Mar-Dec	-	Jul-Sep
	Kittlitz's murrelet			Up To 1,444 Indiv	Concentration Area	M A M J J A S O	Apr-Sep	Mar-May	Jul-Aug	Apr-May Jul-
	Marbled murrelet			Up To 6,661 Indiv	Concentration Area	J F M A M J J A S O N D	Mar-Aug	Mar-Apr	Aug-Oct	Mar-Apr Aug-
	Pelagic cormorant			Up To 4,457 Indiv	Concentration Area	J F M A M J J A S O N D	-	-	-	-
	White-winged scoter			Up To 18,090 Indiv	Concentration Area	J F M A M J J A S O N D	-	Apr-May	Oct-Dec	Aug-Oct
56	Glaucous-winged gull			Up To 9,445 Indiv	Concentration Area	J F M A M J J A S O N D	-	Mar-Apr	Sep-Oct	May-Oct
58	Black-legged kittiwake			25,000 Pairs	Nesting	J F M A M J J A S O N D	Apr-Sep	Aug-Mar	-	Mar-Apr Aug-
	Common murre			60,000 Pairs	Nesting	J F M A M J J A S O N D	May-Sep	Mar-May	Aug-Oct	Sep-Nov
	Fork-tailed storm-petrel			75,000 Pairs	Nesting	A M J J A S O N	Apr-Oct	-	-	-
	Glaucous-winged gull			3,400 Pairs	Nesting	J F M A M J J A S O N D	May-Aug	Mar-Apr	Sep-Oct	May-Oct
	Pelagic cormorant			Up To 1,280 Indiv	Nesting	J F M A M J J A S O N D	May-Oct	-	-	-
	Tufted puffin			70,000 Pairs	Nesting	A M J J A S O N	May-Aug	Apr-May	Sep-Nov	Apr-Apr Sep-
60	Seabirds			Up To 40,143 Indiv	Nesting	J F M A M J J A S O N D	Mar-Sep	-	-	-
	Tufted puffin			Up To 68,329 Indiv	Nesting	A M J J A S O N	May-Aug	Apr-May	Sep-Nov	Apr-Apr Sep-
62	Black-legged kittiwake			Up To 28,000 Indiv	Nesting	J F M A M J J A S O N D	Apr-Sep	Aug-Mar	-	Mar-Apr Aug-
	Seabirds			Up To 36,000 Indiv	Nesting	J F M A M J J A S O N D	Mar-Sep	-	-	-
66	Ancient murrelet			100S	General Distribution	M A M J J A S O N	-	Mar-Apr	Sep-Nov	Mar-Apr Aug-
	Black-footed albatross			100S	General Distribution	A M J J A S O N	-	Jun-Oct	-	Jun-Oct
	Black-legged kittiwake			1,000S	General Distribution	J F M A M J J A S O N D	-	Aug-Mar	-	Mar-Apr Aug-
	Buller's shearwater			100S	General Distribution	A S O N	-	-	-	-
	Cassin's auklet			100S	General Distribution	J J A S O N	-	-	-	Jul-Oct
	Common murre			1,000S	General Distribution	J F M A M J J A S O N D	-	Mar-May	Aug-Oct	Sep-Nov
	Fork-tailed storm-petrel			100S	General Distribution	A M J J A S O N	-	-	-	-
	Glaucous-winged gull			100S	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Sep-Oct	May-Oct
	Horned puffin			100S	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
	Laysan albatross			100S	General Distribution	M J J A S O N	-	-	-	-
	Long-tailed duck			100S	General Distribution	J F M A M J S O N D	-	May-Jun	Oct-Dec	Sep-Nov
	Marbled murrelet			100S	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Aug-Oct	Mar-Apr Aug-
	Northern fulmar			1,000S	General Distribution	J A M J J A S O N D	-	Apr-Apr	Sep-Sep	Jul-Nov
	Parakeet auklet			100S	General Distribution	M J J A S	-	May-May	Aug-Sep	Jun-Sep
	Pomarine jaeger			100S	General Distribution	M J J A S O	-	May-May	Oct-Oct	Sep-Oct
	Scoters			100S	General Distribution	J F M A M J J A S O N D	-	May-May	Oct-Nov	Aug-Oct
	Shearwaters			1,000S	General Distribution	M J J A S O N	-	-	-	-
	Short-tailed albatross		E	1S	General Distribution	M A M J J A S O	-	-	-	-
	Short-tailed shearwater			100S	General Distribution	M J J A S O N	-	-	-	-
	Sooty shearwater			100S	General Distribution	M J J A S O N	-	-	-	-
	Steller's eider		T	-	General Distribution	J F M A N D	-	-	-	-
	Thick-billed murre			100S	General Distribution	M J J A S O N D	-	-	-	-
	Tufted puffin			1,000S	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-

FISH:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Spawning		Eggs	Larvae	Juveniles	Adults
33	Alaska plaice			-	General Distribution	J F M A M J J A S O N D	Mar-Apr	-	Mar-Aug	Mar-Aug	Jan-Dec	Jan-Dec
	Arrowtooth flounder			-	General Distribution	J F M A M J J A S O N D	Nov-Mar	-	Nov-Mar	Nov-Mar	Jan-Dec	Jan-Dec

Species Threatened/Endangered

Cook Inlet/Gulf of Alaska Offshore ESI: Biology Map 2 (cont.)

BIOLOGICAL RESOURCES: (cont.)

FISH (cont.):

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Spawning		Eggs	Larvae	Juveniles	Adults
	Atka mackerel			-	General Distribution	J F M A M J J A S O N D	May-Oct	-	May-Oct	Sep-Feb	Jan-Dec	Sep-May
	Blackspotted rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	Dec-Apr	Jan-Dec	Jan-Dec
	Capelin			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	-	-
	Chinook salmon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Chum salmon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Coho salmon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jun-Sep	Jan-Dec
	Dover sole			-	General Distribution	J F M A M J J A S O N D	Jan-Aug	-	Jan-Aug	Jan-Dec	Jan-Dec	Jan-Dec
	Dusky rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	Mar-Aug	Jan-Dec	Sep-May
	Eulachon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Flathead sole			-	General Distribution	J F M A M J J A S O N D	Jan-Apr	-	Jan-Feb	Mar-Aug	Jan-Dec	Jan-Dec
	Northern rock sole			-	Concentration Area	J F M A M J J A S O N D	Dec-Apr	-	Dec-Apr	Dec-Apr	Sep-May	Sep-May
	Northern rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	Mar-May	Jan-Dec	Sep-May
	Pacific cod			-	General Distribution	J F M A M J J A S O N D	Jan-May	-	Jan-May	Jan-May	Jan-Dec	Jan-Dec
	Pacific halibut			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Pacific herring			-	General Distribution	J F M A M J J A S O N D	-	-	-	May-Aug	Jan-Dec	Jan-Dec
	Pacific ocean perch			-	General Distribution	J F M A M J J A S O N D	-	-	-	Apr-May	Sep-May	Jan-Dec
	Pink salmon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jul-Dec	Jan-Dec
	Rex sole			-	General Distribution	J F M A M J J A S O N D	Oct-Jul	-	Oct-Jul	Mar-Aug	Sep-May	Jan-Dec
	Rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Rougheye rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	Dec-Apr	Sep-May	Jan-Dec
	Sablefish			-	General Distribution	J F M A M J J A S O N D	Dec-Apr	-	Dec-Apr	Apr-Jul	Sep-May	Jan-Dec
	Sculpin			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Shortraker rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	Feb-Aug	Jan-Dec	Sep-May
	Shortspine thornyhead			-	General Distribution	J F M A M J J A S O N D	Apr-Jul	-	Apr-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Skates			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Sockeye salmon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jul-Dec	Jan-Dec
	Southern rock sole			-	General Distribution	J F M A M J J A S O N D	Jun-Aug	-	Jun-Aug	Jun-Aug	Sep-May	Jan-Dec
	Walleye pollock			-	General Distribution	J F M A M J J A S O N D	Feb-Apr	-	Feb-Apr	Mar-Jul	Jan-Dec	Jan-Dec
	Yellowfin sole			-	General Distribution	J F M A M J J A S O N D	May-Aug	-	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
35	Dusky rockfish			-	Concentration Area	J J A	-	-	-	-	-	Jun-Aug
37	Pacific ocean perch			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
38	Rougheye rockfish			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
39	Northern rock sole			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	Jun-Aug
	Southern rock sole			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
40	Rex sole			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
41	Sablefish			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-

INVERTEBRATE:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Spawning		Eggs	Larvae	Juveniles	Adults
49	Dungeness crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	Mar-Nov	Jan-Dec	Jan-Dec
	Golden king crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	Apr-Aug	Jan-Dec	Jan-Dec
	Octopus			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Red king crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Tanner crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	Apr-Aug	Jan-Dec	Jan-Dec
63	Weathervane scallop			-	General Distribution	J F M A M J J A S O N D	May-Jun	-	May-Jun	May-Jun	Jan-Dec	Jan-Dec
64	Tanner crab			High	Concentration Area	J F M A M J J A S O N D	-	-	-	Apr-Aug	Jan-Dec	Jan-Dec
67	Red king crab			High	Concentration Area	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
72	Sunflower sea star			-	General Distribution	J F M A M J J A S O N D	Mar-Jul	-	-	-	Jan-Dec	Jan-Dec

MARINE MAMMAL:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Mating	Calving	Pupping	Molting
4	Beluga whale		E	Up To 267 Indiv	Vulnerable Occurrence	J F M A M J J A S O N D	Mar-Apr	May-Jul	-	Jul-Jul
43	Fin whale		E	-	Concentration Area	J J A S	-	-	-	-
44	Gray whale			-	Concentration Area	J M A M N D	-	-	-	-
45	Gray whale			Migratory Route	Migration	A M J J A S O	-	-	-	-
48	Humpback whale		E	-	Concentration Area	M J J A S	-	-	-	-
65	North Pacific right whale		E	-	Vulnerable Occurrence	J J A S	-	-	-	-
69	Northern sea otter		T	-	Vulnerable Occurrence	J F M A M J J A S O N D	-	-	May-Jun	-
70	Northern sea otter		T	-	Vulnerable Occurrence	J F M A M J J A S O N D	-	-	May-Jun	-
73	Steller sea lion		E	-	Concentration Area	J F M A M J J A S O N D	-	-	May-Jul	-

Species Threatened/Endangered

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Refer to
NOAA Kodiak Island and Shelikof Strait Summary Maps
for nearshore/onshore resources in the area.

Present In All Water:
66
66
33
49, 72
43
45

Present In Continental Shelf Waters:
18, 25

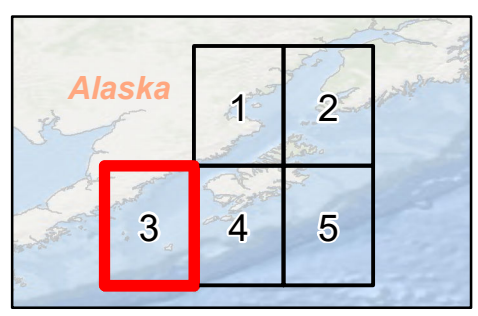
Map 4

Biology Map 3
Cook Inlet/Gulf of Alaska Offshore ESI
Cook Inlet and Kodiak Island

Bureau of Safety and Environmental Enforcement

Benthic
Birds
Fish
Invertebrates
Marine Mammals

Benthic Points
Bathymetry (Meters)
AOI



SEE MAP DATA TABLE
for Status, Seasonality, and Breed information about mapped species.
Published: December 2023

0 Not for Navigation 20 Miles
0 25 Kilometers

N
1:1,000,000

Cook Inlet/Gulf of Alaska Offshore ESI: Biology Map 3

BIOLOGICAL RESOURCES:

BENTHIC:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)
6	Deep sea coral			Predicted Presence	General Distribution	J F M A M J J A S O N D
7	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Soft coral			Solitary	Vulnerable Occurrence	J F M A M J J A S O N D
8	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
10	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
12	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Lace coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
13	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Lace coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
15	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Soft coral			Solitary	Vulnerable Occurrence	J F M A M J J A S O N D
16	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Soft coral			Solitary	Vulnerable Occurrence	J F M A M J J A S O N D
17	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
18	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
19	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
22	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Stony coral			Solitary	Vulnerable Occurrence	J F M A M J J A S O N D
23	Lace coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
24	Soft coral			Solitary	Vulnerable Occurrence	J F M A M J J A S O N D
25	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
28	Black coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Lace coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
30	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Lace coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
32	Demosponge			Predicted Presence	General Distribution	J F M A M J J A S O N D
46	Glass sponge			Predicted Presence	General Distribution	J F M A M J J A S O N D
68	Sea whip			Predicted Presence	General Distribution	J F M A M J J A S O N D

BIRD:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Nesting	Migrating		Molting
50	Horned puffin			Up To 13,713 Indiv	Vulnerable Occurrence	A M J J A S O N	May-Sep	Apr-May	Sep-Nov	Apr-Apr Sep-
53	Cassin's auklet			Up To 108,520 Indiv	Vulnerable Occurrence	J J A S O N	Jun-Sep	-	-	Jul-Oct
57	Horned puffin			Up To 370,200 Indiv	Vulnerable Occurrence	A M J J A S O N	May-Sep	Apr-May	Sep-Nov	Apr-Apr Sep-
61	Black-legged kittiwake			Up To 71,700 Indiv	Nesting	J F M A M J J A S O N D	Apr-Sep	Aug-Mar	-	Mar-Apr Aug-
	Fork-tailed storm-petrel			Up To 103,000 Indiv	Nesting	A M J J A S O N	Apr-Oct	-	-	-
	Leach's storm-petrel			Up To 94,000 Indiv	Nesting	M J J A S O	May-Oct	-	-	-
	Northern fulmar			Up To 370,000 Indiv	Nesting	J A M J J A S O N D	May-Oct	Apr-Apr	Sep-Sep	Jul-Nov
	Parakeet auklet			Up To 27,300 Indiv	Nesting	M J J A S	May-Aug	May-May	Aug-Sep	Jun-Sep
	Tufted puffin			Up To 86,600 Indiv	Nesting	A M J J A S O N	May-Aug	Apr-May	Sep-Nov	Apr-Apr Sep-
66	Ancient murrelet			100S	General Distribution	M A M J J A S O N	-	Mar-Apr	Sep-Nov	Mar-Apr Aug-
	Black-footed albatross			100S	General Distribution	A M J J A S O N	-	Jun-Oct	-	Jun-Oct
	Black-legged kittiwake			1,000S	General Distribution	J F M A M J J A S O N D	-	Aug-Mar	-	Mar-Apr Aug-
	Buller's shearwater			100S	General Distribution	A S O N	-	-	-	-
	Cassin's auklet			100S	General Distribution	J J A S O N	-	-	-	Jul-Oct
	Common murre			1,000S	General Distribution	J F M A M J J A S O N D	-	Mar-May	Aug-Oct	Sep-Nov
	Fork-tailed storm-petrel			100S	General Distribution	A M J J A S O N	-	-	-	-
	Glaucous-winged gull			100S	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Sep-Oct	May-Oct
	Horned puffin			100S	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
	Laysan albatross			100S	General Distribution	M J J A S O N	-	-	-	-
	Long-tailed duck			100S	General Distribution	J F M A M J S O N D	-	May-Jun	Oct-Dec	Sep-Nov
	Marbled murrelet			100S	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Aug-Oct	Mar-Apr Aug-
	Northern fulmar			1,000S	General Distribution	J A M J J A S O N D	-	Apr-Apr	Sep-Sep	Jul-Nov
	Parakeet auklet			100S	General Distribution	M J J A S	-	May-May	Aug-Sep	Jun-Sep
	Pomarine jaeger			100S	General Distribution	M J J A S O	-	May-May	Oct-Oct	Sep-Oct
	Scoters			100S	General Distribution	J F M A M J J A S O N D	-	May-May	Oct-Nov	Aug-Oct
	Shearwaters			1,000S	General Distribution	M J J A S O N	-	-	-	-
	Short-tailed albatross		E	1S	General Distribution	M A M J J A S O	-	-	-	-
	Short-tailed shearwater			100S	General Distribution	M J J A S O N	-	-	-	-
	Sooty shearwater			100S	General Distribution	M J J A S O N	-	-	-	-
	Steller's eider		T	-	General Distribution	J F M A N D	-	-	-	-
	Thick-billed murre			100S	General Distribution	M J J A S O N D	-	-	-	-
	Tufted puffin			1,000S	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-

FISH:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Spawning	Eggs	Larvae	Juveniles	Adults
33	Alaska plaice			-	General Distribution	J F M A M J J A S O N D	Mar-Apr	-	Mar-Aug	Mar-Aug	Jan-Dec	Jan-Dec
	Arrowtooth flounder			-	General Distribution	J F M A M J J A S O N D	Nov-Mar	-	Nov-Mar	Nov-Mar	Jan-Dec	Jan-Dec
	Atka mackerel			-	General Distribution	J F M A M J J A S O N D	May-Oct	-	May-Oct	Sep-Feb	Jan-Dec	Sep-May
	Blackspotted rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	Dec-Apr	Jan-Dec	Jan-Dec
	Capelin			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	-	-
	Chinook salmon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Chum salmon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Coho salmon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jun-Sep	Jan-Dec
	Dover sole			-	General Distribution	J F M A M J J A S O N D	Jan-Aug	-	Jan-Aug	Jan-Dec	Jan-Dec	Jan-Dec
	Dusky rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	Mar-Aug	Jan-Dec	Sep-May
	Eulachon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Flathead sole			-	General Distribution	J F M A M J J A S O N D	Jan-Apr	-	Jan-Feb	Mar-Aug	Jan-Dec	Jan-Dec
	Northern rock sole			-	Concentration Area	J F M A M J J A S O N D	Dec-Apr	-	Dec-Apr	Dec-Apr	Sep-May	Sep-May
	Northern rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	Mar-May	Jan-Dec	Sep-May
	Pacific cod			-	General Distribution	J F M A M J J A S O N D	Jan-May	-	Jan-May	Jan-May	Jan-Dec	Jan-Dec
	Pacific halibut			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Pacific herring			-	General Distribution	J F M A M J J A S O N D	-	-	-	May-Aug	Jan-Dec	Jan-Dec
	Pacific ocean perch			-	General Distribution	J F M A M J J A S O N D	-	-	-	Apr-May	Sep-May	Jan-Dec
	Pink salmon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jul-Dec	Jan-Dec
	Rex sole			-	General Distribution	J F M A M J J A S O N D	Oct-Jul	-	Oct-Jul	Mar-Aug	Sep-May	Jan-Dec
	Rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Rougheye rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	Dec-Apr	Sep-May	Jan-Dec
	Sablefish			-	General Distribution	J F M A M J J A S O N D	Dec-Apr	-	Dec-Apr	Apr-Jul	Sep-May	Jan-Dec
	Sculpin			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Shortraker rockfish			-	General Distribution	J F M A M J J A S O N D	-	-	-	Feb-Aug	Jan-Dec	Sep-May
	Shortspine thornyhead			-	General Distribution	J F M A M J J A S O N D	Apr-Jul	-	Apr-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Skates			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Sockeye salmon			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jul-Dec	Jan-Dec
	Southern rock sole			-	General Distribution	J F M A M J J A S O N D	Jun-Aug	-	Jun-Aug	Jun-Aug	Sep-May	Jan-Dec
	Walleye pollock			-	General Distribution	J F M A M J J A S O N D	Feb-Apr	-	Feb-Apr	Mar-Jul	Jan-Dec	Jan-Dec
	Yellowfin sole			-	General Distribution	J F M A M J J A S O N D	May-Aug	-	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
34	Atka mackerel			-	Concentration Area	J J A	-	-	-	-	-	Jun-Aug
35	Dusky rockfish			-	Concentration Area	J J A	-	-	-	-	-	Jun-Aug

Species Threatened/Endangered

Cook Inlet/Gulf of Alaska Offshore ESI: Biology Map 3 (cont.)

BIOLOGICAL RESOURCES: (cont.)

FISH (cont.):

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Spawning		Eggs	Larvae	Juveniles	Adults
36	Northern rockfish			-	Concentration Area	J J A	-	-	-	-	-	Jun-Aug
37	Pacific ocean perch			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
38	Rougheye rockfish			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
39	Northern rock sole			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	Jun-Aug
	Southern rock sole			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
40	Rex sole			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
41	Sablefish			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
42	Shortraker rockfish			-	Concentration Area	J J A	-	-	-	-	-	Jun-Aug

INVERTEBRATE:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Spawning		Eggs	Larvae	Juveniles	Adults
49	Dungeness crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	Mar-Nov	Jan-Dec	Jan-Dec
	Golden king crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	Apr-Aug	Jan-Dec	Jan-Dec
	Octopus			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Red king crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Tanner crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	Apr-Aug	Jan-Dec	Jan-Dec
63	Weathervane scallop			-	General Distribution	J F M A M J J A S O N D	May-Jun	-	May-Jun	May-Jun	Jan-Dec	Jan-Dec
72	Sunflower sea star			-	General Distribution	J F M A M J J A S O N D	Mar-Jul	-	-	-	Jan-Dec	Jan-Dec

MARINE MAMMAL:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Mating	Calving	Pupping	Molting
43	Fin whale		E	-	Concentration Area	J J A S	-	-	-	-
45	Gray whale			Migratory Route	Migration	A M J J A S O	-	-	-	-
69	Northern sea otter		T	-	Vulnerable Occurrence	J F M A M J J A S O N D	-	-	May-Jun	-
71	Sperm whale		E	-	Migration	A M J J A S	-	-	-	-
73	Steller sea lion		E	-	Concentration Area	J F M A M J J A S O N D	-	-	May-Jul	-

Species Threatened/Endangered

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Map 1

Map 3

Map 5

Kodiak Island

Alaska

Refer to
NOAA Kodiak Island and Shelikof Strait Summary Maps
for nearshore/onshore resources in the area.

Alitak Bay

Sitkinak Strait

Present In All Water:
66
66
33
49

Present In Continental Shelf Waters:
18, 25
72
43
45

Present In Continental Shelf Edge Waters:
6, 32, 46

155°W 154°W 153°W

57°N 56°N 55°N

Biology Map 4

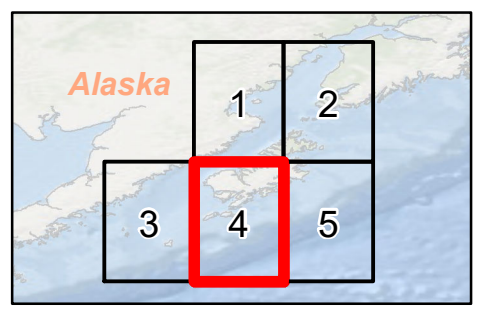
Cook Inlet/Gulf of Alaska Offshore ESI

Cook Inlet and Kodiak Island

Bureau of Safety and Environmental Enforcement

Benthic
Birds
Fish
Invertebrates
Marine Mammals

Benthic Points
Bathymetry (Meters)
AOI



SEE MAP DATA TABLE
for Status, Seasonality, and Breed information about mapped species.
Published: December 2023

0 Not for Navigation 20 Miles
0 25 Kilometers

N

1:1,000,000

Cook Inlet/Gulf of Alaska Offshore ESI: Biology Map 4

BIOLOGICAL RESOURCES:

BENTHIC:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)
6	Deep sea coral			Predicted Presence	General Distribution	J F M A M J J A S O N D
7	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Soft coral			Solitary	Vulnerable Occurrence	J F M A M J J A S O N D
8	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
10	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
12	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Lace coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
13	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Lace coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
17	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
18	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
19	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
21	Stony coral			Solitary	Vulnerable Occurrence	J F M A M J J A S O N D
22	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Stony coral			Solitary	Vulnerable Occurrence	J F M A M J J A S O N D
23	Lace coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
25	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
26	Black coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
27	Black coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Lace coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
29	Black coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
31	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Lace coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Lace coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
32	Demosponge			Predicted Presence	General Distribution	J F M A M J J A S O N D
46	Glass sponge			Predicted Presence	General Distribution	J F M A M J J A S O N D
47	Hardbottom reef			Hapc	High Ecological Value	J F M A M J J A S O N D
68	Sea whip			Predicted Presence	General Distribution	J F M A M J J A S O N D

BIRD:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Nesting	Migrating		Molting
51	Aleutian tern			Up To 312 Indiv	Concentration Area	M J J A	May-Aug	May-May	Aug-Aug	-
	Pomarine jaeger			Up To 760 Indiv	Concentration Area	M J J A S O	Jun-Aug	May-May	Oct-Oct	Sep-Oct
	White-winged scoter			Up To 12,217 Indiv	Concentration Area	J F M A M J J A S O N D	-	Apr-May	Oct-Dec	Aug-Oct
53	Cassin's auklet			Up To 108,520 Indiv	Vulnerable Occurrence	J J A S O N	Jun-Sep	-	-	Jul-Oct
59	Seabirds			Up To 1,153 Indiv	Nesting	J F M A M J J A S O N D	Mar-Sep	-	-	-
	Tufted puffin			Up To 30,000 Indiv	Nesting	A M J J A S O N	May-Aug	Apr-May	Sep-Nov	Apr-Apr Sep-
66	Ancient murrelet			100S	General Distribution	M A M J J A S O N	-	Mar-Apr	Sep-Nov	Mar-Apr Aug-
	Black-footed albatross			100S	General Distribution	A M J J A S O N	-	Jun-Oct	-	Jun-Oct
	Black-legged kittiwake			1,000S	General Distribution	J F M A M J J A S O N D	-	Aug-Mar	-	Mar-Apr Aug-
	Buller's shearwater			100S	General Distribution	A S O N	-	-	-	-
	Cassin's auklet			100S	General Distribution	J J A S O N	-	-	-	Jul-Oct
	Common murre			1,000S	General Distribution	J F M A M J J A S O N D	-	Mar-May	Aug-Oct	Sep-Nov
	Fork-tailed storm-petrel			100S	General Distribution	A M J J A S O N	-	-	-	-
	Glaucous-winged gull			100S	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Sep-Oct	May-Oct
	Horned puffin			100S	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
	Laysan albatross			100S	General Distribution	M J J A S O N	-	-	-	-
	Long-tailed duck			100S	General Distribution	J F M A M J S O N D	-	May-Jun	Oct-Dec	Sep-Nov
	Marbled murrelet			100S	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Aug-Oct	Mar-Apr Aug-
	Northern fulmar			1,000S	General Distribution	J A M J J A S O N D	-	Apr-Apr	Sep-Sep	Jul-Nov
	Parakeet auklet			100S	General Distribution	M J J A S	-	May-May	Aug-Sep	Jun-Sep
	Pomarine jaeger			100S	General Distribution	M J J A S O	-	May-May	Oct-Oct	Sep-Oct
	Scoters			100S	General Distribution	J F M A M J J A S O N D	-	May-May	Oct-Nov	Aug-Oct
	Shearwaters			1,000S	General Distribution	M J J A S O N	-	-	-	-
	Short-tailed albatross		E	1S	General Distribution	M A M J J A S O	-	-	-	-
	Short-tailed shearwater			100S	General Distribution	M J J A S O N	-	-	-	-
	Sooty shearwater			100S	General Distribution	M J J A S O N	-	-	-	-
	Steller's eider		T	-	General Distribution	J F M A N D	-	-	-	-
	Thick-billed murre			100S	General Distribution	M J J A S O N D	-	-	-	-
	Tufted puffin			1,000S	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-

FISH:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Spawning	Eggs	Larvae	Juveniles	Adults
33	Alaska plaice		-		General Distribution	J F M A M J J A S O N D	Mar-Apr	-	Mar-Aug	Mar-Aug	Jan-Dec	Jan-Dec
	Arrowtooth flounder		-		General Distribution	J F M A M J J A S O N D	Nov-Mar	-	Nov-Mar	Nov-Mar	Jan-Dec	Jan-Dec
	Atka mackerel		-		General Distribution	J F M A M J J A S O N D	May-Oct	-	May-Oct	Sep-Feb	Jan-Dec	Sep-May
	Blackspotted rockfish		-		General Distribution	J F M A M J J A S O N D	-	-	-	Dec-Apr	Jan-Dec	Jan-Dec
	Capelin		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	-	-
	Chinook salmon		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Chum salmon		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Coho salmon		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jun-Sep	Jan-Dec
	Dover sole		-		General Distribution	J F M A M J J A S O N D	Jan-Aug	-	Jan-Aug	Jan-Dec	Jan-Dec	Jan-Dec
	Dusky rockfish		-		General Distribution	J F M A M J J A S O N D	-	-	-	Mar-Aug	Jan-Dec	Sep-May
	Eulachon		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Flathead sole		-		General Distribution	J F M A M J J A S O N D	Jan-Apr	-	Jan-Feb	Mar-Aug	Jan-Dec	Jan-Dec
	Northern rock sole		-		Concentration Area	J F M A M J J A S O N D	Dec-Apr	-	Dec-Apr	Dec-Apr	Sep-May	Sep-May
	Northern rockfish		-		General Distribution	J F M A M J J A S O N D	-	-	-	Mar-May	Jan-Dec	Sep-May
	Pacific cod		-		General Distribution	J F M A M J J A S O N D	Jan-May	-	Jan-May	Jan-May	Jan-Dec	Jan-Dec
	Pacific halibut		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Pacific herring		-		General Distribution	J F M A M J J A S O N D	-	-	-	May-Aug	Jan-Dec	Jan-Dec
	Pacific ocean perch		-		General Distribution	J F M A M J J A S O N D	-	-	-	Apr-May	Sep-May	Jan-Dec
	Pink salmon		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jul-Dec	Jan-Dec
	Rex sole		-		General Distribution	J F M A M J J A S O N D	Oct-Jul	-	Oct-Jul	Mar-Aug	Sep-May	Jan-Dec
	Rockfish		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Rougheye rockfish		-		General Distribution	J F M A M J J A S O N D	-	-	-	Dec-Apr	Sep-May	Jan-Dec
	Sablefish		-		General Distribution	J F M A M J J A S O N D	Dec-Apr	-	Dec-Apr	Apr-Jul	Sep-May	Jan-Dec
	Sculpin		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Shortraker rockfish		-		General Distribution	J F M A M J J A S O N D	-	-	-	Feb-Aug	Jan-Dec	Sep-May
	Shortspine thornyhead		-		General Distribution	J F M A M J J A S O N D	Apr-Jul	-	Apr-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Skates		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Sockeye salmon		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jul-Dec	Jan-Dec
	Southern rock sole		-		General Distribution	J F M A M J J A S O N D	Jun-Aug	-	Jun-Aug	Jun-Aug	Sep-May	Jan-Dec
	Walleye pollock		-		General Distribution	J F M A M J J A S O N D	Feb-Apr	-	Feb-Apr	Mar-Jul	Jan-Dec	Jan-Dec
	Yellowfin sole		-		General Distribution	J F M A M J J A S O N D	May-Aug	-	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
34	Atka mackerel		-		Concentration Area	J J A	-	-	-	-	-	Jun-Aug
35	Dusky rockfish		-		Concentration Area	J J A	-	-	-	-	-	Jun-Aug
36	Northern rockfish		-		Concentration Area	J J A	-	-	-	-	-	Jun-Aug

Species Threatened/Endangered

Cook Inlet/Gulf of Alaska Offshore ESI: Biology Map 4 (cont.)

BIOLOGICAL RESOURCES: (cont.)

FISH (cont.):

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Spawning		Eggs	Larvae	Juveniles	Adults
37	Pacific ocean perch			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
38	Rougheye rockfish			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
39	Northern rock sole			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	Jun-Aug
	Southern rock sole			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
40	Rex sole			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
41	Sablefish			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
42	Shortraker rockfish			-	Concentration Area	J J A	-	-	-	-	-	Jun-Aug

INVERTEBRATE:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Spawning		Eggs	Larvae	Juveniles	Adults
49	Dungeness crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	Mar-Nov	Jan-Dec	Jan-Dec
	Golden king crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	Apr-Aug	Jan-Dec	Jan-Dec
	Octopus			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Red king crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Tanner crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	Apr-Aug	Jan-Dec	Jan-Dec
63	Weathervane scallop			-	General Distribution	J F M A M J J A S O N D	May-Jun	-	May-Jun	May-Jun	Jan-Dec	Jan-Dec
67	Red king crab			High	Concentration Area	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
72	Sunflower sea star			-	General Distribution	J F M A M J J A S O N D	Mar-Jul	-	-	-	Jan-Dec	Jan-Dec

MARINE MAMMAL:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Mating	Calving	Pupping	Molting
43	Fin whale		E	-	Concentration Area	J J A S	-	-	-	-
44	Gray whale			-	Concentration Area	J M A M N D	-	-	-	-
45	Gray whale			Migratory Route	Migration	A M J J A S O	-	-	-	-
48	Humpback whale		E	-	Concentration Area	M J J A S	-	-	-	-
65	North Pacific right whale		E	-	Vulnerable Occurrence	J J A S	-	-	-	-
69	Northern sea otter		T	-	Vulnerable Occurrence	J F M A M J J A S O N D	-	-	May-Jun	-
71	Sperm whale		E	-	Migration	A M J J A S	-	-	-	-
73	Steller sea lion		E	-	Concentration Area	J F M A M J J A S O N D	-	-	May-Jul	-

Species Threatened/Endangered

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Map 2

Refer to
NOAA Kodiak Island and
Shelikof Strait Summary Maps
for nearshore/onshore resources in the area.

Alaska

Present In All Water:
66
66
33, 39
49
43, 48, 65

Present In Continental Shelf Waters:
18, 25
63, 72

Present In Continental Shelf Edge Waters:
6, 32, 46, 68

Map 4

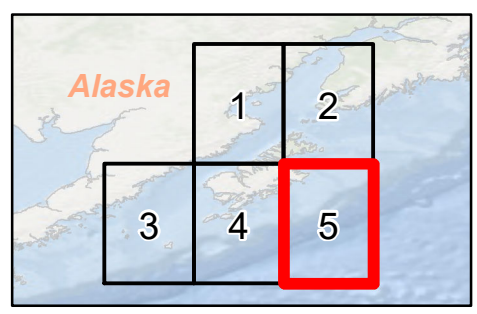
Marchand Seamount

Shelikof Seamount

Biology Map 5
Cook Inlet/Gulf of Alaska Offshore ESI
Cook Inlet and Kodiak Island

Benthic
Birds
Fish
Invertebrates
Marine Mammals

Benthic Points
Bathymetry (Meters)
AOI



Bureau of Safety and Environmental Enforcement

SEE MAP DATA TABLE
for Status, Seasonality, and Breed information about mapped species.
Published: December 2023

0 Not for Navigation 20 Miles
0 25 Kilometers

N
1:1,000,000

Cook Inlet/Gulf of Alaska Offshore ESI: Biology Map 5

BIOLOGICAL RESOURCES:

BENTHIC:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)
6	Deep sea coral			Predicted Presence	General Distribution	J F M A M J J A S O N D
7	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Soft coral			Solitary	Vulnerable Occurrence	J F M A M J J A S O N D
8	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
9	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Soft coral			Solitary	Vulnerable Occurrence	J F M A M J J A S O N D
10	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
11	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Lace coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
12	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Lace coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
13	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Lace coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
14	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
15	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Soft coral			Solitary	Vulnerable Occurrence	J F M A M J J A S O N D
17	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
18	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
19	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
20	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Sea pens			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Stony coral			Solitary	Vulnerable Occurrence	J F M A M J J A S O N D
21	Stony coral			Solitary	Vulnerable Occurrence	J F M A M J J A S O N D
25	Deep sea sponge			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
30	Gorgonian corals			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
	Lace coral			Structure-Forming	Vulnerable Occurrence	J F M A M J J A S O N D
32	Demosponge			Predicted Presence	General Distribution	J F M A M J J A S O N D
46	Glass sponge			Predicted Presence	General Distribution	J F M A M J J A S O N D
47	Hardbottom reef			Hapc	High Ecological Value	J F M A M J J A S O N D
68	Sea whip			Predicted Presence	General Distribution	J F M A M J J A S O N D

BIRD:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Nesting	Migrating		Molting
51	Aleutian tern			Up To 312 Indiv	Concentration Area	M J J A	May-Aug	May-May	Aug-Aug	-
	Pomarine jaeger			Up To 760 Indiv	Concentration Area	M J J A S O	Jun-Aug	May-May	Oct-Oct	Sep-Oct
	White-winged scoter			Up To 12,217 Indiv	Concentration Area	J F M A M J J A S O N D	-	Apr-May	Oct-Dec	Aug-Oct
66	Ancient murrelet			100S	General Distribution	M A M J J A S O N	-	Mar-Apr	Sep-Nov	Mar-Apr Aug-
	Black-footed albatross			100S	General Distribution	A M J J A S O N	-	Jun-Oct	-	Jun-Oct
	Black-legged kittiwake			1,000S	General Distribution	J F M A M J J A S O N D	-	Aug-Mar	-	Mar-Apr Aug-
	Buller's shearwater			100S	General Distribution	A S O N	-	-	-	-
	Cassin's auklet			100S	General Distribution	J J A S O N	-	-	-	Jul-Oct
	Common murre			1,000S	General Distribution	J F M A M J J A S O N D	-	Mar-May	Aug-Oct	Sep-Nov
	Fork-tailed storm-petrel			100S	General Distribution	A M J J A S O N	-	-	-	-
	Glaucous-winged gull			100S	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Sep-Oct	May-Oct
	Horned puffin			100S	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-
	Laysan albatross			100S	General Distribution	M J J A S O N	-	-	-	-
	Long-tailed duck			100S	General Distribution	J F M A M J S O N D	-	May-Jun	Oct-Dec	Sep-Nov
	Marbled murrelet			100S	General Distribution	J F M A M J J A S O N D	-	Mar-Apr	Aug-Oct	Mar-Apr Aug-
	Northern fulmar			1,000S	General Distribution	J A M J J A S O N D	-	Apr-Apr	Sep-Sep	Jul-Nov
	Parakeet auklet			100S	General Distribution	M J J A S	-	May-May	Aug-Sep	Jun-Sep
	Pomarine jaeger			100S	General Distribution	M J J A S O	-	May-May	Oct-Oct	Sep-Oct
	Scoters			100S	General Distribution	J F M A M J J A S O N D	-	May-May	Oct-Nov	Aug-Oct
	Shearwaters			1,000S	General Distribution	M J J A S O N	-	-	-	-
	Short-tailed albatross		E	1S	General Distribution	M A M J J A S O	-	-	-	-
	Short-tailed shearwater			100S	General Distribution	M J J A S O N	-	-	-	-
	Sooty shearwater			100S	General Distribution	M J J A S O N	-	-	-	-
	Steller's eider		T	-	General Distribution	J F M A N D	-	-	-	-
	Thick-billed murre			100S	General Distribution	M J J A S O N D	-	-	-	-
	Tufted puffin			1,000S	General Distribution	A M J J A S O N	-	Apr-May	Sep-Nov	Apr-Apr Sep-

FISH:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Spawning	Eggs	Larvae	Juveniles	Adults
33	Alaska plaice		-		General Distribution	J F M A M J J A S O N D	Mar-Apr	-	Mar-Aug	Mar-Aug	Jan-Dec	Jan-Dec
	Arrowtooth flounder		-		General Distribution	J F M A M J J A S O N D	Nov-Mar	-	Nov-Mar	Nov-Mar	Jan-Dec	Jan-Dec
	Atka mackerel		-		General Distribution	J F M A M J J A S O N D	May-Oct	-	May-Oct	Sep-Feb	Jan-Dec	Sep-May
	Blackspotted rockfish		-		General Distribution	J F M A M J J A S O N D	-	-	-	Dec-Apr	Jan-Dec	Jan-Dec
	Capelin		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	-	-
	Chinook salmon		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Chum salmon		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Coho salmon		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jun-Sep	Jan-Dec
	Dover sole		-		General Distribution	J F M A M J J A S O N D	Jan-Aug	-	Jan-Aug	Jan-Dec	Jan-Dec	Jan-Dec
	Dusky rockfish		-		General Distribution	J F M A M J J A S O N D	-	-	-	Mar-Aug	Jan-Dec	Sep-May
	Eulachon		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Flathead sole		-		General Distribution	J F M A M J J A S O N D	Jan-Apr	-	Jan-Feb	Mar-Aug	Jan-Dec	Jan-Dec
	Northern rock sole		-		Concentration Area	J F M A M J J A S O N D	Dec-Apr	-	Dec-Apr	Dec-Apr	Sep-May	Sep-May
	Northern rockfish		-		General Distribution	J F M A M J J A S O N D	-	-	-	Mar-May	Jan-Dec	Sep-May
	Pacific cod		-		General Distribution	J F M A M J J A S O N D	Jan-May	-	Jan-May	Jan-May	Jan-Dec	Jan-Dec
	Pacific halibut		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Pacific herring		-		General Distribution	J F M A M J J A S O N D	-	-	-	May-Aug	Jan-Dec	Jan-Dec
	Pacific ocean perch		-		General Distribution	J F M A M J J A S O N D	-	-	-	Apr-May	Sep-May	Jan-Dec
	Pink salmon		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jul-Dec	Jan-Dec
	Rex sole		-		General Distribution	J F M A M J J A S O N D	Oct-Jul	-	Oct-Jul	Mar-Aug	Sep-May	Jan-Dec
	Rockfish		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Rougheye rockfish		-		General Distribution	J F M A M J J A S O N D	-	-	-	Dec-Apr	Sep-May	Jan-Dec
	Sablefish		-		General Distribution	J F M A M J J A S O N D	Dec-Apr	-	Dec-Apr	Apr-Jul	Sep-May	Jan-Dec
	Sculpin		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Shortraker rockfish		-		General Distribution	J F M A M J J A S O N D	-	-	-	Feb-Aug	Jan-Dec	Sep-May
	Shortspine thornyhead		-		General Distribution	J F M A M J J A S O N D	Apr-Jul	-	Apr-Jul	Apr-Jul	Jan-Dec	Jan-Dec
	Skates		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Sockeye salmon		-		General Distribution	J F M A M J J A S O N D	-	-	-	-	Jul-Dec	Jan-Dec
	Southern rock sole		-		General Distribution	J F M A M J J A S O N D	Jun-Aug	-	Jun-Aug	Jun-Aug	Sep-May	Jan-Dec
	Walleye pollock		-		General Distribution	J F M A M J J A S O N D	Feb-Apr	-	Feb-Apr	Mar-Jul	Jan-Dec	Jan-Dec
	Yellowfin sole		-		General Distribution	J F M A M J J A S O N D	May-Aug	-	Jun-Aug	Jun-Sep	Jan-Dec	Jan-Dec
34	Atka mackerel		-		Concentration Area	J J A	-	-	-	-	-	Jun-Aug
35	Dusky rockfish		-		Concentration Area	J J A	-	-	-	-	-	Jun-Aug
36	Northern rockfish		-		Concentration Area	J J A	-	-	-	-	-	Jun-Aug
37	Pacific ocean perch		-		Concentration Area	J J A	-	-	-	-	Jun-Aug	-

Species Threatened/Endangered

Cook Inlet/Gulf of Alaska Offshore ESI: Biology Map 5 (cont.)

BIOLOGICAL RESOURCES: (cont.)

FISH (cont.):

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Spawning		Eggs	Larvae	Juveniles	Adults
38	Rougheye rockfish			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
39	Northern rock sole			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	Jun-Aug
	Southern rock sole			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
40	Rex sole			-	Concentration Area	J J A	-	-	-	-	Jun-Aug	-
42	Shortraker rockfish			-	Concentration Area	J J A	-	-	-	-	-	Jun-Aug

INVERTEBRATE:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Spawning		Eggs	Larvae	Juveniles	Adults
49	Dungeness crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	Mar-Nov	Jan-Dec	Jan-Dec
	Golden king crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	Apr-Aug	Jan-Dec	Jan-Dec
	Octopus			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Red king crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
	Tanner crab			-	General Distribution	J F M A M J J A S O N D	-	-	-	Apr-Aug	Jan-Dec	Jan-Dec
63	Weathervane scallop			-	General Distribution	J F M A M J J A S O N D	May-Jun	-	May-Jun	May-Jun	Jan-Dec	Jan-Dec
67	Red king crab			High	Concentration Area	J F M A M J J A S O N D	-	-	-	-	Jan-Dec	Jan-Dec
72	Sunflower sea star			-	General Distribution	J F M A M J J A S O N D	Mar-Jul	-	-	-	Jan-Dec	Jan-Dec

MARINE MAMMAL:

RAR#	Species	S	F	Concentration	Mapping Qualifier	Monthly Presence (Jan-Dec)	Mating	Calving	Pupping	Molting
43	Fin whale		E	-	Concentration Area	J J A S	-	-	-	-
44	Gray whale			-	Concentration Area	J M A M N D	-	-	-	-
45	Gray whale			Migratory Route	Migration	A M J J A S O	-	-	-	-
48	Humpback whale		E	-	Concentration Area	M J J A S	-	-	-	-
65	North Pacific right whale		E	-	Vulnerable Occurrence	J J A S	-	-	-	-
69	Northern sea otter		T	-	Vulnerable Occurrence	J F M A M J J A S O N D	-	-	May-Jun	-
71	Sperm whale		E	-	Migration	A M J J A S	-	-	-	-
73	Steller sea lion		E	-	Concentration Area	J F M A M J J A S O N D	-	-	May-Jul	-

Species Threatened/Endangered

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