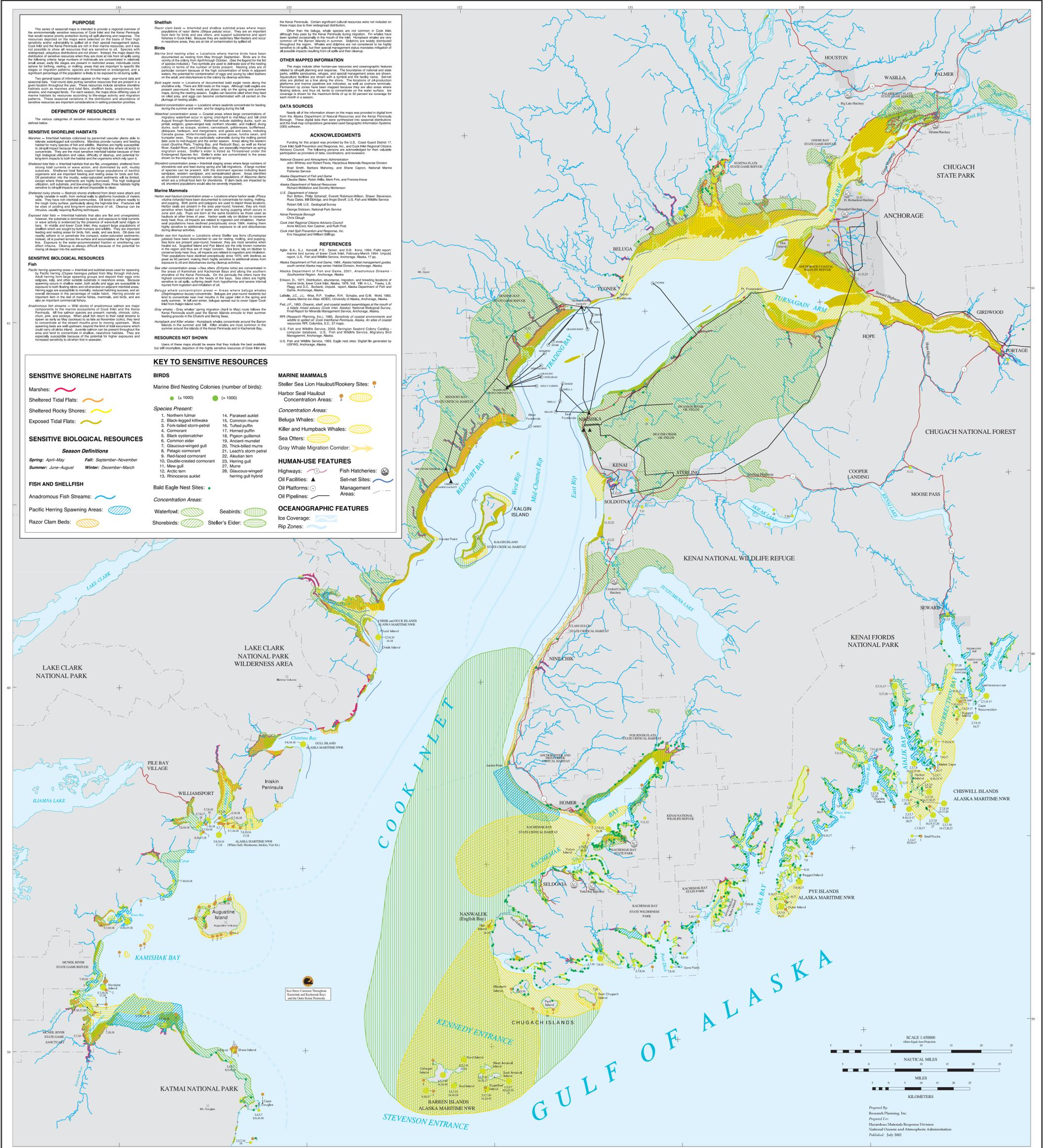




# Cook Inlet and Kenai Peninsula, Alaska Environmentally Sensitive Areas: Summer (June - August)



### PURPOSE

This series of seasonal maps is intended to provide a regional overview of the environmentally sensitive resources of Cook Inlet and the Kenai Peninsula that would require special protection during the summer and fall seasons. The resources depicted on the maps were selected on the basis of their high sensitivity and vulnerability to disturbance from human activities. Cook Inlet and the Kenai Peninsula are rich in marine resources, and it is not possible to show all resources that are sensitive to oil. Species with widespread, abundant distributions are not shown. Instead, the maps depict the distribution of sensitive resources where they are most at risk of being damaged by the following criteria: large numbers of individuals are concentrated in relatively small areas; the species are present in seasonal concentrations; individuals, colonies, or stages of migration patterns, species are threatened or endangered; and a significant percentage of the population is likely to be exposed to oil during spills.

### DEFINITION OF RESOURCES

The various categories of sensitive resources depicted on the maps are defined below.

### SENSITIVE SHORELINE HABITATS

**Marine - Intertidal and shallow subtidal areas** - Intertidal and shallow subtidal areas are those areas that are exposed to the air during low tide and submerged during high tide. These areas are highly sensitive to oil spill impact because they occur at the high-tide line where tides are concentrated. They are the most sensitive habitat because of their high biological productivity and value, diversity of species, and potential for long-term impact to both the habitat and the organisms which rely upon it.

**Sheltered tidal flats** - Intertidal habitats that are flat, unvegetated, shallow, and receive tidal currents or wave action, and dominated by soft, muddy substrates. Sheltered tidal flats support large populations of benthic organisms and are important nesting and resting sites for birds and mammals. They are the most sensitive habitat because of their high biological productivity and value, diversity of species, and potential for long-term impact to both the habitat and the organisms which rely upon it.

**Sheltered rocky shores** - Intertidal habitats that are flat, unvegetated, and receive tidal currents or wave action, and dominated by rocky substrates. Sheltered rocky shores support large populations of benthic organisms and are important nesting and resting sites for birds and mammals. They are the most sensitive habitat because of their high biological productivity and value, diversity of species, and potential for long-term impact to both the habitat and the organisms which rely upon it.

**Exposed tidal flats** - Intertidal habitats that are flat, unvegetated, and receive tidal currents or wave action, and dominated by soft, muddy substrates. Exposed tidal flats support large populations of benthic organisms and are important nesting and resting sites for birds and mammals. They are the most sensitive habitat because of their high biological productivity and value, diversity of species, and potential for long-term impact to both the habitat and the organisms which rely upon it.

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### SENSITIVE BIOLOGICAL RESOURCES

**Pacific herring spawning areas** - Intertidal and subtidal areas used for spawning by Pacific herring (*Clupea harengus*) from May through mid-June. Adult herring form large spawning groups and deposit their eggs into spawning areas in shallow water, both adults and eggs are susceptible to oil spill impact. Oil spill impact to spawning areas can result in reduced egg survival and reduced recruitment to the fishery.

**Anadromous fish streams** - Widespread areas of anadromous salmon are major components to the marine ecosystems of Cook Inlet and the Kenai Peninsula. All five salmon species are present: chinook, coho, copper, pink, and sockeye. When they return to their natal streams to spawn, they are highly sensitive to oil spill impact. Oil spill impact to spawning areas can result in reduced egg survival and reduced recruitment to the fishery.

**Razor clam beds** - Intertidal and shallow subtidal areas where razor clams are concentrated. Razor clams are highly sensitive to oil spill impact. Oil spill impact to razor clam beds can result in reduced egg survival and reduced recruitment to the fishery.

### Birds

**Marine bird nesting sites** - Locations where marine birds have been documented as nesting from April through September. Birds are in the vicinity of the colony from April through October. (Note the legend for the list of species included.) Two symbols are used to indicate size of the colony in terms of the number of birds present. Nesting sites are of particular concern because of the high concentration of birds. Nesting sites are the most sensitive habitat because of their high biological productivity and value, diversity of species, and potential for long-term impact to both the habitat and the organisms which rely upon it.

**Waterfowl concentration areas** - Coastal areas where large concentrations of migratory waterfowl occur in spring (mid-April to mid-May) and fall (mid-September through November). Waterfowl include dabbling ducks, such as pintail, widgeon, green-winged teal, northern shoveler, and mallard; diving ducks, such as scaup, goldeneye, common goldeneye, and bufflehead; grebe, merganser, and grebe and swans, including Canada goose, whooping crane, great egret, sandhill crane, and other species. They are particularly vulnerable during the nesting period (late June to mid-August) and the winter season. Areas along the western coast (Cordova Bay, Trading Bay, and Redoubt Bay), as well as Kenai River, Kodiak Bay, and Chickadee Bay, are especially important as spring migration areas. Steller's eider is listed as a threatened species under the Endangered Species Act. Steller's eider is concentrated in spring migration areas on the Kenai Peninsula and is particularly sensitive to oil spill impact.

**Stellar sea lion haulout sites** - Locations where Steller sea lions are concentrated. Steller sea lions are highly sensitive to oil spill impact. Oil spill impact to haulout sites can result in reduced egg survival and reduced recruitment to the fishery.

**Harbor seal haulout concentration areas** - Locations where harbor seals (*Phoca vitulina*) are concentrated. Harbor seals are highly sensitive to oil spill impact. Oil spill impact to haulout areas can result in reduced egg survival and reduced recruitment to the fishery.

**Stellar sea lion rookeries** - Locations where Steller sea lions (*Eumetopias jubatus*) are concentrated. Steller sea lions are highly sensitive to oil spill impact. Oil spill impact to rookeries can result in reduced egg survival and reduced recruitment to the fishery.

**Gray whales** - Gray whales are highly sensitive to oil spill impact. Oil spill impact to gray whale migration corridors can result in reduced egg survival and reduced recruitment to the fishery.

**Beluga whales** - Beluga whales are highly sensitive to oil spill impact. Oil spill impact to beluga whale concentration areas can result in reduced egg survival and reduced recruitment to the fishery.

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### OTHER MAPPED INFORMATION

The map includes other information related to oil spill planning and response. The boundaries of national and state parks, wildlife refuges, and other management areas are shown. Aquaculture facilities are shown with a symbol and the facility name. Some sites are shown as a line along the shore. The locations of oil production platforms and marine pipelines are indicated, as well as offshore terminals. Permanent zones have been mapped because they are also areas where nesting birds and other animals are concentrated on the water surface. See coverage is shown for the maximum limits of up to 50 percent coverage for each rip zone.

### DATA SOURCES

Items of information shown on the map were provided in digital form from the Alaska Department of Natural Resources and the Kenai Peninsula Borough. These digital data were processed into the seasonal distributions and the final map compositions generated using Geographic Information Systems (GIS) software.

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### SENSITIVE SHORELINE HABITATS

Marshes: Marshes  
Sheltered Tidal Flats: Sheltered Tidal Flats  
Exposed Tidal Flats: Exposed Tidal Flats

### SENSITIVE BIOLOGICAL RESOURCES

Spring: April-May  
Fall: September-November  
Summer: June-August  
Winter: December-March

### FISH AND SHELLFISH

Anadromous Fish Streams: Anadromous Fish Streams  
Pacific Herring Spawning Areas: Pacific Herring Spawning Areas  
Razor Clam Beds: Razor Clam Beds

### KEY TO SENSITIVE RESOURCES

#### SENSITIVE SHORELINE HABITATS

Marshes: Marshes  
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#### FISH AND SHELLFISH

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Razor Clam Beds: Razor Clam Beds

#### BIRDS

Marine Bird Nesting Colonies (number of birds):  
● (x 1000) ● (x 10000)

Species Present:  
1. Northern fulmar  
2. Black-legged kittiwake  
3. Fork-tailed storm-petrel  
4. Cormorant  
5. Black oystercatcher  
6. Common eider  
7. Glaucous-winged gull  
8. Pelagic cormorant  
9. Red-faced cormorant  
10. Double-crested cormorant  
11. Mew gull  
12. Arctic tern  
13. Rhinoceros auklet

Bald Eagle Nest Sites: ●  
Concentration Areas:  
Waterfowl: Waterfowl  
Seabirds: Seabirds  
Shorebirds: Shorebirds  
Steller's Eider: Steller's Eider

#### MARINE MAMMALS

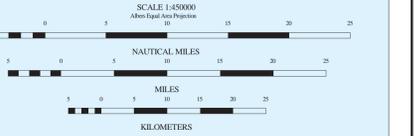
Stellar Sea Lion Haulout/Rookery Sites: ●  
Harbor Seal Haulout Concentration Areas: ●  
Concentration Areas:  
Beluga Whales: Beluga Whales  
Killer and Humpback Whales: Killer and Humpback Whales  
Sea Otters: Sea Otters  
Gray Whale Migration Corridor: Gray Whale Migration Corridor

#### HUMAN-USE FEATURES

Highways: Highways  
Oil Facilities: Oil Facilities  
Oil Platforms: Oil Platforms  
Oil Pipelines: Oil Pipelines

#### OCEANOGRAPHIC FEATURES

Ice Coverage: Ice Coverage  
Rip Zones: Rip Zones



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