

SENSITIVE AREAS: INTRODUCTION

This section is intended for use by the On-Scene Coordinators during the initial phase of a spill event to assist in ascertaining the location and presence of spill-sensitive biological and cultural resources, services, and users in the Cook Inlet Subarea. This information is specific to the Cook Inlet Subarea and was compiled by a multi-organization Sensitive Areas Workgroup. No attempt has been made to duplicate information contained in easily accessible existing documents. The Sensitive Areas Section, therefore, must be used in conjunction with the referenced materials and informational contacts identified herein. More detailed and current data should be available from on-scene resource experts when they become engaged in the response. This information is geared toward early response. If appropriate, natural resources trustees may be conducting natural resource damage assessment (NRDA) activities in conjunction with response activities. Information regarding NRDA activities should be directed to the natural resources trustees or to their appointed NRDA Liaison.

Often, the most detailed, up-to-date biological and resource use information will come from people who live and work in the affected area. People from the local community are often knowledgeable sources for information related to fishing, hunting, non-consumptive outdoor sports, and subsistence use. They may also have a good idea of which spill response techniques (especially exclusion and diversion booming) are practicable under prevailing weather and current conditions.

The Alaska Regional Response Team (ARRT) has adopted several documents (see the *Alaska Federal/State Contingency Plan for Response to Oil & Hazardous Substance Discharges/Releases (Unified Plan)*) that address decision-making to help protect sensitive areas and resources. These documents (location noted) include:

- RRT Oil Dispersant Guidelines for Alaska (see *Unified Plan* Annex F, Appendix 1)
- *In Situ* Burning Guidelines for Alaska (see *Unified Plan* Annex F, Appendix 2)
- Wildlife Protection Guidelines for Alaska (see *Unified Plan* Annex G, Appendix 1)
- Inter-agency Memorandum of Agreement Regarding Oil Spill Planning and Response Activities Under the Federal Water Pollution Control Act=s National Oil and Hazardous Substances Pollution Contingency Plan and the Endangered Species Act Consultation on threatened and endangered species (see *Unified Plan* Annex G, Appendix 2)
- Alaska Implementation Guidelines for Federal On-Scene Coordinators for the Programmatic Agreement on Protection of Historic Properties during Emergency Response under the National Oil and Hazardous Substances Pollution Contingency Plan Protection of Historic Properties (see *Unified Plan* Annex M)

In addition, Annex N of the *Unified Plan* includes *Shoreline Cleanup and Assessment Guidelines*, which provide helpful information on cleanup options by shoreline type.

The Geographic Response Strategies Section of this plan contains site-specific tactics for use by responders in protecting key sensitive areas. In addition, Environmental Sensitivity Index (ESI) maps have been produced that illustrate selected sensitive resources and shoreline types.

This section and the guidelines in the *Unified Plan* are also intended for use by facility/vessel operators in developing industry oil spill prevention and contingency plans. For an operator's facility or area of

operation, industry contingency plans describe: (a) environmentally sensitive areas and areas of public concern; (b) how sensitive areas would be prioritized during a spill event; and (c) response strategies to protect sensitive areas at risk. This information within industry plans should be consistent with the subarea plan.

The definition of sensitive resources and their geographic locations requires use of field observations and data available from published and non-published materials or through additional field work. With the limited time and funds available for Subarea Contingency Plan development (there are ten such plans covering the state of Alaska), not all the detailed information necessary to adequately complete the Sensitive Areas Section has been compiled. Identifying relative priorities among resources and resource uses takes considerable coordination and discussion among resource management agencies.

A substantial effort to develop and refine a sensitive areas database was underway by Cook Inlet Spill Prevention and Response, Inc. (CISPRI) in their Technical Manual (Section 3.10, January 1994). The Sensitive Areas Workgroup decided to use the CISPRI information as the basis for part of the Sensitive Areas Section. This information is used with the permission of CISPRI. Their material was developed with input from federal and state agencies, who will be further reviewing the information for accuracy and currency. The data presented here is available for CISPRI use on the Visual Information Response System (VIRS).

Many of the maps presented in this section are available on-line through the Internet at:

<http://www.asgdc.state.ak.us/maps/cplans/subareas.html>

The joint Federal-State Subarea Contingency Plan for this subarea is scheduled to be updated periodically. Much can be done in these updates to improve the data and its presentation, such as:

- # Establish a continuing interagency mechanism to review, update and maintain sensitivity information and priorities.
- # Fund staff/materials to compile data and prepare materials for presentation in the Subarea Contingency Plans.
- # Subdivide the area into smaller geographic areas and identify more specifically sensitive seasonal biological and other resource locations.
- # Expand and further detail sensitive resources and initial response tactics for the most likely spill scenarios.

Suggestions, comments, and more current information are requested. Please contact either:

Doug Mutter
U.S. Department of the Interior
Office of Environmental Policy
and Compliance
1689 C Street, Room 119
Anchorage, Alaska 99501
(907) 271-5011
FAX (907) 271-4102
email: douglas_mutter@ios.doi.gov

Mark Fink
Alaska Department of Fish and Game
Division of Sport Fish
333 Raspberry Road
Anchorage, Alaska 99518
(907) 267-2338
FAX (907) 267-2464
email: mark_fink@fishgame.state.ak.us

SENSITIVE AREAS: PART ONE – INITIAL CONTACTS

[See next table on page D-6 for specific contact information]

Agency	Resources	Primary Contact	Alternate Contact
FISH and WILDLIFE and HABITAT RESOURCES			
Alaska Department of Fish and Game	fish, shellfish, birds, terrestrial mammals, marine mammals	Mark Fink	Jeanne Walter
U.S. Department of the Interior	migratory birds, sea otters, polar bears, walrus, endangered species, anadromous fish in freshwater, bald eagles, wetlands	Pamela Bergmann	Doug Mutter
U.S. Department of Commerce	sea lions, seals, whales, endangered marine species, anadromous fish in marine waters	Brad Smith	Matthew Eagleton
U.S. Department of Agriculture	national forest lands	Steve Zemke	Mike Novy
Alaska Natural Heritage Program	rare and endangered plants	Julie Michaelson	Rob Lipkin
CULTURAL and ARCHAEOLOGICAL SITES			
Alaska Office of History and Archaeology	historic sites, archaeological sites, national register sites	Dave McMahan	Joan Dale
U.S. Department of the Interior	archaeological/historical sites in park and wildlife refuge system units, public lands, Native allotments/trust lands; sunken vessels	Pamela Bergmann	Doug Mutter
U.S. Department of Agriculture	archaeological/historical sites on national forest lands	Steve Zemke	Mike Novy
SHORELINE TYPES			
Scientific Support Coordinator	shoreline types, environmental sensitivity index maps	John Whitney	
LAND OWNERSHIP and CLASSIFICATIONS/DESIGNATIONS			
Alaska Department of Natural Resources	state lands, state parks and recreation areas, state forests, tidelands	Sam Means	
Alaska Department of Fish and Game	State game refuges, state critical habitats	Mark Fink	Jeanne Walter

Agency	Resources	Primary Contact	Alternate Contact
U.S. Department of the Interior	national parks and preserves, national historic sites, national monuments, national wildlife refuges, public lands, national recreation areas, wild and scenic rivers, wilderness areas, Native trust lands	Pamela Bergmann	Doug Mutter
U.S. Department of Agriculture	national forests, national monuments, wild and scenic rivers, wilderness areas, research natural areas	Steve Zemke	Mike Novy
U.S. Department of Defense	military installations and reservations	Alaska Command	None
Local Governments: –Municipality of Anchorage –Matanuska-Susitna Borough –Kenai Peninsula Borough	municipal and private lands, and rights-of-way	Theede Tobish Ken Hudson Daniel Bevington	Nancy Carver
COMMERCIAL HARVEST			
Alaska Department of Fish and Game	fishing permits, seasons	Mark Fink	Jeanne Walter
Alaska Department of Natural Resources	tideland leases, logging on private lands	Sam Means	
Alaska Department of Environmental Conservation	seafood processing	Manny Soares	Nancy Napolilli
U.S. Department of Commerce	fishing permits, seasons	Brad Smith	Matthew Eagleton
SUBSISTENCE, PERSONAL, AND SPORT USES			
Alaska Department of Fish and Game	subsistence and personal uses statewide and navigable waters, sport hunting and fishing	Mark Fink	Jeanne Walter
U.S. Department of the Interior	subsistence uses on Federal lands and reserved waters; subsistence uses of: sea otters, walrus, polar bears, migratory birds	Pamela Bergmann	Doug Mutter
U.S. Department of Commerce	subsistence use of: whales, porpoises, seals, sea lions	Brad Smith	Matthew Eagleton

Agency	Resources	Primary Contact	Alternate Contact
RECREATION AND TOURISM USES			
Alaska Department of Natural Resources	State parks and recreation areas, anchorages, boat launches, campgrounds, State public lands	Sam Means	
Alaska Department of Fish and Game	sport hunting and fishing	Mark Fink	Jeanne Walter
Alaska Department of Community & Economic Development	seasonal events and activities, travel, outdoor activities, local visitor bureaus, tourism industries	Alaska Division of Tourism	
U.S. Department of Agriculture	campgrounds, cabins, recreation areas, trails, within the national forest system	Steve Zemke	Mike Novy
U.S. Department of the Interior	recreation uses in park and wildlife refuge system units and Federal public lands	Pamela Bergmann	Doug Mutter
WATER INTAKE and USE FACILITIES			
Alaska Department of Environmental Conservation	public drinking water wells, treatment, and storage, fish processing facilities	James Weise	Suzan Hill
Alaska Department of Fish and Game	hatcheries, ocean net pens and release sites, aquaculture	Mark Fink	Jeanne Walter
Alaska Department of Natural Resources	tidelands leases, aquaculture sites, private logging camps and log transfer facilities	Sam Means	
U.S. Coast Guard	marinas and docks, mooring buoys	Marine Safety Office, Anchorage	17 th District, Juneau
AREAS OF LOCAL CONCERN			
Municipality of Anchorage	coastal program special areas, plans, policies	Thede Tobish	
Matanuska-Susitna Borough	coastal program special areas, plans, policies	Ken Hudson	
Kenai Peninsula Borough	coastal program special areas, plans, policies	Daniel Bevington	Nancy Carver

CONTACT INFORMATION:

Agency	Primary Contact		Alternate Contact	
	Name	Numbers	Name	Numbers
Alaska Department of Fish and Game	Mark Fink	work: 267-2338 fax: 267-2464 emer: 337-7933 email: mark_fink@fishgame.state.ak.us	Jeanne Walter	work: 267-2172 fax: 267-2464 emer: 688-5878 email: jeanne_walter@fishgame.state.ak.us
Alaska Department of Natural Resources	Sam Means	work: 269-8548 fax: 269-8913 emer: email: samm@dnr.state.ak.us		work: fax: emer: email:
Alaska Department of Environmental Conservation	James Weise	work: 269-7647 fax: 269-7655 emer: email: james_weise@dec.state.ak.us	Suzan Hill	work: 269-7521 fax: 269-3990 emer: email: suzan_hill@dec.state.ak.us
	Manny Soares	work: 269-7640 fax: 269-7510 emer: 333-5312 email: many_soares@dec.state.ak.us	Nancy Napolili	work: 269-7583 fax: 269-7510 emer: email: nancy_napolili@dec.state.ak.us
Alaska Department of Community and Economic Development	Alaska Division of Tourism	work: 465-2012 fax: 465-3767 emer: email: GoNorth@dced.state.ak.us		work: fax: emer: email:
Alaska Natural Heritage Program	Julie Michaelson	work: 257-2782 fax: 257-2789 emer: 746-0959 email: anjam1@uaa.alaska.edu	Rob Lipkin	work: 257-2785 fax: 257-2789 emer: email: anrl@uaa.alaska.edu

Agency	Primary Contact		Alternate Contact	
	Name	Numbers	Name	Numbers
Alaska Office of History and Archaeology	Dave McMahan	work: 269-8723 fax: 269-8908 emer: 279-0280 email: dave_mcmahan@dnr.state.ak.us	Joan Dale	work: 269-8718 fax: 269-8908 emer: 562-4314 email: joan_dale@dnr.state.ak.us
U.S. Department of the Interior	Pamela Bergmann	work: 271-5011 fax: 271-4102 emer: 333-0489 email: pamela_bergmann@ios.doi.gov	Doug Mutter	work: 271-5011 fax: 271-4102 emer: 345-7726 email: douglas_mutter@ios.doi.gov
U.S. Department of Commerce	Brad Smith	work: 271-5006 fax: 271-3030 emer: 248-4211 email: Brad.Smith@noaa.gov	Matthew Eagleton	work: 271-6354 fax: 271-3030 emer: 338-2822 email: Matthew.Eagleton@noaa.gov
U.S. Department of Agriculture	Steve Zemke	work: 743-9521 fax: 743-9480 emer: 622-6170 email: szemke@fs.fed.us	Mike Novy	work: 743-9517 fax: 743-9480 emer: 688-5251 email: mnovy@fs.fed.us
U.S. Department of Defense	Alaska Command	work: 552-3944 fax: 552-4855 emer: 552-3000 email:	none	work: fax: emer: email:
U.S. Coast Guard	Marine Safety Office, Anchorage	work: 271-6700 fax: 271-6751 emer: 271-6700 email:	17th District, Juneau	work: 463-2065 fax: 463-2216 emer: 463-2000 email:
Scientific Support Coordinator	John Whitney	work: 271-3593 fax: 271-3139 emer: 440-8109 email: John.Whitney@noaa.gov		work: fax: emer: email:

Agency	Primary Contact		Alternate Contact	
	Name	Numbers	Name	Numbers
Local Governments: Municipality of Anchorage	Thede Tobish	work: 343-4261 fax: 343-4220 emer: email: TobishTG@ci.anchorage.ak.us		work: fax: emer: email:
Matanuska-Susitna Borough	Ken Hudson	work: 745-9865 fax: 745-9876 emer: email: khudson@msb.co.mat-su.ak.us		work: fax: emer: email:
Kenai Peninsula Borough	Daniel Bevington	work: 262-4441 fax: 262-8618 emer: email: dbevington@borough.kenai.ak.us	Nancy Carver	work: 262-4441 fax: 262-8618 emer: email: ncarver@borough.kenai.ak.us

SENSITIVE AREAS: PART TWO – AREAS OF ENVIRONMENTAL CONCERN

A. BACKGROUND/CRITERIA

The following relative priority listing was developed by the Sensitive Areas Workgroup, with representatives from state and federal agencies and the private sector. The list prioritizes resources into designations of major, moderate, and lesser concern. Resources are not prioritized within each designation. These designations are for consideration in initial spill response activities; they are not applicable to extended cleanup activities. This prioritization scheme must be used in conjunction with spill-specific information (e.g., size and location of spill, type of product, trajectory) to determine the actual protection priorities for that discharge. Specific guidance to On-Scene Coordinators for protecting cultural resources is contained in Annex M of the *Unified Plan*.

The following criteria were developed as a tool to establish levels of concern. These criteria are not listed in a priority order.

CRITERIA FOR RELATIVE PRIORITY RATING

- # human economic disruption -- economic/social value; human food source disruption, health/safety
- # mortality -- wildlife, fish, other organisms (how many threatened in relation to abundance)
- # animal displacement and sensitivity to displacement
- # aesthetic degradation
- # habitat availability and rarity
- # sublethal effects, including sensitivity to physical or toxic effects of oil or hazardous substances and long-term affects to habitat, species, or both
- # threatened and endangered species, and/or other legal designation
- # persistent concentration of oil or hazardous substances
- # reproduction rate or recolonizing potential
- # relative importance to ecosystem
- # potential for physical contact with spill--pathway of oil or hazardous substances
- # resource sensitivity to response countermeasure

B. AREAS OF MAJOR CONCERN

Threatened or Endangered Species Habitats:
Sea Lion Rookeries, Haulouts, and Critical Habitat
Steller's Eiders Wintering Areas
Shoreline Geomorphology - Coastal Habitat Types:
Marshes
Sheltered Tidal Flats
Sheltered Rocky Shores
High Density Kelp Beds
Eelgrass Beds
Sea Otter Concentration Areas (>20)
Harbor Seal Haulouts (>10)
Large Seabird Colonies (>5,000)
Waterfowl and Shorebird Spring, Fall, Winter Concentration Areas
Bald Eagle Nest Sites
Bald Eagle Feeding Concentration Areas
Large Anadromous Fish Streams (>50,000 Spawners)
Intertidal Salmon Spawning Areas
Hatcheries
Herring Spawning Areas
Beluga Whale Concentration Areas
Land Management Designations:
Federal:
Wilderness
Wild and Scenic Rivers
National Natural Landmarks
State:
Refuges
Sanctuaries
Critical Habitat Areas
Cultural Resources/Archaeological Sites:
National Historic Landmarks
Burial Sites
National Register Eligible Village Sites
Intertidal Sites
High Use Subsistence Harvest Areas
High Use Commercial Fishing Areas
High Use Recreational Areas

C. AREAS OF MODERATE CONCERN

Species of Concern Habitats (Possible Threatened or Endangered)
Shoreline Geomorphology - Coastal Habitat Types:
Gravel Beaches
Mixed Sand and Gravel Beaches
Exposed Tidal Flats
Coarse-Grained Sand Beaches
Sea Otter General Distribution Areas (<20)
Harbor Seal Haulouts (<10)
Seabird Colonies (1,000-5,000)

Waterfowl and Shorebird Nesting and Molting Concentration Areas
Anadromous Fish Streams (500-50,000 Spawners)
Clam Beds
Bear Spring Concentration Areas
Land Management Designations:
 Federal:
 National Parks
 National Wildlife Refuges
 State:
 State Parks
Cultural Resources/Archaeological Sites:
 National Register Eligible Sites (Other Than Village Sites)
 Sites Adjacent To Shorelines
Commercial Fish Harvest Areas
Recreational Use Areas

D. AREAS OF LESSER CONCERN

Shoreline Geomorphology - Coastal Habitat Types:
 Fine-Grained Sand Beaches
 Exposed Wave-Cut Platforms
 Exposed Rocky Shores
Seabird Colonies (<1,000)
Raptor Feeding Areas
Waterfowl and Shorebird General Distribution Areas
Bear Fall Concentration Areas
Anadromous Fish Streams (<500 Spawners)
Land Management Designations:
 Federal:
 Public Lands
 National Forests
 National Preserves
 State:
 General Public Lands

SENSITIVE AREAS: PART THREE – RESOURCE SENSITIVITY

See also the CISPRI Technical Manual, section 3.10.

The following sensitivity tables were developed by the Sensitive Areas Work Group, with representatives from State and Federal agencies and the private sector (not all information is complete at this time). Where references are available they are noted at the end of the tables. Periods and/or conditions when resources are of varying levels of concern (most, medium, least) with respect to oil spill impacts are noted in the following tables.

Slater, C.L. and R.M. Willis. 1995. Prioritization of environmentally sensitive areas for oil spill planning and response. In: Fourth International Conference on Effects of Oil on Wildlife, Seattle, WA, April 12-14, 1995, pp 178-194.

SHORELINE GEOMORPHOLOGY

(references: 4,7)

CATEGORY	LEAST	MEDIUM	MOST
COASTAL HABITAT TYPES	Fine-grained sand beaches Exposed wave-cut platforms Exposed rocky shores	Gravel beaches Mixed sand & gravel beaches Exposed tidal flats Coarse grained sand beaches	Marshes Sheltered tidal flats Sheltered rocky shores
LAKE AND RIVER HABITAT TYPES	Exposed rocky cliffs & banks Bedrock shores & ledges, rocky shoals Eroding scarps/banks in unconsolidated sediment Exposed man-made structures	Sand beaches & bars Mixed sand & gravel beaches/bars Gravel beaches/bars Gently sloping banks Exposed flats Riprap	Sheltered scarps in bedrock Vegetated steep sloping bluffs Sheltered man-made structures Vegetated low banks Sheltered sand & mud & muddy substrates Marshes
UPLAND HABITAT TYPES	To Be Developed	To Be Developed	To Be Developed

THREATENED OR ENDANGERED SPECIES

(references: 8,9,10,11)

CATEGORY	LEAST	MEDIUM	MOST
ENDANGERED SPECIES			WHALES: Humpback, Fin, Blue, Sei, Sperm, Northern right BIRDS: Short-tailed albatross MAMMALS: Steller sea lion
THREATENED SPECIES			BIRDS: Steller's Eider
SPECIES OF CONCERN		BIRDS: Aleutian Canada Goose, American Peregrine Falcon, Harlequin duck, Kittlitz's murrelet, Marbled murrelet, Northern goshawk, Northern Sea Otter, Olive-sided flycatcher MAMMALS: North American lynx WHALES: Beluga PLANTS: <i>Taraxacum carneocoloratum</i>	

SEA OTTERS

(references: 1,4,12)

CATEGORY	LEAST	MEDIUM	MOST
ABUNDANCE		< 20	> 20
SUSCEPTIBILITY			year around
HUMAN HARVEST	year around		

Critical Life Periods **J F M A M J J A S O N D**

Present nearshore =====
Pupping =====

BEARS
(references: 1,11)

CATEGORY	LEAST	MEDIUM	MOST
ABUNDANCE			
SUSCEPTIBILITY ^{1,2,3}	Nov 1 - April 15	April 15 - May 30 Aug 16 - Oct. 31	June 1 - Aug 15
COMMERCIAL VALUE	Nov 1 - April 15	June 1 - Aug 31	April 15 - June 1 & Sept 1 - Oct 31
HUMAN HARVEST	Nov 1 - April 15		April 15 - Oct 31

1. Bear densities and susceptibility to oil impacts increases through spring as more individuals emerge from dens and move to coastal areas.
2. Bear densities and susceptibility to oil impacts decreases through the summer depending upon the availability of fish in lower reaches of streams.
3. Most bear hunting opportunities are closed during the summer period, however, bear viewing opportunities in some areas peak during the summer period.

Critical Life Periods J F M A M J J A S O N D

Denning ===== =====

Spring coastal concentrations =====

Salmon stream concentrations =====

CARIBOU
(references: 1,11)

TENTATIVE

CATEGORY	LEAST	MEDIUM	MOST
ABUNDANCE	October 1 – May 1		April 1 – June 7 Sept 1 – Oct 15
SUSCEPTIBILITY	October 1 – May 1		April 1 – June 7 Sept 1 – Oct 15
HUMAN HARVEST	None on lowland herd		

Critical Life Periods J F M A M J J A S O N D

Migrations ===== =====

Calving =====

Wintering Concentrations ===== =====

STELLER=S EIDER

(References: 4,8)

CATEGORY	LEAST	MEDIUM	MOST
ABUNDANCE			1 or more
SUSCEPTIBILITY			Sept. - April
HUMAN HARVEST			

Eastern Cook Inlet, Ninilchik to Kennedy Entrance

WATERFOWL AND SHOREBIRDS

(references: 1,4,8,11)

CATEGORY	LEAST	MEDIUM	MOST
ABUNDANCE	< 100	100 - 1,000	> 1,000
SUSCEPTIBILITY	Nov 1 - Jan 31	Feb 1 - Apr 14 June 1 - Aug 14	Oct 15 - Apr 15 (UCI) Apr 15 - May 30 Aug 15 - Oct 31
SPECIES DIVERSITY	1 - 3	4 - 6	> 6
HUMAN HARVEST	Feb 1 - Aug 31 (UCI) Feb 1 - Sept 30 (LCI)	Nov 30 - Jan 31 (UCI) Dec 17 - Jan 31 (LCI)	Sept 1 - Oct 31 (UCI) Oct 1 - Dec 16 (LCI)

UCI = Upper Cook Inlet: area north of the latitude of Anchor Point

LCI = Lower Cook Inlet: area south of latitude of Anchor Point

Critical Life Periods **J F M A M J J A S O N D**

Spring migration ===
 Nesting/rearing =====
 Fall migration =====
 Winter concentrations =====

SEABIRDS
(references: 1,2,4,8)

CATEGORY	LEAST	MEDIUM	MOST
ABUNDANCE	< 1000	1000 - 5000	> 5000
SUSCEPTIBILITY	Nov 1 - Jan 31	Feb 1 - April 30	May 1 - Oct 31
SPECIES DIVERSITY	1 - 3	4 - 6	> 6
HUMAN HARVEST			May 1 - June 3 (UCI) April 15 - June 30 (LCI)

UCI = Upper Cook Inlet: area north of the latitude of Anchor Point

LCI = Lower Cook Inlet: area south of latitude of Anchor Point

Critical Life Periods **J F M A M J J A S O N D**

On colonies

=====

Feeding near colonies

=====

RAPTORS (generally eagles)

(references: 1,4,6,8)

CATEGORY	LEAST	MEDIUM	MOST
ABUNDANCE	1 / coastal mile	2-5 / coastal mile	> 5 / coastal mile
SUSCEPTIBILITY ¹			year around

- There are fewer eagles present during the winter, particularly in the central and upper Cook Inlet.

Critical Life Periods **J F M A M J J A S O N D**

Nesting/rearing

=====

Present near coast

=====

REFERENCES FOR TABLES

1. Alaska Habitat Management Guides Reference maps - Southcentral Region (Alaska Department of Fish and Game, Habitat Division, 1986)
2. U.S. Fish and Wildlife Service Seabird Catalog
3. An Atlas of the Catalog of Waters Important to the Spawning, Rearing and Migration of Anadromous Fish Southcentral Region (Alaska Department of Fish and Game, updated annually)
4. Environmental Sensitivity Index (ESI) Maps for Quads in Cook Inlet (RPI for NOAA)
5. National Oceanic and Atmospheric Administration Nautical Charts
6. U.S. Fish and Wildlife Service - bald eagle nest site database
7. Alaska Regional Profiles - Southcentral Region (University of Alaska, Arctic Environmental Information and Data Center, 1974)
8. U.S. Fish and Wildlife Service (Catherine Berg)
9. National Marine Fisheries Service (Brad Smith)
10. U.S. Forest Service (Ken Holbrook)
11. Alaska Department of Fish and Game (Mark Fink)
12. U.S. Fish and Wildlife Service marine mammals database
13. Alaska Department of Natural Resources (Sam Means)
14. National Park Service (Bud Rice)
15. State of Alaska Refuges, Critical Habitat Areas, and Sanctuaries (Alaska Department of Fish and Game, Habitat Division, 1991).
16. Nancy Lethcoe, Personal Communications, 1994