

**KODIAK  
SUBAREA CONTINGENCY PLAN**

**SENSITIVE AREAS  
SECTION**

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## SENSITIVE AREAS: INTRODUCTION

This section is intended for use by the On-Scene Coordinators (OSC) 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 this subarea. This information is specific to the Kodiak Subarea. No attempt has been made to duplicate information contained in easily accessible existing documents. This 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 impacted 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 (and their location) include:

- *ARRT 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)
- *Alaska Implementation Guidelines for Federal OSCs 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, Federal OSCs in Alaska are working in cooperation with the U.S. Department of the Interior and the National Marine Fisheries Service to ensure response activities are conducted in accordance with the 2001 *Inter-Agency Memorandum of Agreement Regarding Oil Spill Planning and Response Activities Under the Federal Water Pollution Control Act National Oil and Hazardous Substances Pollution Contingency Plan* (see *Unified Plan* Annex G, Appendix 2).

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

Section G of the Subarea Contingency Plan contains site-specific Geographic Response Strategies (GRSs) 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. The information in industry plans should be consistent with Subarea Contingency Plans.

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. Identifying relative priorities among resources and resource uses takes considerable coordination and discussion among resource management agencies. 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 about every possible resource at risk is included. Future updates to this document will continue to add information relevant to response activities.

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>

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

U.S. Department of the Interior  
Office of Environmental Policy  
and Compliance  
1689 C Street, Room 119  
Anchorage, Alaska 99501  
271-5011  
Fax: 271-4102  
email: [douglas\\_mutter@ios.doi.gov](mailto:douglas_mutter@ios.doi.gov)

Alaska Department of Fish and Game  
Division of Habitat  
333 Raspberry Road  
Anchorage, Alaska 99518  
267-2541  
Fax: 267-2499



## SENSITIVE AREAS: PART ONE - INITIAL CONTACTS

[see Table at end of Part One for contact information]

Agency	Resources	Primary Contact	Alternate Contact
<b>FISH and WILDLIFE and HABITAT RESOURCES</b>			
Alaska Department of Fish and Game	fish, shellfish, birds, terrestrial mammals, marine mammals	Will Frost	Megan Marie
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
Alaska Natural Heritage Program	rare and endangered plants	Julie Michaelson	Rob Lipkin
<b>CULTURAL and ARCHAEOLOGICAL SITES</b>			
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
<b>SHORELINE TYPES</b>			
Scientific Support Coordinator	shoreline types, environmental sensitivity index maps	John Whitney	
<b>LAND OWNERSHIP and CLASSIFICATIONS/DESIGNATIONS</b>			
Alaska Department of Natural Resources	state lands, state parks and recreation areas, state forests, tidelands	Clark Cox	
Alaska Department of Fish and Game	state game refuges, state critical habitats	Will Frost	Megan Marie
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

Agency	Resources	Primary Contact	Alternate Contact
U.S. Department of Defense	military installations and reservations	Alaska Command	
U.S. Coast Guard	Kodiak Integrated Support Center	Sector Anchorage	USCG District 17
Local Governments	municipal and private lands, and rights-of-way	See Part B. Resources Section	
<b>COMMERCIAL HARVEST</b>			
Alaska Department of Fish and Game	fishing permits, seasons	Will Frost	Megan Marie
Alaska Department of Natural Resources	tideland leases, logging on private lands	Clark Cox	
Alaska Department of Environmental Conservation	seafood processing	Manny Soares	Kimberly Stryker
U.S. Department of Commerce	fishing permits, seasons	Brad Smith	Matthew Eagleton
<b>SUBSISTENCE, PERSONAL, AND SPORT USES</b>			
Alaska Department of Fish and Game	subsistence and personal uses statewide and navigable waters, sport hunting and fishing	Will Frost	Megan Marie
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
<b>RECREATION AND TOURISM USES</b>			
Alaska Department of Natural Resources	State parks and recreation areas, anchorages, boat launches, campgrounds, State public lands	Clark Cox	
Alaska Department of Fish and Game	sport hunting and fishing	Will Frost	Megan Marie
Alaska Department of Commerce, Community & Economic Development	seasonal events and activities, travel, outdoor activities, local visitor bureaus, tourism industries	Alaska Division of Tourism	
U.S. Department of the Interior	recreation uses in park and wildlife refuge system units and Federal public lands	Pamela Bergmann	Doug Mutter
<b>WATER INTAKE and USE FACILITIES</b>			

Agency	Resources	Primary Contact	Alternate Contact
Alaska Department of Environmental Conservation	public drinking water wells, water treatment and storage, fish processing facilities	James Weise	Suzan Hill
Alaska Department of Fish and Game	hatcheries, ocean net pens and release sites, aquaculture	Will Frost	Megan Marie
Alaska Department of Natural Resources	tidelands leases, aquaculture sites, private logging camps and log transfer facilities	Clark Cox	
U.S. Coast Guard	marinas and docks, mooring buoys	Sector Anchorage	17 <sup>th</sup> District, Juneau
<b>AREAS OF LOCAL CONCERN</b>			
Kodiak Island Borough	special use locations	See access information in following table	

**CONTACT INFORMATION:**

Agency	Primary Contact		Alternate Contact	
	Name	Numbers	Name	Numbers
Alaska Department of Fish and Game	TBD	work: 267-2541 fax: 267-2499 email: _____	William Frost	work: 267-2813 fax: 267-2499 email: <a href="mailto:william.frost@alaska.gov">william.frost@alaska.gov</a>
			Megan Marie	work: 267-2446 fax: 267-2499 email: <a href="mailto:megan.marie@alaska.gov">megan.marie@alaska.gov</a>
Alaska Department of Natural Resources	Clark Cox	work: 269-8565 fax: 269-8913 email: <a href="mailto:clark.cox@alaska.gov">clark.cox@alaska.gov</a>		work: fax: email:
Alaska Department of Environmental Conservation	James Weise	work: 269-7647 fax: 269-7655 email: <a href="mailto:james.weise@alaska.gov">james.weise@alaska.gov</a>	Suzan Hill	work: 269-7521 fax: 269-3990 email: <a href="mailto:suzan.hill@alaska.gov">suzan.hill@alaska.gov</a>

Agency	Primary Contact		Alternate Contact	
	Name	Numbers	Name	Numbers
	Manny Soares	work: 269-7640 fax: 269-7510 email: <a href="mailto:many.soares@alaska.gov">many.soares@alaska.gov</a>	Kimberly Stryker	work: 269-7583 fax: 269-7510 email: <a href="mailto:kimberly.stryker@alaska.gov">kimberly.stryker@alaska.gov</a>
Alaska Department of Commerce, Community and Economic Development	Alaska Division of Tourism	work: 465-2012 fax: 465-3767 email: <a href="mailto:GoNorth@dced.state.ak.us">GoNorth@dced.state.ak.us</a>		work: fax: email:
Alaska Natural Heritage Program	Julie Michaelson	work: 257-2782 fax: 257-2789 email: <a href="mailto:anjam1@uaa.alaska.edu">anjam1@uaa.alaska.edu</a>	Rob Lipkin	work: 257-2785 fax: 257-2789 email: <a href="mailto:anrl@uaa.alaska.edu">anrl@uaa.alaska.edu</a>
Alaska Office of History and Archaeology	Dave McMahan	work: 269-8723 fax: 269-8908 email: <a href="mailto:Dave.McMahan@alaska.gov">Dave.McMahan@alaska.gov</a>	Joan Dale	work: 269-8718 fax: 269-8908 email: <a href="mailto:joan.dale@alaska.gov">joan.dale@alaska.gov</a>
U.S. Department of the Interior	Pamela Bergmann	work: 271-5011 fax: 271-4102 email: <a href="mailto:Pamela_bergmann@ios.doi.gov">Pamela_bergmann@ios.doi.gov</a>	Doug Mutter	work: 271-5011 fax: 271-4102 email: <a href="mailto:douglas_mutter@ios.doi.gov">douglas_mutter@ios.doi.gov</a>
U.S. Department of Commerce	Brad Smith	work: 271-5006 fax: 271-3030 email: <a href="mailto:Brad.Smith@noaa.gov">Brad.Smith@noaa.gov</a>	Matthew Eagleton	work: 271-6354 fax: 271-3030 email: <a href="mailto:Matthew.Eagleton@noaa.gov">Matthew.Eagleton@noaa.gov</a>
U.S. Department of Defense	Alaska Command	work: 552-3944 fax: 552-4855		work: fax:
U.S. Coast Guard	Sector Anchorage	work: 271-6700 fax: 271-4689	17th District, Juneau	work: 463-2065 fax: 463-2216
NOAA Scientific Support Coordinator	John Whitney	work: 271-3593 fax: 271-3139 email: <a href="mailto:john.whitney@noaa.gov">john.whitney@noaa.gov</a>		work: fax: email:
Local Government Contacts	For the current local government contact information, go to B. Resources Section, Part One Community Profiles.			
Tribal Contacts	For the current tribal contact information, go to B. Resources Section, Part Three Information Directory, Native Organizations and Federally Recognized Tribes.			

# **SENSITIVE AREAS: PART TWO - AREAS OF ENVIRONMENTAL CONCERN**

## **A. BACKGROUND/CRITERIA**

The following relative priority listing was developed by the Sensitive Areas Work Group, 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 clean-up 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.

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
- mortality -- wildlife, fish, other organisms (how many potentially killed 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 countermeasures

**B. AREAS OF MAJOR CONCERN**

- Threatened and Endangered Species
  - Stellar Sea Lion Rookeries and Haulouts
  - Sea Otter Concentration Areas (> 20) and General Distribution
  - Steller's eiders over-wintering sites
- Geomorphology - Coastal Habitat Types
  - Marshes
  - Eelgrass Beds
  - Sheltered Tidal Flats
  - Sheltered Rocky Shores
- Geomorphology - Upland Habitat Types
  - Streams and Lakes
  - Riparian Habitats
- Harbor Seal Haulouts (> 10)
- Seabird Colonies (> 5,000)
- Waterfowl and Shorebird Spring, Fall, or Winter Concentration Areas
- Eagle Nest Sites
- Anadromous Fish Streams
  - > 25,000 pink salmon spawners
  - > 15,000 chum salmon spawners
  - > 5,000 sockeye salmon spawners
  - > 2,500 coho salmon spawners
  - > 500 chinook salmon spawners
- Bear Spring Coastal Concentration Areas
- Hatcheries
- Large Freshwater Fish Systems
- Herring Spawning Areas
- Land Management Designations
- Federal Lands
  - Designated Wilderness Areas
    - Katmai Wilderness
    - Becharof Wilderness
    - Semidi Wilderness
- State Lands
  - Tugidak Island Critical Habitat
- Cultural Resources/Archaeological Sites
  - National Historical Landmarks
    - Amailik Bay Archeological District
  - National Natural Landmarks
  - Burial Sites
  - National Register Eligible Village Sites
  - Intertidal Sites
- Subsistence Harvest Areas
- High Use Commercial Harvest Areas

C. **AREAS OF MODERATE CONCERN**

- Geomorphology - Coastal Habitat Types
  - Gravel Beaches
- Mixed Sand & Gravel Beaches
  - Exposed Tidal Flats
  - Coarse Grained Sand Beaches
- Harbor Seal Haulouts (< 10)
- Stellar Sea Lion General Distribution
- Seabird Colonies (1,000 - 5,000)
- Waterfowl and Shorebird Nesting and/or Molting Concentration Areas
- Anadromous Fish Streams
  - 5,000 - 25,000 pink salmon spawners
  - 5,000 - 15,000 chum salmon spawners
  - 500 - 5,000 sockeye salmon spawners
  - 500 - 2,500 coho salmon spawners
  - 100 - 500 chinook salmon spawners
- Moderately Sized Freshwater Fish Systems
- Clam Beds
- Sitka Deer and Elk Coastal Feeding Concentration Areas
- Commercial Harvest Areas
- Land Management Designations
  - Federal Lands
    - Katmai National Park and Preserve
    - Kodiak National Wildlife Refuge
    - Alaska Maritime National Wildlife Refuge
    - Alaska Peninsula National Wildlife Refuge
    - Becharof National Wildlife Refuge
  - State Lands
    - Afognak State Park
    - Shuyak Island State Park
    - Buskin River State Recreation Area
    - Ft. Abercrombie State Historic Park
    - Woody Island State Recreation Site
    - Pasagshak River State Recreation Site
- Cultural Resources/Archaeological Sites
  - National Register Eligible Sites (excluding village sites)
  - Sites Adjacent to Shorelines

**D. AREAS OF LESSER CONCERN**

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

Bear Fall Concentration Areas

Anadromous Fish Streams

- < 5,000 pink salmon spawners
- < 5,000 chum salmon spawners
- < 500 sockeye salmon spawners
- < 500 coho salmon spawners
- < 100 chinook salmon spawners

General Freshwater Fish Habitat

Land Management Designations

- Federal and State Public Lands

Cultural Resources/Archaeological Sites

- Cultural Resources that do not meet National Register Criteria



## SENSITIVE AREAS: PART THREE - RESOURCE SENSITIVITY

See also Part Five - Areas of Local Concern and the Kodiak Island Borough's *Sensitive Area Identification Project Report* (1997).

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. Key references are identified for each table and are listed at the end of the tables. Time 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.

### GEOMORPHOLOGY

(references: 6)

CATEGORY	LESSER	MODERATE	MAJOR
COASTAL HABITAT TYPES	Fine-grained Sand Exposed Wave-cut Platforms Exposed Rocky Shores	Gravel Beaches Mixed Sand & Gravel Beaches Exposed Tidal Flats Coarse Grained Sand Beaches	Marshes Eelgrass Beds Sheltered Tidal Flats Sheltered Rocky Shore
UPLAND HABITAT TYPES	To Be Developed	To Be Developed	Streams & Lakes Riparian Habitats

### THREATENED OR ENDANGERED SPECIES

(references: 7,8,9,14,18,22)

CATEGORY	LESSER	MODERATE	MAJOR
ENDANGERED SPECIES			<b>Marine mammals:</b> Steller sea lion; and Fin, Blue, Humpback, Sei, Sperm, and Northern right whales
THREATENED SPECIES			<b>Birds:</b> Short-tailed Albatross
CANDIDATE SPECIES			<b>Marine mammals:</b> northern sea otter
PROTECTED SPECIES			<b>Birds:</b> Steller's eider
			<b>Birds:</b> Kittlitz's murrelet
			Bald eagles, Golden eagles, All marine mammals and migratory birds

**SEA OTTERS**  
(references: 2,4,9,15)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE		< 20	> 20
SUSCEPTIBILITY			year around
HUMAN HARVEST	year around		

**Sea Otter Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Present nearshore												
Pupping (primary period)												

**HARBOR SEALS**  
(references: 2,4,15,16,22)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE (ON HAULOUTS)	< 5	5 – 10	> 10
SUSCEPTIBILITY		year around	
HUMAN HARVEST	June 1 - Aug 31	Sept 1 - Sept 30	Oct 1 - May 31

**Harbor Seal Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Pupping												
Molting												
On Haulouts												

**WHALES and PORPOISES<sup>1</sup>**  
(references: 9,10,15,21)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE	< 10	10 - 50	> 50
SUSCEPTIBILITY	Oct 1 – May 1	Aug 1 - Sept 30	May 1 - July 31

<sup>1</sup> Toothed and baleen whales are present nearshore year round.

**STELLER SEA LIONS**

(references: 2,4,10,14,16)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE (ON HAULOUTS)	< 15	15 - 30	> 30
SUSCEPTIBILITY		year around	
HUMAN HARVEST	May 1 - Aug 31	Sept 1 - Sept 30	Oct 1 - Apr 30

**Stellar Sea Lion Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Pupping												
Molting												
On Rookeries												
On Haulouts												
In area waters												

**BROWN BEARS**

(references: 2,3,4,10, 19, 20)

CATEGORY	LESSER	MODERATE	MAJOR
SUSCEPTIBILITY	Nov 1 – Mar 30	May 1 - June 30 Sept 1 - Oct 31	Apr 1 - Aug 30
COMMERCIAL VALUE	Nov 1 - May 31 July 1 - Aug 31	June 1 - June 30	April 1 - May 15, July, Oct 25 - Nov 30
HUMAN HARVEST	Nov 1 - Apr 15	April 15 - April 13, Nov 15 - Nov 30	May 1 - May 15, Oct 25 - Nov 15

**Bear Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Denning												
Feeding in coastal areas												
Feeding along salmon streams												

**BLACK-TAILED DEER**

(references: 2,3,4,23)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE <sup>2</sup>			
SUSCEPTIBILITY	Apr - Nov		Jan - April
HUMAN HARVEST	Aug - Jan	Sep - Dec	Oct - Nov

<sup>2</sup> Deer populations fluctuate widely from year to year. In addition, densities vary as a result of snow conditions. Consequently, specific abundance figures will not be established for use in prioritizing the importance of an area.

**Sitka Black-Tailed Deer Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Fawning Period					■	■	■					
Present near shoreline	■	■	■	■								■

**ELK**

(references:2,3,4,24)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE <sup>3</sup>			
SUSCEPTIBILITY	Apr 1 - Nov 30		Dec 1 - Mar 31
HUMAN HARVEST			Sept 25 - Nov 30

<sup>3</sup> There are seven elk herds that utilize various portions of Afognak and Raspberry islands. Depending on the herd and the climatic conditions; abundance may vary widely. As a result, specific abundance figures will not be established for use in prioritizing the importance of an area.

**Elk Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Calving					■	■	■					
In wintering areas	■	■	■									■

**CARIBOU/REINDEER**

(references: 2,3,4,10,12,21)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE			
SUSCEPTIBILITY			
HUMAN HARVEST	Closed on AK Peninsula	Closed on AK Peninsula	Aug 1 – Dec 31 Closed on AK Peninsula

**Caribou Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Calving						■						
Insect relief areas							■	■	■			

**WATERFOWL**  
(references: 2,3,4,10)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE	< 100	100 - 1,000	> 1,000
SUSCEPTIBILITY	Nov 1 - Jan 31	Feb 1 - Apr 14 Jun 1 - Aug 31	Apr 1 - May 31 Sept 1 - Mar 31
SPECIES DIVERSITY	1 – 3	4 - 6	> 6
HUMAN HARVEST	June 1 - Aug 31	Dec 1 - Dec 31	Jan 1 - Apr 1 Sept 1 - Nov 30

**Waterfowl Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Spring Migration				■	■							
Nesting/Rearing/Molting				■	■	■	■	■				
Fall Staging/Migration								■	■			

**SEABIRDS**  
(references: 2,3,4,5)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE	< 1000	1000 - 5000	> 5000
SUSCEPTIBILITY	Nov 1 - Jan 31	Feb 1 - Mar 31	Apr 1 - Oct 31
SPECIES DIVERSITY	1 - 3	4 - 6	> 6
HUMAN HARVEST <sup>4</sup>	June 1 - Apr 19		Apr 20 - May 31

<sup>4</sup> Seabird eggs are harvested by local Native communities.

**Seabirds Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
On Colonies												
Present in area												

**BALD EAGLES**

(references: 2,4)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE	< 1 nest/3 coastal miles	1 nest/1 to 3 coastal miles	> 1 nest/coastal mile
SUSCEPTIBILITY			year around

**Eagle Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Nesting/Rearing												
Present in area												

**HERRING (including capelin/hooligan)**

(references: 2,3,4,10,25)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE (Biomass in Tons)	< 500	500 - 5,000	5,000 Nearshore biomass – year-round
SUSCEPTIBILITY			Year-round
HUMAN HARVEST	Jan 1 - Feb 28	June 1 - Dec 31	April 13 - May 31

**Herring Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Congregating to spawn				■	■	■	■					
Spawning				■	■	■	■					
Larvae near shore					■	■	■	■				
Overwintering	■	■	■							■	■	■
Summer feeding					■	■	■	■	■			
Present in area	■	■	■	■	■	■	■	■	■	■	■	■

**SALMONIDS**

(references: 1,2,3,4,10)

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE	< 5,000 pink < 5,000 chum < 500 sockeye < 500 coho < 100 chinook	5,000 - 25,000 pink 5,000 - 15,000 chum 500 - 5,000 sockeye 500 - 2,500 coho 100 - 500 chinook	> 25,000 pink > 15,000 chum > 5,000 sockeye > 2,500 coho > 500 chinook
SUSCEPTIBILITY	Dec 1 - Jan 31	Feb 1 - Apr 30 Nov 1 - Nov 30	May 1 - Oct 31
SPECIES DIVERSITY	2 or less	2 - 4	4 and greater
HUMAN HARVEST		Oct 10 - May 15	May 15 - Oct 10

<sup>5</sup> Chinook salmon are present nearshore during the entire year; however, abundance varies depending on the time of year.

**Salmon Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Spawning						■	■	■	■	■	■	■
Eggs/fry in gravel	■	■	■	■	■	■	■	■	■	■	■	■
Outmigration of fry					■	■	■	■	■	■	■	■
Adults nearshore <sup>5</sup>						■	■	■	■	■	■	■

**FRESHWATER FISH SPECIES**

(references: 2,3,4,10)

**DOLLY VARDEN**

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE	no abundance numbers are available		
SUSCEPTIBILITY	Nov 1 – March 31	June 1 - Oct 31	April 1 - May 31
HUMAN HARVEST	Nov 1 – March 31	Oct 1 - Oct 31	April 1 - Sept 30

**Dolly Varden Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Adults Near Shore												
Spawning in Streams												
Eggs/Fry in Gravel												

**RAINBOW TROUT**

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE			
SUSCEPTIBILITY	Nov 1 - March 31	June 1 - Oct 31	April 1 - May 31
HUMAN HARVEST	Nov 1 - March 31	Oct 1 - Oct 31	April 1 - Sept 30

**Rainbow Trout Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Spawning												
In Freshwater												

**STEELHEAD TROUT**

CATEGORY	LESSER	MODERATE	MAJOR
ABUNDANCE	<350	350-1,900	>1,900
SUSCEPTIBILITY	Nov 1 - March 31	June 1 - Oct 31	April 1 - May 31
HUMAN HARVEST	Nov 1 - March 31	Oct 1 - Oct 31	April 1 - Sept 30

**Steelhead Trout Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Spawning												
In Freshwater (Adults)												
In Freshwater (Juveniles)												
Migration Periods												



**CLAMS and OTHER MARINE INVERTEBRATES (CHITONS)**

(references: 2,3,4,10)

CATEGORY	LESSER	MODERATE	MAJOR
SUSCEPTIBILITY			year around
HUMAN HARVEST		May 1 - Aug 31	Sept 1 - Apr 30

**Clams and Other Marine Invertebrates (Chitons) Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Spawning							■	■	■			
Planktonic Larvae							■	■	■	■	■	■

**SCALLOPS**

(references: 26)

CATEGORY	LESSER	MODERATE	MAJOR
SUSCEPTIBILITY	Year-round		
HUMAN HARVEST	Feb 16 – June 30		July 1 – Feb 15

**Scallops Critical Life Periods**

	J	F	M	A	M	J	J	A	S	O	N	D
Spawning					■	■	■	■				
Planktonic Larvae					■	■	■	■				

**LEGISLATIVELY DESIGNATED LAND STATUS**

(references: 8,11,12,13)

CATEGORY	LESSER	MODERATE	MAJOR
FEDERAL LANDS	Public Lands	National Parks and Preserves Wildlife Refuges	Wild & Scenic Rivers Critical Habitats Designated Wilderness Areas
STATE LANDS	Public Lands <sup>6</sup>	State Parks	Critical Habitat Areas

<sup>6</sup> Includes submerged lands out to 3 miles, and historic bays and inlets.

**HISTORIC PROPERTIES**

(references: 11)

<b>CATEGORY</b>	<b>LESSER</b>	<b>MODERATE</b>	<b>MAJOR</b>
HISTORIC PROPERTIES, CULTURAL AND ARCHAEOLOGICAL SITES	Cultural Resources that do not meet National Register criteria	National Register-eligible sites (excluding villages sites); Sites adjacent to shorelines	National Historic Landmarks; National Natural Landmarks; Burial sites; National Register-eligible village sites; Intertidal sites

## REFERENCE DOCUMENTS FOR SENSITIVITY TABLES

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2. ADF&G. 1985. Fish and wildlife life histories, habitat requirements, distribution, and abundance. Southwest region. Volume I. Alaska Habitat Management Guide. Div. of Habitat, Juneau. 545 pp.
3. ADF&G. 1985. Human use of fish and wildlife. Southwest region. Volume II. Alaska Habitat Management Guide. ADF&G, Div. of Habitat, Juneau. 630 pp.
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9. National Marine Fisheries Service
10. Alaska Department of Fish and Game
11. Alaska Department of Natural Resources
12. National Park Service
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21. James Fall, Subsistence Program Manager, ADF&G – Anchorage, pers. comm. 2009
22. Robert Small, Wildlife Scientist, ADF&G – Juneau, pers. comm. 2009
23. Van Daele, L.J. 2007. Unit 8 - deer. Pages 90-106 in P. Harper, editor. Deer management report of survey and inventory activities 1 July 2004 - 30 June 2006. Alaska Department of Fish and Game. Juneau. Alaska
24. Van Daele, L.J. 2008. Unit 8 - elk. Pages 15-29 in P. Harper, editor. Elk management report of survey and inventory activities 1 July 2005 - 30 June 2007. Alaska Department of Fish and Game. Juneau. Alaska.
25. Steve Schrof, Fisheries Biologist, ADF&G – Kodiak, email comm. 2009
26. Ryan Burt, Fisheries Biologist, ADF&G – Kodiak, email comm. 2009

# SENSITIVE AREAS: PART FOUR - BACKGROUND INFORMATION

## INTRODUCTION

The background information contained in this section is a mixture of references to readily available documents, knowledgeable contacts, and data not readily available elsewhere. Industry or local government-generated references that have had agency input and review are incorporated by reference. Additional information on places of concern to local residents is available in Part Five - Areas of Local Concern.

The Kodiak Island Borough sponsored a study resulting in publication of the *Sensitive Areas Identification Project Report* (1997). The report includes information and maps collected from federal, State, and local agencies; local residents; and resource user groups. The 18 color maps from this report are in this plan as Attachment One of the Sensitive Areas Section. The map numbers and titles are listed below, and these maps are referenced at various points in the Sensitive Areas Section. (The report is also available from the Kodiak Island Borough, 486-9360.)

Maps in the *Sensitive Areas Identification Project Report* (1997):

- (1) Herring Spawning, Pollock Spawning, Pollock Juvenile Rearing, and Pink Salmon Anadromous Streams
- (2) Commercial Salmon Seining and Set Net Areas
- (3) Commercial Herring, Pollock, Halibut, Cod and Scallops
- (4) King and Tanner Crab
- (5) Shellfish and Clam
- (6) Harbor Seal Areas
- (7) Sea Otters
- (8) Terrestrial Mammals, Birds, Sea Lions, Brown Bears and Seabirds
- (9) Humpback and Fin Whales
- (10) Gray, Minke and Orca Whales, and Dall's Porpoise
- (11) Ducks, Geese, Swans
- (12) Fall and Winter Recreation Areas
- (13) Spring and Summer and Year-round Recreation Areas
- (14) Marine Subsistence
- (15) Salmon and Freshwater Fish Subsistence
- (16) Currents and Circulation
- (17) Sensitive Areas Identified by Rural Communities
- (18) Sensitive Areas Identified by Focus Groups, Kodiak Community, Resource Agencies

For coastal information, see the *Prince William Sound Tanker Oil Discharge Prevention and Contingency Plan (Tanker Plan)* (November 2002) by the Prince William Sound Response Planning Group, and Part 3, Supplemental Information Document (SID) #3, Section 2, which contain background information and data descriptions, including:

- (1) Salmon and other Anadromous Fish
- (2) Pacific Herring
- (3) Halibut and Groundfish
- (4) Crabs and Shrimp
- (5) Other Intertidal/Subtidal Invertebrates (Mussels, Clams, Oysters)
- (6) Birds (Water-Related, Shorebirds, Seabirds, Raptors)

- (7) Marine Mammals (Cetaceans, Pinnipeds, Sea Otters)
- (8) Terrestrial Mammals
- (9) Threatened and Endangered Species
- (10) Commercial Fisheries
- (11) Sport Fisheries
- (12) Human Use of Wildlife Resources
- (13) Subsistence Utilization of Fish and Wildlife Resources

The Tanker Plan's automated Graphical Resource Database (November 2004), which covers the Kenai Peninsula and Kodiak Island/Shelikof straits, currently consists of the following data layers:

- |   |                                     |
|---|-------------------------------------|
| --Aerial Photo Locations                    | --Geographic Response Strategies    |
| --Aquaculture Sites                         | --Salmon Collection & Release Sites |
| --Commercial Fishing Areas-Salmon           | --Communities                       |
| --Community Sensitive Sites                 | --Bald Eagle Nest Sites             |
| --Equipment Storage Sites                   | --Harbor Seal Sites                 |
| --Historic Harbor Seal Sites                | --Harbor Seal Areas                 |
| --Herring Spawning Areas                    | -- Hatchery Sites                   |
| --Marine Features                           | --Marsh Shoreline                   |
| --Recreation/Tourism Areas                  | --Research Areas                    |
| --Salmon Streams--all                       | --Salmon Index Streams              |
| --Sea Lion Sites                            | --Sea Otter Concentration Areas     |
| --Seabird Colonies                          | --Sheltered Tidal Flats             |
| --Small Boat Harbors                        | --Subsistence Areas                 |
| --Waterfowl Concentration Areas             | --Whales                            |
| --Shoreline Cleanup Assessment Team         | -- Land Features                    |
| --Eelgrass Bed Locations                    | --Valdez Marine Terminal            |
| --Port Valdez Sensitive Area Tactical Guide |                                     |
| --200 Foot Topographic Contours             | --NOAA Charts                       |
| --Narrow Rivers                             | --Wide Rivers and Lakes             |
| --Tidal Flats                               | --Land                              |
| --Shoreline                                 | --Chugach National Forest Shoreline |

## LAND MANAGEMENT MAPS

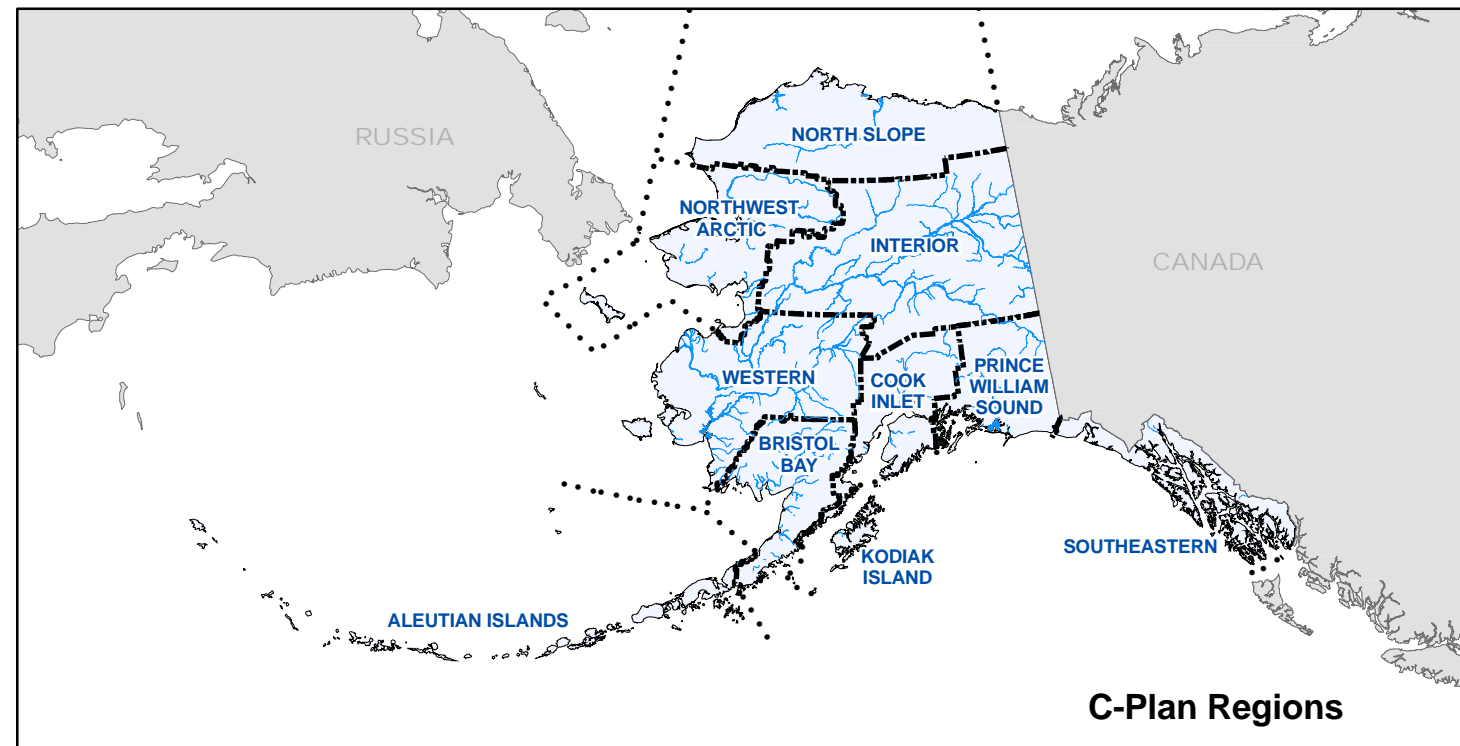
The Alaska Department of Natural Resources, under agreement with the Alaska Department of Environmental Conservation, produced digital base and land management maps for each of the subareas using their ARC-INFO based Geographic Information System. The following land management maps provide an index to the Public Land Record and should not be viewed as legal documents. These maps are available on the internet at: <http://www.asgdc.state.ak.us/maps/cplans/subareas.html>

# Primary Data Sources

- Contingency Plan (C-Plan) Regional Boundaries: Alaska Department of Environmental Conservation (ADEC) (scale approximately 1:1 million; automated in 1995 by ADNR from 18AAC 75.495 specifications).
- State Land Ownership: Alaska Department of Natural Resources (ADNR), Land Administration System (section-level resolution; April 2008).
- State Legislatively Designated Areas: ADNR, Land Administration System (section-level resolution; February 2000).
- Alaska Native Claims Settlement Act, Bureau of Land Management (section-level resolution; April 2008).
- Native Allotments; Patented/Conveyed: Spatial data; Bureau of Land Management (SDMS: Spatial Data Management System (<http://sdms.ak.blm.gov>), March 30, 2005) Tabular data; Bureau of Land Management (ALIS: Alaska Land Information System, March 2005)
- Conservation System Units; Bureau of Land Management (1991) and ADNR edits since then (February 1998).
- Wilderness Designations:
  - U.S. Geological Survey (1:2 million scale; May 1995).
  - U.S. Fish & Wildlife Service (1:2 million scale; May 1995).
  - U.S. Forest Service (1:63,360; May 1995).
  - U.S. National Park Service (1:63,360; May 1995).
  - Bureau of Land Management Wilderness Study Areas (2004)
- Military Lands; Bureau of Land Management (section-level resolution; April 2008)
- Coastline: ADNR, Land Records Informaion Section; US Geological Survey; US Forest Service, Chugach; US Forest Service, Tongass; EVOS Trustee Council, (February 1998).
- Streams and Lakes: Digital Chart of the World, Defense Mapping Agency 1:1 million scale; 1991 data released by Environmental Systems Research Institute.
- Roads & Railroads: Digital chart of the World, Defense Mapping Agency (1:1 million scale; 1991 data released by Environmental Systems Research Institute).
- Geographic Place Names: Dictionary of Alaska Place Names (1967) and U.S. Geological Survey Quadrangle Maps, (1:1 million scale; automated by U.S. Geological Survey, and annotated by ADNR, June 1996).
- Borough Boundaries: Alaska Department of Community & Regional Affairs (1997) (1:250,000 scale) and ADNR (1997).
- Native Corporation Boundaries: ADNR (approximately 1:1 million scale; automated from U.S. Census Bureau digital files, verified and updated by ADNR, July 1995).

# CONTINGENCY PLANNING

## Sensitive Areas Land Management Maps



## Master Legend

### Land Management

	National Forests, Monuments, Recreation, and Conservation Areas		State Patented Tentatively Approved or Other State Acquired Lands
	National Park System		Both State and ANCSA Lands Within a Section
	National Wildlife Refuges		ANCSA Patented or Interim Conveyed
	National Wild and Scenic Rivers Outside National Park System and Outside National Wildlife Refuges		Federal Designated Wilderness Areas
	Bureau of Land Management Public Lands		State Selected (ANILCA Topfilings included)
	National Petroleum Reserve - Alaska (NPRA)		State Wildlife, Park, Forest, and Other Multiple Use Areas
	Major Military		ANCSA Selected
			Native Allotments

### Other Map Features

- C-Plan Boundary (On land)
- C-Plan Boundary (Offshore)
- Borough Boundary
- Native Corporation Boundary
- Wilderness Study Area (BLM)
- main\_roads Major Highways

### To Re-Order Maps

This legend page and the Sensitive Areas Land management maps were produced using ArcGIS software and output as digital postscript files.

To purchase copies of the Sensitive Areas Land Management maps, please contact:

Alaska Department of Natural Resources  
 Division of Support Services  
 Land Records Information Section  
 550 W. 7th Avenue, Suite 706  
 Anchorage, Alaska 99501  
 (907)269-8833

## Hierarchy for Depicting Land Ownership

The land management maps in this C-Plan series depict ownership according to the following hierarchy (e.g., any portion of a section that is State Patented or Tentatively Approved causes the whole section to be depicted as State land):

1. State Municipal Entitlements or Land Exchanges or other Land Disposals.
2. Patented Disposed Federal Lands (Native Allotments or Private Parcels).
3. State Patented or Tentatively Approved (includes casetypes 101-114, 116-117, 128-129).
4. Alaska Native Claims Settlement Act (ANCSA) Patented or Interim Conveyed.
5. Major Military
6. National Wildlife Refuges, National Park System Units.
7. National Wild & Scenic Rivers outside National Park System Units and National Wildlife Refuges.
8. National Forests and Monuments, National Petroleum Reserve-Alaska, National Recreation Areas and National Conservation Areas.
9. Bureau of Land Management Public Lands.

Note: Cross-hatched areas indicate an overlay of State-Selected lands (including Alaska National Interest Lands Conservation Act topfilings) and Alaska Native Claims Settlement Act-Selected lands.

Note: The Alaska Maritime National Wildlife Refuge (NWR) is not completely depicted. Areas where it is depicted are shaded, however, they are not outlined. The Alaska Maritime NWR is described as follows:

The Alaska Maritime NWR consists of all public lands, including submerged waters and interests therein on islands, islets, rocks, reefs, spires, and designated capes and headlands in the coastal areas and adjacent seas of Alaska within five designated subunits: Chukchi Sea, Bering Sea, Aleutian Islands, Alaska Peninsula, and Gulf of Alaska Units; and includes an undetermined quantity of submerged land, if any, retained in Federal ownership at the time of statehood around Kodiak and Afognak Islands. The refuge is generally depicted on the USGS maps entitled, "Alaska Maritime National Wildlife Refuge" dated October 1979.

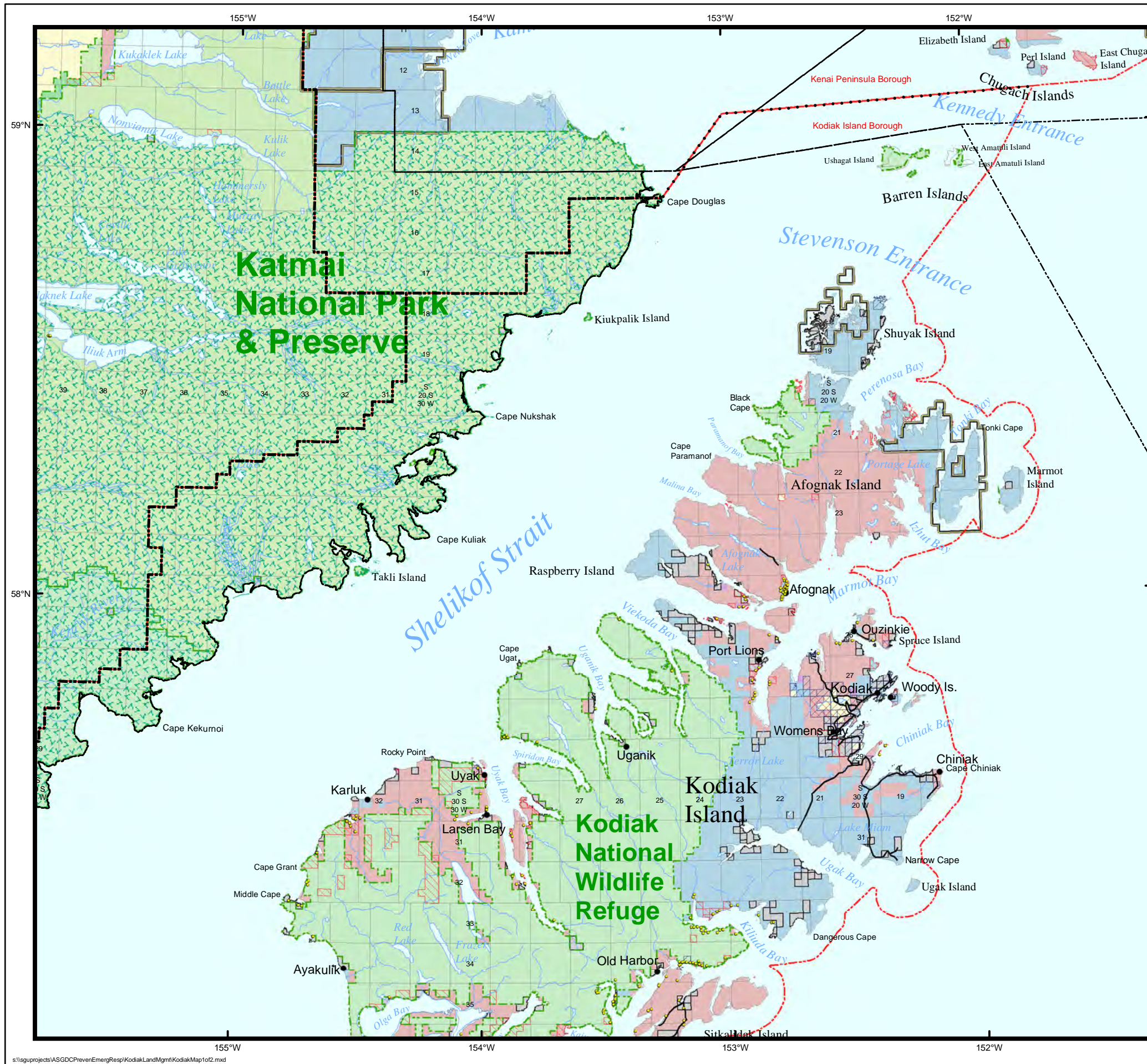
## Background

The Alaska Department of Natural Resources (ADNR), under agreement with the Alaska Department of Environmental Conservation (ADEC), produced digital land management maps for each of the Contingency Plan (C-Plan) Region Subareas, using an ArcGIS based Geographic Informaion System (GIS). The following land management maps provide an index to the Public Land Record and should not be viewed as legal documents. More detailed State Status Plats portraying State land ownership by township are available at the Alaska Department of Natural Resources' Public Information Centers. To view the state's land records online, visit the following web address:<http://plats.landrecords.info> Master Title Plats portraying Federal and Alaska Native Claims Settlement Act land ownership are available at the Bureau of Land Managment's Public Room, Federal Building.

The land management maps summarize land ownership and represent a hierarchical, section-level index to the underlying detailed land ownership.

The State of Alaska makes no expressed or implied warranties (including warranties of merchantability and fitness) with respect to the character, function, or capabilities of this product or its appropriateness for any user's purposes. In no event will the State of Alaska be liable for any incidental, indirect, special, consequential or other damages suffered by the user or any other person or entity whether from use of the product, any failure thereof or otherwise, and in no event will the State of Alaska's liability to you or anyone else exceed the fee paid for the product.





## LAND MANAGEMENT

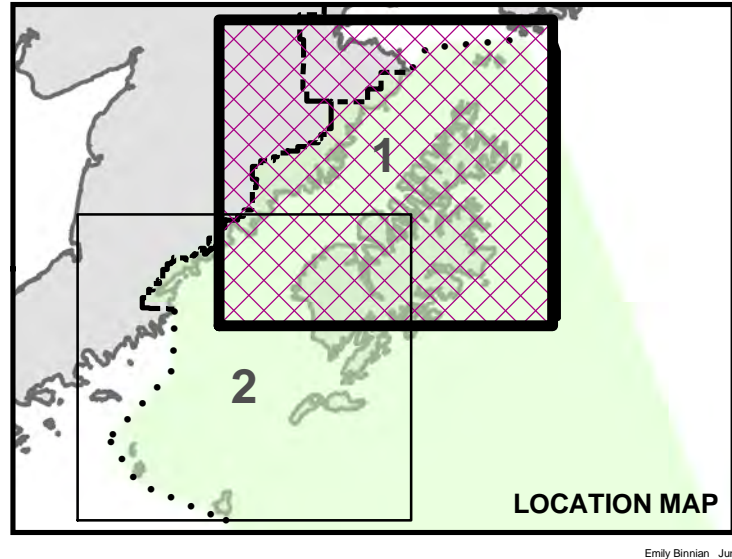
### KODIAK REGION

Map 1 of 2

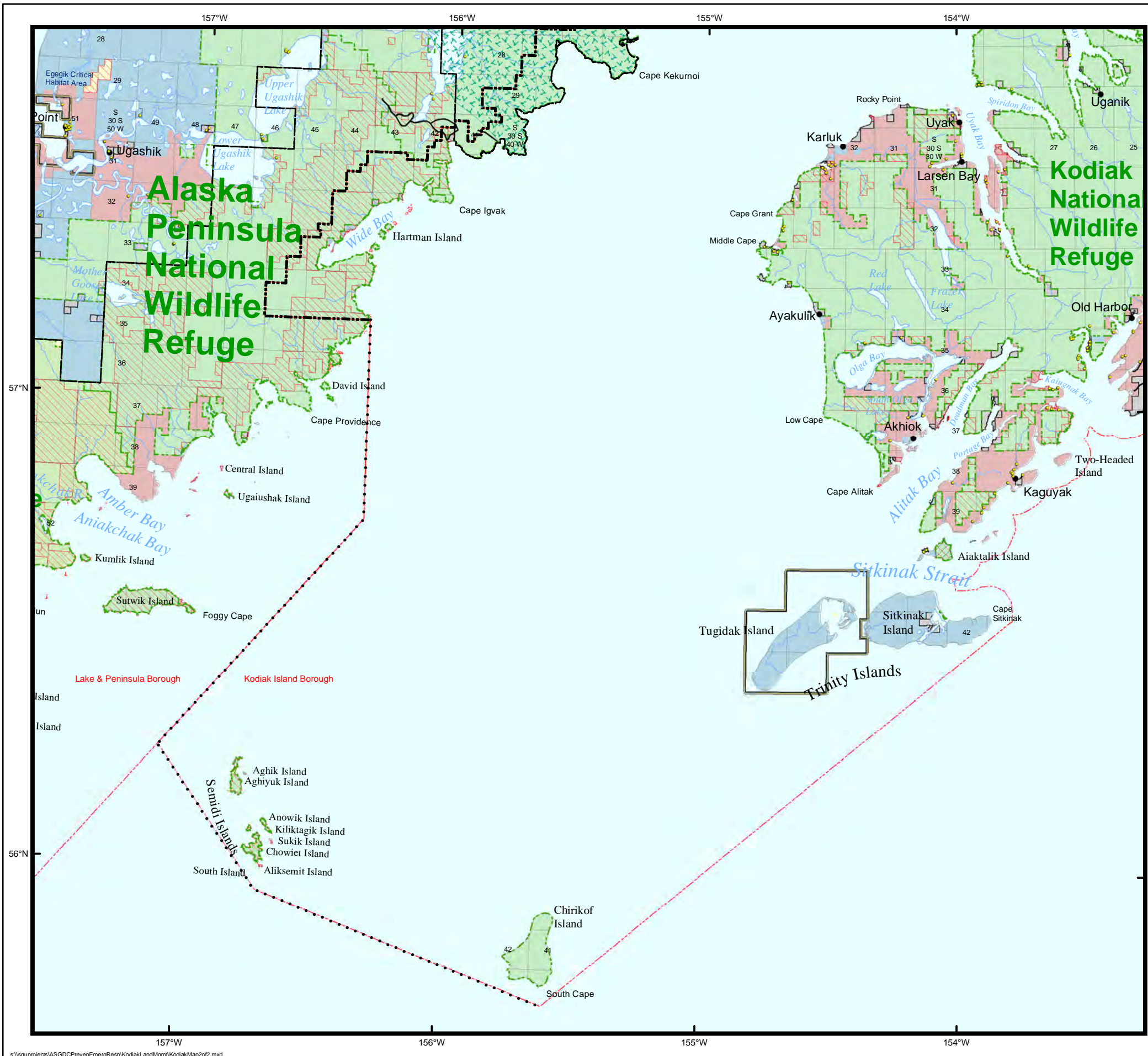
Map projection: Albers Equal Area  
Map scale: 1:1,000,000

0 25 Miles

- National Forests, Monuments, Recreation, and Conservation Areas
- National Park System
- National Wildlife Refuges
- National Wild and Scenic Rivers Outside National Park System and Outside National Wildlife Refuges
- Bureau of Land Management Public Lands
- Major Military
- State Patented Tentatively Approved or Other State Acquired Lands (Land Administration System, April 2008)
- Both State and ANCSA Lands Within a Section
- ANCSA Patented or Interim Conveyed (Bureau of Land Management, April 2008)
- Municipal or Other Private Parcels (Bureau of Land Management; Land Administration System, April 2008)
- Federal Designated Wilderness Areas
- State Selected (ANILCA Topfilings included) (Land Administration System, April 2008)
- State Wildlife, Park, Forest, and Other Multiple Use Areas
- ANCSA Selected (Bureau of Land Management, April 2008)
- Native Allotments (Bureau of Land Management)







## LAND MANAGEMENT

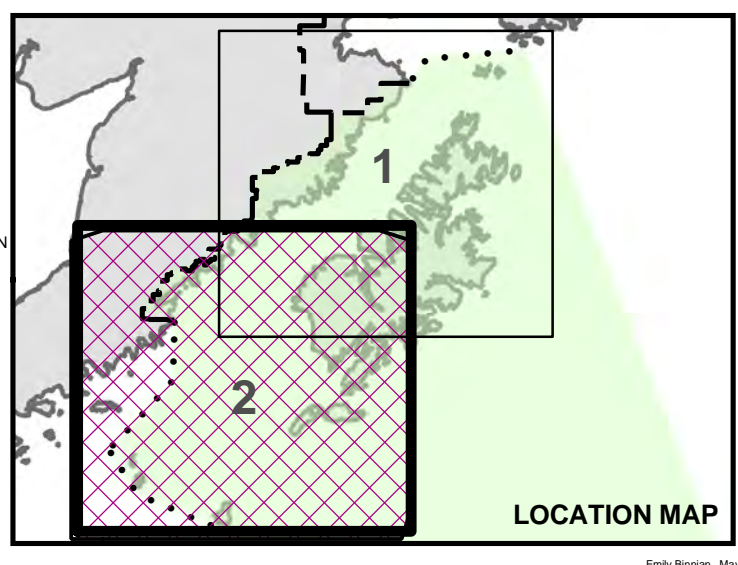
### KODIAK REGION

Map 2 of 2

Map projection: Albers Equal Area  
Map scale: 1:1,000,000

0 25 Miles

- National Forests, Monuments, Recreation, and Conservation Areas
- National Park System
- National Wildlife Refuges
- National Wild and Scenic Rivers Outside National Park System and Outside National Wildlife Refuges
- Bureau of Land Management Public Lands
- Major Military
- State Patented Tentatively Approved or Other State Acquired Lands (Land Administration System, April 2008)
- Both State and ANCSA Lands Within a Section
- ANCSA Patented or Interim Conveyed (Bureau of Land Management, April 2008)
- Municipal or Other Private Parcels (Bureau of Land Management; Land Administration System, April 2008)
- Federal Designated Wilderness Areas
- State Selected (ANILCA Topfilings included) (Land Administration System, April 2008)
- State Wildlife, Park, Forest, and Other Multiple Use Areas
- ANCSA Selected (Bureau of Land Management, April 2008)
- Native Allotments (Bureau of Land Management)



## **A. LAND MANAGEMENT DESIGNATIONS**

### **1. Access to Lands**

Land ownership must be determined and landowners contacted to evaluate incident-specific protection priorities, obtain land-use permitting requirements, and obtain permission to access lands. Native corporation lands, as well as local, State, and Federal government lands often require special use permits. If an incident affects private lands or Native Allotments, permission to enter lands should be sought from the landowner. The local Borough government is often the best source of private land ownership records.

### **2. State**

Tugidak Island State Critical Habitat Area was established in 1988 to ensure the protection and enhancement of fish and wildlife habitat and populations, especially marine mammals, birds, fish, and shellfish. The island has been one of the largest harbor seal haulout and pupping areas in the world with an estimated peak population of over 20,000 seals. In addition, Tugidak Island attracts a great number of waterfowl, shorebirds, tundra swans, and loons. The eelgrass beds and rich marine life found in the island's lagoon attracts thousands of black brant and white-fronted geese, and provides wintering habitat for emperor geese.

Marmot Island Special Use Area was administratively designated in 1990 to minimize human disturbance of Steller sea lions, which use the eastern beaches of Marmot Island, and to protect and preserve important sea lion habitat. The Steller sea lion rookeries on the east side of the island were once the largest in Alaska, but have been steadily declining since the early 1980's. Steller sea lions are listed as threatened under the provisions of the Endangered Species Act. The Alaska Department of Natural Resources maintains management responsibility of special areas, and in the case of the Marmot Island Special Use Area, consults with Alaska Department of Fish and Game.

Shuyak Island State Park was established in 1984, and expanded in 1997, to protect the area's recreational and scenic resources, and the area's fish and wildlife habitat in order to preserve and enhance the continued use of the area for sport and subsistence hunting and fishing, trapping and recreational activities. The park encompasses most of the island's 47,000 acres. There are four public use cabins located on the northwestern side of the park.

Afognak Island State Park was designated in 1994. Afognak State Park, totaling 48,742 acres, is managed by the Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation. There is one public use cabin located on the south shore of Pillar Lake. Brown bear, elk, black-tailed deer, beavers, land otter, muskrat and squirrel are all abundant on the island. Marine wildlife found in the nearshore waters off Afognak include sea otters, harbor seals, humpback whales and Dall porpoises. Several species of seabirds are also found on Afognak such as tufted and horned puffins, black oystercatchers, and cormorants. Common and red-throated loons, mergansers and harlequin ducks are also abundant. Recreational activities on Afognak Island include sport fishing, and hunting, and wildlife viewing.

### **3. Federal**

Alaska Maritime National Wildlife Refuge

Within the Kodiak area, over 30 islands, islets, and rocks are managed as part of the Refuge, including the Barren Islands north of the Kodiak Archipelago. The seven named islands in the Barren Islands group host the largest gathering of nesting seabirds in the northern Gulf of Alaska. More than a half million breeding seabirds represent 18 species. Fork-tailed storm-petrels are the most abundant seabird on most of the islands. Tufted puffins are the most common birds seen during the day. East Amatuli Islands has one of the only two northern fulmar colonies in the northern Gulf of Alaska. Tens of thousands of murres and kittiwakes nest on the cliffs of East Amatuli and Nord islands. Brant and other waterfowl stop at Ushagat Island which has salt water lagoon habitat. The second largest Steller sea lion rookery in the region is located on Sugarloaf Island.

#### Alaska Peninsula National Wildlife Refuge

Managed by the U.S. Fish and Wildlife Service, the Refuge, established in 1980, lies on the Pacific side of the Alaska Peninsula and covers about 3,500,000 acres. The landscape includes active volcanoes along the Aleutian Range, lakes, rivers, tundra, and rugged coastline. Moose, caribou, wolves, brown bears, and wolverines reside on the Refuge. Sea lions, seals, sea otters (about 30,000), and whales live in the marine environment. The cliffs, bays and poorly-drained lowlands provide abundant habitat for millions of birds, particularly seabirds, waterfowl, and shorebirds that use the refuge primarily as a staging area during migration to and from nesting grounds in the Arctic. Seabirds also use the Refuge for breeding. All five species of Pacific salmon (king, coho, sockeye, pink and chum) spawn in the streams and lakes on the Refuge. Brown bears forage heavily in coastal marshes and along shorelines and are particularly susceptible in the spring. Big game hunting and sport fishing are popular uses.

#### Becharof National Wildlife Refuge

Managed by the U.S. Fish and Wildlife Service, the Refuge was created in 1980. The Refuge covers 1,200,000 acres and is dominated by Becharof Lake, the second largest lake in Alaska. The lake is surrounded by low rolling hills, tundra wetlands, and volcanic peaks. All five species of Pacific salmon (king, coho, sockeye, pink and chum) spawn in the streams and lakes on the Refuge. The salmon runs begin in June and continue to September in Bristol Bay. Salmon spawning streams attract one of the largest brown bear populations in the state. Moose, caribou, wolves, wolverines, fox, beaver are abundant. Sea otters, sea lions, harbor seals and whales inhabit the marine shoreline. The Refuge is a major source of salmon, grayling and arctic char. The cliffs, bays, and poorly-drained lowlands provide abundant habitat for millions of birds, particularly seabirds, waterfowl, and shorebirds that use the refuge primarily as a staging area during migration to and from nesting grounds in the Arctic. Seabirds also use the Refuge coastal areas for breeding. Eagles and peregrine falcons are common. Big game hunting and sport fishing are primary visitor uses.

#### Kodiak National Wildlife Refuge

Managed by the U.S. Fish and Wildlife Service, the Refuge was created in 1941 and expanded in 1980; it covers 1,800,000 acres encompassing the southwestern two-thirds of Kodiak Island, Uganik Island, the Red Peaks area on northwestern Afognak Island, and all of Ban Island.. The Refuge is managed to: conserve fish and wildlife, including Kodiak brown bear, salmon, sea otters, sea lions, and other marine mammals and migratory birds; fulfill international treaty obligations; provide for continued subsistence uses; and maintain water quality and quantity. The refuge is home to an estimated 2,300 brown bears, and at least 600 nesting pairs of bald eagles. More than 250 species of birds use the refuge, while more than 1.5 million seabirds and waterfowl overwinter in nearshore waters surrounding Kodiak Island. The refuge also provides spawning and rearing habitat for all five

North American species of Pacific salmon. Salmon produced on the refuge make up approximately 65% of the total commercial harvest in the Kodiak Archipelago. Recreational opportunities include hunting, fishing, wildlife observation, photography, rafting and camping. The refuge also maintains several remote public-use cabins

### Katmai National Park and Preserve

Managed by the National Park Service, the Park and Preserve covers over 4,000,000 acres on the Alaska Peninsula. Katmai was established in 1918 as a National Monument, and was expanded and re-designated in 1980. In 1912 a cataclysmic volcanic eruption created the Valley of Ten Thousand Smokes. Home to huge brown bears, the area also supports significant populations of salmon as well as providing for trophy sport fishing. Over 3,000,000 acres of the Park and Preserve are designated as Wilderness, including all of the coast and offshore islands within five miles of the mainland.

## **B. HABITAT TYPES**

Shoreline habitats have been defined and ranked according to Environmental Sensitivity Index (ESI) standards produced by the National Oceanic and Atmospheric Administration (NOAA) in *Environmental Sensitivity Index Guidelines* (October 1997). Seasonal ESI maps in poster and atlas formats have been produced for the subarea, as shown on the following index map. These maps are available on the internet at: <http://www.asgdc.state.ak.us/maps/cplans/subareas.html>. Updated ESI information can also be found on the internet at: <http://response.restoration.noaa.gov/order/esiindex.html>

### **1. Benthic Habitats**

Oil vulnerability is lower in benthic (near bottom) areas than in the intertidal zone since contamination by floating slicks is unlikely. Sensitivity is derived from the species which use the habitat. Benthic habitats have not been traditionally classed by ESI rankings, but are treated more like living resources which vary with season and location. Benthic habitats include: submerged aquatic vegetation beds and large beds of kelp.

### **2. Shoreline Habitats**

Habitats (estuarine, large lacustrine and riverine) ranked from least to most sensitive (see the following table) are described below:

ESI #1--Exposed impermeable vertical substrates: exposure to high wave energy or tidal currents on a regular basis, strong wave-reflection patterns common, substrate is impermeable with no potential for subsurface penetration, slope of intertidal zone is 30 degrees or greater, attached organisms are hardy and accustomed to high hydraulic impacts.

ESI #2--Exposed impermeable substrates, non-vertical: exposure to high wave energy or tidal currents on a regular basis, strong wave-reflection patterns regular, substrate is impermeable with no potential for subsurface penetration over most of intertidal zone, slope of intertidal zone is less than 30 degrees, there can be accumulated but mobile sediments at the base of cliff, attached organisms are hardy and accustomed to high hydraulic impacts.

ESI #3--Semi-permeable substrate: substrate is semi-permeable with oil penetration less than 10 cm, sediments are sorted and compacted, slope is less than 5 degrees, sediment and potential for rapid



burial mobility is low, surface sediments are subject to regular reworking by waves, there are relatively low densities of infauna.

ESI #4--Medium permeability substrate: substrate is permeable with oil penetration up to 25 cm, slope is between 5 and 15 degrees, rate of sediment mobility is high with accumulation of up to 20 cm of sediments in a single tidal cycle, sediments are soft with low trafficability, low densities of infauna.

ESI #5--Medium to high permeability substrate: substrate of medium to high permeability which allows oil penetration up to 50 cm, spatial variations in distribution of grain sizes with finer ones at high tide line and coarser ones in the storm berm and at toe of beach, 20 percent is gravel, slope between 8 and 15 degrees, sediment mobility is high during storms, sediments are soft with low trafficability, low populations infauna and epifauna except at lowest intertidal levels.

ESI #6--High permeability substrates: substrate is highly permeable with oil penetration up to 100 cm, slope is 10 to 20 degrees, rapid burial and erosion of shallow oil can occur during storms, high annual variability in degree of exposure and frequency of wave mobilization, sediments have lowest trafficability of all beaches, natural replenishment rate is the lowest of all beaches, low populations of infauna and epifauna except at lowest intertidal levels.

ESI #7--Exposed flat permeable substrate: flat (less than 3 degrees) accumulations of sediment, highly permeable substrate dominated by sand, sediments are well saturated so oil penetration is limited, exposure to wave or tidal-current energy is evidenced in ripples or scour marks or sand ridges, width can vary from a few meters to one kilometer, sediments are soft with low trafficability, high infaunal densities.

ESI #8--Sheltered impermeable substrate: sheltered from wave energy and strong tidal currents, substrate of bedrock or rocky rubble, variable in oil permeability, slope greater than 15 degrees with a narrow intertidal zone, high coverage of attached algae and organisms.

ESI #9--Sheltered flat semi-permeable substrate: sheltered from wave energy and strong tidal currents, substrate is flat (less than 3 degrees) and dominated by mud, sediments are water-saturated so permeability is low, width varies from a few meters to one kilometer, sediments are soft with low trafficability, infaunal densities are high.

ESI #10--Vegetated wetlands: marshes and swamps with various types of emergent herbaceous grasses and woody vegetation over the substrate.

**ShoreZone Mapping.** A coastal habitat mapping effort has produced an on-line database, digital maps, and color aerial imagery and videos of the coastline in the subarea. This geo-referenced data set collected at low tide includes coastal geomorphology and biological habitat for intertidal and shallow subtidal areas. ESI types are cross-referenced. The information may be accessed at:

<http://www.CoastAlaska.net>

### **3. Upland Habitats**

At this time, no uplands or wetlands classifications directly related to sensitivity to oil spills has been identified. A general wetlands classification has been developed by the U.S. Fish and Wildlife Service, National Wetlands Inventory, in Anchorage. Considerable mapping of wetlands has been

completed, some of which are available in a Geographic Information System database (see the following figure). Updated map data is being placed on the National Wetlands Inventory Internet web site at: <http://wetlands.fws.gov/>

National Wetlands Inventory  
 ESIC/USGS  
 Anchorage  
 786-7011

Wetlands maps may also be obtained for the Kodiak urban area, including areas north and south of the city and the Womens Bay area, from the Kodiak Island Borough, Community Development Department (486-9362).

**TABLE D - 1: ESI HABITAT RANKING**

ESI NO.	ESTUARINE	LACUSTRINE	RIVERINE (large rivers)
1 A	Exposed rocky cliffs	Exposed rocky cliffs	Exposed rocky banks
1 B	Exposed sea walls	Exposed sea walls	Exposed sea walls
2	Exposed wave-cut platforms	Shelving bedrock shores	Rocky shoals; bedrock ledges
3	Fine- to medium-grained sand beaches	Eroding scarps in unconsolidated sediments	Exposed, eroding banks in unconsolidated sediments
4	Coarse-grained sand beaches	Sand beaches	Sandy bars and gently sloping banks
5	Mixed sand and gravel beaches	Mixed sand and gravel beaches	Mixed sand and gravel bars and gently sloping banks
6 A	Gravel beaches	Gravel beaches	Gravel bars and gently sloping banks
6 B	Riprap	Riprap	Riprap
7	Exposed tidal flats	Exposed flats	Not present
8 A	Sheltered rocky shores	Sheltered scarps in bedrock	Vegetated, steeply sloping bluffs
8 B	Sheltered sea walls	Sheltered sea walls	Sheltered sea walls
9	Sheltered tidal flats	Sheltered vegetated low banks	Vegetated low banks
10 A	Saltwater marshes		
10 B	Freshwater marshes	Freshwater marshes	Freshwater marshes
10 C	Freshwater swamps	Freshwater swamps	Freshwater swamps
10 D	Mangroves		

*Environmental Sensitivity Index Guidelines* (October 1995) NOAA Technical Memorandum NOS ORCA 92





















# National Wetlands Inventory

## U.S. Fish and Wildlife Service, Alaska Region

### September 2009

### Wetlands Mapping Status

- Digital Available
- NW\_Refuges
- Highways
- Paper Draft
- National Parks
- Paper Final

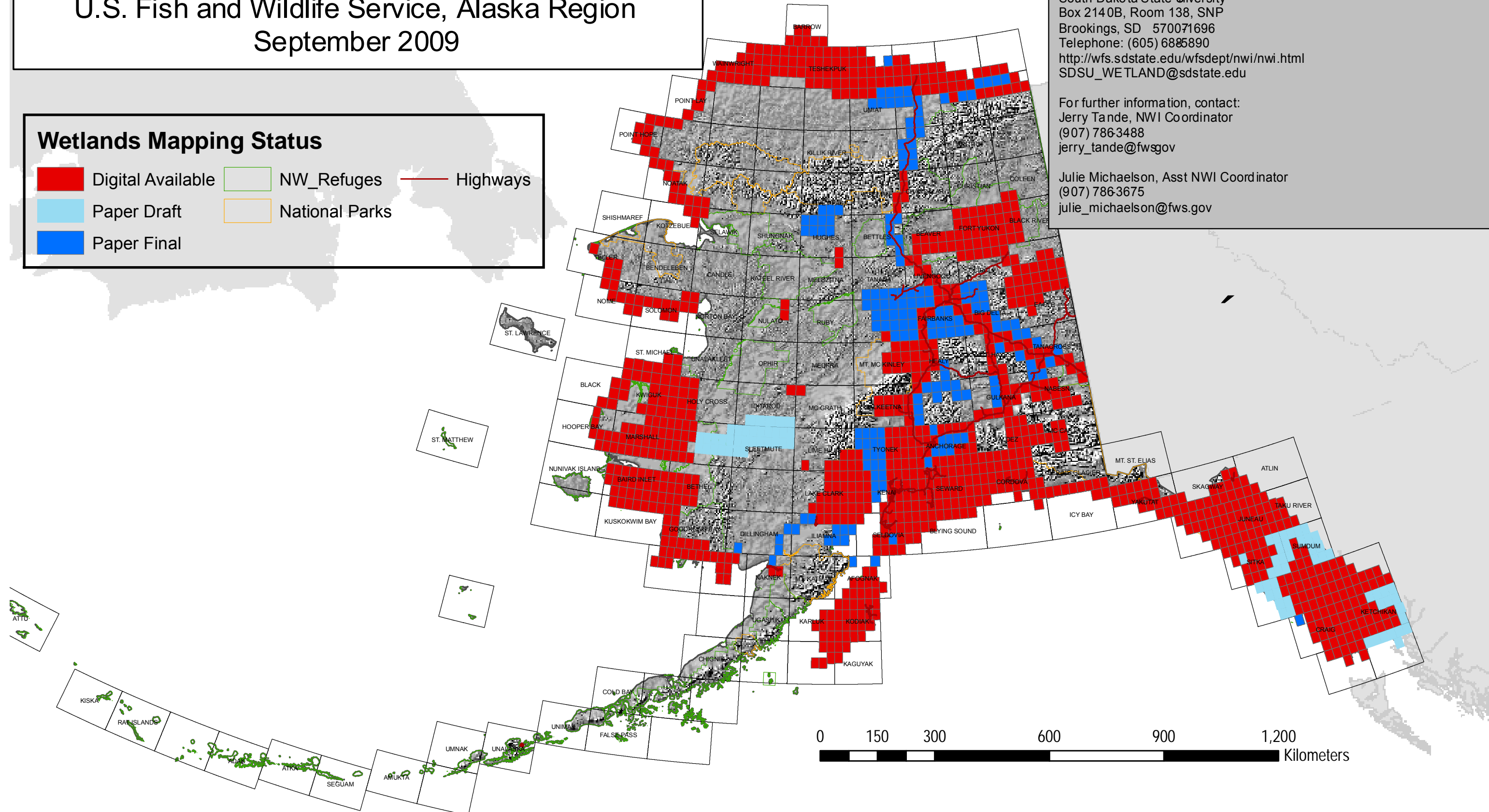
### Where to get Wetland Data:

For digital data, go to web address below and click on map of Alaska:  
<http://wetlandsfws.er.usgs.gov/wtinds/launch.html>

For paper maps, contact:  
 Wildlife and Fisheries Sciences  
 South Dakota State University  
 Box 2140B, Room 138, SNP  
 Brookings, SD 570071696  
 Telephone: (605) 6885890  
<http://wfs.sdstate.edu/wfsdept/nwi/nwi.html>  
[SDSU\\_WETLAND@sdstate.edu](mailto:SDSU_WETLAND@sdstate.edu)

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**C. BIOLOGICAL RESOURCES**

**1. Fish and Wildlife**

(a) Threatened and Endangered Species

Federally listed threatened and endangered species are protected under the Endangered Species Act. Spill response activities that could impact a listed species should be coordinated with the U.S. Fish and Wildlife Service. The short-tailed albatross, blue whale, sei whale, fin whale, sperm whale, humpback whale, and Steller sea lion are also on the State of Alaska's endangered species list. The following species<sup>1</sup> and critical habitat occur in Alaska and have been provided protection under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.):

<b>Table 1: Endangered Species Act of 1973 Protected species and critical habitat</b>			
<b>Listed species</b>	<b>Stock</b>	<b>Latin Name</b>	<b>Status</b>
Short-tailed albatross		<i>Diomedea albatrus</i>	Endangered
Steller's eider	Alaska breeding	<i>Polysticta stelleri</i>	Threatened
Blue whale		<i>Balaenoptera musculus</i>	Endangered
Humpback whale		<i>Megaptera novaeangliae</i>	Endangered
Fin whale		<i>Balaenoptera physalus</i>	Endangered
Sei whale		<i>Balaena borealis</i>	Endangered
Sperm whale		<i>Physeter macrocephalus</i>	Endangered
Northern right whale		<i>Eubalaena glacialis</i>	Endangered
Northern sea otter	Southwest	<i>Enhydra lutris kenyoni</i>	Threatened
Steller sea lion	West of 140 degrees N	<i>Eumetopius jubatus</i>	Endangered
<b>Designated Critical Habitat</b>			
<b>Species Group</b>	<b>General Reference Area</b>		
Whales	No critical habitat has been designated in the subarea		
Birds	No critical habitat has been designated in the subarea		
Sea otters	No critical habitat has been designated in the subarea		
Sea lions	20 miles seaward around each major haulout (see map below)		

All marine mammals, regardless of whether or not they are on the endangered species list, are protected by the Marine Mammal Protection Act of 1972. Any spill response activities which could affect marine mammals should be coordinated with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.

Although Alaskan bald eagles are not on the endangered species list in Alaska, they are fully protected (including their nests and nest trees) under the Eagle Protection Act of 1940. Spill response activities that could affect bald eagles should be coordinated with the U.S. Fish and Wildlife Service.

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<sup>1</sup> In its definition of species, the Endangered Species Act of 1973, as amended, includes the traditional biological species concept of the biological sciences and “any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature” (16 USC 1532). NMFS uses the term *evolutionarily significant unit* as synonymous with *distinct population segment* and lists Pacific salmon accordingly. For the purposes of section 7 consultations, these are all “species.”

**For updated information on the internet:**

U.S. Fish and Wildlife Service National Threatened and Endangered Species web site:  
<http://endangered.fws.gov/>

U.S. Fish and Wildlife Service Regional Threatened and Endangered Species web site:  
<http://www.r7.fws.gov/fisheries/endangered/listing.htm>

Alaska Department of Fish and Game Threatened and Endangered Species web site:  
<http://www.wildlife.alaska.gov/index.cfm?adfg=endangered.main>

(b) Marine Mammals

Harbor seals are found in the nearshore waters throughout the Kodiak Island Archipelago and along the western shore of Shelikof Strait. Concentrations are also found in the Semidi Islands and at Chirikof Island. Harbor seals tend to concentrate in estuaries and protected waters. Some may seasonally inhabit freshwater streams and lakes. Habitats used for haulouts include cobble and sand beaches, tidal mud flats, offshore rocks and reefs, and ice (frozen heads of bays, in fjords, etc.) when available. Known haulout concentrations occur throughout the Kodiak Island Archipelago. Tugidak Island is one of the larger haulout concentration areas. Haulouts are used for pupping, molting, and resting, and may be used year-round. Pupping occurs from late May through June. Populations of harbor seals, like sea lions, have steadily declined since the mid-1970's. At Tugidak Island, numbers have declined from approximately 17,000 to less than 1500. Less information is available on the reasons for the harbor seal population decline, but suggested theories include nutritional stress or an ecosystem-wide environmental perturbation. (*See Map #6 in Attachment One.*)

Sea Otters The southwest Alaska population of northern sea otters is listed as Threatened under the Endangered Species Act. This includes the entire Kodiak Subarea. Sea otters are found along the Barren Islands, the northern Kodiak Island Archipelago (i.e., Shuyak Island, Afognak Island, Marmot Bay, and Raspberry Island), along the northern portion of Kodiak Island southward to Chiniak Bay and Uyak Bay on the eastern side of the island and to Karluk on the western side of the island. At the southern end of Kodiak Island otters are found on the eastern side of Tugidak Island and the straits between Tugidak and Sitkanak Island, and at Alitak Bay. They are also found along the Alaska Peninsula from Cape Douglas south to Cape Nukshak, at Cape Kuliak, Kinak Bay, Cape Kubugaku and at the entrance to Puale Bay near the Kekernoi Islets. Sea Otters are also present on the western side of Chirikof Island. The areas of highest density on Kodiak are in the Whale Pass area. Other concentrations of otters are centered within Alitak Bay and Tugidak Island and the waters between Tugidak and Sitkinak Island at the southern end of Kodiak Island. Sea otters generally range from 5 to 16 km offshore and feed in nearshore waters less than 35 m deep. Breeding occurs year-round, with a peak in September and October. Pupping occurs year-round, with a peak in May. (*See Map #7 in Attachment One.*)

Steller Sea Lions occur year-round in the nearshore waters of the Kodiak Island Archipelago. Major sea lion rookeries occur at Marmot Island, Sugarloaf Island in the Barren Islands, Chirikof Island and Chowiet Island in the Simidi Islands. Rookeries also are used as haulouts following the breeding season. Year-round haulout areas occur on Sitkinak and Sitkalidak Islands. Other known haulout concentration areas occur in the Barren Islands, Sea Otter Island (east of Shuyak Island), on Long Island in Chiniak Bay, at Cape Chiniak, in Ugak Bay, on Twoheaded Island, at Cape Ikolik, Semidi Islands, Chirikof Island, and at Cape Ugat. Other haulouts occur at scattered locations in the Kodiak Island Archipelago. Haulouts generally are used from May through October, although some may be

used year-round. Sea lions begin concentrating at rookeries in mid-May and peak in mid-to-late June. Pupping occurs from late May to early July. Male territoriality on the rookeries diminishes in July as breeding and pupping activities are concluded.

The Steller sea lion (*Eumetopias jubatus*) was reclassified in 1997 by the National Marine Fisheries Service as two distinct populations under the Endangered Species Act (62 FR 24345) and was listed as threatened pursuant throughout its range that extends from California and associated waters to Alaska, including the Gulf of Alaska and Aleutian Islands and into the Bering Sea and North Pacific and into Russian waters and territory (62 FR 24345). The Steller sea lion population segment that occurs west of 140°W longitude near Cape Suckling, Alaska has been reclassified as endangered (62 FR 24345). The threatened classification applies to for the remainder of the U.S. Steller sea lion population (62 FR 24345).

The National Marine Fisheries Service has designated critical habitat areas that include rookeries, major haulout areas and associated terrestrial, air, and aquatic habitat (see the following maps). Critical habitat includes a terrestrial zone that extends 3,000 feet (0.9 km) landward from the baseline or base point of each major rookery or haulout in Alaska. It also includes an air zone that extends 3,000 feet (0.9 km) above the rookery and haulout measured vertically from sea level. The aquatic critical habitat includes a zone that extends 3,000 feet (9.0 km) seaward in state and federally managed waters from the baseline or base point of each major rookery or haulout in Alaska that is east of 144°W longitude. Critical habitat includes an aquatic zone that extends 20 nautical miles (nm) (37 km) seaward in State and Federally managed waters from the baseline or base point of each major haulout in Alaska that is west of 144° longitude. There are three special aquatic foraging areas in Alaska including the Shelikof Strait area, the Bogoslof area, and the Seguam Pass area. The Shelikof Strait area includes the area between the Alaska Peninsula and Tugidak Island, Sitkinak, Aiaktulik, Kodiak, Raspberry, Afognak, and Shuyak Islands; bounded on the west by Cape Kumlik and the southwestern tip of Tugidak Island and bounded on the east by Cape Douglas and the northernmost tip of Shuyak Island. The critical habitat of the Bogoslof area includes the Bering Sea shelf north of the Aleutian Islands. Critical habitat of the Seguam Pass area in the Aleutians includes the area between 52°00 N and 53°00 N and between 173°30 W and 172°30 W (50 CFR 226). (*See Map #8 in Attachment One.*)

Baleen whales in the area include gray, humpback, fin, minke, sei, and blue whales.

Humpback whales are commonly found nearshore along Kodiak Island. Aggregations of humpback whales commonly occur in Marmot Bay, Whale Passage and Shelikof Strait from May through October. Feeding concentrations of humpbacks also occur from the Barren Islands along the coast of the Kodiak Archipelago to Sitkalidak Island. Concentrations of humpbacks have also been observed in the waters south of Alitak Bay, near Kupreanof and Viekada Bays, and near Cape Ikolik. Spring migration of humpbacks occurs in Shelikof Strait along the coast of the Alaska Peninsula. (*See Map #9 in Attachment One.*)

Fin whales are found on summer feeding grounds over the continental shelf and in the Gulf of Alaska and in portions of Lower Cook Inlet and Shelikof Strait and along the outer banks of the Kodiak Archipelago. Major year round concentrations of fin whales (including females with calves) occur in western bays of the Kodiak Island, including the waters near Spiridon Bay, Uyak Bay, Uganik Bay, and Kupreanof Strait and Shelikof Strait as far south as Chirikof Island. (*See Map #9 in Attachment One.*)

Gray whales migratory path takes most of the eastern Pacific population nearshore along the eastern edge of Kodiak Island Archipelago during their annual spring and fall migrations. Numbers of gray whales are highest during April, May, November, and December. Migrating gray whales may be found very near to shore, often within 6 kilometers. During the fall concentrations have been observed near Foul Bay on the western side of Afognak Island to Raspberry Island. (See Map #10 in Attachment One.)

Minke whales are concentrated during the summer months in the Gulf of Alaska and over the continental slope, especially in the shallow nearshore coastal waters of Kodiak Island. Minke whales have been observed at the entrances to Spiridon and Uyak Bays, in Katmai Bay, and Womens Bay. (See Map #10 in Attachment One.)

Uncommon whales: Sei whales are common during the summer months in the Gulf of Alaska in early May, and off the coast of the Kodiak archipelago. The presence of blue whales in this area is rare. Whaling records of the northern right whale indicate that this whale occurred in the waters to the east and south of Kodiak Island from May through September. Sightings of this whale are extremely rare due to its decimated population. Any sightings of northern right whales should be reported to the National Marine Fisheries Service or the U.S. Fish and Wildlife Service.

Toothed whales in the area include Dall and harbor porpoises, Pacific white-sided dolphins, and Orca (killer) whales. Several species of beaked whales, Risso's dolphin, pilot whales, and sperm whales have been recorded in these waters, but are generally pelagic and rarely sighted.

Orca whales concentrate in offshore waters to the east of Kodiak Island and Afognak Island in the Gulf of Alaska. These whales are also present near Kukak Bay on the Alaska Peninsula. (See Map #10 in Attachment One.)

Harbor porpoise are seasonally abundant in bays on the south and west sides of Kodiak Island, specifically in Autak Bay, Womens Bay and Chiniak Bay. There are also very common in certain bays on the west side of Shelikof Strait such as in Kinak Bay. Their calving season is poorly documented but probably includes late June as well as July and early August.

Dall's porpoise inhabit deeper waters than harbor porpoise and are found year-round in waters surrounding the Kodiak Island Archipelago. Dall's porpoise are more abundant in Shelikof Strait and the western waters of Afognak and Shuyak Islands than in the eastern portion of this region. (See Map #10 in Attachment One.)

Pacific white-sided dolphins are seasonally abundant in Alaska waters and are most common during the summer months at Portlock Bank to the northeast of Afognak Island in the Gulf of Alaska. They are also present off the Alaska Peninsula between Cape Nukshuk and Cape Kuliak. On the eastern side of Kodiak Island they are present in Ugak Bay, Kiliuda Bay, and the waters between Sitkalidak Island and Two-Headed Island.

(c) Terrestrial Mammals

Brown bears are found throughout Kodiak, Afognak, Raspberry, Sitkalidak, and Shuyak Islands. Brown bears do not occur on the Trinity Islands, or the Barren Islands. Spring concentration areas include the Driver Bay area on Raspberry Island. On Kodiak Island, spring concentrations of bears occur along portions of Uganik Bay, Uganik Passage, and Terror Bay, at the head of Uyak Bay, near the mouth of the Ayakulik River, at the heads of Alitak Bay, at the head of Kaiugnak Bay, at the heads

of Ugak Bay, and at Eagle Harbor. On the Alaska Peninsula brown bears concentrate on beaches from Cape Douglas to Cape Kilokak. Concentrations of bears occurs along most all anadromous fish streams when salmon are present.

Brown bears may emerge from dens as early as mid-March. From mid-April to late July, bears concentrate along beaches foraging on marine mammal carcasses and shellfish, and in grassland areas, especially grass flats, sedge meadows, and saltwater bogs foraging heavily on grasses and other vegetation. Feeding on salmon begins around mid-May, with the most intensive use of salmon occurring during July and August. Use of salmon by a few bears may continue into December. Denning begins in late October and early November, with most bears denned by mid-December. Some bears may remain active year-round.

A unique situation occurs on the Aliulik Peninsula of southeastern Kodiak Island, where bear densities approach 1 bear/square mile. A recent study has shown these bears to have an unusually high dependence on beaches for food. The vegetation on the Aliulik Peninsula does not appear to be as rich in either herbaceous vegetation or major berry species as are other areas of Kodiak. Consequently, these bears appear to feed heavily on amphipods found in the beach gravel and drift kelp. Some bear scats have been found to contain nearly 100% amphipods. In addition, bears in this area appear to spend less time in dens than in other parts of Kodiak and some bears are actively feeding on the beaches even in the winter months. There are extensive kelp patches on the east side of the peninsula and several collector beaches are particularly favored by bears on that side. The beaches on the west side are not quite as heavily used, but several beaches are regularly used. Until salmon appear in late July in the Humpy Creek and Seven Rivers, these bears spend the majority of their foraging effort on beaches. (*See Map #8 in Attachment One.*)

Roosevelt elk occur on Raspberry and Afognak Islands. During winter, elk use spruce timbered areas on south and southeast-facing slopes adjacent to beach fringes. Winter foraging also occurs in grass and on heath-dominated vegetation, vegetation types that are distributed sporadically along the entire coast.

Sitka Black-tailed deer occur throughout the Kodiak Island Archipelago with the exception of the Trinity and Barren Islands, Ugak Island, and Aiaktalik Island. Most deer generally move into alpine areas in late June and remain in alpine and subalpine ranges into September. Deer generally winter in habitat just below snowline. During severe winters, deer may congregate on the beaches. Windblown capes and bluffs at the mouth of bays and along ocean entrances are favored for wintering areas throughout the Kodiak Island Archipelago. Fawns are born in late May to early June.

Mountain goat are found throughout Kodiak Island, with the highest concentrations in higher elevations.

Feral reindeer/caribou occur in small scattered herds from the Karluk Lake drainage south and west. The Ayakulik/Red River flats from Red Lake north to Halibut Bay and Grant's Lagoon are the favored habitat of these animals.

Furbearers. Red squirrel are most common in the spruce forests of Kodiak. Arctic ground squirrels occur on Woody Island and in the Buskin River vicinity. Beaver occur throughout the riparian areas of the Kodiak Island Archipelago with the exception of the Trinity Island group, the Barren Islands, and Marmot Island. Snowshoe hare and muskrat were also introduced to the Kodiak area.



Short-tailed weasel are also known as ermine. This mammal is an active predator. The short-tailed weasels fur turns completely white during the winter and reaches about 14 to 16 inches in length.

Red Fox are common on Kodiak and Afognak Island and all along the Alaska Peninsula. Red fox are a common scavenger on the shoreline areas and feed on carrion as well as birds and small mammals. They are also regularly seen near seabird colonies where they feed on the eggs and young of seabirds.

River Otter, smaller than the sea otter, occur throughout the Kodiak Region. This otter is primarily observed near freshwater streams, rivers and lakes but also appears in the nearshore marine waters. The river otter feed mostly on fish such as salmon and trout but will also prey on eggs and young at offshore seabird colonies.

(d) Birds

All migratory birds are protected under the Migratory Bird Treaty Act. Any spill response activities which could affect migratory birds should be coordinated with the U.S. Fish and Wildlife Service.

Ducks, both divers and dabblers, are found throughout the year in the Kodiak Island Archipelago. Major concentrations of ducks are found in protected coastal estuarine waters, salt marshes, tidal flats, and riverine habitats. Dabblers are typically found at the heads of bay and lagoons, whereas the divers are found along the rocky shorelines or the outer portions of the bays. The Kodiak Island Archipelago contains important wintering concentration areas used by many species of waterfowl. The largest concentrations of ducks found in the area occur in winter. Portions of Tugidak and Sitkinak Islands are used by ducks as spring and fall concentration areas as well as the heads of Womens Bay, Middle Bay, and Kalsin Bay in the southern portions of Chiniak Bay. (*See Map #11 in Attachment One.*)

Steller's eider, a diving duck known to winter in the Kodiak subarea, is listed as threatened under the Endangered Species Act. Steller's eider may be found wintering in outer bays throughout the Kodiak Archipelago and in small numbers along the Alaska Peninsula coast.

Geese. Estuaries, lagoons, river deltas, marshes, and tidelands support only small numbers of migrating geese on Kodiak Island. Canada geese have been introduced on Shuyak Island and the population appear to be increasing. Pacific brant use the lagoon habitats such as Sukhoi Lagoon at the southern end of Kodiak and on Tugidak and Sitkanak Islands during spring migration. Some emperor geese winter along the coast of Kodiak Island from late September to May with the larger concentrations at the southern end of the island. Emperor geese are also found wintering and during spring and fall migration in Wide Bay on the Alaska Peninsula. (*See Map #11 in Attachment One.*)

Tundra swans generally are distributed throughout the lowland areas of Shuyak, Afognak, Kodiak, and Tugidak Islands in suitable habitat. Spring concentration areas occur at the heads of Pasagshak and Kalsin bays. Year-round residency and nesting by tundra swans occur in the Karluk River lowlands. Known nesting areas include the lowlands north of Fraser Lake, the Little River lowlands, the Dog Salmon Creek lowlands, the Red River lowlands, the Ayakulik River lowlands, the lowlands from the mouth of the Ayakulik River south to Alitak Lagoon, the Aliulik Peninsula, Aiaktalik Island, and Tugidak Island. Trumpeter swans have also been observed. (*See Map #11 in Attachment One.*)

Seabirds. Numerous seabird nesting colonies are found throughout the Kodiak Island Archipelago and along the Alaska Peninsula. Large nesting colonies occur in the Barren Islands and the Semidi Islands to the southwest of Kodiak Island. Breeding seabirds begin staging in large concentrations on the water below seabird colonies as early as late April and may be most vulnerable to oil spills during this

period. Most species lay eggs in June or early July and most of the young have fledged by the end of September. Most nesting seabirds leave the breeding colonies by October to spend the winter in offshore areas.

Bald Eagles are distributed throughout the Kodiak Island Archipelago, with numerous active nests along the coastlines of most islands. Bald eagles occur year-round in the area. Bald eagles begin nesting from late March through May. Eggs hatch from early May through late June. Young eagles fledge from early July through late August. Feeding areas include sea beaches and rocky coastlines, freshwater anadromous fish streams and lakes, and terrestrial habitats. They feed on both live prey and carrion and will feed on refuse at garbage dumps.

Other Raptors. Peale's peregrine falcon, a non-migratory sub-species of peregrines, occurs year-round in the area but only rarely nests on Kodiak Island. This raptor nests on the Barren Islands and in association with seabird colonies on the Alaska Peninsula. Other raptors that occur in the area include rough-legged hawks, northern goshawks, golden eagles, northern harriers, and short-eared owls, and boreal owls.

(e) Fish

#### **Essential Fish Habitat**

Essential fish habitat in the subarea, as identified by the National Marine Fisheries Service, can be found on their interactive mapping internet site: <http://www.fakr.noaa.gov/maps/>

Salmon. Pink, chum, sockeye, coho, and Chinook salmon spawn in streams found on islands in the Kodiak archipelago and on the Alaska Peninsula (from Cape Douglas to Kilokak Rocks). Adult salmon are present in bays and estuaries from mid March through early October, depending on the species of salmon and the stream system. Adults are present in freshwater from mid May through mid December. Salmon fry generally emerge from the stream gravels from mid March through early June. Juvenile coho, chinook, and sockeye salmon remain in freshwater for one year before venturing to the sea.

Pacific Herring move inshore to spawn in the Kodiak area from early April to late July. Spawning occurs in intertidal and subtidal areas. Areas with kelp or eelgrass usually are the preferred spawning substrates. Herring use virtually all bays and protected waters in the Kodiak Island Archipelago as rearing, feeding, and wintering areas. Along the Alaska Peninsula herring spawn at Wide Bay, Paule Bay, Cape Kubugaku, Katmai Bay, Kukuk Bay, and Amalik Bay.

Groundfish (cod, walleye pollock, and Pacific halibut) occur in waters surrounding the Kodiak Island Archipelago. Known summer concentrations of cod and walleye pollock occur in waters off Marmot Bay and Chiniak Bay, and from Sitkalidak Island to Sitkinak Island. Concentrations of cod also occur in Shelikof Strait along the western side of Kodiak Island from the area near Karluk to Chirikof Island. Spawning concentrations of walleye pollock are found in southern Shelikof Strait in March and April.

Cod are also found in the Gulf of Alaska east of Afognak and Kodiak Islands, to the east of Ugak Island, east of Sitkalidak Island, between Sitkalidak Island and Twoheaded Island and east of Sitkinak Island. Spawning concentrations of Pacific halibut occur southeast of Sitkalidak Island and southeast of Cape Chiniak.

Halibut juvenile rearing grounds also include an area surrounding Aiktalik Island and Sitkinak Strait, and from northwest of Tugidak Island to north of Chirikof Island.

Other Fish. Rainbow trout and steelhead are native to specific stream systems in the Kodiak-Afognak area. Important native rainbow trout waters include the Portage, Afognak, Upper and Lower Malina, Uganik, Karluk, Fraser, and Ayakulik (Red) lake-river systems. Steelhead are distributed in a number of lake-river systems but are relatively abundant only in the Karluk and Ayakulik (Red) rivers. Rainbow trout generally spawn during May and June. Steelhead generally spawn between March and May. Steelhead juveniles remain year-round in freshwater from one to four years.

Dolly Varden, both resident and anadromous races, occur in streams throughout the Kodiak Island Archipelago. Dolly Varden spawn from September through December. Fry emerge from the gravels in April and May. Juvenile and some adult Dolly Varden remain in freshwater year-round.

(f) Shellfish

Tanner Crab inhabit the entire Kodiak area shelf to 365 meters. Concentrations of tanner crab occur in the Gulf of Alaska to the east of Afognak and Kodiak Islands and in Shelikof straits east of Puale Bay and Alinchak Bay. There are also tanner crabs in Olga Bay at the southern end of Kodiak Island.

Red King Crab occur throughout the entire Kodiak area to a depth of 365 meters. Inshore and nearshore areas are most critical for king crab spawning. Offshore regions such as Portlock Bank, Marmot Flats, Alitak Flats, and the Albatross Banks are important. The shallow region surrounding Chirikof Island north to the Trinity Islands is significant for both the spawning and rearing of red king crab. Red king crab are also present from Cape Douglas to Portage Bay in Shelikof Strait.

Blue king crab regularly occur only in Olga Bay.

Dungeness crab inhabit all bottom areas shallower than 100 meters, with a distinct preference for sand or mixed substrate bottoms. Dungeness crabs occur in Shelikof Strait from Cape Douglas to approximately Cape Igvak along the Alaska Peninsula. They also occur on Raspberry Strait, Kizhuyak Bay, Sharatin Bay, Monashka Bay, near Kodiak City in Womens Bay, Middle Bay, and Kalsin Bay. Dungeness occur on the eastern side of Kodiak Island in Barry Lagoon, and from Narrow Cape are to Olga Bay on the south side of Kodiak Island. Dungeness area also concentrated in the waters surrounding Tugidak and Sitkinak Islands. Along the west coast of Kodiak these crabs are found from Viekoda Bay to Cape Ikolik.

Shrimp. Pandalid shrimp (northern pink shrimp or deep sea prawn; humpy shrimp or flexed shrimp; spot shrimp or spot prawn; coonstripe shrimp; sidestripe shrimp or giant red) are distributed throughout most major bays and certain nearshore and offshore areas along Kodiak and Afognak Islands. Known shrimp egg hatching and rearing areas include Olga Bay and off Alitak Bays at the southern end of Kodiak Island, Uyak and Uganik Bays on the east side Kodiak. Bays on the east side of Kodiak Island important to shrimp include Kaiugnak Bay, Three Saints Bay, Kiliuda Bay, Sitkalidik Strait area, Ugak Bay, Kalsin and Middle Bays in Chiniak Bay, and Kazakof, Izhut, Tonki Bays in Marmot Bay. Perenosa Bay on Shuyak Island is also important for shrimp.

Razor Clams are found intertidally to a depth of several meters on exposed beaches consisting of fine or coarse sand with some glacial silt or gravel. Areas with known concentrations of razor clams include some isolated beaches on Raspberry Island; beaches along the outer regions of Uyak Bay, beaches of Ocean Bay, Bumble, and Gurney Bays, north of Cape Alitak on Tanner Head, beaches on

Tugidak Island, Sitkinak Island, and Ocean Beach on Sitkalidak Islands, and beaches in small areas within Ugak and Chiniak Bays. On the Alaska Peninsula, extensive razor clam beaches occur in the Swikshak River area, Hallo Bay and Katmai Bay.

Scallops are found throughout much of the deep water areas around the Kodiak Archipelago and along the Alaska Peninsula with areas of concentration near Hallo Bay and Katmai Bay on the Alaska Peninsula.

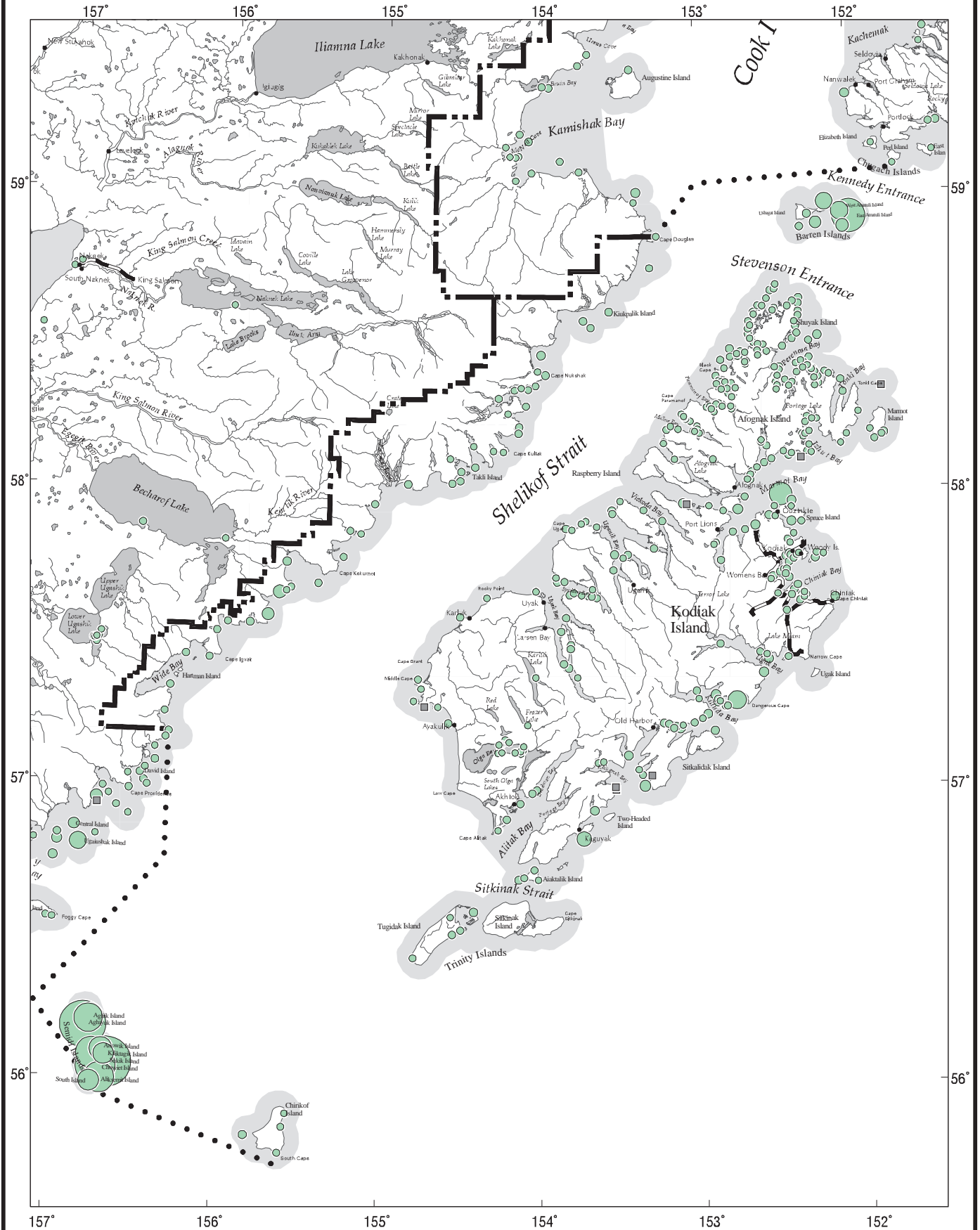
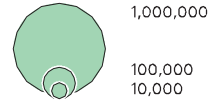
1 inch = 32 miles

Source: US Fish and Wildlife Service, 2000.  
Beringian Seabird Colony Catalog-  
computer database, Anchorage, AK

# Kodiak, Alaska Contingency Plan Subarea 2000 Seabird Population

Seabird Present




Seabird Population  
1,000,000






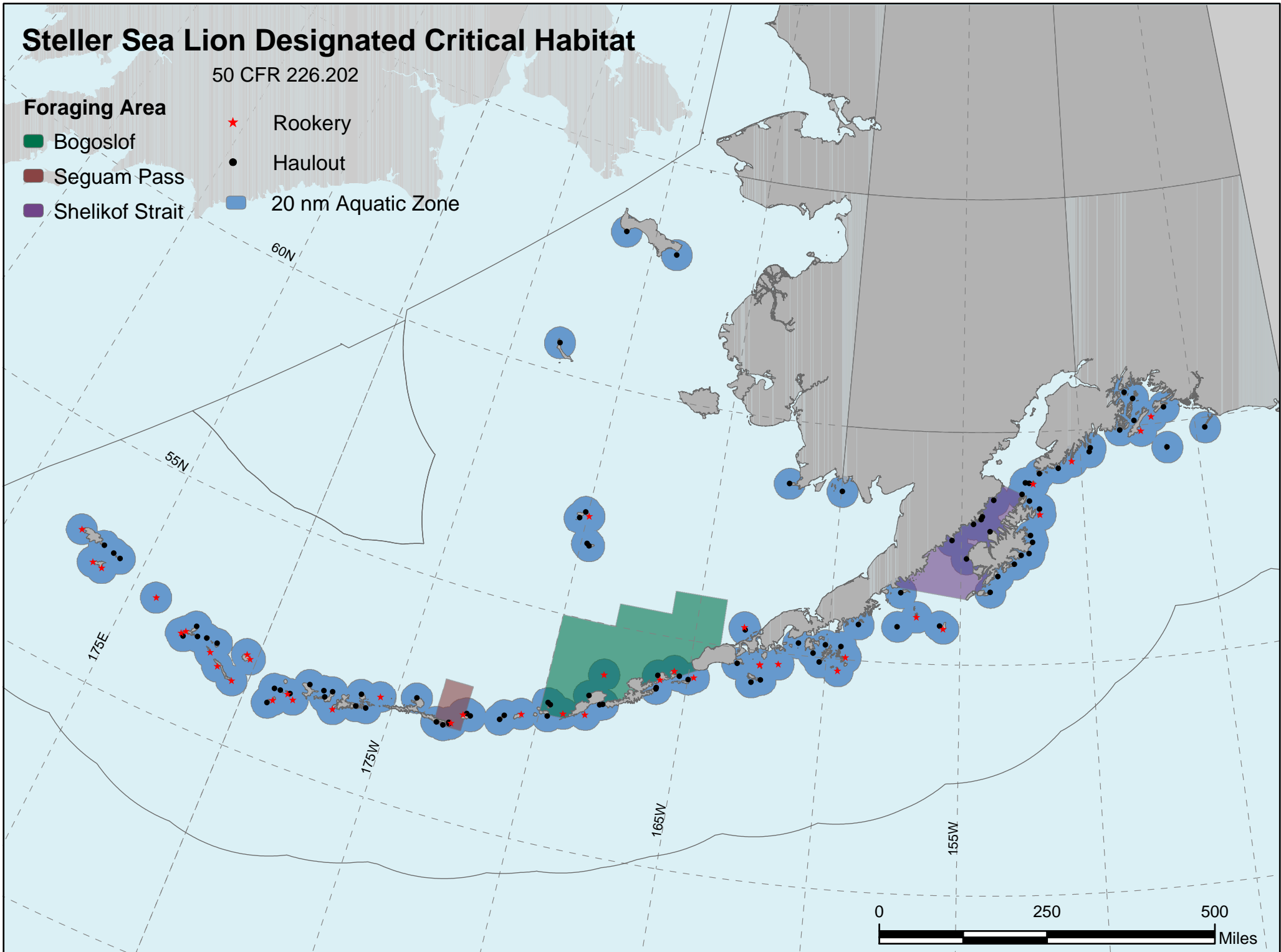
# Steller Sea Lion Designated Critical Habitat

50 CFR 226.202

## Foraging Area

-  Bogoslof
-  Seguam Pass
-  Shelikof Strait

-  Rookery
-  Haulout
-  20 nm Aquatic Zone



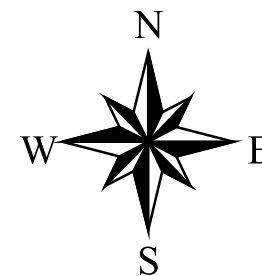
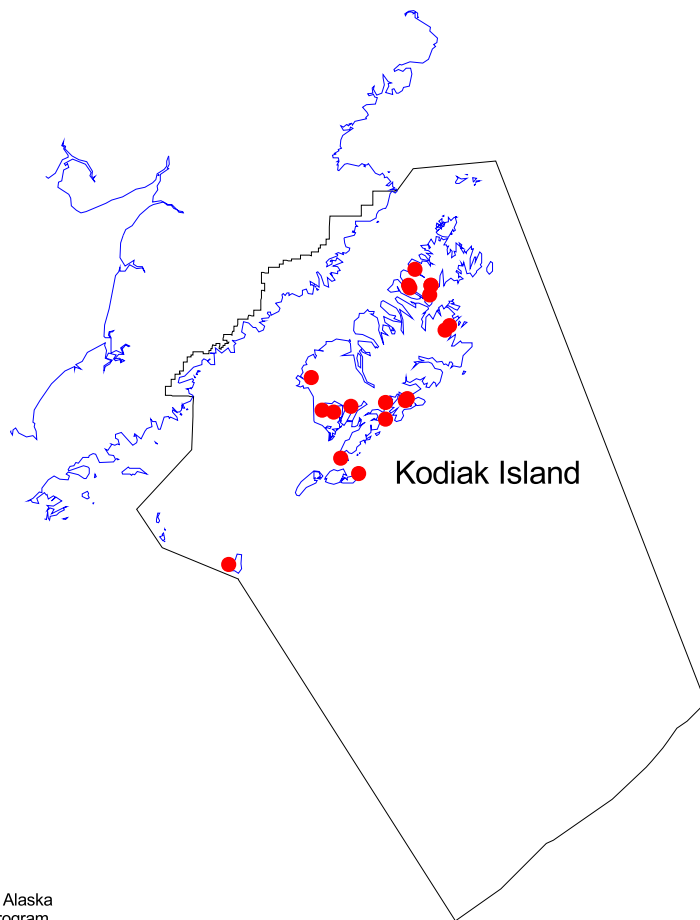
## 2. Vegetation

There are no species of threatened or endangered plants within the Kodiak Island Borough. Below is a listing of plants that are considered rare and sensitive. The status of these plants is tracked by the University of Alaska Natural Heritage Program. For further information contact the University of Alaska Natural Heritage Program in Anchorage at 257-2780.

<u>Scientific Name</u>	<u>Common Name</u>	<u>Specific Area</u>
<i>Ligusticum calderi</i>	Calder's lovage	Karluk
<i>Cochlearia sessilifolia</i>	Sessile - leaf scurvy grass	Kodiak
<i>Gentianella propinqua ssp aleutica</i>	Aleutian four - parted gentian	Karluk
<i>Romanzoffia unalaschensis</i>	Unalaska mist maid*	Afognak/Karluk
<i>Androsace alaskana</i>	Alaska rock - jasmine	Afognak
<i>Dodecatheon pulchellum ssp alaskanum</i>	Alaskan pretty shooting star*	Kodiak
<i>Carex lenticularis var dolia</i>	Goose - grass sedge*	Kodiak
<i>Eleocharis nitida</i>	Slender spike - rush	Kodiak
<i>Scirpus subterminalis</i>	Water bulrush	Afognak
<i>Platanthera chorisiana</i>	Choriso bog - orchid*	Afognak
<i>Phyllospadix serrulatus</i>	Serrulate surf grass	Kaguyak/Trinity Is.

\* These plants are also listed on the U.S. Forest Service Sensitive Species Listing

# Known Rare Plant Locations for the Kodiak Subarea Contingency Plan



Source Data: University of Alaska  
Alaska Natural Heritage Program  
Biological Conservation Database



### 3. **Biologically Sensitive Areas**

The Alaska Department of Fish and Game began a project in 1996 to map some of the most environmentally sensitive areas (MESAs) for wildlife along Alaska's coast. This information is for contingency planning purposes and does not cover the complete coastline or sensitive areas that other organizations may identify. Maps entitled "Most Environmentally Sensitive Areas along the Coast of Alaska" were published by the Alaska Department of Fish and Game (1997), and are available in hard copy and digital format from their Anchorage office at 267-2541. These maps are also available at the DNR Prevention and Emergency Response Subarea Plan Maps website located at: <http://www.asgdc.state.ak.us/maps/cplans/subareas.html>

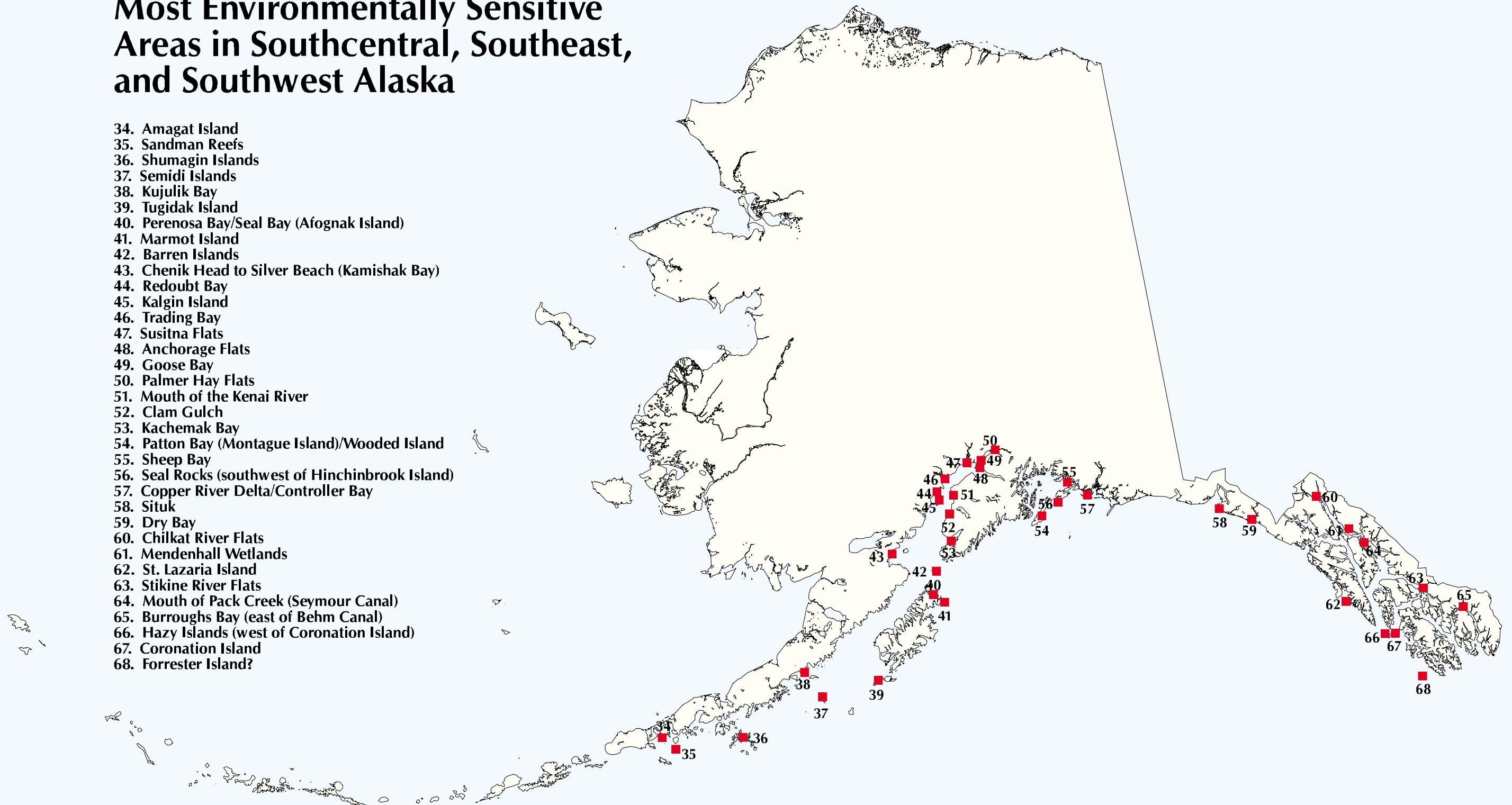
Each of these sensitive areas is plotted on a 1:250,000 scale U.S. Geological Survey quadrangle map. A list of the sensitive areas in the subarea and map referencing their location is provided followed by the MESA maps.

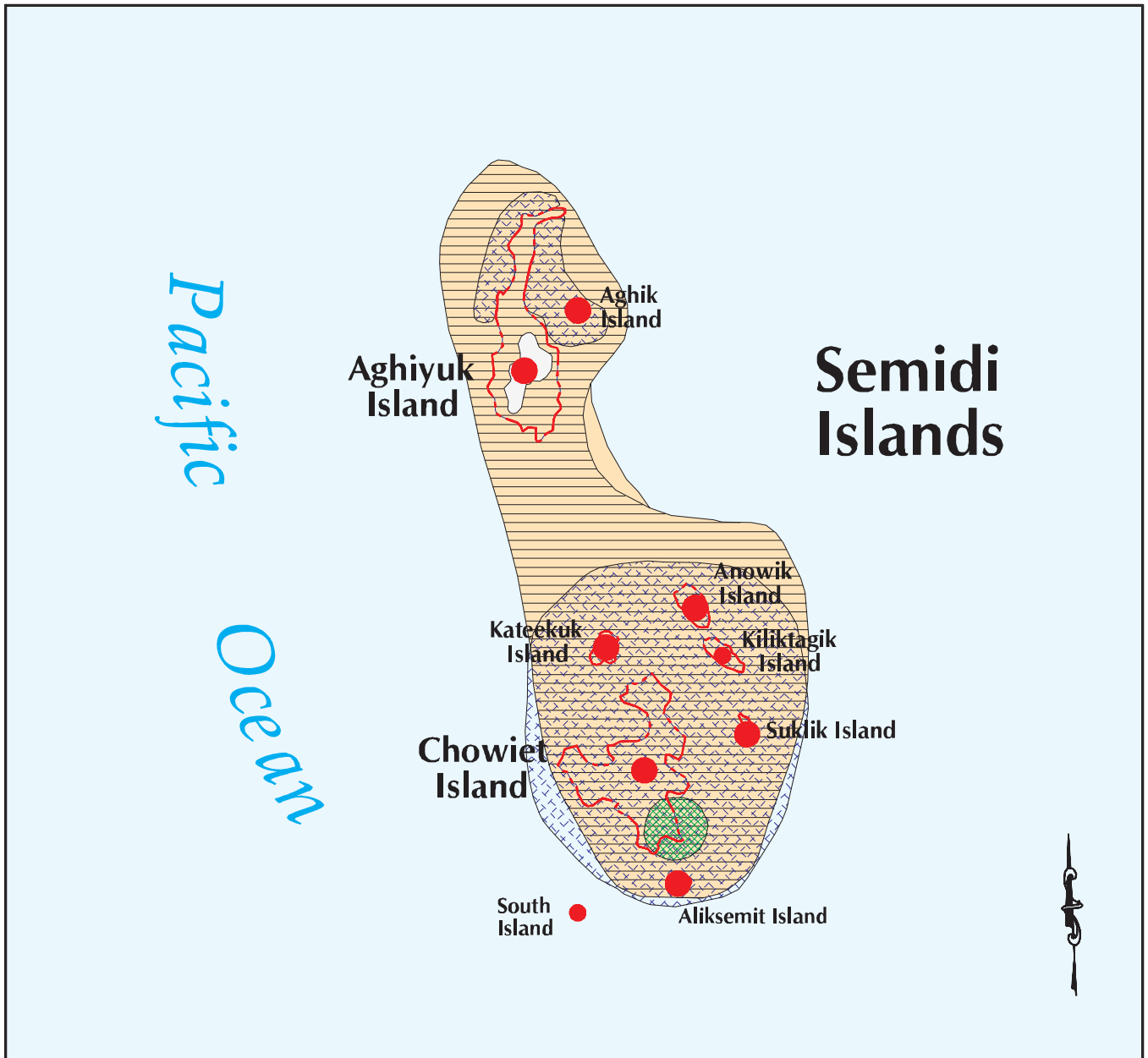
#### **Listing of the Most Environmentally Sensitive Areas in the Kodiak Subarea**

37. Semidi Islands
  - seabird colonies (>2.4 million birds)
  - waterfowl spring and fall staging and winter concentrations
  - sea lion haulout and rookery (344 pups)
  - Alaska Maritime National Wildlife Refuge
  
38. Kujulik Bay - this site is in the Bristol Bay Subarea
  
39. Tugidak Island
  - razor clam concentrations
  - seabird colonies (>3,700 birds)
  - waterfowl spring and fall staging
  - harbor seal haulout
  - Tugidak Island State Critical Habitat Area
  
40. Perenosa Bay/Seal Bay (Afognak Island)
  - salmon concentrations
  - herring spawning
  - seabird colonies (>4,800 birds)
  - waterfowl winter concentrations
  - harbor seal haulouts
  - sea lion haulout and/or rookery
  - sea otter concentrations
  - Alaska Maritime National Wildlife Refuge
  
41. Marmot Island
  - seabird colonies (>2,100 birds)
  - harbor seal haulouts
  - sea lion haulout and rookery (2,199 pups)
  - sea otter concentrations
  
42. Barren Islands
  - seabird colonies (>480,000 birds)
  - harbor seal haulouts
  - sea lion haulouts and rookery (1,638 pups)
  - sea otter concentrations
  - Alaska Maritime National Wildlife Refuge





# Most Environmentally Sensitive Areas in Southcentral, Southeast, and Southwest Alaska

- 34. Amagat Island
- 35. Sandman Reefs
- 36. Shumagin Islands
- 37. Semidi Islands
- 38. Kujulik Bay
- 39. Tugidak Island
- 40. Perenosa Bay/Seal Bay (Afognak Island)
- 41. Marmot Island
- 42. Barren Islands
- 43. Chenik Head to Silver Beach (Kamishak Bay)
- 44. Redoubt Bay
- 45. Kalgin Island
- 46. Trading Bay
- 47. Susitna Flats
- 48. Anchorage Flats
- 49. Goose Bay
- 50. Palmer Hay Flats
- 51. Mouth of the Kenai River
- 52. Clam Gulch
- 53. Kachemak Bay
- 54. Patton Bay (Montague Island)/Wooded Island
- 55. Sheep Bay
- 56. Seal Rocks (southwest of Hinchinbrook Island)
- 57. Copper River Delta/Controller Bay
- 58. Situk
- 59. Dry Bay
- 60. Chilkat River Flats
- 61. Mendenhall Wetlands
- 62. St. Lazaria Island
- 63. Stikine River Flats
- 64. Mouth of Pack Creek (Seymour Canal)
- 65. Burroughs Bay (east of Behm Canal)
- 66. Hazy Islands (west of Coronation Island)
- 67. Coronation Island
- 68. Forrester Island?





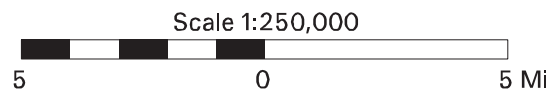
# MESA37 SEMIDI ISLANDS LEGEND

-  Waterfowl Spring and Fall Concentrations
-  Waterfowl Winter Concentrations
-  Harbor Seal Concentration Areas
-  Sea Lion Rookery

Seabird Colonies

-  10,001 - 100,000 Birds
-  Greater Than 100,000 Birds

 Alaska Maritime National Wildlife Refuge Boundary



SOURCES: USFWS 1996; Dames and Moore 1997



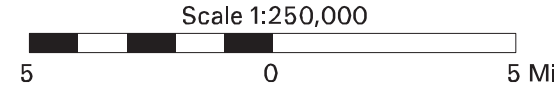
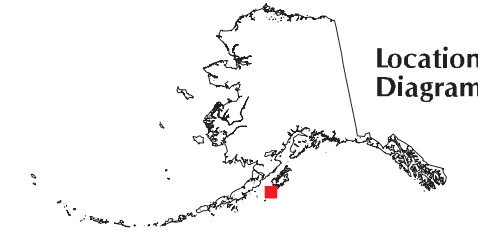
State of Alaska  
Department of Fish and Game  
Habitat and Restoration Division  
June, 1998

# MESA39 TUGIDAK ISLAND

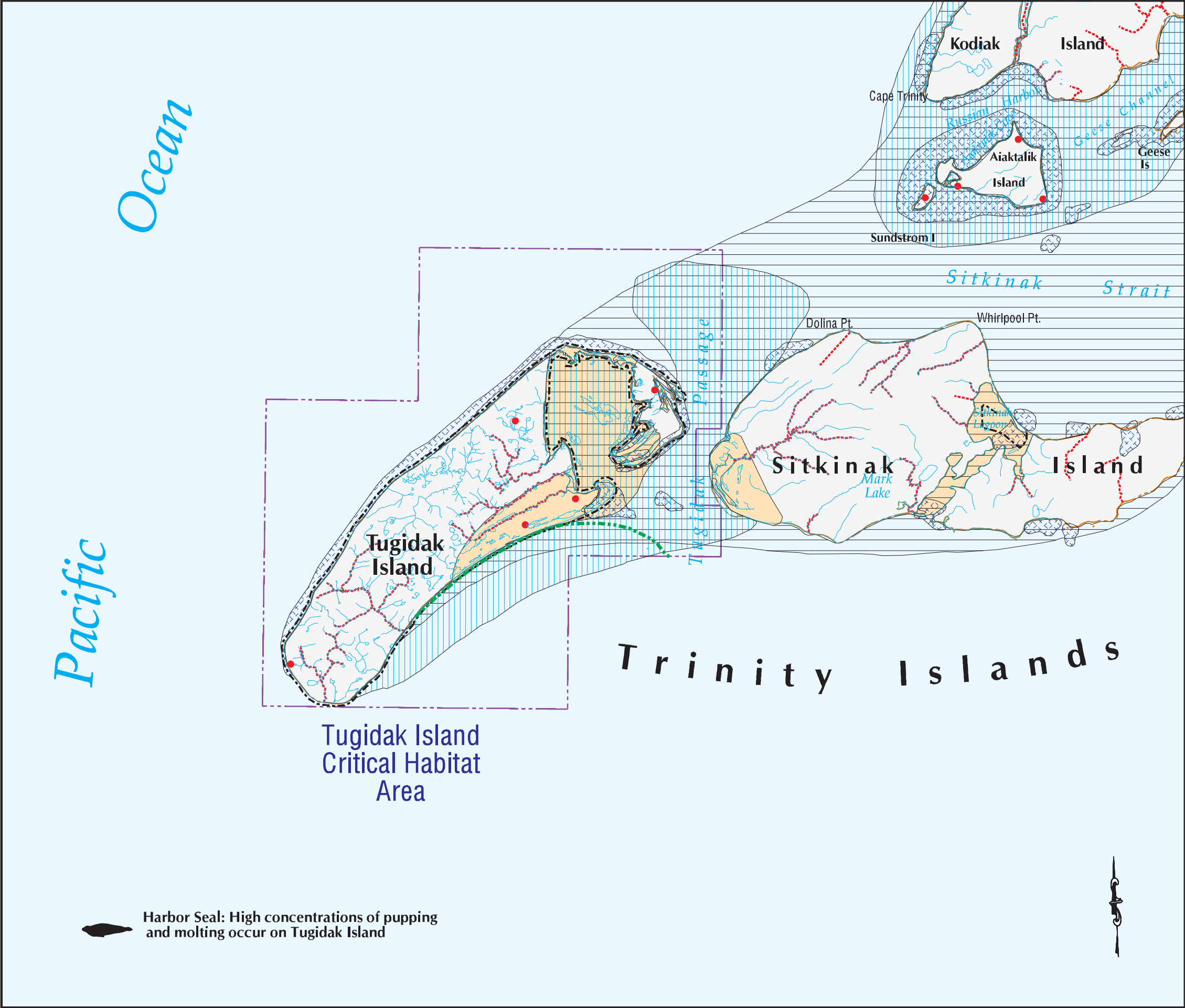
## LEGEND


-  Waterfowl Spring and Fall Concentrations
-  Waterfowl Winter Concentrations
-  Harbor Seal Haulout Concentrations
-  Sea Otter Concentration Areas
-  Razor Clam Concentrations
-  Herring Spawning Areas
-  Anadromous Streams
-  Seabird Colonies  
Less Than or Equal To 10,000 Birds
-  Tugidak Island State Critical Habitat Area Boundary
-  Alaska Maritime National Wildlife Refuge

SOURCES: ADF&G 1995b; ADF&G 1996c; USFWS 1996; Dames and Moore 1997

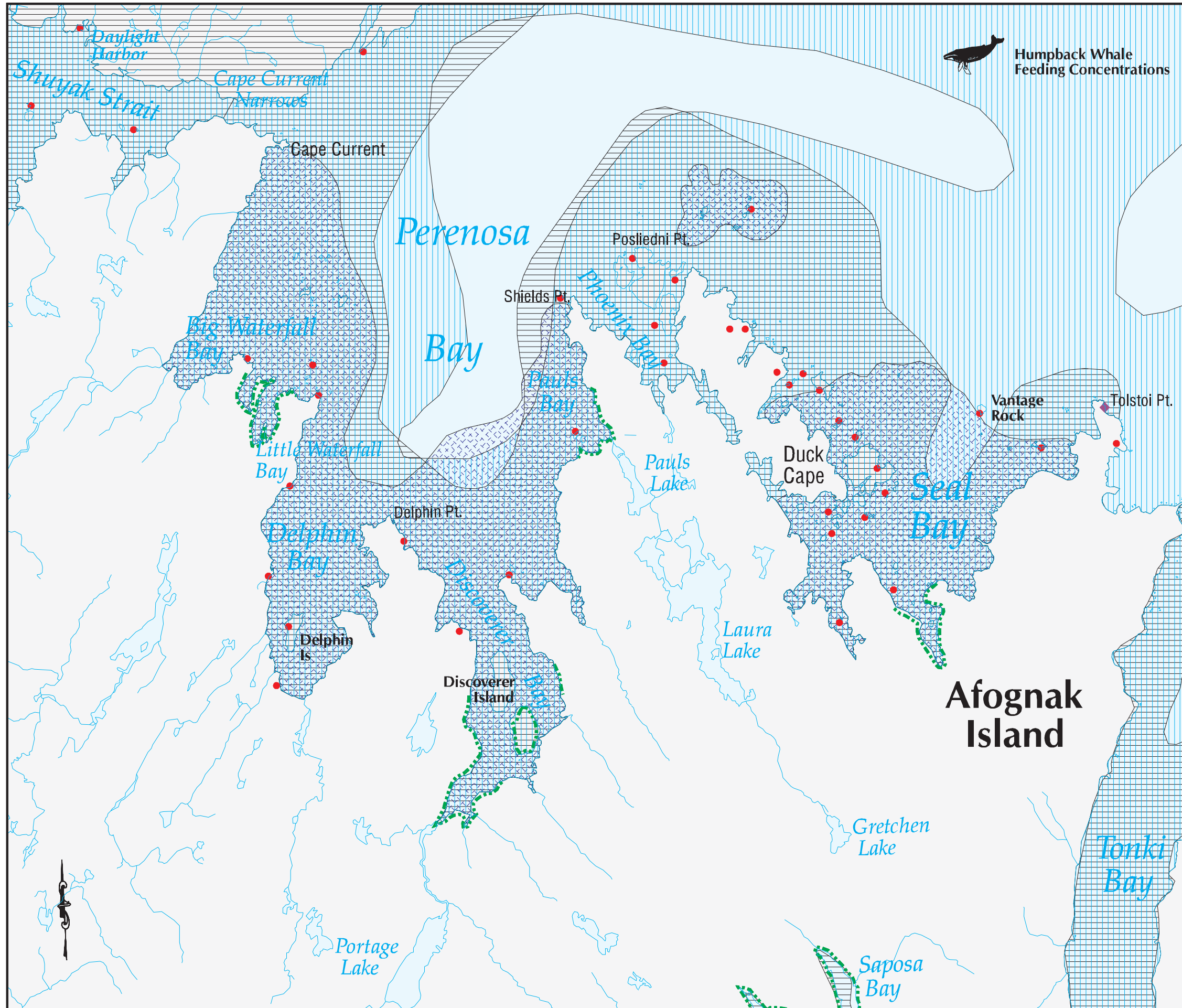


State of Alaska  
Department of Fish and Game  
Habitat and Restoration Division  
June, 1998










 Harbor Seal: High concentrations of pupping and molting occur on Tugidak Island



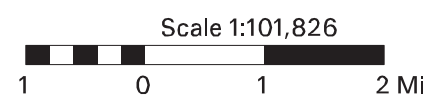
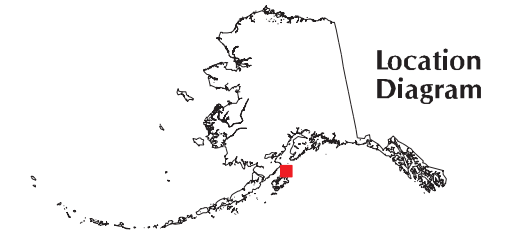


# MESA40a PERENOSA BAY SEAL BAY (AFOGNAK ISLAND)

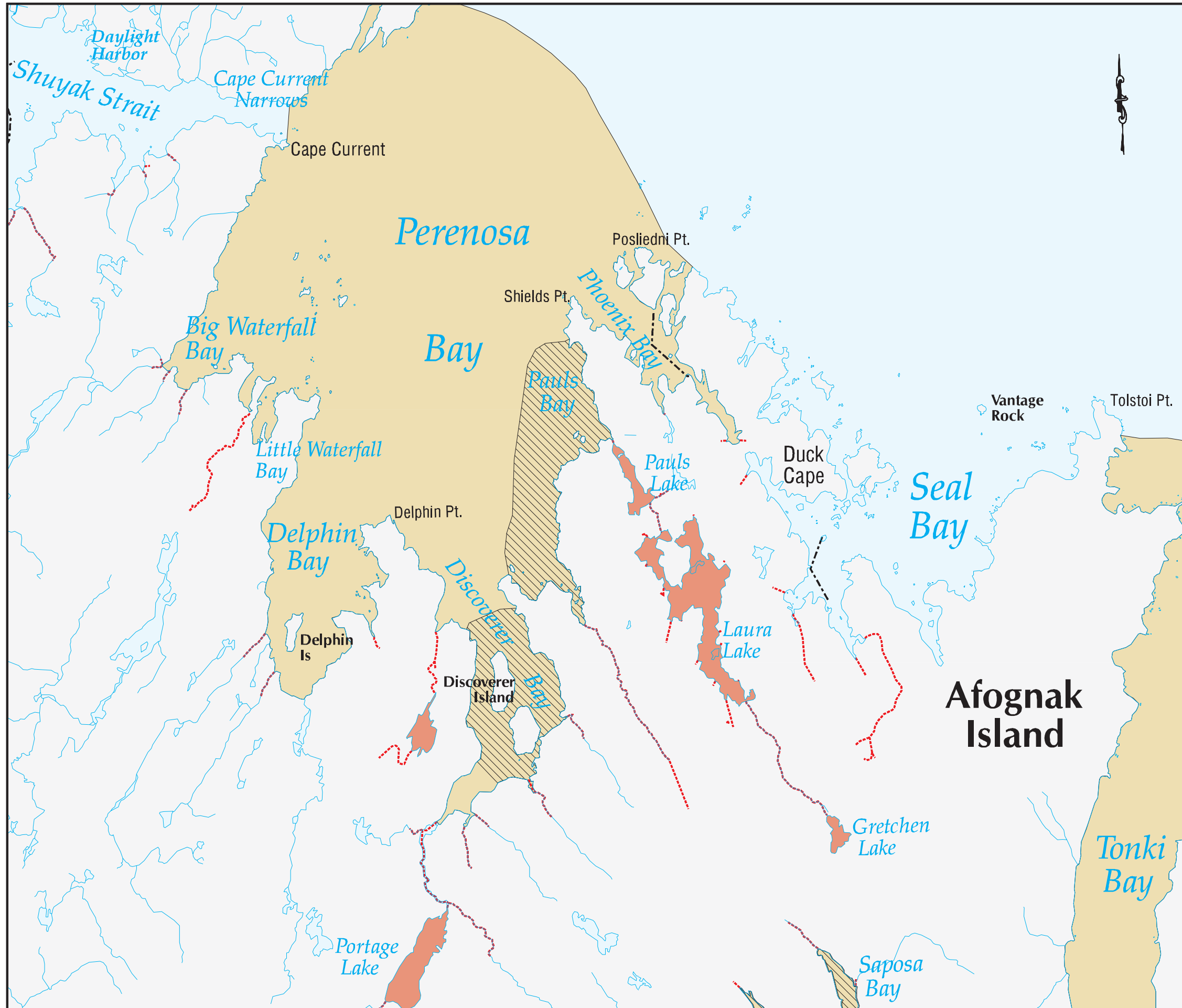
## LEGEND

-  Waterfowl Winter Concentrations
-  Harbor Seal Concentration Areas
-  Sea Otter Concentration Areas
-  Brown Bear High Use Areas
-  Sea Lion Haulout
-  Seabird Colonies
-  Less Than or Equal To 10,000 Birds

SOURCES: USFWS 1996; Dames and Moore 1997








State of Alaska  
Department of Fish and Game  
Habitat and Restoration Division  
June, 1998

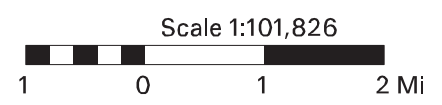
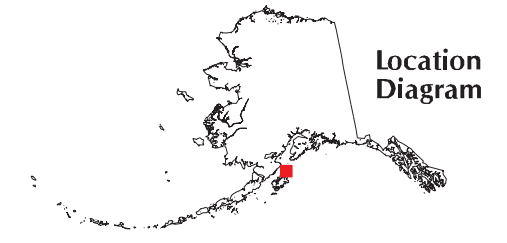


# MESA40b PERENOSA BAY SEAL BAY (AFOGNAK ISLAND)

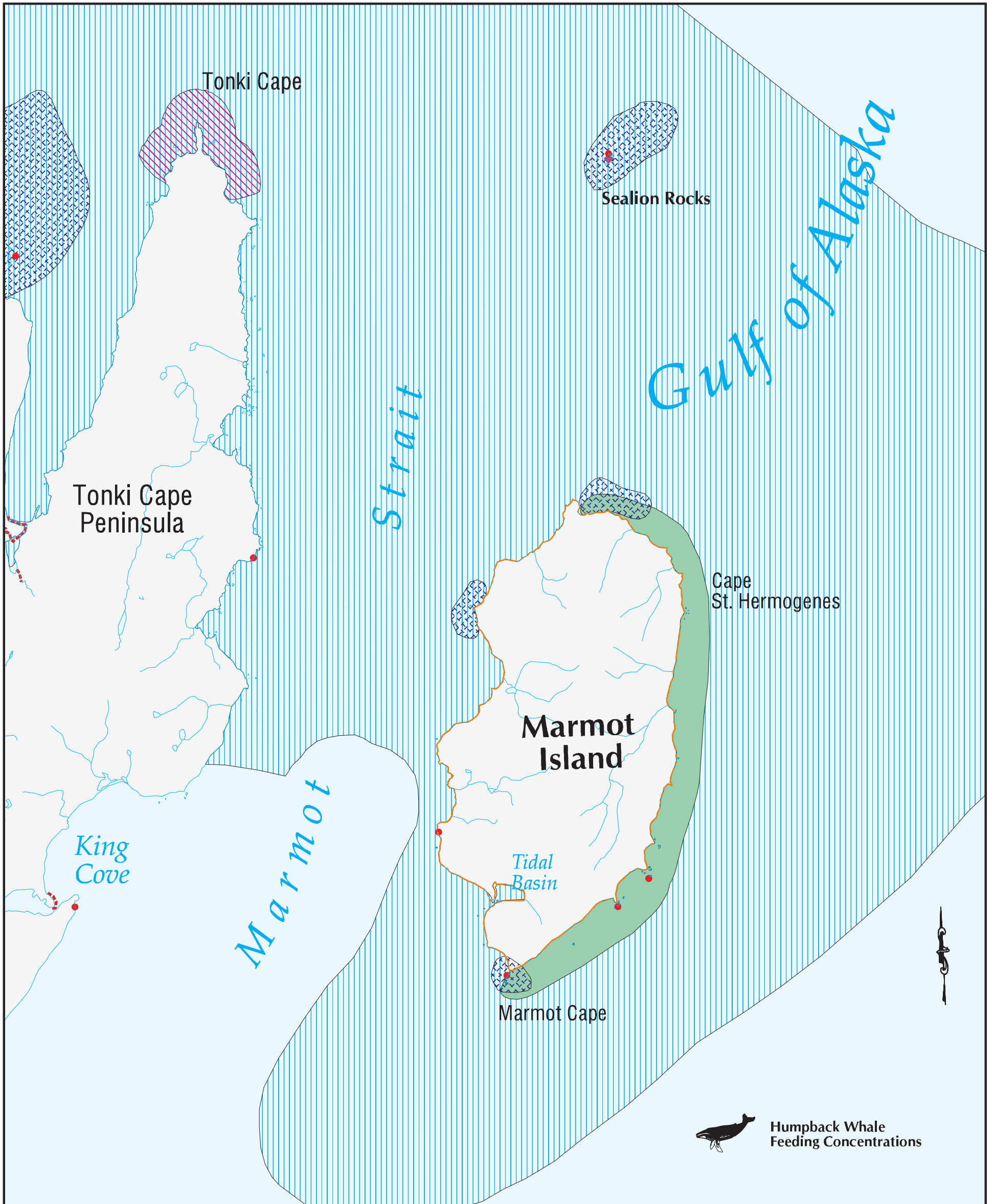
## LEGEND

-  Shrimp Egg Hatch/Rearing Concentrations
-  Anadromous Lakes
-  Anadromous Streams
-  Herring Spawning Areas
-  Herring Spawning Areas

SOURCES: ADF&G 1985e; ADF&G 1996c;  
Dames and Moore 1997



State of Alaska  
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Habitat and Restoration Division  
June, 1998

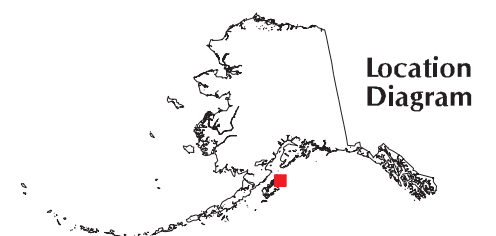


## MESA41 - MARMOT ISLAND

### LEGEND

- |   |   |
|---|---|
|  Harbor Seal Concentration Areas |  Anadromous Streams                                |
|  Sea Otter Concentration Areas   | Seabird Colonies  |
|  Sea Lion Rookery                |  Less Than or Equal To 10,000 Birds                |
|  Sea Lion Haulout                |  Alaska Maritime National Wildlife Refuge Boundary |
|                                  |   |

SOURCES: USFWS 1996; Dames and Moore 1997; Strick et al. 1997



Scale 1:94,115  
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State of Alaska  
Department of Fish and Game  
Habitat and Restoration Division  
June, 1998



Humpback Whale Feeding Concentrations

Kennedy Entrance



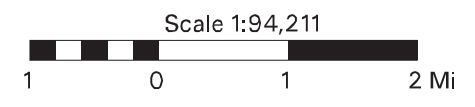
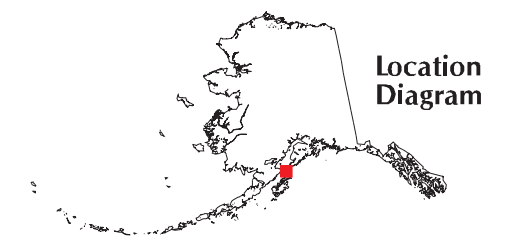
Barren Islands

# MESA42 BARREN ISLANDS

## LEGEND

- Harbor Seal Concentration Areas
- Sea Otter Concentration Areas
- Sea Lion Rookery
- Sea Lion Haulout
- Seabird Colonies**
- Less Than or Equal To 10,000 Birds
- 10,001 To 100,000 Birds
- Greater Than 100,000 Birds
- Alaska Maritime National Wildlife Refuge Boundary

SOURCES: USFWS 1996; G. Del Frate, ADF&G, harbor seal pers. comm, 1997; Dames and Moore 1997; Strick et al. 1997



State of Alaska  
Department of Fish and Game  
Habitat and Restoration Division  
June, 2000



## HUMAN RESOURCES USES

### 1. Fish Hatcheries and Associated Ocean Net Pens

There are currently two hatcheries in the Kodiak Archipelago, and both facilities are operated with funds provided by the Kodiak Regional Aquaculture Association. Hatchery locations are shown in the Hatchery Location Map on the next page.

Kitoy Bay Hatchery, located on Afognak Island at the head of Kitoy Bay, produces pink, chum, sockeye, and coho salmon for the enhancement of the Kodiak commercial purse-seine salmon fishery.

In addition, the hatchery provides coho salmon fingerlings for programs designed to create additional salmon fisheries along the Kodiak road system. In 1991, Kitoy Bay Hatchery released over 125 million salmon, including 124.1 million pink salmon fry.

Pillar Creek Hatchery, located approximately 7 miles from the city of Kodiak, was built in 1990. The hatchery was designed as a 20 million sockeye salmon egg incubation facility. The hatchery will create new fisheries for the Kodiak Island seiners and gillnet fishermen by stocking several barren lake systems with sockeye salmon fry from donor stocks. The first returns from Pillar Creek Hatchery are expected in 1994.

Hatchery-related activities most vulnerable to spill damage include fry rearing and release, terminal harvests, and egg takes. The timing of these activities varies by species so it is difficult to generalize about the periods of highest vulnerability, however, spring and summer tend to be the most critical periods. The hatchery managers can be contacted for specific information on the timing of activities at the following:

Kitoy Bay Hatchery  
486-6559

Pillar Creek Hatchery  
486-4730 or 486-1872 (ADFG/Kodiak)

### 2. Aquaculture Sites

Several commercial aquatic farms have been permitted in the Kodiak Island Archipelago for raising blue mussels and possibly Pacific oysters, but none are in current operation. Mariculture farms are vulnerable to spill damage on a year-round basis since the shellfish are suspended from anchored rafts and are submerged continuously in the water column. The timing of the harvest varies.

For more information on aquaculture, contact:

Aquaculture Coordinator  
Alaska Department of Fish and Game  
Juneau: 465-6150      Anchorage: 267-2333

Alaska Department of Environmental Conservation  
Anchorage: 269-7638

Alaska Department of Natural Resources  
Anchorage: 269-8546

### 3. Historic Properties

The Kodiak Subarea contains a multitude of known and unidentified archaeological and historic sites. Oil spills and hazardous substance releases may result in direct and/or indirect impacts to those cultural resources. On-Scene Coordinators (OSC) are responsible for ensuring that response actions take the protection of cultural resources into account and that the statutory requirements for protecting cultural resources are met. Annex M of the *Unified Plan* outlines OSC responsibilities for protecting cultural resources and provides an expedited process for compliance with Section 106 of the National Historic Preservation Act during the emergency phase of a response. A local resource for cultural resources information is the Alutiiq Museum, Kodiak, 486-7004.

National Historic Landmarks occur in the Subarea at:

<u>Landmark</u>	<u>Location</u>
Amalik Bay Archeological District	Alaska Peninsula
Three Saints Bay	Kodiak Island
Kodiak Naval Operating Base and Forts Greely and Abercrombie	Kodiak Island

### 4. Subsistence and Personal Use Harvest

Subsistence-related uses of natural resources play an important role in the economy and culture of all the communities in the Kodiak area. Generally, a subsistence economy is one in which the customary and traditional uses of fish, wildlife and plant resources contribute substantially to the social, cultural and economic welfare of families in the form of food, clothing, transportation and handicrafts.

A number of federal and state agencies manage subsistence resources in Alaska. Regulations regarding subsistence harvest may undergo substantial modification in the near future. Current information on harvest regulations for state lands can be obtained from the Alaska Department of Fish and Game.

Maps #14 and #15 in Attachment One indicate marine and freshwater subsistence areas. This information can be used during a spill event to identify the specific food sources at risk of contamination.

For specific local information on the locations and seasons of subsistence harvests, contact the village or tribal governments, listing provided in the Resources Section, Community Profiles.

For more information contact the Subsistence Division of the Alaska Department of Fish and Game in Anchorage at 267-2353.

### 5. Commercial Fishing

Commercial fishing is an important part of the culture and economy of Kodiak. Salmon and herring are two of the primary commercial fisheries in this subarea. Other commercially viable fisheries include crab, cod, pollock, and several ground fish species.

Commercial fisheries openings and closing are managed by both state and federal agencies, and vary by year and season. The Alaska Department of Fish and Game manages the approximately 800 streams in Kodiak in which salmon migration and spawning has been documented. Commercially harvested salmon stocks include chum, pink, coho, sockeye and chinook.

Maps of key commercial fishing areas are available in multiple Alaska Department of Fish and Game publications, the *Alaska Habitat Management Guide Reference Maps, Southwestern Region, Vols. I and II* and the *Alaska Habitat Management Guide, Southwestern Region Map Atlas*. Specific

information on which species are currently being harvested may be obtained from the Division of Commercial Fisheries Management and Development in Kodiak at 486-1825. There are also several active commercial fishing industry groups in Kodiak who may be able to provide specific information on the location and timing of fish runs as well as local tide and current conditions. These organizations are listed in the Resources Section of this plan.

See Maps #1 through #5 in Attachment One for commercial fishing resources, including herring spawning, pollock spawning, anadromous fish streams, salmon seining and set net areas, king and tanner crab fishing areas, and shellfish and clam harvest areas.

The timing of commercial fisheries openings/closings in Kodiak can be generalized as follows:

SALMON (seine and set net):	June through September
HERRING sac roe:	Mid-April through June
HERRING food or bait:	August through February
DUNGENESS CRAB:	May through December
TANNER CRAB:	January through March
GROUND FISH:	year-round, varies by species
SHRIMP pot:	year-round
SHRIMP trawl:	June through February
SCALLOPS:	June through March
HALIBUT:	IFQ fishery; year-round

For index salmon stream escapement data, see Attachment Two.

## **6. Sport Fishing and Hunting**

Important sport fishing rivers and streams in the Kodiak Archipelago include: the Buskin River, Salonie Creek, the American River, the Olds River, Roslyn Creek, the Pasagshak River, the Saltery River, the Uganik River, the Dog Salmon River, the Ayakulik (Red) River, the Karluk River, and the Afognak River. On the mainland, in Katmai National Park and Preserve, popular coho fishing occurs in August and September on the Big River. Kafli Creek hosts a red salmon sport fishery from June through September.

The king salmon run in the Kodiak area occurs between June 1 through July 10th with the peak occurring around mid-June. Fishing for king salmon occurs primarily on the Karluk and Red (Ayakulik) Rivers. King salmon fishing has become popular on the Kodiak road system. Kings can be caught year around including during the winter months. The fishery is very popular with both recreational anglers and supports an active charter/guide business segment in the community. There is likely some troll fishing done out of lodges around Kodiak Island and in the outlying village communities. The red salmon run generally occurs between June 10 and August 1 on the Buskin, Pasagshak and Saltery Rivers. These three rivers can all be accessed by the road system on Kodiak. The runs on the Pasagshak and Saltery Rivers occur later than the run on the Buskin River. Red runs also occur on the Karluk, Red River, Uganik, Fraser, Upper Station and Litnik Rivers. Pink salmon are the most abundant fish on Kodiak and generally run between July 20 and August 20th. Pink salmon are plentiful in most of the streams on Kodiak, however the most productive streams are on the road system and include the Buskin, Russian, Salonie, American, Olds, Roslyn, and Saltery Rivers. The silver salmon run occurs from Mid-August through September in the Kodiak Archipelago. The run occurs earlier on the northern islands of Afognak and Shuyak than on the south end of Kodiak Island and peaks in early September. The more popular systems on Afognak and Shuyak include Shangin Bay, Carry Inlet, Big Bay, Paul's Bay, and Litnik which are accessible by boat and plane.

Silver fishing on the Kodiak road system are abundant by the first of September and generally peak later in the month. Natural runs occur in the Buskin, Pasagshak, American, Olds, Roslyn, and Saltery Rivers. The hatchery runs of silvers occur along Mill Bay, Mission, and Mayflower beaches. Larger silver runs also occur in the Uganik, Spiridon, Karluk, Red and Olga Bay Rivers.

Other sport fishing on Kodiak includes dolly varden, rainbow trout, steelhead and halibut. May and mid-July are the best times to catch dollies. In May, along the road system the best places to fish include the Buskin, Pasagshak, and Saltery Rivers. In June, salt water beaches for fishing dollies are Mission, Mill Bay, and Monashka Beach. From mid-July through October, the Buskin River offers dolly varden fishing. The American and Olds Rivers spawning grounds offer good fishing along the road system. Deer hunters find dolly varden fishing in the fall where tributaries enter large lakes.

There are 16 tributaries that the Alaska Department of Fish and Game has identified that support steelhead populations on the Kodiak Archipelago. The Karluk and Ayakulik Rivers are thought to contain the largest populations of steelhead on Kodiak and are also the most popular with sport fisherman. The fall run of steelhead begin entering Kodiak Island freshwater tributaries in early September. The steelhead overwinter in lakes and rivers and spawn in April-June, while adults that survive return to the sea in June and July. All flowing waters are closed to sport fishing for rainbow trout and steelhead fishing during the spawning season from April 1 to June 14. The best time to fish for steelhead is mid to late October. A catch and release fishery was established in 1996 on the Buskin River and lake during the months of November and December. For the remainder of the year this river is closed to steelhead and rainbow trout fishing in the Buskin River and the lake.

Approximately 30 lodges are located throughout the Kodiak Subarea that cater to sport fishing and hunting activities. Sport Fishing guides operating within the Kodiak National Wildlife Refuge on Kodiak, Uganik, and Afognak Islands are approved by the refuge

Halibut fishing around Kodiak Island occurs from May through September. Well known fishing spots near Kodiak City include waters near Spruce Cape. Long Island, Woody Island, Cape Chiniak, and Whale Pass. There are approximately 16 charter boat services that operate in the Kodiak Island area.

The Kodiak Island Borough lies within Game Management Units 8 and 9. Game Management Unit 8 includes all islands southeast of the centerline of Shelikof Strait, including Kodiak, Afognak, Whale, Raspberry, Shuyak Spruce, Marmot, Sitkalidak, Amook, and Chirkof Islands, the Trinity Islands, the Semidi Islands and the Barren Islands. Brown bear, caribou, deer, elk and goat are harvested in this unit. Game Unit 9 includes the Alaska Peninsula and adjacent islands. Black and brown bear as well as caribou, moose, sheep, wolf and wolverine are hunted in this unit.

## **7. Recreational Sites and Facilities**

There are six Alaska State Parks in the Kodiak Subarea. These include the Buskin River State Recreation Site, Fort Abercrombie State Historic Site, and Pasagshak State Recreation site, which are accessible by the road system on Kodiak. Shuyak Island State Park, Woody Island State Recreation Site, and Afognak Island State Park can only be reached by boat or float plane.

The Katmai National Park and Preserve, Alaska Peninsula National Wildlife Refuge, Becharof National Wildlife Refuge, Alaska Maritime National Wildlife Refuge, and the Kodiak National Wildlife Refuge are also located in the Kodiak Subarea. Most are accessible by boat or plane only. Maps #12 and #13 in Attachment One identify seasonal recreational areas in the Kodiak Subarea.

For information regarding state parks in the Kodiak Subarea contact the Department of Natural Resources, Division of Parks & Outdoor Recreation, in Kodiak at 486-6339. For information concerning the Katmai National Park and Preserve contact their Office in King Salmon at 246-3305. For information about the Kodiak National Wildlife Refuge and public use cabins contact their Visitor Center in Kodiak at 487-2600.

## **8. Commercial Tourism**

Commercial tourism in the Kodiak Archipelago revolves primarily around wildlife viewing. Visitors can reach Kodiak by only sea or air. Transportation is available to Kodiak from Anchorage and Homer on commercial aircraft. The Alaska Ferry System also serves the City of Kodiak. The City of Kodiak is the main attraction for visitors, who can then depart from the city on fishing charters and wildlife cruises. Accommodations for visitors are most plentiful on the road system on the northern end of Kodiak Island. Bear viewing on Kodiak attracts visitors off the road system via air taxis from the City of Kodiak. Longer stays at lodges, cabins and camps offer opportunities for wildlife viewing, bird watching, sport fishing, sea kayaking, hiking, and mountain biking. Cruise ships occasionally visit Kodiak. For more information contact the Kodiak Island Convention and Visitors Bureau at 486-4782.

Bear viewing is popular at Katmai National Park and Preserve on the Alaska Peninsula at Hallo Bay, Swikshak Bay, Kukak Bay, and Amailik Bay. Tourism along the Park's coastline usually originates in Kodiak or Homer.

## **9. Marinas and Ports**

There are few marinas and ports in the Kodiak Island Borough. The largest port is at the City of Kodiak which accommodates large commercial fishing vessels and fish processors, a charter boat fleet, U.S. Coast Guard facilities and vessels, and private boats. There are small boat harbors at Port Lions and Old Harbor. The village of Ouzinkie has docking facilities for the Alaska Ferry, but does not have a boat harbor. There are no marinas or ports at Larsen Bay, Akhiok, and Karluk. Harbor office contact information is listed in the Resources Section.

## **10. Fish Processing**

The companies listed below are canneries and major processors with permits issued by the State of Alaska:

Ocean Beauty, Inc., Kodiak 486-5791  
Kodiak Salmon Packers, Inc., Larsen Bay 486-2250  
Alaska Pacific Seafoods, Kodiak 486-3234  
Alaska Fresh Seafoods, Inc., Kodiak 486-5749  
Faros Seafoods, Inc., Kodiak 486-4156  
Shelikof Plant-International Seafoods, Kodiak 486-4768  
Marine Way Plant-International Seafoods, Kodiak 486-4768  
Kodiak Seaside Seafoods, Kodiak 486-8575  
Queen Fisheries-Kodiak Plant, Kodiak 481-5799  
Ursin Seafoods, Inc., Kodiak 486-5724  
Western Alaska Fisheries, Inc., Kodiak 486-4112  
Emerald Isle Gourmet Seafoods, Kodiak 486-4857  
Kodiak Abattior, Kodiak 487-2359  
Ouzinkie Tribal Fisheries, Ouzinkie 680-2259

## **11. Logging Facilities**

Logging activities occur in several locations in the Kodiak Subarea. The following organizations can be contacted with requests for specific information on location and timing of logging activities. Although the primary function of these organizations is not to provide such information, the individual members will be quite knowledgeable about environmental conditions and will often be willing to share information.

Current Log Transfer Facilities (LTFs) or logging camps are:

<u>Location</u>	<u>Operator</u>	<u>Phone</u>	<u>Fax</u>
Chiniak (logging camp)	Lesnoi, Inc. (In Kodiak)	486-8191	486-8181
Afognak Island:			
Kazakof/Danger Bay	ANC/Ben Thomas Logging	379-1119	379-1161
Big Sandy Lake	Koncor/Silver Bay Logging	381-2000	381-2003

Also: Afognak Native Corporation (ANC) in Kodiak at 486-6014 - (fax 486-2514)  
 Koncor Forest Products in Anchorage at 562-3335 - (fax 562-0599)

## 12. Water Intake/Use

The following table was generated by the Alaska Department of Environmental Conservation, Drinking Water and Water Treatment Section. The systems below include public permitted water use facilities by index number, source (groundwater, surface water, purchased water), facility name, and facility location. Additional information about facility owners can be obtained from the Drinking Water and Water Treatment Section at (907) 465-5300.

<u>Name of System</u>	<u>Location</u>	<u>Source</u>	<u>State ID No.</u>	<u>Population Size Served</u>
Whitestone Logging	Afognak Island	Surface Water	AK2250427	75
Akhiok	Akhiok	Surface Water	AK2250037	90
KIBSD Chiniak	Chiniak	Surface Water	AK2250168	32
Karluk Water System	Karluk	Surface Water	AK2250087	52
Kodiak Water System	Kodiak	Surface Water	AK2250011	9,547
USCG Station Kodiak	Kodiak	Surface Water	AK2250126	3,092
Larsen Bay Water System	Larsen Bay	Surface Water	AK2250134	335
Old Harbor	Old Harbor	Surface Water	AK2250061	320
Ouzinkie Water System	Ouzinkie	Surface Water	AK2250053	246
Port Lions	Port Lions	Surface Water	AK2250045	309

## **SENSITIVE AREAS: PART FIVE - AREAS OF LOCAL CONCERN**

The Kodiak Island Borough received a grant to ensure up-to-date, local knowledge is integrated into this edition of the Kodiak Subarea Contingency Plan, Sensitive Areas Section. Traditional or local knowledge is a term used to describe information primarily possessed by local residents gained from experience in living on the land and water of the Kodiak Subarea. Local knowledge includes, but is not limited to, expertise on topics related to storms and ocean currents; distribution and behavior of fish and wildlife; and historic and current use of the land and waters for subsistence activities and other traditional uses, especially historic commercial and recreational fisheries.

State and federal and agencies have historically relied on western scientific research and engineering when making decisions related to oil spill prevention and response. In doing so, they often overlook the knowledge of local residents that is based on years, even generations, of experience and observation. The agencies cooperating in preparation of the Sensitive Areas Section of the plan have committed to incorporation of local knowledge of the residents of the subarea. Not only can this information help ensure that areas and activities important to local residents are addressed in spill prevention and response planning, but that local knowledge of physical and biological characteristics will improve spill response efficiency and application of appropriate spill response techniques.

Dames & Moore worked in conjunction with the Kodiak Island Borough, Alaska Department of Fish and Game, and the Department of the Interior to develop survey and meeting methodologies for obtaining, documenting, and incorporating local knowledge into the SCP. The methodology included a project newsletter, pre-meeting contact, development of a survey instrument, and the community and focus group meetings.

Community meetings were held in six rural communities on Kodiak Island: Akhiok, Karluk, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions. Focus group meetings on specific topics were held in the City of Kodiak along with a general community meeting; a meeting was held with each of the following organizations and coastal users.

- Lodge Operators
- Charter Boat Owners/Operators
- Kodiak Salmon Group
- Recreational Users/Environmental Groups
- Local Government Agencies/Native Corporations
- Oil Industry Watchers
- Alaska Draggers Association
- Kodiak Regional Aquaculture Association

The series of six community and eight focus group meetings in Kodiak and the rural communities highlighted the fact that the marine environments of Kodiak Island and the adjacent Alaska Peninsula support a tremendous variety of natural resources and that the people living in these areas place very high values on these resources. The full report *Kodiak Island Borough Sensitive Areas Identification Project* (June 30, 1997), containing resource summaries from the meetings, associated maps, and references can be obtained through the Community Development Department of the Kodiak Island Borough, 710 Mill Bay Road, Kodiak, AK, 99615, 907-486-9360.

*Summaries of the sensitive areas identified in the meetings are provided below and in Table D-2, and is graphically summarized on Maps #17 and #18 in Attachment One.*

**Akhiok:** In the case of an oil spill and with limited oil spill equipment, the sensitive areas selected by the participants included Kempff Bay northwest of Akhiok (for sea urchins), Tanner Head for razor clams, butter clam beaches on small islands off of Akhiok, Moser Bay (salmon), Snug Cove between Akhiok and Moser Bay (subsistence), and Sukhoi Lagoon (waterfowl and subsistence). Residents indicated these should have a very high priority.

**Alaska Druggers Association:** Sensitive areas selected by the druggers focused on habitat for groundfish and halibut and consisted of both bays and open water areas. The areas selected included Kukak Bay on the west side of Shelikof Strait and spawning areas in: Shelikof Strait (pollock); on the east side of Kodiak Island, Raspberry Strait, Kupreanof Strait, and Marmot Bay (pollock and cod); and Uyak Bay, Uganik Bay, Perenosa Bay, Womens Bay in Chiniak Bay, Ugak Bay, Olga Bay, and Deadman Bay (juvenile fish).

**Charter Boat Owners/Operators:** Areas selected as important to sportfishing and marine recreation which deserve some type of protection in the event of a spill included coastal areas on the road system, such as Holiday Beach, the rocks off of Long Island (sea lion haulouts), the Cape Chiniak bird colonies, Litnik, the back side of Hog Island in Marmot Bay, and the east entrance to Whale Pass. Other areas of importance included Womens Bay, the mouth of the Buskin River, Danger Bay, Marka Bay, and the head of Kazakof Bay.

**Karluk:** In the event of oil spill, with limited resources for response the sensitive areas selected were based primarily on subsistence. These included the Sturgeon River, Karluk Lagoon, Halibut Bay, and Grant Lagoon. Karluk Lagoon was by far the highest priority.

**Kodiak:** According to the participant, sensitive areas around the community of Kodiak center on coastal areas accessible by road, such as Monashka Bay, the Baskin River, and other local beaches. Kalsin and Middle Bays were considered sensitive areas for juvenile fish as well as other resources.

**Kodiak Regional Aquaculture Association:** Based on the importance to one or more fishery resources, areas were designated as priorities for protection in the event of an oil spill. They included the following: Marmot Bay (nursery area for several species of commercial importance), the west end of Sitkalidak Strait (herring, groundfish, halibut), Sitkalidak Island areas (herring), Uyak Bay (herring spawning), Uganik Bay (herring spawning), Alitak Bay (nursery area for herring, shrimp, salmon, and forage fish), Kukak Bay on the Alaska Peninsula (herring and shrimp), Little River Lagoon and beach, and Ayakulik Lagoon and beach.

**Kodiak Salmon Group:** Sensitive areas selected by the Kodiak salmon focus group included all major anadromous fish streams. Areas selected for reasons other than salmon included Mission Beach and the west side of Shuyak Island.

**Larsen Bay:** The extreme tides in Larsen Bay make many areas difficult to protect in the event of an oil spill. In general, participants agreed that the most practical beaches to protect, in the event of a spill, would be Browns Lagoon, Humpy Creek, and Telrod Creek. Participants identified the following Sensitive Areas for Larsen Bay: from the outer part of Larsen Bay to the end of Larsen Bay, from the northern tip of Amok Island to the southern tip of Amok Island, from Carlson Point to Zacker Bay, the Chiefkof area, from Hook Point to the head of Spiridon Bay, and from the islands south of Amok Islands to the head of Uyak Bay. Residents voiced serious concerns about the habit of barges and other vessels using Uyak Bay as a safe harbor when the weather becomes rough in the Shelikof Straits. This activity greatly increases the threat of a spill in Larsen Bay.



**Lodge Owners:** The focus group participants selected a large number of areas which deserve some initial protection in the event of an oil or hazardous material spill, mostly entire bays, which they felt would be adversely affected and subsequently would affect their local industry. For the Alaska Peninsula on the west side of Shelikof Strait, these included Katmai Bay, Hallo Bay, Kukak Bay, Kafia Bay and Geographic Harbor. On the west side of Kodiak Island, sensitive areas included: Karluk River and Lagoon, the head of Uyak Bay, Spiridon Bay and River, South Arm of Uganik Bay, Uganik River, Mink Point, Village Islands, and Zachar Bay and River. On the east side of Kodiak Island in the Ugak Bay area, sites delineated as sensitive included: Hidden Bay (Basin), Saltery Cove, Pasagshak Bay, Portage Bay, and Eagle Harbor. In the Afognak Island area, sensitive areas included Whale Pass (high priority), Paramanof Bay, Selief Bay (four lodges), Malina Bay, Pauls Bay, Big Waterfall Bay, Litnik, and Muskomee Bay.

**Local Government Agencies/Native Corporations:** A large number of areas were selected by this focus group as sensitive for one or more resources. On the Alaska Peninsula (west side of Shelikof Strait), sensitive areas included: Geographic Harbor, Amalik Bay, Hallo Bay, and Kukak Bay. Areas on the road system included Buskin River, Point Abercrombie, Monashka Bay, Pasagshak Bay, and Chiniak Bay areas including Womens, Kalsin, and Middle Bays, Termination Point, and the north end of Long Island. For salmon resources, sensitive areas selected included Olga Bay, Uganik Bay, Uyak Bay, Kitoi Bay (hatchery), and the Karluk River and Lagoon. Other areas selected for resources (recreation and subsistence) included Litnik, Paramanof Bay, and Sitkalidak Strait. Sensitive areas selected for marine mammals included Marmot Island and all of Marmot Bay (whale and sea lions), Uyak and Uganik Bays (whales), the Barren Islands (seabirds, whales, and sea lions), Semedi Islands (seabirds), Tugidak Island (harbor seal), and all the Trinity Islands and surrounding waters (waterfowl, marine mammals).

**Oil Industry Watchers Group:** When asked which areas which would be considered sensitive and should be prioritized in the case of an oil spill (assuming limited resources), the areas selected included: the areas between Kodiak City and the mouth of Womens Bay, Cape Chiniak to the east side of Kalsin Bay (waterfowl), and Ugak Strait (marine mammals). Recreational areas which should have a high priority include Cook Lagoon on Long Island, Monashka Beach, Mayflower Beach, Pasagshak Beach, the entrance to Big Bay, and Fossil Beach.

**Old Harbor:** Sensitive areas or areas of special concern in the case of an oil spill with limited oil spill equipment were delineated by people at the meeting. The highest priorities were associated with important subsistence areas. Most of the areas were either located on Sitkalidak Strait or Sitkalidak Island. These areas included: Barling Bay south through Fox Lagoon, all of Sitkalidak Strait, Ocean Beach (Bay), and Partition Cove (east side Sitkalidak Island), Port Hobron, Tanginak Anchorage (north side Sitkalidak Island), Shearwater Bay (in Kiliuda Bay), Newman Bay (west side Sitkalidak Island), Kiavak Bay, Big Creek on Kaiugnak Bay, Mouse Island, and Seal Bay (west of Cape Barnabas).

**Ouzinkie:** The participants were asked at the end of the meeting that if they had a limited amount of oil boom to protect areas of greatest importance to the communities in the event of an oil or hazardous material spill, what areas would be highest on the priority list. The areas of most concern involved those used for subsistence gathering activities. These included the Camel Rock area, Sourdough Flats, a salmon stream just south of town, and the west side of Spruce Island from the Narrows to the Zapadni Point. Other sensitive areas include Icon Bay at the eastern end of the island for its historical significance.

**Port Lions:** The participants in the meeting were asked what areas they would like protected if there was a spill, and if there were limited resources to protect sensitive areas. The areas selected were primarily associated with subsistence and included Settler Cove at Port Lions, clam beds at the end of the runway at Port Lions, the head of Kizhuyak Bay, and Litnik at the head of Afognak Bay.

**Recreational Users/Environmental Groups:** All areas on the road system with access to the coast are heavily used for recreation and should receive some level of protection in the event of an oil or hazardous substance spill. Other areas included: the mouth of Big Bay on Shuyak Island, Foul Bay on the west side of Afognak Island, all of Chiniak Bay (a heavily used area), the heads of Kalsin and Middle Bays (juvenile halibut and forage fish), and Anton Larson Bay (due to road access).

As illustrated in the following table, there is a considerable amount of overlap in the sensitive areas selected by the different focus groups. Marmot Bay, Chiniak Bay, Kalsin Bay, Middle Bay, and Womens Bay were selected by most of the focus groups. Other areas of overlap included Uyak Bay, Whale Pass, Litnik at the head of Afognak Bay, the mouth of the Buskin River, and Pasagshak Bay and Beach in Ugak Bay. When totaled, the selected sensitive areas covered a significant portion of the Kodiak Archipelago.

**TABLE**

**D-2**

**SUMMARY OF SENSITIVE AREAS SELECTED BY  
COMMUNITY REPRESENTATIVES AND FOCUS GROUPS  
Kodiak Island Borough, 1997**

<b>Community/Group</b>	<b>Sensitive Areas</b>
Akhiok	Kempff Bay, Tanner Head, small islands off Akhiok, Moser Bay, Snug Cove, and Sukoi Lagoon
Alaska Draggers	Kukak Bay and spawning areas in Shelikof Strait, the east side of Kodiak Island, Uyak Bay, Uganik Bay, Raspberry Strait, Kupreanof Strait, Marmot Bay, Perenosa Bay, Womens Bay, Olga Bay, Deadman Bay, and Ugak Bay.
Charter Boat Owners/Operators	Cape Chiniak, Litnik, Hog Island in Marmot Bay, Whale Pass, Womens Bay, mouth of Buskin River, Danger Bay, Marka Bay, the head of Kuskoff Bay and coastal areas accessible by road.
Karkuk	Karluk Lagoon, Sturgeon River, Halibut Bay, and Grant Lagoon
Kodiak	Kalsin Bay, Middle Bay, Buskin River, Monashka Bay, and all beach areas accessible by road system.
Kodiak Regional Aquaculture Association	Marmot Bay, west end of Sitkalidak Strait, Sitkalidak Island areas, Uyak Bay, Uganik Bay, Alitak Bay, Kukak Bay, Little River Lagoon/beach, and Ayakulik Lagoon/beach.
Kodiak Salmon Group	All salmon streams, Mission Beach, and west side of Shuyak Island.
Larsen Bay	Brownlls Lagoon, Humpy Creek, Telrod Creek, Larsen Bay from outer Larsen Bay to end, from northern tip of Amok Island to southern tip of Amok Island, from Carlson Point to Zacker Bay, the Chiefkof area from Hook Point to head of Spiridon Bay, from islands south of Amok Island to head of Uyak Bay.
Local Government Agencies/Native Corporations.	Alaska Peninsula - Geographic Harbor, Hallo Bay, Kukak Bay, and Amalik Bay. West side Kodiak Island- Karluk River and Lagoon, Uyak Bay, Uganik Bay, and Olga Bay. East side Kodiak Island - All of Chiniak Bay (Kalsin, Middle, and Womens Bays), Termination Point, north Long Island, Buskin River, Point Abercrombie, Monashka Bay, Pasagshak Bay, and Sitkalidak Strait. Afognak Island Area – Litnik, Paramanof Bay, Marmot Island, Marmot Bay, and Kitoi Bay. Barren Islands, Semedi Islands, and Trinity Islands (especially Tugidak Island)
Lodge Owners	Alaska Peninsula – Katmai Bay, Hallo Bay, Kukak Bay, Kafliia Bay, and Geographic Harbor. West side Kodiak Island- Karluk River and Lagoon, head of Uyak Bay, Spiridon Bay and River, South Arm of Uganik Bay, Uganik River, Mink Point, Village Island, and Zachar Bay and River. East side Kodiak Island - Hidden Bay, Saltery Cove, Pasagshak Bay, Portage Bay, and Eagle Harbor. Afognak Island Area – Whale Pass, Paramanof Bay, Selief Bay, Malina Bay, Pauls Bay, Big Waterfall Bay, Litnik and Muskomee Bay.
Oil Industry Watchers	Womens Bay, Cape Chiniak to east side of Kalsin Bay, Ugak Strait,

Community/Group	Sensitive Areas
	Cook Lagoon on Long Island, Monashka Beach, Mayflower Beach, Pasagshak Beach, and Fossil Beach.
Old Harbor	Barling Bay, Sitkalidak Strait, Ocean Beach, Partition Cove, Port Hobron, Tanginak, Anchorage, Shearwater Bay, Newman Bay, Kiavak Bay, Big Creek, Mouse Island, and Seal Bay (Cape Barnabas).
Ouzinkie	Camel Rock , Sourdough Flats, west side of Spruce Island, Icon Bay, and the fish stream south of Ouzinkie
Port Lions	Settler Cove, head of Kizuyak Bay, Litnik, and the clam beds at end of runway
Recreational Users/ Environmental Groups	Coastal areas with road access, mouth of Big Bay on Shuyak Island, Foul Bay, all of Chiniak Bay, heads of Kalsin and Middle Bays, and Anton Larson Bay

## **SENSITIVE AREAS: PART SIX - KEY REFERENCES**

The following documents will provide information on critical fish and wildlife concentrations and human uses. The information contained in these documents is not, for the most part, duplicated in this contingency plan. Also identified are Geographic Information System (GIS) databases which may have automated resources information for the area.

### ***Documents:***

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Hood and Zimmerman (eds). 1986. Gulf of Alaska: Physical Environment and Biological Resource. (Gulf of Alaska net surface currents)

Kodiak Area Native Association (KANA). 1983. Kodiak Island Area Local Fish and Game Resource Guide. Prepared with assistance from the Alaska Department of Fish and Game Division of Subsistence. Kodiak.

Kodiak Island Borough, 1985. Coastal Sensitivity Study, Citizens Manual. Kodiak Island Borough, Community Development Department. Kodiak, Alaska.

LaBelle, J.C. and J.L. Wise. 1983. Alaska Marine Ice Atlas.

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Bureau of Land Management: Gust Panos, Anchorage, 271-5545

Kodiak Island Borough: Duane Dvorak, 486-9363

Alyeska Pipeline Service Company/SERVS: Rod Hoffman, Valdez, 834-6833



# **SENSITIVE AREAS: ATTACHMENT ONE**

## **RESOURCE AND SENSITIVE AREA MAPS FOR THE KODIAK SUBAREA**

The following maps were prepared by the Kodiak Island Borough and are available online at the Subarea Plan Maps website for the Kodiak Subarea under Biologically Sensitive Areas Maps:  
<http://www.asgdc.state.ak.us/maps/cplans/subareas.html>.

- MAP #1: Fishery Resources - Herring Spawning, Pollock Spawning, Pollock Juvenile Rearing, Anadromous Fish Streams (pink salmon). Accompanied by a List of the Estimated Average Annual Peak Index Counts for Salmon Streams in the Kodiak Subarea from Aerial Surveys (1967 - 1994)
- MAP #2: Commercial Fishing Areas - Salmon Seining and Set Net Areas
- MAP #3: Commercial Fishing Areas - Herring, Pollock, Halibut, Cod, Scallops
- MAP #4: Fishery Resources - King and Tanner Crab
- MAP #5: Fishery Resources - Shellfish, Clam
- MAP #6: Marine Mammals - Harbor Seal Areas
- MAP #7: Marine Mammals - Sea Otters
- MAP #8: Marine Mammals, Terrestrial Mammals and Birds, Sea Lions, Brown Bears, & Seabirds
- MAP #9: Marine Mammals - Humpback Whales, Fin Whales
- MAP #10: Marine Mammals - Gray Whales, Dall's Porpoise, Minke Whales, Orca Whales
- MAP #11: Waterfowl - Ducks, Geese, Swans
- MAP #12: Recreation Areas - Fall, Winter
- MAP #13: Recreation Areas - Spring/Summer, Year-round
- MAP #14: Subsistence - Marine
- MAP #15: Subsistence - Salmon, freshwater fish
- MAP #16: Currents and Circulation
- MAP #17: Sensitive Areas - Rural Communities
- MAP #18: Sensitive Areas - Focus Groups, Kodiak community, resource agencies
- MAP #19: Biological Hotspot Sites - as Identified by ADF&G (page D-43)

(Note: The Kodiak Island Borough has been unable to update these maps since first publication and some may be outdated, most notably maps #3, #4, #8, #12, and #13.)

## SENSITIVE AREAS: ATTACHMENT TWO

### ALASKA DEPARTEMT OF FISH AND GAME INDEX SALMON STREAM ESCAPEMENT FOR THE KODIAK SUBAREA

This table is to be used in conjunction with the Alaska Department of Fish and Game's Atlas to the Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes, Southwest Region. The Atlas, made up of USGS quadrangle maps, is needed to locate the streams using the unique water body, or stream catalog number.

The table provides information that is used with the prioritization scheme located on pages D - 7 through D - 10 to identify salmon streams of major, moderate or lesser concern. To prioritize salmon streams a responder will need to know the USGS quadrangles for the spill trajectory and then locate the streams on the quadrangle. Using the stream catalog number, the responder can then cross-reference a stream to this table to determine if the stream is of major, moderate, or lesser concern.

ESTIMATED AVERAGE ANNUAL PEAK INDEX COUNTS FOR SALMON STREAMS  
IN THE KODIAK SUBAREA FROM AERIAL SURVEYS  
1967-1994<sup>1</sup>

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd )	Pink (Even)	Chum
SELIEF	251-101	251-10-10010	799	1259	2592	3926	6
WASKANARESKA CREEK	251-102	251-10-10020		6	356	875	
MUSKOMEY BAY	251-103	251-10-10030	1	17	970	828	13
DOLPHIN CREEK	251-104	251-10-10040			155	106	
MALINA RIVER	251-105	251-10-10050	5558	1260	8847	41062	4400
Weir escapement	251-105w	251-10-10050	8308	44	2202	34311	
IRON CREEK	251-106	251-10-10005			300	800	
HERRING CAMP CREEK	251-109	251-10-10033			500		
MALKA BAY	251-201	251-20-10005		1400	1698	421	
MALINA BAY	251-202	251-20-10020	3	1200	366	4200	
CAPE CREEK	251-203	251-20-10030			3100	2900	
SIDE CREEK	251-204	251-20-10003			68	167	
HUNT CREEK	251-205	251-20-10006				150	
MARKER CREEK	251-206	251-20-10010		200	165	1086	
SITE CREEK	251-207	251-20-10023			200	75	
LONG LAGOON	251-301	251-30-10010	389	1074	7487	15000	602
THORSHEIM CREEK	251-302	251-30-10020	1434	912	4565	5000	32
Weir escapement	251-302w	251-30-10020	5673	281	15		32
SOUTH ARM CREEK	251-403	251-40-10030	6	100	2884	11023	
EAST ARM CREEK	251-404	251-40-10040	25	185	8618	13192	361
OLD CABIN CREEK	251-405	251-40-10050		500	42	5175	
HIDDEN LAKE CREEK	251-406	251-40-10190	210	1000	2838	4362	
LONG CANYON CREEK	251-407	251-40-10120			3249	2428	

ESTIMATED AVERAGE ANNUAL PEAK INDEX COUNTS FOR SALMON STREAMS  
IN THE KODIAK SUBAREA FROM AERIAL SURVEYS  
1967-1994<sup>1</sup>

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd )	Pink (Even)	Chum
DEVILS INLET CREEK	251-501	251-50-nc				32	
BLUEFOX CREEK	251-502	251-50-10021		3	78	749	
ESTER LAGOON CREEK	251-503	251-50-10030			41	343	
SW REDFOX CREEK	251-504	251-50-10045		125	4125	531	
SE REDFOX CREEK	251-505	251-50-10055		10	21287	2965	
CROSSFOX CREEK	251-506	251-50-10065	1		412	270	
CATARACT CREEK	251-507	251-50-10070			12		
POOR CREEK	251-508	251-50-nc				2000	
HANDER CREEK	251-510	251-50-10023			1503	4000	
BIG BAY CREEK	251-601	251-60-10010	28	1340	846	864	
Weir escapement	251-601w	251-60-10010		1886			
HIDDEN COVE CREEK	251-602	251-60-10020	2		11	191	
SHANGIN NARROWS	251-701	251-70-10010		80		1148	
WEST SHANGIN BAY	251-702	251-70-10022		54	93	1066	
EAST SHANGIN BAY	251-703	251-70-10020		20		200	
CARRY BEAR CREEK	251-705	251-70-10025	9	988	328	1959	
WHITEY'S HOLE	251-706	251-70-10050	1	50	11		
Weir escapement	251-706w	251-70-10050		1023			
BACK BAY CREEK	251-811	251-81-10010			11		
BIG FORT CREEK	251-813	251-82-10090			150		
BIG WATERFALL	251-821	251-82-10010			1078	1644	
LITTLE WATERFALL	251-822	251-82-10020	60	25	57391	22755	5
Weir escapement	251-822w	251-82-10020	28	17	68062	44457	2
DELPHIN ISLAND	251-823	251-82-10026				4	
DELPHIN BAY	251-824	251-82-10031		200		500	
PORTAGE CREEK	251-825	251-82-10050	3774	1268	25203	20891	3
DISCOVERY BAY CREEK	251-826	251-82-10060			108	133	
BEAN CREEK	251-827	251-82-10070		135	415	1241	
OTTER CREEK	251-828	251-82-10045		72	3728	158	
ELK CREEK	251-829	251-82-10057	2	8	778	170	
CABIN CREEK	251-830	251-82-10050-2006			138	32	
PAUL'S BAY	251-831	251-82-10080	14314	5281	2714	3031	5389
weir escapement	251-831w	251-82-10080	17055	7592	7071	3215	8
BARNYARD CREEK	251-832				75		
SEAL BAY CREEK	251-901	251-90-10010	8	43	9042	9412	
SOUTH CREEK	251-902	251-90-10009		20	212	166	
ROCKY BAY CREEK	251-903	251-90-10005			300	325	
LONG TONKI	252-101	252-10-10010		402	2818	2870	
SHORT TONKI	252-102	252-10-10020		60	5062	2387	
TONKI CAMP CREEK	252-103	252-10-10011			1150		
TONKI FALLS CREEK	252-104	252-10-10013			325		
EAST SAPOSA CREEK	252-301	252-31-10010			2881	5020	

ESTIMATED AVERAGE ANNUAL PEAK INDEX COUNTS FOR SALMON STREAMS  
IN THE KODIAK SUBAREA FROM AERIAL SURVEYS  
1967-1994<sup>1</sup>

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd )	Pink (Even)	Chum
GRASSY LAGOON CREEK	252-302	252-31-10020		13	843	2758	
UNNAMED	252-305	252-31-10005			380	2113	
SAPOSA BAY	252-306	252-31-10013			6815	1720	3
RUTH BAY	252-307	252-31-10025	1500		1802	326	
BARRIER CREEK	252-308	252-31-10027			3		
LEFT HAND BAY	252-309	252-31-10017	1300		5465	2157	
HERMIT'S CREEK	252-317	252-32-10050		6	1		
MCDONALD'S LAGOON	252-318	252-31-10080		26	10011	2556	
LITTLE AFOGNAK	252-319	252-32-10010		63	434	3352	
KITOI BAY	252-32				27750	73750	
LITTLE KITOI	252-323	252-31-10030	2399	475	40165	3138	516
BIG KITOI	252-324	252-31-10040	25	662	53738	11250	2754
DANGER BAY	252-33					900	
N.E. DANGER CREEK	252-331	252-33-10010	10	354	3845	7586	219
BIG DANGER	252-332	252-33-10020	5	381	14120	21892	1221
EAST DANGER CREEK	252-333	252-33-10030	5	2	4209	2046	1
OLD BEAVER CREEK	252-334	252-33-10005				211	
N.W. DANGER CREEK	252-335	252-33-10025			144	883	
P-A CREEK	252-337				3		
STEEP CREEK	252-338	252-33-10027			2		
CRACK CREEK	252-339	252-33-nc			7		
BACK BAY	252-341	252-34-10010	3	2	899	3087	
AFOGNAK RIVER	252-342	252-34-10020	50843	6189	12019	33069	685
weir escapement	252-342w	252-34-10020	71124	8324	12859	47258	7
MARKA BAY	252-343	252-34-10005	1	686	18245	63000	790
CORT'S CREEK	252-345	252-34	42	28	6469		19
CAMPBELL LAGOON	253-114	253-11-10040		125	580	211	5
LITTLE RIVER	253-115	254-10-10010	13569	1832	30002	76664	3050
UGANIK BAY	253-12		68000			16500	
S. ARM UGANIK	253-121	253-12-10010		100	3735	4770	3671
UGANIK RIVER	253-122	253-12-10020	44742	4118	108993	103321	1370
CAPE UGANIK CREEK	253-141	253-31-10200			925	275	
UNNAMED	253-142	253-31-10210			900		
FAWN CREEK	253-311	253-31-10100			850	136	
COHO CREEK	253-313	253-31-10030		146	443	816	
VIEKODA CREEK	253-321	253-32-10050		85	3172	2871	108
EAST VIEKODA CREEK	253-322	253-32-10020		75	188	200	
TERROR RIVER	253-331	253-33-10010		158	73217	67746	8272
BAUMANN'S	253-332	253-33-10020			38812	9264	1280
CLARA'S CREEK	253-333	253-33-10030			4470	1300	2
CHERNOF POINT CREEK	253-352	252-35-10020			113	100	
7-MILE BEACH	254-103	254-10-10120			1274	1677	

ESTIMATED AVERAGE ANNUAL PEAK INDEX COUNTS FOR SALMON STREAMS  
IN THE KODIAK SUBAREA FROM AERIAL SURVEYS  
1967-1994<sup>1</sup>

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd )	Pink (Even)	Chum
UNNAMED	254-105	254-10-10100			245	250	
UYAK BAY	254-20				225000		
UYAK 201 CREEK	254-201	254-20-10010			11537	4175	1000
UYAK RIVER	254-202	254-20-10020		1722	108642	49771	1493
EAST UYAK CREEK	254-203	254-20-10030		82	53916	7980	7081
BROWNS LAGOON	254-204	254-20-10100	2	735	8303	62821	1633
ISLANDS CREEK	254-205	254-20-10050			611	18	20
SHORT CREEK	254-206	254-20-10060			725		
LONG CREEK	254-207	254-20-10070			1748	275	
CABIN CREEK	254-208	254-20-10040			652		
GWEN'S CREEK	254-209	254-20-10003			390	100	
TRAP CREEK	254-210	254-20-10005			900	150	
MARKER CREEK	254-211	254-20-10008			560		
RUINS CREEK	254-212	254-20-nc			697		1500
LARSEN BAY CREEK	254-213	254-10-10070			3498		
ZACHAR BAY	254-30					5000	
ZACHAR RIVER	254-301	254-30-10010		5103	38314	59576	1884
N.E. ZACHAR CREEK	254-302	254-30-10020			3333	4375	1666
SPIRIDON RIVER	254-401	254-40-10010	250	6545	20300	19080	1840
CLOVER ROCK	254-402	254-40-10020			760	933	
TELROD COVE	254-403	254-40-10050	3500		144	2681	
CHIEF COVE	254-404	254-10-10050			2528	990	
CAPE KULIUK	254-405	254-10-10030			250	575	
KARLUK RIVER	255-101	255-10-10010	395004	2416	69415	1057898	215
weir escapement	255-101w	255-10-10010	578551	1918	56846	1153160	212
LOW CAPE	256-101	257-10-nc				150	100
RED RIVER	256-201	256-20-10010	249130	1616	12195	595008	731
weir escapement	256-201w	256-20-10010	293632	1060	15662	520269	92
OLD RED RIVER	256-202	256-20-10020			705	5433	2000
CAMEL CREEK	256-301	256-30-10010		420	5028	6641	9025
HALIBUT BAY	256-302	256-30-10020		288	425	1592	1447
GRANT'S LAGOON CREEK	256-303	256-30-10025		326	1400	30075	1458
STURGEON RIVER	256-401	256-40-10010	1	5127	8192	34853	4413
EAST STURGEON RIVER	256-402	256-40-10010-2003		898	3580	11154	6183
LITTLE SUKHOI	257-101	257-20-10010		1200			8726
BIG SUKHOI	257-102	257-20-10020		1104	2834	4280	1299
STEEP CREEK	257-301	257-30-10005	450	12	1500		50
AKALURA CREEK	257-302	257-30-10020	22854	3043	11725	17873	171
weir escapement	257-302w	257-30-10020	31748	3032	21221	22618	6
SILVER SALMON CREEK	257-303	257-30-10035	1889	1291	750	332	
UPPER STATION	257-304	257-30-10040	139820	5562	9710	8877	2
weir escapement	257-304w	257-30-10040	237180	4572	6313	5031	2

ESTIMATED AVERAGE ANNUAL PEAK INDEX COUNTS FOR SALMON STREAMS  
IN THE KODIAK SUBAREA FROM AERIAL SURVEYS  
1967-1994<sup>1</sup>

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd )	Pink (Even)	Chum
LITTLE DOG SALMON	257-305	257-30-10010		200	8751	9011	210
NARROWS CREEK	257-401	257-40-10010	3	62	5670	4362	766
HORSE MARINE	257-402	257-40-10020	5662	689	2013	6287	1457
DOG SALMON RIVER	257-403	257-40-10030	144912	3608	98331	85275	6148
weir escapement	257-403w	257-40-10030	224967	5059	140629	61929	1235
TALIFSON'S CREEK	257-404	257-40-10028			7350	1729	219
CHIP COVE CREEK	257-405	257-40-10050			4066	4375	55
SNUG COVE CREEK	257-406	257-40-10060			1500	1306	
AKHIOK CREEK	257-407	257-40-10070			202	1000	20
KEMPF BAY CREEK	257-408	257-20-nc				625	
DEADMAN BAY	257-50					4000	5000
DEADMAN RIVER	257-502	257-50-10020		2099	134035	55289	1178
ALPINE COVE CREEK	257-503	257-50-10030		21	12145	5331	920
HELLEN CREEK	257-504	257-50-10040			9462	230	
N.E. PORTAGE	257-601	257-60-10010		453	9531	5814	4832
SULUA PINK CREEK	257-602	257-60-10200			12907	3184	2223
SULUA CHUM CREEK	257-603	257-60-10030		850	14771	4846	8992
TOMS CREEK	257-604	257-60-10040			18016	3272	2003
EAST PORTAGE CREEK	257-605	257-60-10035			3333	200	803
HUMPY RIVER	257-701	257-70-10010		2447	191092	131535	
SHAG BLUFF CREEK	257-702	257-60-10050			17100	1220	490
SEABORG BAY CREEK	257-703	257-70-10030			1975	405	
BOULDER BAY	258-101	258-10-10010		150	2875	1227	35
SANTA FLAVIA	258-201	258-20-10010		300	2833	801	3183
SHEARWATER BAY CREEK	258-202	258-20-10020			1943	1083	1888
PORT OTTER CREEK	258-203	258-20-10025		600	1110	457	1007
DOG BAY CREEK	258-204	258-20-10040		24	750	1631	5965
COXCOMB PT. CREEK	258-205	258-20-10050		6	1788	2618	4892
N.KILIUDA CREEK	258-206	258-20-10060			5326	12419	2865
W. KILIUDA CREEK	258-207	258-20-10069		970	20557	17200	9638
DUKALUK CREEK	258-208	258-20-10080		200	325	4807	2785
DEER CREEK	258-209	258-20-10054			1261	6675	462
KILIUDA SPIT CREEK	258-210	258-20-10056			5000	5287	204
MARKER GROVE CREEK	258-211	258-20-10110		50	215	233	732
PIVOT POINT	258-212	258-20-10120			4000	966	1190
BEAR CAMP CREEK	258-213	258-20-10073			9600	1100	2112
AMEE BAY CREEK	258-301	258-30-10010			633	102	1718
MCCORD BEACH	258-302	258-30-10020		100	835	126	1807
LEFT CAPE CREEK	258-303	258-30-10030			2	650	
GHOST ROCKS CREEK	258-304	258-30-10040			4557	1778	366
NUT ISLAND CREEK	258-305	258-30-10050			387	255	602
BUSH POINT CREEK	258-306	258-30-10060			150	260	500

ESTIMATED AVERAGE ANNUAL PEAK INDEX COUNTS FOR SALMON STREAMS  
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1967-1994<sup>1</sup>

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd )	Pink (Even)	Chum
FUGITIVE CREEK	258-307	258-30-10025		10	1100	80	575
OCEAN BEACH	258-401	258-40-10012	4526	3047	1833	4937	4028
WEDGE CREEK	258-402	258-40-10020		10	946	4525	903
ROLLING BAY	258-511	258-51-10010		2260	12250	10580	6035
NATALIA BAY	258-512	258-51-10020		17	2516	224	3165
NEWMAN BAY	258-513	258-51-10030		150	915	638	2720
NATALIA CABIN CREEK	258-514	258-51-10024			2925	60	775
DRY CREEK	258-515	258-51-10018			8000	50	1410
OUTSIDE CREEK	258-516	258-51-nc					75
MIDWAY CREEK	258-521	258-52-10010	135	6118	17135	19026	9748
BARLING CREEK	258-522	258-52-10020	2	2808	46592	39917	5463
OLD HARBOR CREEK	258-523	258-52-10015		380	505	2700	529
LAGOON CREEK	258-524	258-52-10012		40			
WEST THREE SAINTS	258-531	258-53-10010			1543	3200	1670
SW THREE SAINTS	258-532	258-53-10020			141	890	177
NE THREE SAINTS	258-533	258-53-10030		150	45	558	4
KAIUGNAK POINT	258-541	258-54-10012	100	1912	13792	11987	1250
KAIUGNAK LAGOON	258-542	258-54-10020		175	23692	12723	5770
AVNULA CREEK	258-543	258-54-10005		300	2003	566	
BRUIN CREEK	258-544	258-54-10022		60	5957	3001	2250
KIAVAK PORTAGE	258-551	258-55-10045	6	200	5830	5191	1785
CAPE KIAVAK	258-552	258-55-nc			7750	3512	1310
KNOLL PT. CREEK	258-553	258-55-10010			6700	7935	6125
KIAVAK LAGOON	258-554	258-55-10040			1000	4250	987
KIAVAK SPIT	258-555	258-55-10050		30	155	1562	525
JAP BAY	258-601	258-60-10010		1450	1306	531	240
KAGUYAK BAY CREEK	258-602	258-60-10020	75	1500	16778	10270	1106
KAGUYAK FOX CREEK	258-603	258-60-10030			11260	7000	1614
SEVEN RIVER	258-701	258-70-10040		450	101917	82432	7000
WALTER'S CREEK	258-702	258-70-10050			17414	4850	
TUNDRA LAKES CREEK	258-703	258-70-10010			14080	6750	
SOW CREEK	258-704	258-70-10024			800	10515	
MELAVEDOF CREEK	258-705	258-70-10003	250		19000	250	
KAGUYAK VILLAGE CREEK	258-706	258-70-10002			10000	4900	
UNNAMED	258-707	258-70-10005			100		200
DOLINA POINT	258-801	258-80-10010	62		6133	5412	1508
NORTH BEACH CREEK	258-802	258-80-10020			20		
WHIRLPOOL POINT	258-803	258-80-10030			251	150	1600
CAMP CREEK	258-804	258-80-10040			90	4950	35
BEND CREEK	258-805	258-80-10050				20	
PYRAMID CREEK	258-807	258-80-nc			70	20	1155
STRIP CREEK	258-808	258-80-10080		260	250		808

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1967-1994<sup>1</sup>

Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd )	Pink (Even)	Chum
GLOTECLOSS CREEK	258-809	258-80-10035			107		1755
PASSAGE CREEK	258-851	257-90-10100		966	1125	500	1106
SOUTH VIEW CREEK	258-852	257-90-10152			30	225	
TUGIDAK CREEK	258-853	257-90-10010		35			100
RUSSIAN HARBOR	258-901	258-80-10140			1333	355	1204
E. RUSSIAN CREEK	258-902	258-80-10140-2006			8480	1250	
KEVIN CREEK	258-903	258-80-10130			1575	400	500
MONASHKA CREEK	259-101	259-10-10015		193	3025	5866	101
PILLAR CREEK	259-102	259-10-10020	4	59	5154	4349	183
VIRGINIA CREEK	259-105	259-10-10015-2001		10	1958	4100	20
BUSKIN RIVER	259-211	259-21-10120	6363	2969	61893	82913	616
weir escapement	259-211w	259-21-10120	12104	8387	89852	92069	38
SARGENT CREEK	259-221	259-22-10010		72	2803	5587	538
RUSSIAN RIVER	259-222	259-22-10020		75	11196	6397	2388
SOLONIE CREEK	259-223	259-22-10030		302	16303	4843	1965
PANAMAROFF CREEK	259-224	259-22-10026		4		110	100
MIDDLE BAY	259-23			200		8000	
AMERICAN RIVER	259-231	259-23-10010		590	60550	31600	4566
HORSESHOE CREEK	259-232	259-22-10047				1200	
SALT CREEK	259-233	259-23-10030		34	2925	21056	1770
SLOUGH CREEK	259-234	259-23-10010-2003		207	5000	3500	1260
PEAT BEACH CREEK	259-235	259-23-10033			1400	500	
SID OLDS	259-242	259-24-10020	6	1186	43800	48085	7452
KALSIN CREEK	259-243	259-24-10030	2	172	9700	2395	615
FRANK'S CREEK	259-244	259-24-nc		375	400	107	
MYRTLE CREEK	259-245	259-24-10050		106	4130	3087	
MAYFLOWER BEACH	259-246	259-24-10004		60			
ROSLYN CREEK	259-251	259-25-10010	1	484	9507	23615	1248
WEST FORK TWIN CREEK	259-252	259-25-10020		11	2452	7386	100
CAPELIN CREEK	259-253	259-25-10030			113	4546	
CHINIAK RIVER	259-254	259-25-10040		97	8370	7387	167
CHINIAK LAGOON	259-255	259-25-10050		27			50
CRESCENT CREEK	259-362	252-36-10010		220	125		300
BARABARA CREEK	259-363	252-36-10030	1672	185	200	4083	
GOAT CREEK	259-364	252-36-10040			3283	1183	20
KIZHUYAK RIVER	259-365	252-36-10050		607	33860	14340	1226
PESTCHANIE CREEK	259-366	252-36-10060		20	3906	3566	36
FEW CREEK	259-367	252-36-10045			120	50	
DOVOLNO CREEK	259-368	252-36-10054			3240	1200	
MORE CREEK	259-369	252-36-nc				500	75
SHERATIN RIVER	259-371	252-37-10010		99	15010	19785	7265



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Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd )	Pink (Even)	Chum
HORSE CREEK	259-372	252-37-10007			1197	1016	10
NEW CREEK	259-373	252-37-nc			910		
CORRAL CREEK	259-381	252-38-10030			3750	4800	3166
RED CLOUD RIVER	259-382	252-38-10020	3	75	7703	3341	1448
HOLLIE CREEK	259-391	252-39-10010		100	4780	3600	1200
NEVA CREEK	259-392	252-39-nc		200	4672	5100	500
AZIMUTH CREEK	259-393	259-10-10010		17	692	823	200
SEREDNI POINT CREEK	259-394	252-39-10005		600	408	2140	150
MONKS LAGOON	259-395	259-10-10050		166	2062	65	100
SOLDIER'S BAY	259-397	252-39-10020		400	3625	1850	350
KNEE BAY CREEK	259-399	252-39-10067			3		
SACRAMENTO RIVER	259-401	259-30-10010		907	12486	3366	1255
TWIN PEAKS CREEK	259-402	259-30-10040		125	65	355	100
VALLEY CREEK	259-403	259-30-10050		133	536	225	
BURTON CREEK	259-404	259-30-10060		200	113	252	
ZENTNER CREEK	259-410	259-41-10013			6410	1527	433
PASAGSHAK RIVER	259-411	259-41-10010	6433	1691	3578	1314	250
MIAM RIVER	259-412	259-41-10020-2002	1210	1650	20948	24362	1896
NOSE CREEK	259-413	259-41-10017			255		400
HURST CREEK	259-414	259-41-10040		243	18942	20292	2050
SALTERY CREEK	259-415	259-41-10050	27732	2097	69401	20098	6591
ROUGH CREEK	259-416	259-41-10060		1443	5911	5061	9191
WILD CREEK	259-417	259-41-10070			286	362	1018
HORT SLOUGH CREEK	259-417A	259-41-nc			400	1100	1092
HIDDEN BASIN	259-418	259-41-10077			2450	1486	3354
WEST BASIN CREEK	259-419	259-41-10090			140	123	1303
GLOTTOF CREEK	259-420	259-41-10080			1000	200	916
LAROSE BIGHT	259-421	259-42-10010			813	150	2040
GOAT LAKE CREEK	259-422	259-42-10020	80		6313	2563	2792
KILIUDA PASS CREEK	259-423	259-42-10027		50	2609	2341	3384
EAGLE HARBOR	259-424	259-42-10039		2052	20207	17565	5441
BUCK CREEK	259-425	259-42-10048			2000	181	152
GULL POINT CREEK	259-426	259-42-10060			650	171	761
DELTA CREEK	259-427	259-42-10037		100	150	895	72
GULL CAPE LAGOON	259-428	259-42-10080			1700		6244
DOUGLAS CREEK	262-101	262-10-10100		50	183	187	243
CLEAR CREEK	262-102	262-10-10080	4	500	2695	1550	3768
MONUMENT CREEK	262-103	262-10-10070	1		720	940	866
GLACIER LAKE CREEK	262-104	262-10-nc	30		200		1605
CALVING GLACIER CREEK	262-105	262-10-10060				1000	240
TRIPLE LAKES CREEK	262-106	262-10-10040	452	25	1933	1200	300
LONG MUD CREEK	262-107	262-10-10030	80		460	533	1102

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Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd )	Pink (Even)	Chum
PRODUCTIVE FORKS	262-108	262-10-10010			1316	83	2150
BLUFF CREEK	262-109	262-10-10035					1400
LONG SLOUGH CREEK	262-110	262-10-10035-2005	25	50			
BROAD VALLEY CREEK	262-113	262-10-10020			3800		
SWIKSHAK RIVER	262-151	262-15-10010	19907	7353	3750	13000	2900
BIG RIVER	262-152	262-15-10020		4730	27571	16269	3247
VILLAGE CREEK	262-153	262-15-10030			30490	17191	1370
CHINIAK LAGOON	262-154	262-15-10040			1210	3224	6791
WOLF CREEK	262-155	262-15-10015			450		
NINAGIAK RIVER	262-201	262-20-10010		3662	1253	1050	5857
HOOK CREEK	262-202	262-20-10020			3100	25	1484
SERPENT CREEK	262-203	262-20-10030		862	4785	6350	8788
HALLO CREEK	262-204	262-20-10040	2		520	755	3590
CAPE CHINIAK CREEK	262-205	262-20-10050			12334	5214	7485
OLE'S CREEK	262-206	262-20-10005			6000		2000
LITTLE NINAGIAK	262-207	262-20-10015					9200
DEVIL'S LAKE CREEK	262-253	262-25-nc			125	1355	200
YUGNAK CREEK	262-254	262-25-10080			108	2137	300
STARFISH CREEK	262-255	262-25-10050			349	150	
SOURCE CREEK	262-256	262-25-10060			79	41	105
KUKAK RIVER	262-271	262-25-10030			5060	2491	2795
KUKAK VALLEY CREEK	262-272	262-25-10018			1925	3400	4772
KAFLIA CREEK	262-301	262-30-10010	21125	650	2300	3455	
HALFERTY CREEK	262-351	262-35-10010	1195		3771	2458	3500
WEISS CREEK	262-352	262-30-10030			4900		600
SANDY CREEK	262-401	262-40-10010			1050	1114	37
MISSAK CREEK	262-402	262-40-10020			4283	2400	1400
KINAK CREEK	262-451	262-45-10010		1000	37083	33041	4159
W. HIDDEN HARBOR	262-452	262-45-10020	2000		1050		
LOW PASS CREEK	262-453	262-45-nc			1100	2000	
GEOGRAPHIC CREEK	262-501	262-50-10050			29050	5316	
AVALANCHE CREEK	262-502	262-50-10072			1660	200	10
GIEGERICH CREEK	262-503	262-50-10020			1000		
RIED CREEK	262-504	262-50-10031				1000	
DAKAVAK	262-551	262-55-10010			28085	34217	1153
KATMAI CREEK	262-601	262-60-10006				2000	2014
ALOGOGSHAK CREEK	262-602	262-60-10020		6500	2800	13500	2248
CLAM CREEK	262-603	262-60-10030			2000	12910	2500
KASHVIK CREEK	262-604	262-60-10040		6833	41653	34523	9880
WRECKAGE CREEK	262-605	262-60-10050			3220	1600	100
SKIMPY CREEK	262-606	262-60-10028			20	3600	
ATMO CREEK	262-607				4300	2000	100

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Stream/Lake	Comfish Number	Catalog Number	Sockeye	Coho	Pink (Odd )	Pink (Even)	Chum
BIG ALINCHAK	262-651	262-65-10010		900	54069	21576	4896
LITTLE ALINCHAK	262-652	262-65-10020			20118	2681	671
PTERODACTYL CREEK	262-653	262-65-10030			24887	4991	550
BEAR BAY CREEK	262-654	262-65-10040	682		4985	6185	4476
BEAR LAKE CREEK	262-655	262-65-10055	463		800	150	2191
WEST BEAR CREEK	262-656	262-65-10038			4675	1700	450
HELEN CREEK	262-701	262-70-10010			5895	1852	633
PORTAGE CREEK	262-702	262-70-10020	6		14158	15708	1812
TERESA CREEK	262-703	262-70-10030			17206	8875	4257
TRAIL CREEK	262-704	262-70-10040			4812	4430	4644
KATIE CREEK	262-705	262-70-10050			3993	2127	300
PUALE CREEK	262-706	262-70-10025		60	2000	60	1342
OIL CREEK	262-751	262-75-10010			14766	22765	75
DRY BAY	262-752	262-75-10020		2000	3014	3438	8222
JUTE CREEK	262-801	262-80-10010			2669	1951	1005
KANATAK	262-802	262-80-10020	1252	350	22846	11800	1037
SALMON CREEK	262-803	262-80-10012			250	160	600
LOG JAM CREEK	262-804	262-80-10014			200		
LITTLE BIG CREEK	262-850	262-85-10012			5000	900	
BIG CREEK	262-851	262-85-10010	122	350	172230	63230	2187
DES MOINES CREEK	262-852	262-85-10020		1	21350	8530	2163
PASS CREEK	262-853	262-85-10030			8625	6287	5205
SHORT CREEK	262-854	262-85-10040			9430	76918	850
HIDDEN CREEK	262-855	262-85-10050			15		83
SPIT CREEK	262-856	262-85-10045	6		5776	3150	1572
ALAI CREEK	262-857	262-85-10070			10	933	2875
KIALAGVIK CREEK	262-858	262-85-10080			4520	950	5185
ICY PEAK CREEK	262-859	262-85-10090			2400	825	7402
SLOUGH CREEK	262-860	262-85-nc			75		2016
KAYAKLIUT CREEK	262-861	262-85-10098			2450	500	500
POINT CREEK	262-862	262-85-10096			200		
TINY CREEK	262-865	262-85-10042			50	800	25
W. COAL CREEK	262-866	262-85-10016			800	200	
IMUYA CREEK	262-951	262-85-10110			7091	4168	1962
CIRC CREEK	262-952	262-85-10142	7		9900	6200	
KILOKAK CREEK	272-963	272-96-10300			1000	5450	8000

<sup>1</sup>Data provided by J. Blackburn, ADFG, Commercial Fisheries Management and Development Division, Kodiak.