Marine Mammals – Introduction

The Marine Mammal group met in late April 2004 to draft the marine mammal "templates" for the CWCS. The first task was to determine which species or species group would be included in the CWCS. The group acknowledged that although all marine mammals in the waters off Alaska fit some or many of the established criteria, they could not all be included in the first iteration of the CWCS. The group decided to include those marine mammals that have (1) very little information available on their population status and basic biology and life history and (2) been listed under the Endangered Species Act as either "Endangered" or "Threatened," or designated as "Depleted" under the Marine Mammal Protection Act. The group decided not to include Steller sea lions, northern fur seals, or the AT1 group of transient killer whales because they believed these species would be added to subsequent revisions of the CWCS, and that ongoing efforts to revise their recovery or conservation plans would focus attention on their status and promote needed conservation actions. The omission of these 3 species in the current CWCS is not intended to indicate that the actions needed to promote their conservation are in any way less important than those for species featured in the CWCS.

The group believed that attention needed to be directed to those marine mammals that are dependent on ice for a substantial portion of their annual life cycle, especially because of the impact of global climate change in the Arctic, and thus created the "ice dependent" species group that includes polar bear, walrus, bearded seal, ringed seal, ribbon seal, and spotted seal. Two other species groups were created, beaked whales and large whales, with additional templates written for each of 3 of the endangered large whales (i.e., right, bowhead, humpback). The remaining 2 templates were written for the Cook Inlet stock of beluga whales and the southwest stock of northern sea otters, both of which have experienced dramatic population declines over the last decade with no current indication of recovery.

The primary source of information on the range, abundance, and trend used in the templates were the Alaska marine mammal stock assessment reports (SARs) compiled by NOAA Fisheries and USFWS. Although this information is based on numerous scientific publications, the template bibliographies list only the SARs. The other main sources of information used in the templates were conservation and recovery plans, yet for some species (e.g., beaked whales, ice seals) very little information is available.

Cook Inlet Beluga Whale

A. Species description

Common name: Cook Inlet beluga; white whale
Scientific name: *Delphinapterus leucas*

B. Distribution and abundance

Range:
   Global range comments: circumpolar for species (IUCN 1991)
   State range comments: Five stocks in Alaska: Beaufort Sea, Eastern Chukchi Sea,
   Eastern Bering Sea, Bristol Bay, and Cook Inlet

Abundance:
   Global abundance comments: 50,000 – 70,000 animals (IUCN 1991)
   State abundance comments: Greater than 40,000 among 5 stocks (Angliss and Lodge
   2003)
   Cook Inlet abundance: 357 animals (Hobbs, et al. 2000)

Trends:
   Global trends: Some populations are clearly much depleted and require adequate
   management for recovery. (IUCN 1991) Stock that occupies western Hudson Bay in
   summer is thought to be large and stable, despite a substantial harvest; the effect of
   hydroelectric development on the estuarine habitat of this stock is unknown; status of
   the southern Hudson Bay stock should be reviewed when more information on its
   size, relationship to other stocks, and harvest levels becomes available. The Southeast
   Baffin Island population is thought to be declining.
   State trends: 5 stocks: Bristol Bay stable or increasing, Eastern Bering Sea trend
   unknown, Eastern Chukchi Sea no evidence of declines, Eastern Beaufort Sea stable
   or increasing, Cook Inlet Beluga declining (Angliss and Lodge 2003)
   Cook Inlet trends: During 1994 – 1998 the stock declined by over 50%, and there has
   been no indication of a recovery since regulation of the subsistence harvest began
   (Angliss and Lodge 2003) in 1999.

C. Problems, issues, or concerns for species

Cook Inlet Beluga (CIB) stock (IUCN/SSC Cetacean Specialist Group 2003)
   - CIB population is small and has declined by 50% over past 10 years.
   - Resource prey competition with people
   - Incidental mortality of belugas in fisheries (entanglement in nets, shooting)
   - Potential impacts from pollution and contaminants that need monitoring:
     - Oil and gas development (high volume discharge, mud cuttings, produced water)
     - Municipal waste and bilge discharge
     - Marine oil spills

- Subsistence harvest
    - Sustainable harvest levels
    - Co-management
    - Recovery
- Vessel interactions (recreational, commercial, high speed vessels)
    - Ship strikes
    - Harassments
    - Whale watching
- Anthropogenic noise (seismic testing, vessel traffic, drilling, dredging, industrial activities like pile driving, aircraft overflights) potentially resulting in injury or harassment
- Predation by transient killer whales
- Strandings
    - Stranding response plan needs upgrading
    - Acquisition of scientific samples (genetics, contaminants, etc.)
    - Coordination with Natives; allow opportunity to harvest
    - Causation
    - Reporting or identification (need rapid response, increase reporting frequency by public)
- Potential impacts from environmental change
    - Regime shifts
    - Increase in hatchery fish production
    - Coastal development
    - Climate change
- Loss of genetic diversity
- Potential for ESA listing; changes your ability to manage, gather information, take action, etc.
    - Establish prohibited actions
    - Designate critical habitat
    - Potential impact on development
- Unknowns
    - Age-specific survival and reproduction
    - Parasites
    - Diet
    - Many other life history parameters
- Highly concentrated, clustered distribution increases vulnerability (e.g., oil spills, vessel traffic, harassment, etc.).

D. Location and condition of key or important habitat areas

- All of Cook Inlet, particularly north of the Forelands currently
- Apparent feeding concentrations at the mouths of several rivers entering the upper Inlet during the summer: Big Susitna, Little Susitna, Chickaloon, Eagle River, Upper Knik, and Turnagain Arms
- Middle portion of Cook Inlet in winter (Hanson and Hubbard 1999; Rugh et al. 2000)

E. Concerns associated with key habitats

- See Section C
- CIB habitat coincides with highest human population and most developed portion of Alaska
- Generally a high level of human activity in CIB habitats
- Coastal development, especially in the Upper Knik Arm, e.g., bridge crossing, ferry
- Impact of human development on habitat quality is poorly known
- Potential for impact from climate change

F. Goal: Maintain population within the range of OSP (optimum sustainable population) and as significant functioning elements of the marine ecosystem.

G. Conservation objectives and actions

State conservation and management needs (NOAA Fisheries, in prep):

<u>**Objective**</u>: Recover CIB.

  Target: Reach population at Maximum Net Productivity Levels (780 animals) by 2015.
    Measure: Abundance estimates based on aerial surveys, TEK.

<u>**Issue 1**</u>: The effect of subsistence harvest on population recovery is unknown.

  Conservation actions:
    a) Establish depletion (already accomplished).
    b) Consult with Alaska Native hunting organizations on hunting locations and practices.
    c) Update co-management plans; include TEK.
    d) Develop regulations and monitor harvest.
    e) Develop harvest models that drive the species management.
      - develop life history parameters for model
      - collect data on abundance
      - collect life history data from harvested whales
    f) Provide for enforcement activity as needed.

<u>**Issue 2**</u>: Managers need better information on habitat selection and use.

  Conservation actions:
    a) Determine essential ecological needs of CIB.
    b) Determine habitat needs and functions.
    c) Identify essential seasonal habitat use of males and females of various ages (i.e. adults, juveniles, and young).
      - conduct aerial surveys, use telemetry, and collect observation data including TEK.
      - describe use of river mouths by boat, ground, and aerial methods.
      - collect data on temperature, water quality, turbidity, and other oceanographic data for high density use areas.
    d) Once food habits and diet are established, determine overlap between

important CIB food resources, and commercial and subsistence fisheries.

Issue 3: Need to investigate ways to work with users of key CIB habitats to develop voluntary and legal protection measures; also assess the potential need for federal, state, and local review permits and regulations to enhance recovery efforts.

Conservation actions:
a) Work with users to minimize harassment and vessel interactions.
- identify in-water activities with potential to disturb or harass whales
- identify times and areas in which beluga may be especially sensitive to harassment
- develop guidelines for water-based commercial whale-watching tours
- consider development of approach distance regulation for belugas; currently, only guidelines exist
- decrease speed of recreational boaters at river mouths during critical use times
- increase awareness of local mariners and commercial boaters about areas with high CIB use
- sign major access points to encourage voluntary reporting of illegal activity
b) Reduce underwater noises capable of disturbing belugas.
c) Provide guidelines for timing of seismic activity.
- avoid times when belugas are present
- limit by frequency and source levels as appropriate
d) Develop stipulations or conditions on appropriate permits to protect CIB and habitat.
- educate users on when permits are required and subsequent enforcement
- educate public on legal prohibitions on take
- educate local, state, and federal officials who issue permits
- ensure adequate regulation by agencies (issue of timeliness)
e) Develop collaborative enforcement effort for upper Cook Inlet between appropriate Native, federal, state, and local officials.
- investigate need for funding to increase enforcement activity
f) Investigate establishment of protected water habitats.
g) Investigate establishment of marine protected areas within scope of larger regional system for protection of marine plant and animal diversity.

Issue 4: Current monitoring efforts are not comprehensive.

Conservation actions:
a) Continue annual aerial population surveys.
b) Collect data on age (size) structure of the CIB population to monitor recovery.
c) Collect water quality data in key habitats, especially areas impacted by bilge discharges, oil spills, and sewage.
d) Consistently analyze tissues from stranded or harvest animals to monitor contaminant levels.
e) Expand monitoring to include fish populations in Cook Inlet that are

important beluga food resources.
f) Periodically monitor the mortality of belugas in commercial and subsistence fisheries.
g) Track occurrence, abundance, and distribution of killer whale populations in Cook Inlet.
h) Monitor annual frequency of stranding.
- determine mortality rate associated with strandings
- collect biological samples from stranded whales to better understand life history parameter (age, growth, reproduction, diet)
- update the NOAA Fisheries stranding response plan, including determining cause of death and any possible measures to increase survival.
- distribute muktaak from stranded whales to Alaska Native community

Issue 5: Additional research is needed.

Conservation actions:
a) Follow and update Cook Inlet Research Plan.
b) Determine need for research on predation, especially related to killer whales.
c) Determine need for research on important prey species.
d) Encourage the adoption of least intrusive methods for scientific research.

H. Plan and time frames for monitoring species and their habitats

NOAA Fisheries has the responsibility for management and recovery of Cook Inlet belugas. The conservation plan should be completed as soon as possible, and acquisition of sufficient funding and implementation of conservation actions should begin as soon as possible.

I. Recommended time frame for reviewing species status and trends

Five years or sooner if substantial new information becomes available or the number of whales continues to decrease.

J. Bibliography

Angliss, R.P. and K.L. Lodge. 2003. Alaska marine mammal stock assessments, 2002. NOAA Tech. Mem. NMFS-AFSC-144, 230 p.

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IUCN (World Conservation Union). 1991. Dolphins, Porpoises and Whales of the World: the IUCN Red Data Book. Compiled by M. Klinowska. IUCN, Gland, Switzerland, and Cambridge, United Kingdom. viii + 429 pp.

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Ice-associated Marine Mammals

A. Species group description

Common name(s): ice-associated marine mammals: polar bear, walrus, bearded seal, ringed seal, ribbon seal, spotted seal
Scientific names: *Ursus maritimus, Odobenus rosmarus, Erignathus barbatus, Phoca hispida, Phoca fasciata, Phoca largha*

B. Distribution and abundance (Angliss and Lodge 2004)

Range:
Global range comments:
- Polar Bear – Circumpolar, 20 relatively distinct populations. Use ice and terrestrial habitats.
- Walrus – 2 subspecies: Pacific walrus (*O. r. divergens*), and Atlantic walrus (*O. r. rosmarus*). For Atlantic walrus, there are 4 eastern Canadian Arctic stocks, 2 Greenland stocks, and one stock in the Svalbard and Franz Josef Land archipelagos. For Pacific walrus, one stock is currently recognized, ranging throughout the continental shelf waters of the Bering and Chukchi seas, occasionally moving into the East Siberian and Beaufort seas. Use ice and terrestrial haulouts.
- Bearded seal – Circumpolar, from the Arctic Ocean (85 degrees north) south to Hokkaido (45 degrees north) in the western Pacific Ocean. Generally inhabit areas that are less than 200 m deep and seasonally ice covered. During winter they are most common in broken pack ice, yet in some areas they also inhabit shorefast ice. They do not haul out on land.
- Ringed seal – Circumpolar, from ~35 degrees north to the North Pole, occurring in all seas of the Arctic Ocean. Inhabit ice-covered waters and are well adapted to occupying shorefast and pack ice; they do not haul out on land.
- Ribbon seal – North Pacific Ocean and adjacent fringes of the Arctic Ocean. Occur primarily in open seas and on pack ice, rarely on shorefast ice. Prefer broken pack ice and do not haul out on land.

- Spotted seal – Distributed along the continental shelf of the Beaufort, Chukchi, Bering, and Okhotsk seas south to the northern Yellow Sea and western Sea of Japan. Prefer broken ice and ice edge habitats, but will haul out on land in summer.

State range comments:
- Polar bear – 2 stocks recognized: Southern Beaufort Sea stock, and Chukchi/Bering seas stock, which overlap between Point Barrow and Point Hope, centered near Point Lay.
- Pacific walrus – Bering and Chukchi seas.
- Bearded seal – Over the continental shelf of the Bering, Chukchi, and Beaufort seas
- Ringed seal – Bering, Chukchi, and Beaufort seas.
- Ribbon seal – Aleutian Islands, Bristol Bay, Bering and Chukchi seas, western Beaufort Sea.
- Spotted seal – Bering, Chukchi, and Beaufort seas.

Abundance:

Global abundance comments:
- Polar Bear – 21,500–25,000
- Walrus – unknown
- Bearded seal – unknown
- Ringed seal – unknown
- Ribbon seal – unknown
- Spotted seal – unknown

State abundance comments:
- Polar Bear – Southern Beaufort Sea stock: 2272 based on data for the 1986-1998 period; Chukchi/Bering Seas stock: unknown
- Pacific Walrus – reliable estimates not available; USFWS will conduct Bering Sea population assessment in 2006–07
- Bearded seal – unknown
- Ringed seal – unknown
- Ribbon seal – unknown
- Spotted seal – unknown

Trends:

Global trends:
- Polar bear – unknown for some populations, stable or decreasing for others
- Walrus – unknown
- Bearded seal – unknown
- Ringed seal – unknown
- Ribbon seal – unknown
- Spotted seal – unknown

State trends:
- Polar bear – Southern Beaufort Sea stock: likely stable; Chukchi/Bering Seas stock: unknown
- Pacific walrus – unknown
- Bearded seal – unknown
- Ringed seal – unknown
- Ribbon seal – unknown
- Spotted seal – unknown

C. Problems, issues, or concerns for species group (USFWS 1994a, 1994b and 1995)

- Little is known about population size and trends for most species, although more is known for the polar bear
- Global climate change will reduce sea ice extent and thickness, thus reducing available habitat
- Potential increases in shipping and fishing activities in habitats important for ice-associated species
- Coastal development, such as oil and gas exploration
- Contaminants, especially airborne contaminants transported to the Arctic
- Potential for unsustainable harvest of polar bears in Alaska

D. Location and condition of key or important habitat areas

All species associated with ice at some time of the year in the Bering, Chukchi, and Beaufort seas. Spotted seals are not associated with ice during the summer but haul out on land at specific locations along the western and northern coasts of Alaska.

E. Concerns associated with key habitats (USFWS 1994a, 1994b and 1995)

- Changes in sea ice extent/thickness related to climate change
- Coastal development
- Potential increased shipping and fishing activities

F. Goal: Maintain sustainable populations within the range of OSP and as significant functioning element of the marine ecosystem.

G. Conservation objectives and actions

State conservation and management needs:

Objective: Conserve and sustain Alaska's ice-associated marine mammals through a comprehensive program of scientific research, co-management with Alaska Native organizations, and international management and conservation efforts.

Target: Gain adequate scientific information and establish appropriate management mechanisms to predict and respond to changes in marine mammal populations resulting from ecosystem changes.

Measure: Current data on distribution, population size, and habitat use for ice associated marine mammals, continued co-management, and development of predictive mechanisms for assessing expected changes in sea ice extent and thickness.

Issue 1: Information on this species group is limited, which restricts our ability to develop a conservation strategy. Specifically, information is needed for all species on abundance, trends, and habitat requirements, and for some species, data is needed on distribution and life history. In addition, species are widely distributed, and in some cases migratory, requiring international cooperative efforts.

Conservation actions:
a) Establish (for ice seals) and expand (for walrus and polar bear) international collaborative research efforts to document habitat use/needs; abundance and distribution of all species; life history traits, including diet, fecundity, survival, etc.; disease occurrence and exposure; and contaminant levels. It is important that efforts be made to minimize the potential adverse effects of research.
b) Determine population size/trends when possible (no techniques or funds currently available for monitoring ringed, bearded seals).
c) Compare life history traits, such as age at sexual maturity, fecundity, age structure, etc., with historical data.
d) Assess abundance and distribution of prey species.

Issue 2: Impacts of climate change and effects of diminishing sea ice are unknown.

Conservation actions:
a) Develop approach for evaluating effects of climate change on important habitats for this species group.
b) Establish multidisciplinary studies to document habitat change, especially those related to sea ice.

Issue 3: Need better documentation of subsistence harvest, and refinement of management goals.

Conservation actions:
a) Document harvest levels.
b) Document TEK and incorporate with scientific studies and related management actions.
c) Support co-management organizations.
d) Investigate need for establishing international agreements for the management of ice-associated species.
e) Develop harvest management protocols, through co-management organizations, to avoid potential overharvest.

Issue 4: Need to better understand the effects of human activities, and initiate appropriate management efforts to sustain ice-associated species.

Conservation actions:
a) Identify activities with potential for adverse effects.
   • Determine effects of noise on ice-associated species.

- Assess impact of coastal development, and oil and gas activity in Beaufort and Chukchi seas.
- Determine effects of pollution, including persistent contaminants and oil spills.

b) Develop guidelines to reduce/mitigate adverse effects from human activities, including cumulative effects.

c) Implement guidelines through various avenues, such as federal, state, or local permits.

d) Identify and conserve nearshore ringed seal lairs in areas of industrial activity and development (e.g. Beaufort Sea developments) through research, regulation and education. Specifically, continue to require incidental take permits under the Marine Mammal Protection Act, follow DNR guidelines and mitigation measures, and obtain permits through NMFS.

e) Identify and conserve polar bear dens through research, regulation and education. Specifically, continue to require incidental take permits (MMPA), follow DNR guidelines and mitigation measures, and obtain permits through USFWS.

f) Determine and establish methods to monitor volume of shipping traffic and expansion of fisheries in areas used by ice-associated species. There is potential for increased shipping (related to transport, tourism, military, and research) and fishing, as sea ice extent decreases.

g) Also, monitor contaminants in tissues of subsistence harvested animals.

H. Plan and time frames for monitoring species and their habitats

NOAA Fisheries USFWS, in cooperation with Alaska Native marine mammal organizations, have the responsibility for management of this group of ice-associated marine mammals. Acquisition of sufficient funding and implementation of conservation actions should begin immediately.

I. Recommended time frame for reviewing species status and trends

Five years or sooner if significant new information is obtained.

J. Bibliography

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Large Whale Group

A. Species group description

Common name: bowhead, fin, sperm, North Pacific right, sei, humpback, blue, and gray whales. (For additional species-specific information, see templates for bowhead, North Pacific right and humpback.)

Scientific name: *Balaena mysticetus, Balaenoptera physalus, Physeter macrocephalus, Eubalaena japonica, Megaptera novaeangliae, Balaenoptera musculus, Eschrichtius robustus*.

B. Distribution and abundance (see separate templates for bowhead, right, and humpback whales for available information on range, abundance, and trend) (Angliss and Lodge 2004; Perrin et al. 2002)

Range:
  Global range comments:
  - Fin whale – distributed throughout most of the world's large water masses from both polar regions to the equator; typically absent near ice limit.
  - Sperm whale – distributed widely throughout the world's large water masses from both polar regions to the equator; large males observed close to the edge of the pack ice. As males grow older, they shift to higher latitudes, whereas females are typically distributed at latitudes less than 40 degrees (except 50 degrees north in the North Pacific).
  - Sei whale – Distributed in all ocean basins, but typically farther from shore and not near polar regions.
  - Blue whale – Distributed in all ocean basins, and Antarctic waters and north to Svalbard and Spitsbergen in the Atlantic.
  - Gray whale – Distribution is much more coastal than other large whales, primarily inshore or shallow waters of the continental shelf. Eastern population ranges from ~20 degrees north in Mexico north along the coast of North America to the Chukchi and Beaufort seas, and east along the Kamchatka Peninsula. Western population may range from both the east and west side of the Kamchatka Peninsula southwest along Asia to the Gulf of Tonkin. North Atlantic population extinct by the late 17th or early 18th century.

  State range comments:
  - Fin whale – North Pacific Ocean and Bering Sea
  - Sperm whale – North Pacific Ocean and southwest Bering Sea
  - Sei whale – North Pacific Ocean
  - Blue whale – Gulf of Alaska and Aleutian Islands.
  - Gray whale – Southeast Alaska, Gulf of Alaska west to Unimak Pass, Bristol Bay, northern Bering Sea, Chukchi and Beaufort seas.

Abundance:
Global abundance comments:
- Fin whale – Largest concentrations in temperate and cold waters, 2 populations (sometimes recognized as subspecies *B. p. physalus B. p. quoyi*) exist within the northern and southern hemispheres. An estimated 27,700–82,000 whales are in the North Atlantic; abundance is unknown in all other areas.
- Sperm whale – unknown
- Sei whale – unknown
- Blue whale – Southern Hemisphere 400–1400 (CV = 0.4) (IWC 2004), abundance is unknown in all other areas.
- Gray whale – eastern population 26,300 (21,900–32,400); western population less than 100.

State abundance comments:
- Fin whale – Based on surveys in the central (1999) and southern (2000) eastern Bering Sea, provisional (not-corrected for whales not observed) estimates for those areas are 3368 (CV=0.29) and 683 (CV = 0.32), respectively.
- Sperm whale – unknown
- Sei whale – unknown
- Blue whale – unknown; in 2005, a single individual was reported 100 nautical miles southeast of Prince William Sound where the ocean is approximately 2 miles deep; 2 more blue whales were sighted a little farther offshore, about 150 nautical miles southeast of the Sound.
- Gray whale – some whales of the eastern population may not migrate north to Alaska, so the abundance is an unknown amount lower than the total (26,300).

Trends:
Global trends:
- Fin whale – unknown
- Sperm whale – unknown
- Sei whale – unknown
- Blue whale – unknown
- Gray whale – increasing or stable for the eastern population; western population unknown

State trends:
- Fin whale – unknown
- Sperm whale – unknown
- Sei whale – unknown
- Blue whale – unknown
- Gray whale – increasing or stable

C. Problems, issues, or concerns for species group (IUCN/SSC Cetacean Specialist Group 2003; NMFS 1998a, NMFS 1998b)

- Coastal development, including oil and gas activity, harbor development, etc.
- Global climate change (may be positive, negative, or both)
- Fisheries interactions: entanglements, competition, etc.
- Ship strikes
- Increasing ambient and peak noise levels from anthropogenic sources
- International distribution and management
- Extensive range/migration and pelagic distribution (except gray whale) complicates obtaining knowledge and implementing management actions
- Limited information on biology for some species
- Limited knowledge about prey species
- Some species are hunted for subsistence
- All but the gray whale are listed as Endangered under the ESA

D. Location and condition of key or important habitat areas

In Alaska:
- All coastal and pelagic waters of Alaska
- Humpback and gray whales use nearshore areas
- Summer feeding areas throughout Alaska are especially important to all species

Worldwide:
- Many habitats throughout the Pacific, including migration pathways along the west coast of North America, and calving/breeding locations in Mexico and Hawaii

E. Concerns associated with key habitats (IUCN/SSC Cetacean Specialist Group 2003; NMFS 1998a, NMFS 1998b)

- Increased noise, especially associated with military and geophysical activities
- Ship strikes
- Fisheries interactions, entanglement, potential competition for prey (sperm whales)
- Climate change (impacts may be positive, negative, or both)
- Extractive resource development in nearshore and offshore areas

F. Goal: Maintain populations within the ranges of OSP and as significant functioning elements of the marine ecosystem.

G. Conservation objectives and actions (IUCN/SSC Cetacean Specialist Group 2003; NMFS 1998a, NMFS 1998b)

State conservation and management needs:

<u>Objective:</u> Recover, maintain, or increase abundance of large whale populations.

Target: Maintain or increase the current population sizes, habitat quality, and range of large whale species.
   Measure: Estimates of abundance, extent, and quality of habitat, and distribution of large whales in or adjacent to Alaska

Issue 1: Lack of population and habitat information for most species.

   Conservation actions:
   a) Determine population size and trend of all large whales in Alaska.
   b) Increase knowledge of population structure of all large whales that occur in Alaska.
   c) Establish international collaborative research efforts to document distribution and habitat use.
   d) Increase the stranding reporting and response program for beach cast and entangled whales.
   e) Maximize collection of samples from stranded large whales.
   f) Determine effects from killer whale predation

Issue 2: Need better management of factors causing mortality.

   Conservation actions:
   a) Evaluate rangewide effects of noise, fishing, shipping, and industrial activities.
   b) Minimize anthropogenic noise that affects large whales. Develop time and area restrictions on high-level noise sources in important habitat areas. High-level noise sources include seismic (from industrial and research) and military activities.
   c) Manage offshore development to conserve large whales.
      - identify and measure the extent of effects from oil and gas activities
      - develop guidelines to eliminate/reduce/mitigate adverse effects
      - implement guidelines through various avenues, such as federal, state, or local permits
   d) Improve knowledge of interactions with fisheries for all species.
      - determine magnitude and consequences of interactions between sperm whales and longline fisheries for sablefish in Gulf of Alaska
      - develop fishing gear (or modifications to gear) and methods that minimize impacts/interactions with large whales
      - review response protocol for entanglements in Alaska
      - ensure that all gear is retrieved
   e) Develop "Notice to Mariners" or "Marine Advisories" regarding ship operations in areas used by large whales. Notices and advisories are intended to minimize ship strikes, disturbance, and harassment.
   f) Evaluate climate change effects on habitats and determine if the changes are positive or negative, emphasizing multidisciplinary studies.
   g) Evaluate needs and tools for addressing international distribution and management issues.

H. Plan and time frames for monitoring species and their habitats

NOAA Fisheries has the responsibility for the recovery and management of all large whale species. Recovery plans need to be updated for all species except gray whales, followed by the acquisition of sufficient funding and implementation of conservation actions.

I. Recommended time frame for reviewing species status and trends

Five years or sooner if substantial new information becomes available.

J. Bibliography

Angliss, R.P. and K.L. Lodge. 2004. Alaska marine mammal stock assessments, 2003. NOAA Tech. Memo. NMFS-AFSC-144, 230 p.

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Bowhead Whale

A. Species description

Common name: bowhead whale
Scientific name: *Balaena mysticetus*

B. Distribution and abundance (Angliss and Lodge 2004)

Range:
Global range comments: Distributed in seasonally ice-covered waters of the Arctic and near-Arctic, with 5 stocks currently recognized by the International Whaling

Commission for management purposes: Okhotsk, Davis Strait, Hudson Bay, Spitsbergen, and Western Arctic.

State range comments: Western Arctic stock (also known as the Bering stock and Bering-Chukchi-Beaufort stock) is the largest population, and the only stock found in U.S. waters. The majority of the Western Arctic stock migrates annually from wintering areas in the northern Bering Sea, through the Chukchi Sea in the spring to the Beaufort Sea, where they spend much of the summer before returning again to the Bering Sea in the fall to overwinter.

Abundance:

Global abundance comments: The 4 stocks not in U.S. waters are relatively small, only consisting of 10s to 100s of whales.

State abundance comments: The 2001 abundance estimate for the Western Arctic stock abundance is 10,470 (CI: 8100–13,500).

Trends:

Global trends: Most stocks stable

State trends: Western Arctic stock is increasing about ~3.4% (CI: 1.7%–5%) annually

C. Problems, issues, or concerns for species (George et al. 2004; IUCN/SSC Cetacean Specialist Group 2003)

- Coastal development, particularly off the Beaufort Sea coast
- Nearshore/offshore oil and gas exploration in Beaufort and Chukchi seas
- Oil spills
- Potential effects of climate change
- Fisheries interactions, particularly with king crab fishery in the Bering Sea
- Potential increased shipping and fishing in Chukchi and Beaufort seas
- Increased anthropogenic noise
- International distribution
- Important for Alaska Native subsistence harvest
- Extreme longevity, relatively low fecundity
- Listed as Endangered under the ESA
- Bowheads are the longest lived mammal known to exist, and thus long-term data sets will be required

D. Location and condition of key or important habitat areas

- Bering-Chukchi-Beaufort seas
- Polynyas (Anadyr, St. Lawrence, etc.) and ice edge in Bering Sea for wintering habitat
- Leads in sea ice off western Alaska for spring migration
- Northern Chukotka coast for fall feeding/staging
- Eastern Beaufort Sea for summer feeding, Beaufort Sea for feeding during fall migration

All habitats are considered to be in very good to pristine condition.

E. Concerns associated with key habitats (George et al. 2004)

See Section C.

F. Goal: Maintain Western Arctic bowhead stock within the range of OSP and as significant functioning element of the marine ecosystem.

G. Conservation objectives and actions (George et al. 2004)

State conservation and management needs:

Objective: Maintain or increase the abundance and current distribution of the Western Arctic bowhead stock; maintain habitat quality.

Target: Level trend in annual abundance as measured over a 10-year cycle; 100% of habitat currently occupied.
Measure: Index of abundance and documentation of seasonal distribution of Western Arctic bowheads; baseline map of available habitats to compare with monitoring results.

Issue 1: Lack of research addressing current concerns.

Conservation actions:
a) Determine importance of summer vs. winter feeding areas
b) Determine specific areas of concentration (e.g., feeding and wintering)
c) Determine if all bowheads migrate from the Bering to Beaufort in summer
d) Establish international collaborative research efforts to document distribution and habitat use.
e) Evaluate climate change effects on bowhead whale habitats and determine if the changes are positive or negative through multidisciplinary studies.
f) Evaluate stock structure of Western Arctic bowheads, including adequate sample sizes (bowhead tissues) from the Bering Sea, including the Chukotka Peninsula, during summer.
g) Evaluate rangewide effects (e.g., noise, fishing, shipping, industrial activities) on population status of bowheads.
h) Develop and enhance techniques for studying bowhead whales that are not detrimental to whales or intrusive to those who harvest bowheads.

Issue 2: Maintain population monitoring programs.

Conservation actions:
a) Estimate population size of bowheads by 2011. (International Whaling Commission requires an estimate of population size every 10 years; the last estimate was from 2001.)
b) Continue collecting data on life history traits of bowheads, including a better understanding of foraging needs and aging.

Issue 3: International distribution and management.

Conservation actions:
a) Harvest is currently managed through cooperative agreement between the NMFS/NOAA and Alaska Eskimo Whaling Commission, as well as through the International Whaling Commission. Harvest co-management should continue through the most appropriate means possible.
b) Continue to manage the harvest of Western Arctic bowheads through international collaboration with the indigenous peoples and governments of Russia and Canada.

Issue 4: Potential mortality and serious injury of bowhead whales incidental to the Bering Sea crab fishery.

Conservation actions:
a) Evaluate impacts from Bering Sea crab fishery on bowheads.
b) Reduce impacts from Bering Sea crab fishery by designing gear that will least likely entangle bowheads.
c) Monitor frequency of scarring on bowheads from fishing gear through aerial surveys and examination of harvested whales.
d) Ensure that all gear is retrieved.

Issue 5: Potential impacts from oil and gas exploration and development in the Beaufort (United States and Canadian) and Chukchi seas on bowhead whale feeding, movement patterns, and migration.

Conservation actions:
a) Manage offshore explorations and development to conserve bowhead whales.
b) Further identify and measure the extent of effects from oil and gas activities that adversely effect bowheads.
c) Further develop guidelines to eliminate/reduce/mitigate adverse effects from development.
d) Continue to provide guidelines through various avenues, such as federal, state, or local permits or Conflict Avoidance Agreements.
e) In addition to current drilling restrictions during migration, consider establishing acoustic thresholds for the Beaufort Sea to reduce potential for harassment or injury to bowhead whales.
f) Identify important foraging areas for bowheads and implement measures to protect these areas from industrial activities.
g) Continue monitoring effects from existing oil and gas activities in the Beaufort Sea.

H. Plan and time frames for monitoring species and their habitats

NOAA Fisheries, in cooperation with the Alaska Eskimo Whaling Commission, the International Whaling Commission, and the North Slope Borough have the responsibility for the recovery of the western arctic bowhead whale stock. Issues important to bowhead conservation and harvest are discussed annually at International Whaling Commission meetings.

I. Recommended time frame for reviewing species status and trends

Five years or sooner if substantial new information becomes available.

J. Bibliography

Angliss, R.P. and K.L. Lodge. 2004. Alaska marine mammal stock assessments, 2003. NOAA Tech. Memo. NMFS-AFSC-144, 230 p.

George, J.C., J. Zeh, R. Suydam, and C. Clark. 2004. Abundance and population trend (1978–2001) of western Arctic bowhead whales surveyed near Barrow, Alaska. Marine Mammal Science 20(4):755–773.

IUCN/SSC Cetacean Specialist Group. 2003. Dolphins, Whales and Porpoises: 2002–2010 Conservation Action Plan for the World's Cetaceans. Compiled by R.R. Reeves, B.D. Smith, E.A. Crespo, and G. Notarbartolo di Sciara. IUCN, Gland, Switzerland.

Humpback Whale

A. Species description

Common name: humpback whale
Scientific name: *Megapetera novaeanglia*

B. Distribution and abundance (Angliss and Lodge 2004)

Range:
Global range comments: circumpolar, less common in Arctic waters
State range comments: Alaska is a migratory feeding destination for 2 and possibly 3 stocks of humpback whales in the North Pacific. The western stock winters in the waters of Japan and the Philippines and is known to migrate to Alaskan waters for feeding. This stock is known historically to migrate to the western Aleutian Islands, southern Bering Sea, and possibly the southern Chukchi Sea. Current data for the western stock has shown connections to northern British Columbia, the Kodiak Archipelago and the Shumagin Islands. The central stock is known to migrate to Southeast Alaska, British Columbia, Prince William Sound, Kodiak Island and the

Shumagin Islands. Humpback whales that winter in Mexico's offshore waters (Revillagigedo Archipelago) are not yet connected to any one feeding area, but some of them have been documented in Alaskan waters.

Abundance:
Global abundance comments: Unknown
State abundance comments: North Pacific population is estimated at about 10,000 (Calambokidis et al. in prep). The portion of the population that exists in Alaskan waters is unknown but is less than 10,000 because some of the population feeds in waters off the continental U.S. and Canadian coasts.

Trends:
Global trends: Mst populations are likely recovering from commercial exploitation
State trends: Central stock increasing at 7%/year (Mobley et al. 2001), unknown trends for western stock.

C. Problems, issues, or concerns for species (IUCN/SSC Cetacean Specialist Group 2003; Mobley et al. 2001)

- **Vessel disturbance/whale watching:** Whale watching and vessel traffic have been increasing in most of the areas used by humpback whales. This has reached high levels in some feeding areas, such as Southeast Alaska. Additionally, this is an emerging industry in Canada and along the U.S. West Coast. These activities have the potential to disrupt feeding and displace mothers and calves.
- **Entanglement:** Humpback whales are subject to entanglement in fishing gear, in particular, gillnets and pot gear. The severity of the problem varies regionally, with the highest number of reported cases in Southeast Alaska. The number of entanglements is underreported for all regions, and there are indications the entanglement rate is increasing in some areas.
- **Ship strikes**: Ship strikes are a threat to large whales worldwide. As levels of commerce and tourism increase in North America, the likelihood of vessel strikes to whales also increases. A 2003 NMFS report compiled nearly 300 records of ship strikes worldwide since 1975, and humpbacks were one of the most commonly hit species. The only specific measures at present to reduce the threat of ship strikes for humpbacks are vessel restrictions in Glacier Bay National Park, Alaska. In Southeast Alaska, strikes of humpbacks by cruise ships appear to be increasing, and potential concerns for high-speed ferries that have recently begun operating need to be evaluated.
- **Noise/acoustic injury and disturbance**: Impacts from ocean noise are a serious threat to humpback whales because they produce and use low-frequency sounds, as do other whales. Noise can result in direct physiological trauma through temporary or permanent threshold shifts in hearing, or in avoidance behavior that in turn may force animals away from critical feeding, breeding, or migratory areas. Noise also may cause humpbacks to suspend important social activities, including feeding, mating, and nursing, or mask communication necessary for survival. The variety of low-frequency anthropogenic sound sources in the ocean includes Navy activities (Low-frequency Active mid-range sonar), oceanographic

experiments (like Acoustic Thermometry of Ocean Climate), vessel traffic, and seismic air-gun surveys. Oil exploration and associated seismic surveys are ongoing and proposed in Alaska. It is not clear where sound sources are concentrated; however, a substantial amount of noise exists in the North Pacific Ocean that may threaten humpback whale populations.

- **Impacts on habitat and prey:** Although changes in habitat and prey could result in substantial impacts to humpback whales, the data to fully evaluate this issue are not available. Direct competition for food resources may exist, particularly for herring, both a humpback whale prey item and a targeted commercial fishery. Little is known about krill and other forage fish in humpback feeding areas, especially Alaska. Logging near humpback whale marine habitats may affect their prey base. Climate change and regime shifts triggered by human-induced activities have the potential to impact the survival of whale populations.
- **Contaminants/pollution**: Contaminant impacts are a significant concern for many species of marine mammals that concentrate toxins in their blubber, particularly as more and more chemical compounds end up in the world's oceans. Levels of chemical compounds found in North Pacific populations of killer whales are among the highest documented in any animal worldwide. Stable contaminants, such as PCBs and pesticides, are generally far lower in baleen whales, such as humpbacks, because they feed lower on the food chain, and therefore are less of a problem.

D. Location and condition of key or important habitat areas

Nearshore coastal area is primary habitat for feeding humpback whales in Alaskan waters.

E. Identify threats or concerns associated with key habitats (IUCN/SSC Cetacean Specialist Group 2003; Mobley et al. 2001)

See Section C.

F. Goal: Maintain the population within the range of OSP and as significant functioning element of the marine ecosystem

G. Conservation objectives and actions (IUCN/SSC Cetacean Specialist Group 2003; Mobley et al. 2001)

State conservation and management needs:

Objective: Increase the abundance of western and central stocks of humpback whales.

  Target: Increase the current level of abundance, and maintain or increase habitat quality.
    Measure: Estimate of abundance and documentation of seasonal distribution.

Issue 1: Lack of information on population status, trends, and structure.

  Conservation actions:
    a) Initiate new efforts, as well as increase existing efforts, to gather current information on abundance, distribution, and population structure.

b) Work to reestablish U.S. funding for a program similar to the Large Whale Initiative.
c) Identify funding to complete portions of SPLASH Project (Structure of Population, Levels of Abundance and Status of Humpback Whales), which provide information on abundance and distribution.
d) Work with the governments of Canada and Mexico to identify funding for all or a portion of the costs of the sampling within their countries.

Issue 2: Develop management options for addressing impacts of human activities on mortality rates and populations.

Conservation actions:
a) Conduct additional coordinated research efforts on the impact of whale-watching vessels; collaboration among countries would be ideal. There are anecdotal reports of shifts in displacement of mothers and calves from some areas with heavy vessel activities, yet this concern needs to be documented.
b) Identify additional funding for enforcement of existing whale-watching regulations. Often, even a few enforcement actions are enough to change the behavior of vessel operators.
c) Identify the principal regions and time periods posing the greatest risk of collision between ships and humpback whales.
d) Encourage voluntary cooperation from the cruise ship and other industries operating large high-speed vessels to reduce speed in these areas during critical time periods.
e) Encourage legislation to impose these restrictions if it is not occurring voluntarily.
f) Encourage sharing of information and collaboration among countries about sources and impacts of anthropogenic sounds.
g) Encourage minimization of projects involving production of loud, low-frequency, anthropogenic sounds in areas and times of critical humpback whale use.
h) Facilitate information sharing between agencies and nations about the extent, nature, and source of entanglement events in order to better understand the problem. In addition, promote information sharing on the development and efficacy of gear modifications in order to optimize mitigation efforts.
i) Increase understanding of this issue to the Ministerial level in Mexico, where the problem has been increasing.
j) Increase the effectiveness of disentanglement efforts. Whereas training and equipment has been put into place in a number of areas in the United States and Canada, problems with reporting and implementation have prevented effective action and successful outcomes.

H. Plan and time frames for monitoring species and their habitats

NOAA Fisheries has the responsibility for management and recovery of humpback whales. Acquisition of sufficient funding and implementation of conservation actions should begin immediately.

I. Recommended time frame for reviewing species status and trends

Five years or sooner if substantially new information is obtained.

J. Bibliography

Angliss, R.P. and K.L. Lodge. 2004. Alaska marine mammal stock assessments, 2003. NOAA Tech. Memo. NMFS-AFSC-144, 230 p.

IUCN/SSC Cetacean Specialist Group. 2003. Dolphins, Whales and Porpoises: 2002–2010 Conservation Action Plan for the World's Cetaceans. Compiled by R.R. Reeves, B.D. Smith, E.A. Crespo, and G. Notarbartolo di Sciara. IUCN, Gland, Switzerland.

Mobley, Jr., J.R., S.S. Spitz, R. Grotefendt, P.H. Forestell, A.S. Frankel and G.A. Bauer. 2001. Abundance of humpback whales in Hawaiian waters: results of 1993–2000 aerial surveys. Report prepared for the Hawaiian Islands Humpback Whale National Marine Sanctuary, Nov. 26, 2001.

Beaked Whale Group

A. Species group description

Common names: beaked whales: Baird's beaked whale, Cuvier's beaked whale, and Stejneger's beaked whale
Scientific names: (*Berardius bairdii*), (*Ziphius cavirostris*), (*Mesoplodon stejnegeri*)

B. Distribution and abundance (Angliss and Lodge 2004; IUCN/SSC Cetacean Specialist Group 2003)

Range:
Global range comments: Currently 20 recognized species in 5 genera; all species are pelagic and live and feed in the open oceans. Very little is known about most species; Cuvier's is thought to perhaps be the most widely distributed beaked whale
State range comments: Baird's and Stejneger's beaked whales occur in the North Pacific Ocean and Western Bering Sea, whereas Cuvier's beaked whale occurs in the North Pacific Ocean

Abundance:
Global abundance comments: Unknown
State abundance comments: Unknown

Trends:
Global trends: Unknown
State trends: Unknown

C. Problems, issues, or concerns for species group (IUCN/SSC Cetacean Specialist Group 2003)

- Lack of information on geographic range, distribution, abundance, life history parameters, population structure and trends, foraging behavior, essential habitat needs.

- Potential impacts of climate change on prey availability, distribution, and biomass.

- Possible fishery interactions – at least 6 different commercial fisheries operate within the range of this species group, and incidental mortality has been documented outside of Alaska. Although no incidental mortality or serious injury has been reported in Alaska, observer coverage is limited, and thus some risk of interaction remains.

- Noise – including naval military operations, shipping and fishing traffic, seismic surveys, and coastal development. Mass strandings have occurred in the north Atlantic associated with naval activities, including the live stranding of 14 individual beaked whales (Cuvier's, Blanville's, and unidentified species) in the Bahamas in March 2000. Necropsies of 6 of these whales found tissue damage from acoustic or impulse injury that likely caused the whales to strand, with mortality resulting from physiologic stress associated with the physical stranding. Similar mortalities have been documented in Mexico. There are no known strandings in Alaskan waters.

D. Location and condition of key or important habitat areas

The available data do not allow assessment of current habitat needs, though beaked whales are thought to feed in deep pelagic waters for fish and squid**.**

E. Concerns associated with key habitats

Unknown.

F. Goal: Maintain beaked whale populations within the range of OSP, and as significant functioning element of the marine ecosystem.

G. Conservation objectives and actions (IUCN/SSC Cetacean Specialist Group 2003)

Objective: Maintain sustainable and well-distributed Beaked whale populations. (Reassess objective as new survey information on abundance becomes available.)

  Target: Level trend in annual abundance of each sampled species as measured over a 10-year cycle.

    Measure: Trend analysis based on information from baseline surveys. Species and habitat distribution maps acquired through acoustics and shipboard surveys (include genetic sampling and satellite tagging).

Issue 1: Information on this species group is severely limited and fundamentally precludes development of a conservation strategy.

Conservation actions:
a) Develop reliable population estimates, and collect data on population structure, abundance, and trends.
b) Collect data on geographic distribution and movements and life history parameters.
c) Acquire information necessary to identify and protect essential habitat.
d) Develop monitoring protocols.
e) Conduct necropsies on dead beaked whales.
f) Include opportunistic sighting efforts for beaked whales during marine research conducted by federal and state agencies whenever possible.
g) Educate mariners to report sightings and provide verifiable documentation of beaked whales across the North Pacific.
h) Coordinate research efforts internationally with Canada, Russia, and Japan.

Issue 2: The potential effects of noise on beaked whales need evaluation.

Conservation actions:
a) Coordinate management efforts with Canada, particularly with sonar and seismic activities.
b) Educate mariners to report strandings.
c) If strandings occur, monitor military and commercial operations that include sonar for potential lethal impacts on beaked whales.

H. Plan and time frames for monitoring species and their habitats

NOAA Fisheries should review beaked whale monitoring studies conducted off the western United States and Mexico and initiate similar studies in Alaska, if applicable, within 5 years.

I. Recommended time frame for reviewing species status and trends

Review when significant new data become available.

J. Bibliography

Angliss, R.P. and K.L. Lodge. 2004. Alaska marine mammal stock assessments, 2003. NOAA Tech. Memo. NMFS-AFSC-144, 230 p.

IUCN/SSC Cetacean Specialist Group. 2003. Dolphins, whales and porpoises: 2002–2010 conservation action plan for the world's cetaceans. Compiled by R.R. Reeves, B.D. Smith, E.A. Crespo, and G. Notarbartolo di Sciara. IUCN, Gland, Switzerland.

North Pacific Right Whale

A. Species description

Common name: North Pacific right whale
Scientific name: *Eubalaena japonica*

B. Distribution and abundance

Range:
Global range comments: *E. japonica* exists in the North Pacific, *E. glacialis* exists in the North Atlantic, and *E. australis* exists in the Southern Hemisphere.
State range comments: Historically, right whales were distributed throughout the western Pacific, Gulf of Alaska, and southeastern Bering Sea. Current known distribution is limited to a few animals on the Bering Sea shelf and an occasional sighting elsewhere in the North Pacific (NMFS 1991).

Abundance:
Global abundance comments: Potentially, before commercial exploitation, in excess of 11,000 whales existed historically in the North Pacific (Angliss and Lodge 2004). There are possibly 2 populations of right whales in the North Pacific; western and eastern. Survey data indicate the abundance of right whales in the western North Pacific is 900 (CI 404–2108) (NMFS 1991), and the abundance of the eastern population is very low, in the tens of animals.
State abundance comments: Until recently, the eastern North Pacific population existed in Alaska waters with abundance in the tens of animals. In September 2004, biologists following the satellite signal from a whale tagged in August, photographed 25 whales in the Bering Sea about 50 miles due north of Dutch Harbor, including 3 cows accompanied by calves. This doubled the number of the critically endangered whales known to forage near Alaska.

Trends:
Global trends: Unknown
State trends: Unknown

C. Problems, issues, or concerns for species (IUCN/SSC Cetacean Specialist Group 2003)

- Lack of information: specifically geographic range, distribution, abundance, trends, life history parameters, population structure, foraging behavior, and essential habitat needs
- Very small population size
- Climate change with potential for changes in prey availability, distribution, and biomass
- Potential vessel interactions, especially ship strikes
- Potential fishery interactions: serious injury and mortality in winter commercial crab fishery through entanglement (dependent on seasonal distribution of right whales)

- Noise-related injuries from anthropogenic sources: military operations, shipping and fishing traffic, seismic surveys, coastal development
- Effects of contaminants and pollution; i.e., non-halogenated aromatic hydrocarbons, polynuclear aromatic hydrocarbons (NMFS 1991)

D. Location and condition of key or important habitat areas

The available data do not allow assessment of current habitat needs. The only consistent sightings have been in the southeastern Bering Sea during July and August.

E. Concerns associated with key habitats (IUCN/SSC Cetacean Specialist Group 2003)

- Habitat changes associated with climate change, contaminants, or pollution.
- Future oil and gas leasing has the potential to degrade habitat in the historical range of right whales (NMFS 1991).

F. Goal: Maintain the population within the range of OSP and as significant functioning element of the marine ecosystem.

G. Conservation objectives and actions (IUCN/SSC Cetacean Specialist Group 2003)

State conservation and management needs:

Objective: Promote the recovery of North Pacific right whales to a population level that would prevent extinction within the next century.

    Target: Allow for maximum growth of population; theoretical maximum for cetaceans is 4%/year.

    Measure: Monitor changes in abundance and distribution though acoustic, aerial, and shipboard surveys (include photographic and genetic sampling and satellite tagging).

Issue 1: Current abundance is extremely low, and near level of functional extinction.

    Conservation actions:
      a) Acquire information necessary to identify and protect critical habitat (conduct studies in areas of historical presence).
      b) Collect data on population structure, life history parameters, abundance, and trends.
      c) Collect data on geographic distribution and movements.
      d) Collect photographs for individual identification and frequency of entanglements and ship strikes.
      e) Conduct oceanographic surveys to collect data on likely prey species and associated variability with climate change.
      f) Compile information from all historical whaling records.
      g) Coordinate research efforts with Canada and Russia.
      h) Conduct research on feeding ecology.
      i) Conduct necropsies on any dead right whale.
      j) Educate mariners to report sightings and verifiable documentation of right whales across the North Pacific.

Issue 2: If population is determined to be recoverable, management efforts need to be initiated.

Conservation actions:
   a) Coordinate management efforts with Canada.
   b) Maintain ban on hunting and directed takes.
   c) Increase awareness at federal, state and private level to secure funding for all conservation actions.
   d) Consider relevant mitigation measures for noise, contaminants/pollution, and vessel and fishery interactions.
   e) Educate mariners of the vulnerability of right whales to ship strikes.

H. Plan and time frames for monitoring species and their habitats

NOAA Fisheries has the responsibility for management and recovery of North Pacific right whales. Acquisition of sufficient funding and implementation of conservation actions should begin immediately. Draft recovery plan needs to be finalized as soon as possible.

I. Recommended time frame for reviewing species status and trends

Five years or sooner if substantially more whales are discovered in the North Pacific.

J. Bibliography

Angliss, R.P. and K.L. Lodge. 2004. Alaska marine mammal stock assessments, 2003. NOAA Tech. Memo. NMFS-AFSC-144, 230 p.

IUCN/SSC Cetacean Specialist Group. 2003. Dolphins, Whales and Porpoises: 2002–2010 Conservation Action Plan for the World's Cetaceans. Compiled by R.R. Reeves, B.D. Smith, E.A. Crespo, and G. Notarbartolo di Sciara. IUCN, Gland, Switzerland.

NMFS. 1991. Recovery plan for the Northern Right Whale (*Eubalaena japonica*). Prepared by the right whale recovery team for the National Marine Fisheries Service, Silver Spring, MD. 86 p.

Northern Sea Otter

A. Species description

Common name: sea otter
Scientific name: *Enhydra lutris*

B. Distribution and abundance (Angliss and Lodge 2004)

Range:
Global range comments: Distributed along Pacific Rim, including the Kamchatka Peninsula in Russia, Alaska, British Columbia, Washington, and central to southern California.
State range comments: 3 management stocks recognized: southeast Alaska, southcentral Alaska, and southwest Alaska.

Abundance:
Global abundance comments:
- Russia: ~30,000
- British Columbia: ~2000
- Washington: ~500
- California: ~2500

State abundance comments:
- Southeast Alaska stock: 12,632
- Southcentral Alaska stock: 16,552
- Southwest Alaska stock: 41,474

Trends:
Global trends:
- Russian population stable in Commander Islands and central Kuril Islands, current range expansion of Kamchatka Peninsula and north and south Kuril Islands.
- British Columbia population listed as threatened under the British Columbia Wildlife Act.
- Washington population listed as endangered by Washington Department of Fish and Wildlife.
- California population listed as threatened under ESA.

State trends:
- Southeast stock uncertain.
- Southcentral stock stable/increasing.
- Southwest stock decreasing, and listed as threatened under ESA.

C. Problems, issues, or concerns for species (USFWS 1994)

- Substantial decline of southwest stock (Burn 2005)
- Coastal development
- Nearshore oil and gas activity exploration, development, and production
- Oil and gas transport
- Fisheries interactions, including incidental mortality from entanglement, competition for prey
- Poaching (Alaska and Russia)
- Important for subsistence harvest (Alaska)
- Climate changes
- Killer whale predation (Southwest Alaska stock)
- Lack of recovery (California)

D. Location and condition of key or important habitat areas (USFWS 1994)

Habitats can be generally characterized as "good" for breeding, feeding, and wintering.

Shallow waters (depth <100 m) are an important habitat:
1. Southeast Alaska: range Cape Yakataga south to the Dixon Entrance.
2. Southcentral Alaska: Kachemak Bay, Kenai Peninsula, Prince William Sound to Cape Yakataga.
3. Southwest Alaska: Aleutian Islands, southern Bristol Bay, Alaska Peninsula, Kodiak Archipelago, Barren Islands, and lower western Cook Inlet.

E. Concerns associated with key habitats (USFWS 1994)

- Oil and gas development and transport.
- Fisheries interactions, including entanglement in gillnets and pot fisheries.
- Increased coastal development.
- Pollutants, persistent ocean contaminants, PCBs.

F. Goal: Maintain Alaska populations within the range of OSP and as significant functioning elements of the marine ecosystem.

G. Conservation objectives and actions (USFWS 1994)

Objective 1: Reverse the population decline of the southwest Alaska stock of sea otters.

Target: Increase the current population size to OSP, and maintain habitat quality and range of the stock.
Measure: Estimate of abundance and documentation of distribution changes of northern sea otters in southwest Alaska.

Issue 1: Cause of the decline is unknown.

Conservation actions:
a) Investigate role of following factors in decline of this population: predation,

disease, starvation, contaminants, competition with commercial fisheries, entanglement in commercial fisheries, and unregulated subsistence harvest.
- determine causes of mortality
- determine habitat requirements for sea otters
- develop an understanding of effects of human/sea otter interactions and methods to alleviate resource/habitat conflicts if needed

b) Develop Statewide Stranding Network.
- use volunteers in communities around the state to report stranded sea otters and to transport them to USFWS or Alaska Sea Life Center
- collect tissues from dead animals and analyze for environmental contaminants and signs of disease

Issue 2: Lack of appropriate management and monitoring tools and efforts for conserving this stock.

Conservation actions:
a) Determine appropriate listing action.
- Form recovery team
- Develop recovery plan
b) Investigate minimum population size for population recovery.
c) Conduct surveys to monitor trends in sea otter abundance in southwest Alaska.
d) Monitor habitat status and trends.
e) Monitor indices of health and body condition.
f) Monitor incidence of disease within southwest Alaska.
g) Monitor sea otter prey populations.

Objective 2: Support the ongoing natural recolonization of sea otters in Southeast Alaska.

Target: Increase the current population size to OSP throughout historical range of the stock; maintain habitat quality.
Measure: Estimate abundance and document distribution changes of northern sea otters in Southeast Alaska.

Issue: Recolonization of sea otters in Southeast Alaska has not proceeded in accordance with earlier expectations. Population size and range expansion appear to have slowed, or even stopped. The reasons for this are unknown.

Conservation actions:
a) Investigate role of following factors in limiting recovery of this population to expected levels: predation, disease, starvation, contaminants, competition with commercial fisheries, entanglement in commercial fisheries, and unregulated subsistence harvest.
- determine habitat requirements and patterns of habitat selection for sea otters

- develop an understanding of effects of human/sea otter interactions and methods to alleviate resource/habitat conflicts if needed

b) Develop Statewide Stranding Network.
- use volunteers in communities around the state to report stranded sea otters and to transport them to USFWS or Alaska Sea Life Center
- collect tissues from dead animals and analyze for environmental contaminants and signs of disease

c) Conduct surveys to monitor trends in sea otter abundance in Southeast Alaska.
d) Monitor habitat status and trends.
e) Monitor indices of health and body condition.
f) Monitor incidence of disease within Southeast Alaska.
g) Monitor sea otter prey populations.

H. Plan and time frames for monitoring species and their habitats

USFWS has the lead responsibility for management of sea otters and is required to annually review and revise stock assessment reports as necessary. The USFWS continuously monitors subsistence harvest of sea otters through the marine mammal marking, tagging, and reporting program. In recent years, population monitoring has been a shared activity between USFWS, USGS, and the Alaska Sea Otter and Steller Sea Lion Commission, with USFWS and USGS conducting large-scale aerial surveys, and all 3 entities conducting skiff-based surveys at index sites throughout the state.

I. Recommended time frame for reviewing species status and trends

At least every 3 years with revisions as necessary.

J. Bibliography

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