**ATTACHMENT 1-13: Biological Information on Listed Species of Marine Mammals and Model Parameterization for Pesticide Effects Determinations**

1. **Introduction**

The purpose of this document is to summarize available information for currently listed, proposed and candidate marine mammal species (primarily from the National Marine Fisheries Service and Fish and Wildlife Service). The focus of this effort is to capture information that may be used in ecological risk assessments of pesticides to make species-specific effects determinations. This report focuses on defining parameters which may be used to estimate pesticide exposures to listed marine mammals. This report also focuses on defining species characteristics that may be used to assess potential indirect effects to the species (*e.g.,* diet and habitat).

A formal quality assurance and quality control plan was implemented in the collection of species specific data. The instructions for extracting information for marine mammals are included in **Supplemental information 1**. A template for the worksheet used to record relevant biological information for each species is provided in **Supplemental information 2**. **Supplemental information 3** contains the completed worksheets containing biological information on each listed species or DPS.

At this time, there are a total of 17 endangered and threatened (listed) species, subspecies or populations of marine mammals that are listed under the Endangered Species Act (ESA) and occur in the United States, its territories and its waters. In addition, there are 6 candidate and proposed threatened species. These species will be considered in the national level risk assessments for chlorpyrifos, diazinon, and malathion (**Table A 1-13.1**). This assessment does not consider foreign species listed under the ESA, as they occur outside of the action area for pesticide registrations in the US.

**Table A 1-13.1. Number of listed marine mammals by status.**

|  |  |
| --- | --- |
| **Status** | **Number of listings** |
| Endangered | 14 |
| Threatened | 3 |
| Proposed Threatened | 2 |
| Candidate | 4 |
| Total | 23 |

1. **Species considered in National Level Effects Determinations**

The majority of listed marine mammals can be categorized as pinnipeds (clade) or cetaceans (infraorder). The listed pinnipeds are comprised of 7 species, including seals, Pacific walrus and Steller sea lion, and two sea otter species (mustelids) are also listed (**Table A 1-13.2**). The listed cetaceans include 12 species of whales (**Table A 1-13.3**). Two additional species that rely upon marine habitats are also included here: the polar bear and West Indian manatee (**Table A 1-13.4**). Of the 23 listed marine mammals, 8 have designated critical habitat.

**Table A 1-13.2. Listed pinniped and mustelid species.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Scientific Name*** | **Common Name** | **Listing Status\*** | **Critical Habitat?** | **FWS/NMFS Species ID (ENTITY\_ID)** |
| *Arctocephalus townsendi* | Guadalupe fur seal | T | No | 3318 |
| *Enhydra lutris kenyoni* | Northern sea otter (Southwest Alaska DPS) | T | Yes | 5232 |
| *Enhydra lutris nereis* | Southern sea otter | T | No | 45 |
| *Erignathus barbatus* |  Bearded Seal (Beringia) | T | No | 10381 |
| *Eumetopias jubatus* | Steller sea lion (Western DPS) | E | Yes | 7115 |
| *Neomonachus schauinslandi* | Hawaiian monk seal | E | Yes | 2891 |
| *Odobenus rosmarus ssp. Divergens* | Pacific walrus | C | No | 9709 |
| *Phoca largha* | Spotted seal | T | No | NMFS182 |
| *Phoca vitulina richardii* | Pacific harbor seal (Iliamna lake) | C | No | NMFS159 |

\*E=endangered; T=threatened, C = candidate

**Table A 1-13.3. Listed cetacean species.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Scientific Name*** | **Common Name** | **Listing Status\*** | **Critical Habitat?** | **FWS/NMFS Species ID (ENTITY\_ID)** |
| *Balaena mysticetus* | Bowhead whale | E | No | 3133 |
| *Balaenoptera borealis* | Sei whale | E | No | 1769 |
| *Balaenoptera edeni* | Bryde’s whale | C | No | NMFS178 |
| *Balaenoptera musculus* | Blue whale | E | No | 3199 |
| *Balaenoptera physalus* | Finback whale | E | No | 3096 |
| *Delphinapterus leucas* | Beluga whale (Cook Inlet DPS) | E | Yes | 10144 |
| *Eubalaena glacialis* | North Atlantic Right Whale | E | Yes | 2510 |
| *Eubalaena japonica* | North Pacific Right Whale | E | Yes | 10145 |
| *Megaptera novaeangliae* | Humpback whale | E | No | 5623 |
| *Orcinus orca* | Killer whale (Southern resident DPS) | E | Yes | 9126 |
| *Physeter microcephalus(=icrocephalus)* | Sperm whale | E | No | 4719 |
| *Pseudorca crassidens* | false killer whale (Main Hawaiian Islands Insular DPS) | E | No | 10700 |

\*E=endangered; T=threatened, C = candidate

**Table A 1-13.4. Other listed marine mammals.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Scientific Name*** | **Common Name** | **Listing Status\*** | **Critical Habitat?** | **FWS/NMFS Species ID (ENTITY\_ID)** |
| *Trichechus manatus* | West Indian Manatee | E | Yes | 7 |
| *Ursus maritimus* | Polar bear | T | No | 8861 |

1. **Diets**

When considering the pinnipeds and mustelids (**Table A 1-13.5**), all 9 listed species consume invertebrates (*e.g.,cephalopods*, crabs) that are considered benthic. All 9 species also consume fish. In addition, one species (Steller sea lion) eats birds and marine mammals. The pacific walrus also eats marine mammals (seals). The majority of the listed whales’ (cetaceans) diets include invertebrates (e.g., cephalopods) and fish (**Table A 1-13.6**). Several species also rely upon zooplankton (e.g., krill). One species (orca) also eats marine mammals (seals). When considering the other two marine mammal species, the polar bear primarily consumes marine mammals, such as seals. The manatee is unique among the marine mammals in that it is an herbivore, consuming algae and aquatic plants (**Table A 1-13.7**).

**Table A 1-13.5. Diets of listed pinnipeds.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Scientific Name*** | **Common Name** | **Invertebrates** | **Fish** | **Birds** | **Mammals** |
| *Arctocephalus townsendi* | Guadalupe fur seal | Yes | Yes | No | No |
| *Enhydra lutris kenyoni* | Northern sea otter (Southwest Alaska DPS) | Yes | Yes | No | No |
| *Enhydra lutris nereis* | Southern sea otter | Yes | Yes | No | No |
| *Erignathus barbatus* | *Bearded*Seal (Beringia) | Yes | Yes | No | No |
| *Eumetopias jubatus* | Steller sea lion (Western DPS) | Yes | Yes | Yes | Yes |
| *Neomonachus schauinslandi* | Hawaiian monk seal | Yes | Yes | No | No |
| *Odobenus rosmarus ssp. divergens* | Pacific walrus | Yes | Yes | No | Yes |
| *Phoca largha* | Spotted seal | Yes | Yes | No | No |
| *Phoca vitulina richardii* | Pacific harbor seal (Iliamna lake) | Yes | Yes | No | No |
| *Total* | 9 | 9 | 9 | 1 | 2 |

**Table A 1-13.6. Diets of listed cetaceans.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Scientific Name*** | **Common Name** | **Zooplankton** | **Invertebrates** | **Fish** | **Mammals** |
| *Balaena mysticetus* | Bowhead whale | Yes | Yes | Yes | No |
| *Balaenoptera borealis* | Sei whale | Yes | Yes | Yes | No |
| *Balaenoptera edeni* | Bryde’s whale | Yes | Yes | Yes | No |
| *Balaenoptera musculus* | Blue whale | Yes | Yes | No | No |
| *Balaenoptera physalus* | Finback whale | Yes | Yes | Yes | No |
| *Delphinapterus leucas* | Beluga whale (Cook Inlet DPS) | No | Yes | Yes | No |
| *Eubalaena glacialis* | North Atlantic Right Whale | Yes | Yes | No | No |
| *Eubalaena japonica* | North Pacific Right Whale | Yes | No | No | No |
| *Megaptera novaeangliae* | Humpback whale | Yes | Yes | Yes | No |
| *Orcinus orca* | Killer whale (Southern resident DPS) | No | Yes | Yes | Yes |
| *Physeter microcephalus(=macrocephalus)* | Sperm whale | No | Yes | Yes | No |
| *Pseudorca crassidens* | false killer whale (Main Hawaiian Islands Insular DPS) | No | Yes | Yes | No |
| *Total* | 12 | 8 | 11 | 9 | 1 |

**Table A 1-13.7. Diets of other marine mammals.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Scientific Name*** | **Common Name** | **Algae** | **Aquatic plants** | **Mammals** |
| *Trichechus manatus* | West Indian Manatee | Yes | Yes | No |
| *Ursus maritimus* | Polar bear | No | No | Yes |

1. **Exposure models**

Since all of the marine mammals rely upon the oceans for their prey and habitat, the Kow (based) Aquatic BioAccumulation Model (KABAM) will be used to estimate dietary-based exposures. At this time, KABAM is designed to estimate exposures to birds and mammals that consume prey from much smaller freshwater habitats (*i.e.,* ponds). Because of the difference in the model domain and the ocean habitat, there will be considerable uncertainty in estimating dietary exposures to marine mammals. For instance, KABAM assumes that the concentration of a chemical is at steady state and homogeneously distributed through the habitat. These assumptions are more reasonable at the smaller scale of pond and are unlikely at the scale of the ocean, especially given that chlorpyrifos, diazinon and malathion may not be particularly persistent in the marine environment.

KABAM has the ability to generate exposures represented as concentrations and as doses. Interpretation of the relevance of dose-based exposures requires that the toxicity data from small mammals (rats weighing approximately 350 g) be scaled to the body weights of marine mammals (ranging 20,000 – 145,000,000 g). Given the uncertainty in scaling the toxicity value across 2-6 orders of magnitude, dose-based exposures will not be generated. Concentration-based exposures will be compared directly to available concentration-based dietary toxicity endpoints.

Inhalation and dermal routes of pesticide exposure (due to spray drift) will be considered for the pinnipeds when they are on land. Details are provided in the terrestrial exposure attachment.

1. **Habitat**

All of the listed marine mammals use the ocean for foraging; however, not all species use the same ocean habitats. Additionally, one species, the West Indian manatee, also uses freshwater habitats. Attachment x lists the specific habitat bins that will be used for these species.

1. **Obligate Relationships**

When reviewing the life history information for listed marine mammals, one species has an obligate relationship. The orca has an obligate relationship with pacific salmon.

For all other species, there are no obvious obligate relationships related to diet or habitat. For those species, it will be assumed for risk assessment purposes that none of the listed marine mammals have obligate relationships with other species.

1. **Geographic Ranges of Listed Species**

Listed, proposed and candidate marine mammals occur in several different water bodies that include waters of the US. The waterbodies and relevant states where marine mammals occur are listed in **Tables A 1-13.11 and A 1-13.12**. Some marine mammals (e.g., pinnipeds) occur on land as well.

**Table A 1-13.11. Waterbodies (that include waters of the US) where listed marine mammals occur.**

|  |  |
| --- | --- |
| **Water body** | **Number of species** |
| Caribbean Sea | 8 |
| Chukchi Sea | 8 |
| Gulf of Alaska | 13 |
| Gulf of California | 8 |
| Gulf of Mexico | 9 |
| Gulf of St-Lawrence | 8 |
| North Atlantic Ocean | 9 |
| North Pacific Ocean | 17 |
| Philippine Sea | 5 |
| South Pacific Ocean | 5 |
| The Coastal Waters of Southeast Alaska and British Columbia | 11 |

**Table A 1-13.12. Number of marine mammals with ranges that overlap with waters of the specific states or mammals use shorelines of these states.**

|  |  |
| --- | --- |
| **State** | **Number of species** |
| Alabama | 8 |
| Alaska | 18 |
| American Samoa | 5 |
| California | 12 |
| Commonwealth of the Northern Mariana Islands | 5 |
| Connecticut | 8 |
| Delaware | 8 |
| District of Columbia | 3 |
| Florida | 10 |
| Georgia | 10 |
| Guam | 5 |
| Hawaii | 8 |
| Louisiana | 8 |
| Maine | 8 |
| Maryland | 8 |
| Massachusetts | 8 |
| Mississippi | 8 |
| New Hampshire | 8 |
| New Jersey | 8 |
| New York | 8 |
| North Carolina | 9 |
| Oregon | 10 |
| Pennsylvania | 3 |
| Puerto Rico | 7 |
| Rhode Island | 8 |
| South Carolina | 10 |
| Texas | 9 |
| United States Virgin Islands | 6 |
| Virginia | 9 |
| Washington | 10 |

1. **Strategy for grouping species**

In order to efficiently assess the risks of a pesticide to listed marine mammals, it is necessary to group them by their defining features that are relevant in the context of the risk assessment framework. There are two major factors that impact the risk of a pesticide to a species: exposure and effects. **Table A 1-13.13** summarizes the 4 groups of listed marine mammals. Each group of species will share risk hypotheses and lines of evidence.

**Table A 1-13.13. Summary of listed marine mammal groups.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Category description** | **Number of species** | **Habitat(s)** | **Diet** |
| Seals and sea otters | 7 | terrestrial (haul-outs), intertidal nearshore, subtidal nearshore  | Benthic invertebrates, fish |
| Steller sea lion and Pacific walrus | 2 | terrestrial (haul-outs), intertidal nearshore, subtidal nearshore, and offshore marine | Benthic invertebrates, fish, marine mammals, birds |
| Cetaceans (whales) | 11 | Ocean | Zooplankton, Invertebrates, fish |
| Orca | 1 | subtidal nearshore, offshore marine | Invertebrates, fish, marine mammals |
| Polar bear | 1 | terrestrial, intertidal nearshore, subtidal nearshore, and offshore marine, offshore marine | Marine mammals |
| Manatee | 1 | freshwater habitats, marine nearshore, subtidal nearshore, offshore marine | Algae, aquatic plants |

**Supplemental Information 1. Instructions for extracting biological information for listed marine mammals**

The purpose of this project is to compile biological information on federally listed endangered and threatened marine mammals. This document contains instructions for extracting relevant biological information on each of these species and a form for entering this information.

**Instructions:**

Step 1. Copy the template (below) for the listed mammal species worksheet used to record biological information for individual species. Paste this into a new page at the end of this document. This worksheet will be used to record biological information for one of the listed mammal species listed in the table above.

Step 2. Go to the species profile for the species of interest.

Step 3. If available, acquire the most recent recovery plan available for the listed species of interest. Recovery plans can be located by clicking on the “recovery” quick link of the species profile for the species of interest. Save the pdf of the recovery plan.

Step 4. Extract information on body weight, habitat, diet and the other parameters listed in the attached sheet. When information is entered into the worksheet, note the source number in ( ). These data can generally be found in the life history portion of the recovery plan, so it is not necessary to review the entire recovery plan. When a data point is extracted, highlight the appropriate information in the PDF. When all data are extracted from the recovery plan, save the revised file. All information that appear in the species worksheet must have a source and must be highlighted in the original document. This is a critical component of the Quality Control (QC) for this project.

Step 5. Determine if the species has an obligate relationship with other species. If so, describe the nature of the obligate relationship.

* Obligate relationships of a listed species may be explicitly stated in a recovery (*e.g.,* the golden coqui frog has obligate relationships with bromeliads[[1]](#footnote-1)). It is recommended that the data extractor do a search of the recovery plan for the term “obligate” to determine whether the listed species of interest has any obligate relationships with other species.
* In some cases, obligate relationships may not be explicitly stated; however this relationship may be inferred from the description of the diet or habitat of the listed species. If the recovery plan indicates that the listed species requires a specific species for its survival (*i.e.,* for diet or habitat), then EFED scientists may determine that the species has an obligate relationship with the specific species that is noted in the recovery plan.

Step 6. If body weight data are not available in the recovery plan, consult the species account from the American Society of Mammalogists. This is available online at: <http://www.asmjournals.org/>.

Step 7. If data are not located in the recovery plan, other scientifically valid sources (*e.g.,* scientific literature, USFWS publications) may be used to acquire the necessary information. Please check with Kris Garber before extracting data from other sources.

Notes:

1. Many recovery plans include information on multiple listed species. If this is the case, data can be extracted at the same time for all of the species included in the recovery plan.
2. Kris Garber will complete the EFED model portion of the worksheet for all species.
3. If a source provides different body weights for different life stages or distinguishes between male and female body weights, enter all of the available values. In that case, note what each body weight corresponds to.
4. “Locations known to occur” may include a state or a county. For Hawaii, it may be a specific island.
5. If a recovery plan specifically describes an animal’s habitats as agricultural or golf courses, or other areas where pesticides are expected to be applied, please note this in the habitat or comments section of the worksheet.
6. For any questions, please see Kris Garber.

**Supplemental Information 2. Template for worksheet used to collect biological information on listed mammal species**

Species (common name):

Listed status: endangered threatened

Designated critical habitat? yes no

Primary Constituent Elements: (list)

Map of range/occurrences in recovery plan? yes no

Population size (most current estimate):

Body weight (in g):

Locations known to occur:

Federal lands or Indian reservations where species is known to occur:

Diet (enter as many as relevant):

insects small mammals fish

seeds birds aquatic invertebrates

grass reptiles aquatic plants

broadleaf plants terrestrial amphibians aquatic amphibians

 other:

Relevant EFED model(s): T-REX KABAM none

Habitat (enter as many as relevant):

 Forest Wetlands Fallow fields Agricultural areas

 Other:

Elevation restriction:

Obligate relationships:

Comments:

Name of data extractor (date):

QC reviewer (date):

Sources:

**Supplemental information 3. Species, subspecies or Distinct Population Segment-specific information for listed marine mammals**

This appendix contains a summary of the biological and geographical information available (primarily from the National Marine Fisheries Service) for listed marine mammal species, subspecies and Distinct Population Segments (DPS).

**Species (common name): *Arctocephalus townsendi* (Guadalupe fur seal)**

Listed status: threatened (2, p. 51252)

Designated critical habitat? No (2, p. 51252)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? no

Population size (most current estimate): 7,408, 1993 estimate (3, p. 1)

Estimated “current” population 10,000 in (4, p 2)

Body weight (in g): 50,000 - 160,000 (1, p. 295)

Males: mean 180,000 (4, p. 1)

Females: mean 50,000 (4, p. 1)

Dates of hibernation period: None noted in available USNMFS documentation (1, 2, 3, 4)

Dates of breeding period: May-August (1, p 295)

Migratory: No

Locations known to occur: from Zihuatanejo, Mexico (17° 39'N, 101° 34'W) to Blind Beach, CA (38° 26’ 10”N, 123° 07’ 20”W) (3, p 1)

CA Counties south of Blind Beach: Sonoma, Marin, San Francisco, San Mateo, Santa Cruz, Monterey, San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, San Diego

Federal lands or Indian reservations where species is known to occur: (5)

* Channel Islands National Park
* Farallon National Wildlife Refuge
* San Nicolas Island Naval Reservation

Diet: squid, mackerel, lantern fish (4, p 1)

Relevant EFED model(s): KABAM

Habitat: Marine (1, p. 295); Coastal rocky habitats and caves during breeding season (4, p. 1)

Habitat size: Not specified in available USNMFS documentation (1, 2, 3, 4)

Elevation restriction: None noted in available USNMFS documentation (1, 2, 3, 4)

Obligate relationships: None noted in available USNMFS documentation (1, 2, 3, 4). Reviewer believes that there are no obvious obligate relationships related to diet (species is opportunistic) or habitat.

Comments:

Breed only on the eastern shore of Guadalupe Island (1, p. 295)

Mainly feed at night, diving up to depths of 65 ft (20 m) (4, p. 1)

Non-migratory species, only species of *Arctocephalus* north of the equator (4, p. 2)

Name of data extractor (date): Steve Carey (2/1/12)

QC reviewer (date): Elyssa Gelmann (4/27/12), modified by K. Garber (12/4/15)

Sources:

1. US NMFS. 1985. Threatened Fish and Wildlife; Guadalupe Fur Seal. Proposed Rule. United States National Marine Fisheries Service. Available online at: http://ecos.fws.gov/docs/federal\_register/fr910.pdf
2. US NMFS. 1985. Threatened Fish and Wildlife; Guadalupe Fur Seal. Final Rule. United States National Marine Fisheries Service. Available online at: http://ecos.fws.gov/docs/federal\_register/fr1065.pdf
3. US NMFS. 2000. Marine Mammal Stock Assessment Report: Guadalupe Fur Seal. United States National Marine Fisheries Service. Available online at: http://www.nmfs.noaa.gov/pr/pdfs/sars/po2000segf-mx.pdf
4. US NMFS Species Profile: Guadalupe Fur Seal. NOAA Fisheries, Office of Protected Resources. Available online at: <http://www.nmfs.noaa.gov/pr/species/mammals/pinnipeds/guadalupefurseal.htm>
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Balaena mysticetus* (Bowhead Whale)**

Listed status: Endangered (2, p. 1)

Designated critical habitat? No (3, p. 55767)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? No recovery plan is available; map of range (1, p. 47), (2, p. 1)

Population size (most current estimate): 7,000 - 10,000 whales worldwide (2, p. 2); North Atlantic stocks range from <100 to 450 whales (2, p. 2); North Pacific stocks range from 150-200 to 6,400-9,200 whales (2, p. 2)

12,631 in 2004 (6)

Body weight (in g):

Adults: 68,000,000 – 91,000,000 (roughly converted from 75-100 tons, assuming 1 short ton is equal to 907,185 grams) (1, p. 47; 2, p. 1);

Calves: 900,000 (2, p. 1)

Dates of hibernation period: None

Dates of breeding period: Believed to take place late winter and spring, perhaps continuing to spring migration (3, p. 55767); sexual maturity reached around 20 years, gestation period 13-14 months (2, p. 1); Calves are born in spring (April- June) as whales migrate to feeding grounds (1, p. 47), (3, p. 55767)

Migratory: Yes

Locations known to occur: Arctic and Subarctic regions of the North Atlantic and Pacific Oceans and adjacent seas including the Bering, Chukchi, and Beaufort Seas (1, p. 47), (2, p. 1), (3, p. 55767)

Relevant state: Alaska (coastal counties) (2)

Feeding areas include Amundsen Gulf; central and western U.S. Beaufort Sea; Wrangel Island; the coast of Chukotka, between Wrangel Island and the Bering Strait; and the western Bering Sea (6)

Federal lands or Indian reservations where species is known to occur: None (5)

Diet: Small-medium sized invertebrates, especially krill and copepods (1, p. 47); zooplankton, copepods, euphausiids, mysids, other invertebrates and fish (2, p. 1)

Euphausiids, copepods, isopods, mysids, amphipods and fish (7)

Relevant EFED model(s): KABAM

Habitat: Arctic Ocean and adjacent seas (1, p. 47); summer in ice-free waters adjacent to Arctic Ocean, and are otherwise associated with sea ice (2, p. 1)

 Closely associated with sea ice in winter and spring (6)

During autumn migration, shelf waters are used (6)

Habitat/range size: Circumpolar (2, p. 1)

Elevation restriction: sea level (assumed by reviewer)

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: The large bow-shaped skull is used break through thick ice (2, p. 1); longest baleen plates of any whale (can reach lengths of 5.2 m) (1, p. 46), thickest (17-19 in) blubber layer of any whale (2, p. 1); lacks a dorsal fin (2, p. 1); Gray whales and Right whales habitats overlap with the bowhead whale (1, p. 47); Alaskan, Canadian, and Russian natives are allowed to harvest (hunt) the bowhead whale (1, p. 47); five stocks of bowhead whales: North Atlantic (3 stocks) - the Spitsbergen, Baffin Bay-Davis Strait, and Hudson Bay-Fox Basin stocks; and North Pacific (2 stocks) - the Sea of Okhotsk and Bering-Chukchi-Beaufort stocks (2, p. 2)

There is evidence (genetic) that the Baffin Bay-Davis Strait and Husdon Bay-Fox Basin stocks are from the same stock (6)

Name of data extractor (date): Steve Carey (March 9, 2012)

QC reviewer (date): Christina Wendel (April 17, 2012), modified by K. Garber (11/20/15)

Sources:

1. Jefferson T.A., S. Leatherwood, and M.A. Weber. 1993. FAO Species Identification Guide: Marine Mammals of the World, Rome. Food and Agriculture Organization. 320 p. Available online at: <http://www.fao.org/docrep/009/t0725e/t0725e00.htm>.
2. NMFS. 2012. Bowhead Whale (*Balaena mysticetus*), Office of Protected Resources, NOAA Fisheries Species Information. Date accessed March 9, 2012. Available online at: <http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/bowheadwhale.htm>
3. National Marine Fisheries Service (NMFS). 2002. Department of Commerce, National Oceanic and Atmospheric Administration, 50 CFR Part 226, Endangered and Threatened Species; Final Determination on a Petition to Designate Critical Habitat for the Bering Sea Stock of Bowhead Whales. Federal Register Vol. 67, No. 169, August 30, 2002. pg 55767-55771. Available online at: <http://alaskafisheries.noaa.gov/prules/fr55767bowhead.pdf>
4. USFWS. 2012. Species Profile for Bowhead Whale (*Balaena mysticetus*). U.S. Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A02N>
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
6. <http://www.nmfs.noaa.gov/pr/sars/2013/ak2013_bowhead.pdf>
7. http:www.afsc.noaa.gov/nmml/PDF/BOWFEST-2013-Final-Report.pdf

**Species (common name): *Balaenoptera borealis* (Sei Whale)**

Listed status: Endangered (1)

Designated critical habitat? No (2)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? No (2)

Population size (most current estimate): 80,000 whales worldwide; Hawaii stock 40-80 whales, eastern north pacific 35-55 whales. No estimates for the stocks in Nova Scotia and the western North Atlantic (1)

HI Islands (2010): 178 (5)

CA, OR and WA: (2005-2008): 126 (6)

Nova Scotia (2011): 357 (7)

Body weight (in g): 45,000,000 (1)

Dates of hibernation period: None

Dates of breeding period: generally in winter (1)

Gestation is between 10 months to 1 year (12.7 months for the North Pacific stock). In the North Atlantic, most births take place in November/December and conceptions in December/January. Weaning occurs on the feeding grounds in summer or autumn. Calving season for the North Pacific stock lasts from September to March and lactation continues for at least 9 months. The mean age of sexual maturity is thought to be 8 - 10 years in both sexes. (4)

Migratory: Yes

Sei whales are highly mobile, and there is no indication that any population remains in a particular area year-round (4)

Locations known to occur: Hawaii, Eastern north Pacific, Nova Scotia, and Western north Atlantic (1); or California (Del Norte, Humboldt, Mendocino counties), Massachusetts and Alaska maritime national wildlife refuge, Kodiak national wildlife refuge (2).

Federal lands or Indian reservations where species is known to occur: None (3)

Diet: Copepods, krill, small schooling fish, and cephalopods such as squid (1)

Relevant EFED model(s): KABAM

Habitat:

Subtropical to subpolar waters on the continental shelf edge and slope; usually found in deeper waters of oceanic areas far from coastlines (1)

Habitat size: Not specified

Elevation restriction: sea level (assumed by reviewer)

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: Fastest swimming cetaceans. Top speeds of 34.5 mph

North Atlantic diet: calanoid copepods, with a secondary preference for euphausiids. Also, they have a preference for zooplankton and micronekton (4).

North Pacific diet: calanoid copepods and euphausiids, sei whales in the North Pacific reportedly prey on "almost every gregarious organism occurring with large biomass," including pelagic squid and fish the size of adult mackerel (4).

Name of data extractor (date): Steve Carey March 9, 2012

QC reviewer (date): Brian Anderson, 5/4/12, K. Garber (February 1, 2013), modified by K. Garber (12/4/15)

Sources:

1. NMFS. 2012. Sei Whale (*Balaenoptera borealis*). National Marine Fisheries Service. Available online at: <http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/seiwhale.htm>
2. USFWS. 2012. Species profile for Sei Whale (*Balaenoptera borealis*). United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A02S>
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
4. <http://www.nmfs.noaa.gov/pr/pdfs/recovery/seiwhale.pdf>
5. http:/www.nmfs.noaa.gov/pr/sars/2013/po2013\_seiwhale-hi.pdf
6. <http://www.nmfs.noaa.gov/pr/pdfs/sars/po2010whse-en.pdf>
7. http://www.nmfs.noaa.gov/pr/sars/2013/ao2013\_seiwhale-novascotia.pdf

Species (Bryde’s whales, Gulf of Mexico DPS): *Balaenoptera edeni*

Listed status: Candidate

Designated critical habitat? no

Spatial data in recovery plan? no

Population size (most current estimate): NMFS (2012) estimates the abundance of the Gulf of Mexico Bryde’s whales to be 33 (CV = 1.07) based on a 2009 survey (with a maximum best estimate from 1996-2001 of 40 animals; CV = 0.61). (1)

Body weight (in g): about 90,000 lbs (40,000 kg= 40000000 Grams)

Dates of Breeding Period: Successful breeding may only occur in alternate years, although a new conception may occur relatively quickly following the loss of a calf. The South African inshore Bryde's whale has a slower overall rate of growth and reaches a smaller maximum size than offshore whales, which may mean a lower rate of population growth (Best, 1977).

Locations known to occur: Gulf of Mexico

Federal lands or Indian reservations species is known to occur:

Migratory:

Diet: fish

aquatic invertebrates

plankton (like krill and copepods), crustaceans (like red crabs and shrimp), schooling fish (like anchovies, herring, mackerel, pilchards, and sardines). Bryde’s whales around the world have been observed feeding at the surface, typically taking schooling fish such as sardines (clupeid: e.g., in Brazil, Siciliano et al., 2004). Alves et al. (2010) tagged two Bryde’s whales off Madeira Island and found that they were lunge-feeding at depth while diving synchronously to depths up to nearly 300 m, with increasingly shallow dives around dusk and increasingly deep dives from around midnight to dawn (and with a period of shallow dives in between). A similar dawn and dusk feeding pattern was observed visually in the Gulf of California (Tershy, 1992). Alves et al. (2010) suggested that this was not unlike other Balaenoptera species, and that the whales were likely to be consuming zooplankton and following the deep scattering layer’s diel migration.

Relevant EFED model(s): KABAM

Habitat (enter as many as relevant):

Other: Animals from the Bryde’s whale complex are found around the world’s warmer waters between about 40°N and 40°S or in waters warmer than 16.3°C (Kato, 2002), with winter migration towards the equator, as reported in the southeast Atlantic (Best,1996) and the northwest Pacific (Kishiro, 1996) populations. Although they can be found in pelagic habitats (e.g., Wade and Gerrodette,1993; and as indicated from whaling data: IWC, 2006), several sheltered and enclosed waters harbor regular if not resident populations, such as in the northern Gulf of California (Urbán-Ramirez and Flores,1996) but not in the Mediterranean (Reeves and Notabartolo di Sciara ,2006). They are also commonly found, at least at certain times of the year, in some coastal areas, such as the coasts of Peru and Ecuador (Valdivia et al.,1981), Chile (in an area of upwelling: Gallardo et al.,1983) and the western coast of southern Africa (Best, 2001). With regard to the northern Gulf of Mexico, several records of strandings exist (e.g., Mead, 1977; Jefferson and Schiro, 1997), complementing the various sightings data provided by NMFS surveys (Mullin and Fulling, 2004; NMFS, 2012). These data sets are complimentary, highlighting a relatively small habitat range offshore in the area off the Florida Panhandle, with sightings only along the shelf edge near DeSoto Canyon at depths between 100 and 1,000m. The Canyon is an erosional valley that cuts through the broad continental shelf and creates an upwelling of deep nutrient-rich water that leads to more consistently high primary productivity. Recent acoustic data support the consistent presence of Bryde’s whales in this area and their residency in the Gulf (Širović et al., 2014). (1)

Habitat size (home range): Bryde's whales likely have a cosmopolitan distribution and occur in tropical and warm temperate oceans (Atlantic, Indian, and Pacific) around the world. They can be found globally in all oceans from 40° South to 40° North. Some populations of Bryde's whales may migrate seasonally, moving towards higher latitudes during the summer and towards the equator during the winter. Other populations of Bryde's whales are residents and do not migrate; this is unique among baleen whales. The distribution of Omura's whales includes the nearshore and continental shelf waters of the southeast Asia, eastern Indian, and western Pacific Ocean. Bryde’s whales are generally found in a range of habitats and water depths; in the Gulf of Mexico, however, their distribution appears highly limited to a relatively small area off the Florida Panhandle. More specifically, they are found right along the shelf edge in DeSoto Canyon at depths between 100 and 1,000m (e.g., Mullin and Fulling, 2004; Širović et al., 2014). (1)

Elevation restriction:

Obligate relationships:

Comments: Bryde's whales prefer highly productive tropical, subtropical and warm temperate waters worldwide (61-72° F or 16-20° C). The smaller form of this species may prefer waters near the coast and continental shelf.

Relatively little is known of the life history of Bryde's whales. In both the inshore and offshore South African ecotypes, as reported by Best (1977), both males and females become sexually mature at around 12 m in length, which is between to 8 to 13 years of age for females. Bryde’s whales may mate year round, although the offshore South African form displays a slight autumnal peak. Pregnancy is assumed to last 12 months, in line with other balaenopterid species, and lactation is thought to be similar to that of the sei whale at six months to a year. Mothers typically give birth to a single calf of around 3.5 m in length and weighing around 1,000 kilograms.

Name of data extractor and date: Lewis Ross Brown, III, Environmental Biologist August 26, 2016

QC reviewer (date):

Sources:

1. Petition for Listing: 2014\_NOAA\_ A petition to list the Gulf of Mexico Bryde’s whale (*Balaenoptera edeni*) as endangered under the Endangered Species Act

<http://www.nmfs.noaa.gov/pr/species/petitions/brydes_whale_petition_2014.pdf>

**Species (common name): *Balaenoptera musculus* (Blue Whale)**

Listed status: Endangered (1, p. 1, 3)

Designated critical habitat? No (1, p. 4)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? No (1, p. 1)

Population size (most current estimate):

 North Atlantic = 440 (5)

Eastern North Pacific: 1647 (5)

Central North Pacific (Hawaii): 81 (5)

Body weight (in g): 145,000,000 (2)

Dates of hibernation period: none

Dates of breeding period:

Gestation period is 10-12 months- calves nurse for 6-7 months. Birth and mating takes place during the winter season (1, p. 6)

Migratory: Yes (6)

They migrate seasonally between summer and winter, but some evidence suggest that individuals remain in certain areas year-round.

* Western stock: feed in summer in the southwest of Kamchatka, south of the Aleutians, and in the Gulf of Alaska. In winter, they migrate to lower latitudes in the western Pacific and, less frequently, in the central Pacific, including Hawaii.
* Easter stock is believed to spend winters off of Mexico and central America, and feed during summer off the U.S. West Coast and, to a lesser extent, in the Gulf of Alaska and central North Pacific waters

Locations known to occur:

North Atlantic = Subtropics north to Baffin Bay and the Greenland Sea—Present in Gulf of St. Lawrence for most of the year (March-February) (1, p. 4, 5)

North Pacific = Southern Japan, Northern Japan/ Kurils/Kamchatka, Aleutian Islands, Eastern Gulf of Alaska, California/Mexico (1, p. 10)

States: Alaska, California, Hawaii, Massachusetts (3)

Gulf of CA (December- March; Calving and nursing area) (6)

Federal lands or Indian reservations where species is known to occur: None (4)

Diet:

 North Atlantic = krill (relatively large euphausiids crustaceans) (1, p. 5)

 North Pacific = Euphausiids and pelagic crabs (1, p. 12)

Relevant EFED model(s): KABAM

Habitat: Marine waters (primarily offshore distribution) (1, p. 1)

Habitat Size:

North Atlantic = Range from North of Baffin Bay to the Greenland Sea (1, p. 4)

North Pacific = Range is known to encompass most of the North Pacific ocean from Kamchatka to Southern Japan in the west and from the Gulf of Alaska and California south to Costa Rica in the East/ Concentrated most from Aleutian Islands to the Bering Sea (1, p. 11)

Elevation restriction: sea level (assumed by reviewer)

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: Comparing the North Atlantic populations with the North Pacific populations – distribution is governed by food requirements and migratory patterns (1, p. 3)

The Eastern North Pacific Stock was formerly referred to as the California/Mexico stock (6)

The Western North Pacific Stock was formerly know as the Hawaiian stock or Central stock (6)

Studies of intraspecific variability have led to the designation of three subspecies:

* B. m. musculus in the Northern Hemisphere;
* the somewhat larger B. m. intermedia from the Antarctic; and
* B. m. brevicauda, the so-called "pygmy" blue whale, a significantly smaller and morphologically distinct form found in the subantarctic zone of the Indian Ocean and sowthwestern Pacific Ocean.

Name of data extractor (date): Hannah Yingling January 5, 2012

QC reviewer (date): Jean Holmes 1/30/12, K. Garber (February 1, 2013), modified 12/1/15

Sources:

1. NMFS. 1998. Recovery plan for blue whale. National Marine Fisheries Service. Available online at: http://www.nmfs.noaa.gov/pr/pdfs/recovery/whale\_blue.pdf
2. FAO. 1993. Marine mammals of the world, Rome. Food and Agriculture Organization. Available online at: <http://www.fao.org/docrep/009/t0725e/t0725e00.htm>.
3. NMFS. 2012. Blue Whale (*Balaenoptera musculus*), Office of Protected Resources, NOAA Fisheries Species Information. Date accessed June 4, 2012. Available online at: <http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/bluewhale.htm>
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
5. <http://www.nmfs.noaa.gov/pr/sars/2013/po2013_bluewhale-cnp.pdf>
6. http://www.nmfs.noaa.gov/pr/pdfs/recovery/whale\_blue.pdf

**Species (common name): *Balaenoptera physalus* (Fin Whale)**

Listed status: Endangered (1, p. I-1)

Designated critical habitat? No (1, p. I-1)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? No map has global distribution (1, p. v)

Population size (most current estimate): 2010 stock assessment reports - minimum population estimates for fin whales in U.S. waters (3, p. 5): western North Atlantic stock: 3,985; California/Oregon/Washington stock: 2,624; Hawaiian stock: 101; Northeast Pacific stock: 5,700

Body weight (in g): 75,000,000 (2, p. 53)

Dates of Hibernation Period: None

Dates of Breeding Period: Mating and births take place November to March, peaking in December/ with some occasionally occurring “out of season” (1, p. 8); gestation period is less than a year (1, p. I-80; calves are nursed for 6-7 months (1, p. I-8).

Migratory: Yes

Locations known to occur:

North Atlantic = Gulf of Mexico and Mediterranean sea, northward to the edge of the arctic pack ice; more common north of 30º N latitude (1, p. I-6)

North Pacific = Immediate offshore waters through North Pacific from Baja California to Japan and north to the Chukchi Sea; high densities in Northern Gulf of Alaska and southeastern Bering Sea May - October; occasional migration to waters off Hawaii and surrounding islands (1, p. I-11)

Federal lands or Indian reservations where species is known to occur: None (6)

Diet:

North Atlantic = pelagic crustaceans (euphasiids or krill), schooling fish (*e.g.,* capelin, herring, sand lance) (1, p. I-7)

North Pacific = prefer euphasiids, and large copepods; followed by schooling fish (*e.g.,* herring, walleye pollock, and capelin) (1, p. I-13)

Relevant EFED model(s): KABAM

Habitat: Marine waters globally (1, p. v)

Habitat size: Pacific and Atlantic Oceans (1, p. v)

Elevation restriction: sea level (assumed by reviewer)

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

* There are two subspecies of finned whales in the North Atlantic (*B. p. physalus*)and southern oceans (*B. p. quoyi*), most experts consider the North Pacific finned whales part of another subspecies which remains unnamed (1, p. I-4).
* The recovery plan is divided into sections: the North Atlantic finned whale, North Pacific finned whale, and the Southern Hemisphere fin whale; however, they are currently not considered to be distinct population segments (DPS), more research is being conducted to finalize classification (1, p. I-5)
* Local distribution is prey driven (1, p. I-6)
* It has been suggested that fin whales can alter their age of sexual maturity based on the population structure; delaying or speeding up maturity depending on the ratio of sexually mature whales (1, p. I-9 and I-13)
* Can reach speeds of up to 37 km/h (2, p. 53)

Name of data extractor (date): Hannah Yingling (January 10, 2012)

QC reviewer (date): Christina Wendel (May 4, 2012), K. Garber (February 1, 2013), modified by K. Garber (12/4/15)

Sources:

1. National Marine Fisheries Service (NMFS). 2010. Recovery plan for the fin whale (*Baalaenoptera physalus*). National Marine Fisheries Service, Silver Spring, MD. 121 pp. Available online at: <http://www.nmfs.noaa.gov/pr/pdfs/recovery/finwhale.pdf>.
2. Jefferson T.A., S. Leatherwood, and M.A. Weber. 1993. FAO Species Identification Guide: Marine Mammals of the World. Rome. Food and Agriculture Organization. 320 p. Available online at: <http://www.fao.org/docrep/009/t0725e/t0725e00.htm> and ftp://ftp.fao.org/docrep/fao/009/t0725e/t0725e08.pdf
3. NMFS. 2011. Fin Whale (*Baalaenoptera physalus*) 5-Year Review: Summary and Evaluation. National Marine Fisheries Service, Silver Spring, MD. 23 pp. Available online at: <http://www.nmfs.noaa.gov/pr/pdfs/species/finwhale_5yearreview.pdf>
4. http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/finwhale.htm
5. <http://www.nmfs.noaa.gov/pr/sars/species.htm#largewhales>
6. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Delphinapterus leucas* (Beluga Whale - Cook Inlet Population)**

Listed status: Endangered (1)

Designated critical habitat? Yes (1)

Primary Constituent Elements: (2)

1. Intertidal and subtidal waters of Cook Inlet with depths <30 feet (MLLW) and within 5 miles of high and medium flow anadromous fish streams.

2. Primary prey species consisting of four species of Pacific salmon (Chinook, sockeye, chum, and coho), Pacific eulachon, Pacific cod, walleye pollock, saffron cod, and yellowfin sole.

3. Waters free of toxins or other agents of a type and amount harmful to Cook Inlet beluga whales.

4. Unrestricted passage within or between the critical habitat areas.

5. Waters with in-water noise below levels resulting in the abandonment of critical habitat areas by Cook Inlet beluga whales.

Map of range/occurrences in recovery plan? Yes (1)

Population size (2014 estimate): Cook Inlet stock (one of the five stocks) 340 individuals, CV 0.8 (1)

Body weight (in g):

Adult males: 1,500,000 (1)

Adult females 1,360,000 (1)

Dates of hibernation period: None

Dates of breeding period: March, April (1)

Migratory: No (4)

Locations known to occur: Cook Inlet, Alaska (1)

Arctic Ocean and its adjoining seas, including the Sea of Okhotsk, the Bering Sea, the Gulf of Alaska, the Beaufort Sea, Baffin Bay, Hudson Bay, and the Gulf of St. Lawrence (1)

Federal lands or Indian reservations where species is known to occur: None (3)

Diet: marine invertebrates (octopus, squid, crabs, shrimp, clams, mussels, snails, sandworms) and anadromous fish (eulachon and salmon), marine fish (capelin, cod, herring, smelt, flounder, sole, sculpin, lamprey, and lingcod) (1)

Relevant EFED model(s): KABAM

Habitat: Shallow coastal waters, have been seen in deep waters; cold ocean and warmer freshwater; small bays, estuaries and river basins (1).

Habitat/range size: Circumpolar (1)

Elevation restriction: sea level (assumed by reviewer)

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Opportunistic feeders (1)

Five stocks (Cook Inlet, Bristol Bay, Eastern Bering Sea, Eastern Chukchi Sea, Beaufort Sea). The Cook Inlet stock was listed as endangered (1).

Blubber accounts for up to 40% of body weight (1).

Gestation period is 14-15 months. Calves are born March through September of the year following mating (1).

Offspring diet is based on mother’s milk for first 12-18 months, then supplement diet with shrimp and small fish, while nursing for another year (1).

Generally, belugas spend the ice-free months in the upper Inlet (often at discrete high-use areas), then expand their distribution south and into more offshore waters of the middle Inlet in winter. (4)

Diets switch seasonally/temporally. Beluga whales are opportunistic when foraging. In spring, they feed extensively on concentrations of spawning eulachon; then shift to foraging on salmon species as eulachon runs diminish and salmon return to spawning streams. In winter, it is presumed that belugas forage more on benthic species or opportunistically on infrequently encountered pelagic species. In spring and fall, gadid and flounder species are relatively important prey items in spring and fall (and likely winter); seasons when fewer salmon are available (4).

Name of data extractor (date): Jean Holmes (May 23, 2012)

QC reviewer (date): Kris Garber (May 25, 2012), modified 12/1/15

Sources:

1. NOAA Fisheries Office of Protected Resources Species Information (Beluga whale): <http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/belugawhale.htm>
2. Federal Register, 76(69):20180-20214, April 11, 2011. Available online at: <http://www.nmfs.noaa.gov/pr/pdfs/fr/fr76-20180.pdf>
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
4. http://www.fisheries.noaa.gov/pr/recovery/plans/draft\_cib\_recovery\_plan\_15may2015.pdf

**Species (common name): *Enhydra lutris kenyoni* (Northern Sea Otter) -** Southwest Alaska Distinct Population Segment

Listed status: threatened (1)

Designated critical habitat? yes (2)

Primary Constituent Elements: (2)

1. Shallow, rocky areas where marine predators are less likely to forage, which

are waters less than 2 m (6.6 ft) in depth.

2. Nearshore waters that may provide protection or escape from marine

predators, which are those within 100 m (328.1 ft) from the mean high tide line.

3. Kelp forests that provide protection from marine predators, which occur in

waters less than 20 m (65.6 ft) in depth.

4. Prey resources within the areas identified by PCEs 1, 2, and 3 that are

present in sufficient quantity and quality to support the energetic

requirements of the species.

Map of range/occurrences in recovery plan? Yes

Population size (most current estimate): 53,674 (1, p. 2-22).

Body weight (in g):

Males: 45,000 (1, p. 2-10)

Females: 36,000 (1, p. 2-10)

At birth pups weigh 1,700-2,300 (1, p. 2-30)

Dates of hibernation period: N/A

Dates of Breeding Period: Any time of year, though there appears to be a positive relation between latitude and reproductive synchrony. (1, p. 2-6).

Locations known to occur: Sea Otters occur only in the North Pacific Ocean. Southwest Alaska DPS is known or believed to occur in Alaska in the following counties: Aleutians East, Aleutians West, Kenai Peninsula, Kodiak Island, and Lake and Peninsula. (1)

Federal lands or Indian reservations where species is known to occur: None (3)

Diet: Fish, aquatic invertebrates (1, p. 2-10)

Relevant EFED model(s): KABAM

Habitat: (1)

**Coastal marine habitats**, including protected bays and estuaries to exposed outer coasts and offshore islands. Habitat typically limited to areas defined by a 100 m depth contour as otters need to be able to reach the sea floor to forage. While otters periodically haul out on intertidal or supratidal (above the high tide line) shores (particularly during winter months) and generally remain close to the sea/land interface, no aspect of their life history requires leaving the ocean (1, p. 2-4).

Habitat size: home range size varies. Early research in Aleutian Islands found that female’s home range is 8 – 16 km of contiguous coastline. Adult male home range in Prince William Sound are 4.6-11.0 km2 and adult female home ranges are 1.0-4.8 km2. (1, p. 2-9).

Elevation restriction: N/A

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: - sea otters have a keystone role in coastal marine ecosystems: sea urchins are the most frequently consumed prey of sea otters and when sea otters are sufficiently abounded, prevent overgrazing of kelp forest by sea urchins (1, p. 1).

-Though not an obligate relationship, the presence of northern sea otters is positively associated with kelp forests along the near shore areas. (1)

Name of data extractor (date): Joseph DeCant 10/27/11

QC reviewer (date): Jean Holmes 5/16/12, modified by K. Garber (12/4/15)

Sources:

1. USFWS. 2010. Draft Recovery Plan for the Southwest Alaska DPS of the Northern Sea Otter (Enhydra lutris kenyoni). Available online at: [Draft Recovery Plan for the Southwest Alaska DPS of the Northern Sea Otter (Enhydra lutris kenyoni)](http://ecos.fws.gov/docs/recovery_plan/101012.pdf).
2. USFWS. 2009. Designation of Critical Habitat for the Southwest Alaska Distinct Population Segment of the Northern Sea Otter. Federal Register, 74(194):51988-52012. October 8, 2009. Available online at: <http://www.gpo.gov/fdsys/pkg/FR-2009-10-08/pdf/E9-24087.pdf#page=1>
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Enhydra lutris nereis* (Southern Sea Otter)**

Listed status: threatened and experimental population, non-essential (3)

Designated critical habitat? Yes (4)

Primary Constituent Elements: (4)

1. Shallow, rocky areas where marine predators are less likely to forage, which

are waters less than 2 m (6.6 ft) in depth.

2. Nearshore waters that may provide protection or escape from marine

predators, which are those within 100 m (328.1 ft) from the mean high tide line.

3. Kelp forests that provide protection from marine predators, which occur in

waters less than 20 m (65.6 ft) in depth.

4. Prey resources within the areas identified by PCEs 1, 2, and 3 that are

present in sufficient quantity and quality to support the energetic

requirements of the species.

Map of range/occurrences in recovery plan? Yes

Population size (most current estimate): 2,139 (1, p. 4).

Body weight (in g):

Males: 30,000 (1, p. 5), (3)

Females: 20,000 (1, p. 5), (3)

Dates of hibernation period: N/A

Dates of Breeding Period:breeding can be throughout the year (1, p. 6).

Locations known to occur: Range delineation is somewhat arbitrary because individuals frequently wander beyond the distributional limits of most of the rest of the population. Currently, the population is distributed from Marin County **California** to the most southern county in California. Counties include: Monterey, San Luis Obispo, Santa Barbara, Santa Cruz, Ventura. (1)

Federal lands or Indian reservations where species is known to occur: (5)

* San Nicolas Island Naval Reservation (Navy)

Diet: aquatic invertebrates, in some areas fish (1, p. 5)

Relevant EFED model(s): KABAM

Habitat: (1, p. viii).

Near-shore ecosystem, primarily marine

Habitat size (habitat range): Males defend contiguous territories from which they exclude other males (Riedman and Estes 1990). Males may move up to 30-60 miles along coast, females generally stay within area 5-10 miles long. Daily movements generally encompass a few kilometers (Riedman and Estes 1990). (2)

Elevation restriction: Sea otters occupy hard- and soft-sediment marine habitats from the littoral zone to depths of less than 100 meters (330 feet). Most individuals occur between shore and the 20-meter (65-foot) depth contour (1, p. viii).

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: though not an obligate relationship, the presence of southern sea otters is positively associated with kelp forests along the near shore areas off of California. (1)

Name of data extractor (date): Joseph DeCant 10/27/11

QC reviewer (date): Jean Holmes, 5/14/12, modified by K. Garber (12/4/15)

Sources:

1. USFWS. 2003. Final Revised Recovery Plan for the Southern Sea Otter (Enhydra lutris nereis). Available online at: [Final Revised Recovery Plan for the Southern Sea Otter (Enhydra lutris nereis)](http://ecos.fws.gov/docs/recovery_plan/030403.pdf).
2. NatureServe. 2011. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: January 11, 2012 ).
3. Species Profile on FWS website: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0A7>
4. Federal Register, 74(194):51988-52012. October 8, 2009. Available online at: <http://www.gpo.gov/fdsys/pkg/FR-2009-10-08/pdf/E9-24087.pdf#page=1>
5. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Eubalaena glacialis* (North Atlantic right whale)**

Listed status: Endangered (1, p. v)

Designated critical habitat? Yes (2)

Primary Constituent Elements: Not defined in FR for designation of critical habitat (2)

Map of range/occurrences in recovery plan? No, map of critical habitat available (1, VIID-1 and 2).

Population size (most current estimate): 455 in 2010 (8)

Body weight (in g): 63,500,000 (1, p. IB)

Dates of hibernation period: N/A

Dates of Breeding Period: Between December and March (5)

Females give birth to a single calf every 3- 4 years. The gestation period is about 12 months. The calf is about 4.5m - 6m long at birth (1)

Migratory: Yes, they migrate to higher latitudes during the spring and summer. Juvenile and female right whales migrate to the southeastern U.S. for winter months (5)

Locations known to occur: There are five well-known habitats used annually by western North Atlantic right whales: 1) coastal Florida and Georgia, 2) the Great South Channel, east of Cape Cod, 3) Cape Cod and Massachusetts Bays, 4) the Bay of Fundy, and 5) Browns and Baccaro Banks, south of Nova Scotia. The first three areas occur in U.S. waters and were designated by NMFS as critical habitat in June 1994 (59 FR 28793).

(1, p. ID))

Individuals in the western North Atlantic population range from winter calving and nursery areas in coastal waters off the southeastern United States to summer feeding grounds in New England waters and north to the Bay of Fundy and Scotian Shelf

(1, p. v)

Western North Atlantic population range from wintering and calving areas in coastal waters off the southeastern United States to summer feeding and nursery grounds in New England waters and north to the Bay of Fundy and Scotian Shelf (9)

Federal lands or Indian reservations where species is known to occur: (3)

* Blackbeard Island National Wildlife Refuge
* Cape Cod National Seashore (NPS)
* Cumberland Island National Seashore (NPS)
* Wassaw National Wildlife Refuge
* Wolf Island National Wildlife Refuge

Diet: Right whales feed mainly on [copepods](http://en.wikipedia.org/wiki/Copepods) *(Calanus finmarchicus* (7) and other small [invertebrates](http://en.wikipedia.org/wiki/Invertebrate) such as [krill](http://en.wikipedia.org/wiki/Krill), [pteropods](http://en.wikipedia.org/wiki/Pteropod), and larval [barnacles](http://en.wikipedia.org/wiki/Barnacles), generally by slowly skimming through patches of concentrated prey at or below the ocean surface (1, p. v)

Relevant EFED model(s): KABAM

Habitat: The North Atlantic right whale primarily occurs in coastal or shelf waters in temperate to subarctic latitudes, but may go into deeper waters. (1, p. v)

Habitat size: Not specified

Elevation restriction: sea level (assumed by reviewer)

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Predators: Various species of large sharks and killer whales (*Orcinus orca*) may be predators of right whales, particularly for young or sick individuals. However, no such attacks have been observed in this species. Scars from killer whale attacks have been photographed on North Atlantic right whales (Kraus 1990), although the level of killer whale attacks and the extent to which they result in death is not known (1, p. IE)

Comments:

Females are larger than males. (1, p. IB)

New designated critical habitat has been proposed (4)

The only known calving and nursery grounds are in the coastal waters off the southeastern US, from Savannah, Georgia to St. Augustine, Florida. (6)

(7)

Name of data extractor (date): Lewis Brown, 5/4/12

QC reviewer (date): Brian Anderson, 5/4/12, K. Garber (February 1, 2013), modified 12/1/15

Sources:

1. NMFS. 2004. Recovery plan for the north Atlantic right whale (*Eubalaena glacialis*). Available online at: <http://ecos.fws.gov/docs/recovery_plan/whale_right_northatlantic.pdf>
2. Federal Register, 59(106):28794-28834, June 3, 1994. Available online at: <http://www.gpo.gov/fdsys/pkg/FR-1994-06-03/html/94-13500.htm>
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
4. 80 FR 9314
5. <http://www.fisheries.noaa.gov/pr/pdfs/species/narightwhale_5yearreview.pdf>
6. Hooper, T. NMFS. Personal Communication. 9/9/15.
7. <https://www.federalregister.gov/articles/2015/02/20/2015-03389/endangered-and-threatened-species-critical-habitat-for-endangered-north-atlantic-right-whale#h-10>
8. <http://www.nmfs.noaa.gov/pr/sars/2013/ao2013_rightwhale-west-atl.pdf>
9. http://www.fisheries.noaa.gov/pr/species/mammals/whales/north-atlantic-right-whale.html

**Species (common name): *Eubalaena japonica* (North Pacific Right Whale)**

Listed status: Endangered (1)

Designated critical habitat? Yes (1)

Primary Constituent Elements:

The primary constituent elements of the North Pacific right whale are the copepods *Calanus marshallae*, *Neocalanus cristatus*, and *N. plumchris*, and the euphausiid *Thysanoessa raschii*, in areas of the North Pacific Ocean in which North Pacific right whales are known or believed to feed. (4)

Map of range/occurrences in recovery plan? (1)

Population size (most current estimate): < 500 individuals between the eastern and western populations (5)

Body weight (in g): Adults: 63,500,000 (1)

Dates of hibernation period: None

Dates of breeding period: Winter (gestation is approx. 1 year) (1).

Migrate: Yes (1)

Locations known to occur: Designated critical habitat is in waters off the coast of Alaska. Since 1996, observed in Bristol Bay, southeastern Bering Sea, during the summer months. Have been sited in central North Pacific and Bering Sea, central Baja California in the eastern North Pacific, Hawaii in the central North Pacific, and the sub-Arctic waters of the Bering Sea and sea of Okhotsk (1). Based on distribution map (1), it appears that this species may occur off the coast of WA, OR and CA.

Federal lands or Indian reservations where species is known to occur: None (3)

Diet: Zooplankton (copepods, euphausiids, and cyprids) (1)

Relevant EFED model(s): KABAM

Habitat: Shallow coastal waters though movements over deep waters are known to occur (1)

Habitat/range size: Not indicated

Elevation restriction: sea level (assumed by reviewer)

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: Right whales feed during spring, summer and fall (1)

It is likely that feeding areas in the Okhotsk Sea and adjacent waters along the coasts of Kamchatka and the Kuril Islands together with the Gulf of Alaska have been important summer habitats for eastern North Pacific right whales. (6)

The western Gulf of Alaska and the southeast Bering Sea are, or were, frequently used areas. (6)

Little is known about the migratory pattern. (6)

Southern California, the Northwest Hawaiian Islands, the southern coast of China, and the northern coast of Vietnam are potential calving areas. (6)

Name of data extractor (date): Jean Holmes (May 23, 2012)

QC reviewer (date): Kris Garber (May 25, 2012), updated 12/1/15

Sources:

1. National Marine Fisheries NOAA Fisheries Species Information. Office of Protected Resources: <http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/rightwhale_northpacific.htm>
2. Federal Register, 73(68):19000-19014, April 8, 2008. Available online at: <http://www.gpo.gov/fdsys/pkg/FR-2008-04-08/pdf/E8-7233.pdf#page=1>
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
4. <http://www.fisheries.noaa.gov/pr/pdfs/fr/fr73-19000.pdf>
5. <http://www.nmfs.noaa.gov/pr/sars/2013/ak2013_northpacificrightwhale.pdf>
6. http://www.fisheries.noaa.gov/pr/recovery/plans/rightwhale\_northpacific.pdf

**Species (common name): *Erignathus barbatus (*Bearded Seal (Beringia DPS))**

Listed status: Threatened

Designated critical habitat? No

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? yes (1)

Population size (most current estimate):

Beringia DPS: 155,000 (3)

Body weight (in g): 260,000-360,000 (1)

Pups: 33,600 g at birth, 85,000g by weaning. (4)

Migratory: Yes (4)

Locations known to occur: Arctic Ocean (1)

Federal lands or Indian reservations where species is known to occur: None (2)

Diet: arctic cod, shrimp, clams, crabs, and octopus (1)

Primarily benthic organisms, including epifaunal and infaunal invertebrates, and demersal fishes (5)

Relevant EFED model(s): KABAM

Habitat: arctic waters with drifting sea ice. Waters <200 m. (1) closely associated with sea ice (4)

Elevation restriction: none

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

The Beringia DPS is often referred to as the Alaskan stock (5).

While feeding, seals dive to depths <100 m. (1)

Bearded seals generally move north in late‐spring and summer as the ice melts and retreats and then move south in the fall as sea ice forms to remain associated with their preferred ice habitat. (4)

Their normal range extends from the Arctic Ocean (85°N) south to Sakhalin Island (45°N) in the Pacific, and south to Hudson Bay (55°N) in the Atlantic.(5)

Name of data extractor (date): Kris Garber (5/7/12)

QC reviewer (date): Elyssa Arnold (5/18/15) , modified by K. Garber (12/4/15)

Sources:

1. <http://www.nmfs.noaa.gov/pr/species/mammals/pinnipeds/beardedseal.htm>
2. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
3. 77 FR 76739
4. <http://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-211.pdf>
5. http://www.nmfs.noaa.gov/pr/sars/2013/ak2013\_beardedseal.pdf

**Species (common name): *Eumetopias jubatus* (Steller sea-lion), Western Distinct Population Segment**

Listed status: endangered (1, p x)

Designated critical habitat? Yes (1, p x)

Primary Constituent Elements:

Terrestrial, air, and aquatic areas that support (4):

* reproduction
* foraging
* rest
* refuge

Map of range/occurrences in recovery plan? Yes (1, p I-57, I-58, I-59, I-65)

Population size (most current estimate): 45,000 in AK, 2004-2005 (1, p x)

16,000 in Russia, 2005 (part of the western DPS) (1, p x)

Body weight (in g):

Average Male: 566,000 (1, p I-1)

Maximum Male: 1,120,000 (1, p I-1)

Average Female: 263,000 (1, p I-1)

Maximum Female: 350,000 (1, p I-1)

Pups at birth: 18,000-22,000 (5)

Dates of hibernation period: None noted in available USNMFS documentation (1)

Dates of breeding period: Pups born late May through early July, females breed about 11 days after giving birth (1, p I-2)

Migratory: yes

Males that breed in California move north after the breeding season and are rarely seen in California or Oregon except from May through August (6).

Locations known to occur: From Japan around the Pacific Rim to Cape Suckling in Alaska (144°W); includes Aleutian Islands (1, p I-1)

The western DPS of Steller sea lion breeds on rookeries in Alaska (the U.S. portion of the western DPS) from Prince William Sound (144°W) west through the Aleutian Islands and in Russia on the Kamchatka peninsula, Kuril Islands and the Sea of Okhotsk (6)

Federal lands or Indian reservations where species is known to occur: None (3)

Diet: fish, cephalopods, marine mammals, birds (1, p I-28)

Occasionally eats mammals and birds (6)

Relevant EFED model(s): T-REX, KABAM

Habitat: Marine and terrestrial. Haulouts and rookeries on exposed rock shoreline and wave-cut platforms and gravel beaches. Rookeries located on offshore islands and reefs. Terrestrial sites tend to be associated with water that are relatively shallow and well-mixed, with average tidal speeds and gradual bottom slopes. Ocean habitat from shore to beyond the continental shelf. (1, p I-18)

Habitat size: Adult females with pups and juveniles: <20 km from rookeries and haulout sites. Otherwise, >20 km as demanded by forage availability (1, p I-20)

Elevation restriction: None noted in available USNMFS documentation (1).

Obligate relationships: None noted in available USNMFS documentation (1). Reviewer believes that there are no obvious obligate relationships related to diet (species is opportunistic) or habitat.

Comments:

In Southeast Alaska, diet includes walleye Pollock, pacific cod, flatfishes, rockfishes, herring, salmon, sand lance, skates, squid, and octopus (1, p I-28)

Name of data extractor (date): Steve Carey (1/30/12)

QC reviewer (date): Elyssa Gelmann (4/26/12) , modified by K. Garber (12/4/15)

Sources:

1. US NMFS. 2008. Recovery Plan for the Stellar Sea Lion: Western and Eastern Distinct Population Segments (Revision). United States National Marine Fisheries Service. Available online at: <http://ecos.fws.gov/docs/recovery_plan/stellersealion.pdf>
2. Federal Register, 64(55):14052-14077. March 23, 1999. Available online at: <http://www.gpo.gov/fdsys/pkg/FR-1999-03-23/pdf/99-6626.pdf#page=1>
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
4. 58 FR 45269
5. Hooper, T. NMFS. Personal Communication. 9/9/15.
6. <http://www.nmfs.noaa.gov/pr/pdfs/recovery/stellersealion.pdf>

**Species (common name): *Megaptera novaeangliae* (Humpback whale)**

Listed status: Endangered (1, p. iv)

Designated critical habitat? No (5)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? yes (1, p. 77)

Population size (most current estimate); Recovery Plan and NMFS report different estimates, both are reported:

 Separated/organized by stock (regional geographic areas) (1, p. 5-6) (4, p. 3)

Difficult to estimate and combine regional population sizes because of overlap between stocks (1) pg 22 & (4, p. 3)

 Recovery Plan (1):

Western North Atlantic Region = 5,505 (1, p. 16 & 73)

 Eastern North Pacific Region = 1,407 (1, p. 73)

 NMFS (4):

North Pacific = 20,000 (western North Pacific ≈365; central North Pacific (including southeast Alaska feeding area ≈3,700; California/Oregon/Washington ≈1,250; American Samoa ≈150)

North Atlantic = 11,570 (Gulf of Maine ≈ 550)

Source 7 has additional estimates

Body weight (in g):

35,000,000 (2, p. 61)

Dates of Hibernation: None

Dates of Breeding: Conception peaks in December through March but can occur through the year; Gestation 10-12 months (1, p. 74)

Northern Hemisphere = young calves mostly observed during winter - births can occur at other times as well (1, p. 10)

Breeding in the Northern and Southern Hemisphere populations is out of phase by approximately six months, corresponding to their respective winter periods. (7)

Migratory: Yes

Nearly all populations undertake seasonal migrations between their tropical and sub-tropical winter calving and breeding grounds and high-latitude summer feeding grounds. (7)

Locations known to occur:

 Summering (Feeding grounds) (4, p. 1-2):

North Atlantic = Western: Iceland, Southwestern Greenland, Newfoundland, Labrador coasts, Gulf of St. Lawrence, Gulf of Maine (1, p. 13 & 78)

North Pacific = Point Conception California up to Gulf of Alaska and west toward Aleutian Islands into Sea of Okhotsk (1, p. 17 & 780

Wintering (Breeding and calving grounds) (4, p. 2):

North Atlantic = Population concentrated at Silver and Navidad Banks near Bahamian Archipelago and Dominican Republic (1, p. 78)

North Pacific = Population winter on three separate grounds: coastal waters of Baja California, mainland of Hawaii, islands south of Japan (1, p. 78)

States include: AK, CA, HI, ME, OR, WA (4)

Federal lands or Indian reservations where species is known to occur: None (6)

Diet: Small schooling fishes, large zooplankton (1, p. 7)

North Atlantic = herring, sand lance, capelin, mackerel, small pollock, haddock, krill, anchovies (1, p. 7-8)

North Pacific = herring, krill, euphasiids, pollock, mackerel, eulachon, sand lance, cod, mysids, pelagic amphipods, shrimps, copepods (1, p. 8)

Relevant EFED model(s): KABAM

Habitat: Marine waters over and near edges of continental shelves (1, p. 5)

Habitat size: Distributed throughout all ocean basins (1, p. 5)

Elevation restriction: sea level (assumed by reviewer)

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Considered to have stocks which refer to different groups of geographically distinct populations for reproduction (1, p. 6)

Stocks that spend at least part of the year in waters under US jurisdiction (western North Atlantic, central North Pacific, and eastern North Pacific; with Guam and American Samoa in the range of the western North Pacific and Central South Pacific stocks) (1, p. 6 & 78)

Table of each stock with wintering and summering locations can be found in Figure 1 (1, p. 78)

Organisms have complex migration patterns within summer range and long distance migrations between summer and wintering areas (1, p. 8); during migration humpbacks stay near the surface of the ocean (4, p. 2)

Population estimates are inconclusive to an actual worldwide estimate (1, p. 77)

Humpbacks can consume up to 3,000 lbs (1360 kg) of food per day (4, p. 2)

There is a proposal to divide this species into 14 separate DPSs.

2 Proposed Threatened: Central America DPS, and Western North Pacific DPS

2 Proposed Endangered: Arabian Sea DPS, Cape Verde Islands/Northwest Africa DPS

10 Proposed as not warranted for listing. (8).

Name of data extractor (date): Hannah Yingling (January 5, 2012)

QC reviewer (date): Christina Wendel (March 15, 2012), K. Garber (February 1, 2013), modified by K. Garber (12/4/15)

Sources:

1. NMFS. 1991. Final Recovery Plan for the Humpback Whale (*Megaptera novaeangliae*). Prepared by the Humpback Whale Recovery Team for the National Marine Fisheries Service, Silver Spring, MD. 105 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/whale_humpback.pdf>.
2. Jefferson T.A., S. Leatherwood, and M.A. Weber. 1993. FAO Species Identification Guide: Marine mammals of the world, Rome. Food and Agriculture Organization. 320 p. Available online at: <http://www.fao.org/docrep/009/t0725e/t0725e00.htm>.
3. NMFS. 2010. Marine Mammal Protection Act Section 101(a)(5)(E) - Negligible Impact Determination Central North Pacific Humpback Whale. National Marine Fisheries, Protected Resources Division, Pacific Islands and Alaska Regional Offices. May 17, 2010. Available online at: <http://www.nmfs.noaa.gov/pr/pdfs/species/humpback_cnp_nid.pdf>.
4. NMFS. 2012. Humpback Whale (*Megaptera novaeangliae*), Office of Protected Resources, NOAA Fisheries Species Information. Date accessed March 15, 2012. Available online at: <http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/humpbackwhale.htm>.
5. USFWS. 2012. Species Profile for Humpback whale (*Megaptera novaeangliae*). U.S. Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A02Q>.
6. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
7. <http://www.fisheries.noaa.gov/pr/species/Status%20Reviews/humpback_whale_sr_2015.pdf>
8. 80 FR 22304

**Species (common name): *Neomonachus schauinslandi* (Hawaiian monk seal)**

Listed status: endangered (1, p vi)

Designated critical habitat? Yes (1, p I-32)

Primary Constituent Elements: Not defined in FR for designation of critical habitat (2)

* pupping and major hauling beaches including the vegetation immediately backing the beaches (coral sand beaches and lava benches).
* Shallow protected water adjacent to the above (tide pools, inner reef waters, shoal areas, and nearshore shallows).
* Deeper inner reef areas and laggon waters.
* Other waters surrounding the NWHI to at least 80 fathoms.
* Banks and shoals without emergent lands and pelagic waters. (5)

Map of range/occurrences in recovery plan? yes (1, p I-5)

Population size (most current estimate): 2006 estimate: 1,202 (1, p I-18)

2014: 1209 (6)

Body weight (in g):

Average adult females: 205,000 (1, p I-3)

Average adult Males: 170,000 (1, p I-3)

Newborn pups: 14,000-17,000 (1, p I-3)

Pups at weaning: 50,000-100,000 (1, p I-3)

Dates of hibernation period: None noted in available USNMFS documentation (1)

Dates of breeding period: Most births February-August, peak in March-April, but documented in all months of the year. Mating occurs 3-4 weeks after weaning. (1, p I-24)

Migratory: No

Locations known to occur: Northwestern Hawaiian Islands (Kure Atoll, Midway Islands, Pearl and Hermes Reef, Lisianski Island, Laysan Island, and French Frigate Shoals, Necker Island, Nihoa Island, Gardner Pinnacles and Maro Reef) and Main Hawaiian Islands. (1, p I-4)

Federal lands or Indian reservations where species is known to occur: (3)

* Coast Guard Reservation
* Dillinghan Air Force Base
* Hickam Air Force Base
* Haleakala National Park
* Hanalei National Wildlife Refuge
* Kaena Military Reservation (Army)
* Kahuku Training Area (Army)
* Kaneohe Marine Corps Air Station
* Kilauea National Wildlife Refuge
* Makua Military Reservation (Army)
* Pacific Missile Range Facility, Barking Sands (Navy)
* Pacific Tsunami Warning Center (National Weather Service)
* Pearl Harbor Naval Station

Diet: fish, cephalopods, crustaceans (1, p. I-29)

Relevant EFED model(s): KABAM

Habitat: Marine and Terrestrial: sandy beaches, emergent reef, vegetation behind beaches (1, p I-29)

Habitat size: Main Hawaiian Islands: 34-800 km2; Northwestern Hawaiian Islands: 163-7400 km2 (1, p I-31)

Elevation restriction: None noted in available USNMFS documentation (1)

Obligate relationships: None noted in available USNMFS documentation (1). Reviewer believes that there are no obvious obligate relationships related to diet (species is opportunistic) or habitat.

Comments:

Only endangered marine mammal whose entire species range lies within the US (1, p vi)

Pups nurse for 5-6 weeks (1, p I-24)

Primarily benthic foragers, including coral reef habitat and marine terraces of atolls and banks to depths >500 m (1, p I-29)

Prey primarily on benthic and demersal prey (4)

Name of data extractor (date): Steve Carey (2/2/12)

QC reviewer (date): Elyssa Gelmann (4/27/12), modified by K. Garber (12/4/15)

Sources:

1. US NMFS. 2007. Recovery Plan for the Hawaiian Monk Seal (Revision). United States National Marine Fisheries Service. Available online at: <http://ecos.fws.gov/docs/recovery_plan/hawaiianmonkseal.pdf>
2. Federal Register, 64(55):14052-14077. March 23, 1999. Available online at: <http://www.gpo.gov/fdsys/pkg/FR-1999-03-23/pdf/99-6626.pdf#page=1>
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
4. <http://www.fisheries.noaa.gov/pr/pdfs/recovery/hawaiianmonkseal.pdf>
5. Hooper, T. NMFS. Personal Communication. 9/9/15.
6. http://www.nmfs.noaa.gov/pr/sars/2013/po2013\_monkseal-hi.pdf

**Species (common name): *Odobenus rosmarus ssp. Divergens (*Pacific walrus*)***

Listed status: candidate

Designated critical habitat? no

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? Yes (3)

Population size (most current estimate): 200,000-250,000 (2)

Body weight (in g):

Calves: 45,000-68,000 (2)

Adult females: 862,000 (2)

Adult males: 1,225,000 (2)

Locations known to occur: Alaska (1)

Federal lands or Indian reservations where species is known to occur:

ALASKA PENINSULA NATIONAL WILDLIFE REFUGE, ARCTIC NATIONAL WILDLIFE REFUGE (1)

Diet: benthic invertebrates: clams are most common food, also consume snails, sea cucumbers, crabs, segmented worms (2)

Fish (occasionally) (2)

Marine mammals (ringed and ribbon seals) (2)

Relevant EFED model(s): KABAM

Habitat: ocean waters ≤300 ft. deep (2)

Ice floes (2)

Some terrestrial areas (islands, points, spits) (2)

Elevation restriction: none

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

The distribution of Pacific walruses varies by season (2)

Forage for food on the bottom of the ocean (2)

“In Alaska, major terrestrial haulouts are found in Bristol Bay at Cape Seniavin, Round Island, Cape Pierce, and Cape Newenham.” (2)

Name of data extractor (date): Kris Garber (5/7/15)

QC reviewer (date): Elyssa Arnold (5/18/15), modified by K. Garber (12/4/15)

Sources:

1. <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0J8>
2. <http://www.fws.gov/alaska/fisheries/mmm/walrus/wmain.htm>
3. <http://www.fws.gov/alaska/fisheries/mmm/walrus/pdf/walrus_range_map.pdf>

**Species (common name): *Orcinus orca* (Killer whale, Southern Resident Distinct Population Segment)**

Listed status: Endangered (1, p. iv)

Designated critical habitat? yes (2, p. 1) and (1, p. II-37 to II-38)

Primary Constituent Elements: (3)

1. Water quality to support growth and development.

2. Prey species of sufficient quantity, quality, and availability to support individual growth, reproduction, and development, as well as overall population growth.

3. Passage conditions to allow for migration, resting, and foraging.

Map of range/occurrences in recovery plan? yes (1, p. I-1, and II-26 to II-28)

Population size (most current estimate): 87 Southern Resident DPS killer whales (3 pods) (1, p. iv & p. II-6)

Body weight (in g):

 Males = 5,568,000 (1, p. II-2)

 Females = 3,810,000 (1, p. II-2)

 Newborn: 180,000 (5)

Dates of Hibernation: None

Dates of Breeding: Most mating in North Pacific peaks between April and October but can occur through the year; Gestation period is 17 months (1, p. II-39, II-40)

Migratory: Yes

Locations known to occur: Southern Resident killer whales are concentrated in Washington State and British Columbia (Strait of Georgia, Strait of Juan de Fuca, and Puget Sound) (1, p. II-6) and can extend south to Oregon and Central California and north to Queen Charlotte Islands (1, p. II-6)

Federal lands or Indian reservations where species is known to occur: None (4)

Diet: fish, squid and other marine mammals (1, p. II-16)

Those at higher latitudes have a specialist diet on fish or marine mammals whereas those at lower latitudes are generalists (1, p. II-17); Fish eaten include salmonid species (Chinook, chum, coho, steelhead, sockeye) and non-salmonid species (*i.e.,* Pacific herring, quillback rockfish) (1, p. II-18)

Relevant EFED model(s): KABAM

Habitat: Most common in coastal marine waters at higher latitudes (1, p. II-4)

Elevation restriction: sea level (assumed by reviewer)

Obligate relationships: Pacific salmon, particularly Chinook salmon (*Oncorhynchus tshawytscha*) (5).

Comments:

Three distinct forms of killers whales which differ genetically are found in northeastern Pacific Ocean: residents, transients and offshore (1, p. I-4)

The Southern Resident killer whales are listed as Endangered-The Recovery plan only refers to this distinct population segment (DPS) (1, p. I-4)

More recent information indicates that Southern Resident killer whales have a strong preference to Chinook salmon; in the summer months the Southern Residents would need up to 143,000 Chinook and 53,000 other salmon to meet metabolic needs (1, p. II-22)

Extensive distribution and tracking data available for the Southern Resident DPS (1, p. II-26 to II-32)

Commensal organisms that are connected to killer whales include barnacles, ramoras, and diatoms. (1, p. II-46)

During the spring, summer, and fall months, the Southern Resident population can be found in the Salish Sea, which includes the inland waters of Puget Sound, the Northwest Straits, and southern Georgia Strait. (6)

The complete winter range of this stock is uncertain. (6)

Southern Residents had been sighted as far south as Monterey Bay, CA and as far north as Chatham Strait in southeast Alaska. (6)

Diet:

* Chinook salmon are the whales’ preferred prey, particularly in the summer (7).
* To a lesser extent, the whales also consume other salmon species and ground¬fish, such as halibut and lingcod (7).
* In Puget Sound, chum salmon appear to be a particularly important prey item during the late fall (7).
* Fraser River Chinook salmon make up the bulk of the whales’ summer diet while they are in the Salish Sea (7).
* They also consume Chinook from the Columbia, Sacramento, Klamath, and other coastal river systems (7).
* Southern Residents consume Chinook, steelhead, chum, lingcod, and halibut during winter and spring months (7).

Name of data extractor (date): Hannah Yingling (January 5, 2012)

QC reviewer (date): Jean Holmes (January 27, 2012) & Christina Wendel (March 16, 2012), K. Garber (February 1, 2013), modified by K. Garber (12/4/15)

Sources:

1. NMFS. 2008. Recovery plan for Southern Resident Killer Whales,(*Orcinus orca*). National Marine Fisheries Service, Northwest Region, Seattle, Washington. Available online at: <http://ecos.fws.gov/docs/recovery_plan/whale_killer.pdf>.
2. NMFS. 2011. Endangered and Threatened Species; Designation of Critical Habitat for Southern Resident Killer Whale. Federal Register, Vol. 71, No. 229. November 29, 2006. Available online at: <http://www.gpo.gov/fdsys/pkg/FR-2006-11-29/pdf/06-9453.pdf#page=1>.
3. Federal Register, 71(229):69054-69070, November 29. 2006. Available online at: <http://www.gpo.gov/fdsys/pkg/FR-2006-11-29/pdf/06-9453.pdf#page=1>
4. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
5. Hooper, T. NMFS. Personal Communication. 9/9/15.
6. <http://www.nmfs.noaa.gov/pr/sars/2013/po2013_killerwhale-enps.pdf>
7. http://www.nwfsc.noaa.gov/news/features/killer\_whale\_report/pdfs/bigreport62514.pdf

**Species (common name): *Phoca hispida hispida (*Ringed seal (Arctic subspecies))**

Listed status: Vacated

Designated critical habitat? No (proposed 2014 (2))

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? yes (1)

Population size (most current estimate): 249,000 (1)

The reported estimates of ringed seal abundance (in thousands) by region (4).

Region Total Basking numbers Comments and Assumptions

Greenland Sea and 787 Surveys in 1979 & stable

Baffin Bay since.

Hudson Bay 53.5 Mid-point between ‘07 - ‘08

Beaufort and

Chukchi Seas 1,000 Extrapolated include pack ice

White, Barents, and

Kara Seas 220 Most surveys from ‘75 - ‘93

Body weight (in g): 50,000-70,000 (1)

Newborns: 4,000 - 5,000

Migration: No

Breeding Season: Ringed seals breed annually, and males in the Arctic populations rut from late March to mid-May, occasionally to mid-June, and rarely ever later. Gestation lasts approximately 240 days. In much of the Arctic, whelping occurs in late March through April - when snow depth is maximal. Ringed seals generally attain sexual maturity at ages 4-8 for females, and at 5-7 for males, but with geographic and temporal variability depending on animal condition and population structure (6).

Hibernation period: none

Locations known to occur: Arctic ocean (1)

Federal lands or Indian reservations where species is known to occur: None (3)

Diet: fish and invertebrates, such as mysids, shrimp, arctic cod, and herring (1)

Relevant EFED model(s): KABAM

Habitat: ocean, ice floes (1)

Elevation restriction: none

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

The distribution of Arctic ringed seals is divided into four regions: Greenland Sea and Baffin Bay; Hudson Bay; Beaufort and Chukchi Seas; and the White, Barents and Kara Seas (4).

Molting: Adults generally molt from mid‐May to mid‐July. Ringed seals come out of the water for long periods of time during the molt (4)

The distribution of ringed seals is strongly correlated with pack and land-fast ice, and areas covered at least seasonally by ice. Adults use land-fast ice for breeding, molting, and over-wintering habitat (5)

Diet (4):

* Gadid fishes tend to dominate the diet from late autumn through early spring in many areas.
* Arctic cod is often reported to be among the most important prey species, especially during the ice‐covered periods of the year.
* Invertebrates appear to become more important to ringed seals in many areas during the open‐water season, and are often found to dominate the diets of young seals.
* Large amphipods, mysids, euphausiids, shrimps and squid are all commonly found in the diet of ringed seals.

Name of data extractor (date): Kris Garber (5/7/15)

QC reviewer (date): Elyssa Arnold (5/18/15), modified by K. Garber (12/4/15)

Sources:

1. http://www.nmfs.noaa.gov/pr/species/mammals/pinnipeds/ringedseal.htm
2. http://www.fisheries.noaa.gov/pr/species/ringedseal-proposed-critical-habitat.jpg
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
4. <http://alaskafisheries.noaa.gov/protectedresources/seals/ice/ringed/statusreview10.pdf>
5. <http://seamap.env.duke.edu/species/622018>
6. Hooper, T. NMFS. Personal Communication. 9/9/15.

Species (common name): *Phoca largha* (Spotted seal)

Listed status: Threatened

Designated critical habitat? no

Spatial data in recovery plan? no

Population size (most current estimate): Little information is published on the biological characteristics of spotted seal populations. Spotted seals have a lifespan of about 30 - 35 years. They become sexually mature at 3 - 5 years of age, varying over regions and time, and adult females usually give birth every year to a single pup which is nursed for 2 - 4 weeks and then abandoned to fend for itself.

Body weight (in g): 140-250 pounds (65-115 kg=65,000-115,000 grams)

Dates of Breeding Period: Breeding season ranges from January to mid-April with a peak of pup births in mid-March

Locations known to occur:

Federal lands or Indian reservations species is known to occur:

Migratory:

Diet: fish

aquatic invertebrates

Spotted seals feed on a variety of prey and diet composition varies by age. Adults mainly feed on herring, arctic cod, pollock, and capelin while juveniles feed mainly on krill and small crustaceans. While feeding, spotted seals dive to depths up to 1,000 ft (300 m).

|  |  |
| --- | --- |
|  | adults: herring, arctic cod, pollock, and capelin; juveniles: krill and small crustaceans |
|  |  |

Relevant EFED model(s): T-REX KABAM none

Habitat (enter as many as relevant):

Spotted seals prefer arctic or sub-arctic waters and are often found within the outer margins of shifting ice floes. Rarely do they inhabit areas of dense pack ice. During breeding season, spotted seals haul out on ice floes, whereas during the summer months they can be found in the open ocean or hauled out on shore.

Habitat size (home range): Spotted seals are widely distributed on the continental shelf of the Beaufort, Chukchi, southeastern East Siberian, Bering and Okhotsk seas, and to the south throughout the Sea of Japan and into the northern Yellow Sea. Their range extends over about 40 degrees of latitude from Point Barrow, Alaska in the north (∼71 N.) to the Yangtse River, China in the south (∼31 N.).

Elevation restriction: While feeding, spotted seals dive to depths up to 1,000 ft (300 m)

Obligate relationships:

Comments: From late fall through spring, spotted seal habitat-use is closely associated with the distribution and characteristics of seasonal sea ice. The ice provides a dry platform away from land predators during the whelping, nursing, breeding, and molting periods. When sea ice begins to form in the fall, spotted seals start to occupy it immediately, concentrating in large numbers on the early ice that forms near river mouths and estuaries. In winter, as the ice thickens and becomes shorefast along the coasts, spotted seals move seaward to areas near the ice front with broken ice floes. Spotted seals can only make and maintain holes in fairly thin ice and have been known to travel 10 km or more over solid ice in search of cracks or open patches of water. Spotted seals usually avoid very dense, compacted ice and stay near the ice front. Recent research has also shown that, unlike spotted seals in more northerly latitudes, a portion of spotted seals in the Peter the Great Bay and the northern Yellow Sea use shore lands as haul-out sites for whelping, nursing, breeding, and molting (Wang, 1986; Trukhin, 2005; Nesterenko and Katin; 2008; Nesterenko and Katin, 2009)

Name of data extractor and date: Lewis Ross Brown, III August 26, 2016

QC reviewer (date): Elizabeth Donovan, 12/13/2016

Sources:

2009\_ National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce\_Proposed Threatened and Not Warranted Status for Distinct Population Segments of the Spotted Sea

<http://www.nmfs.noaa.gov/pr/pdfs/fr/fr74-53683.pdf>

2015\_NOAA Fishers Species Page for the Spotted Seal *(Phoca largha)*

<http://www.fisheries.noaa.gov/pr/species/mammals/seals/spotted-seal.html>

**Species (common name): *Phoca vitulina richardia* (Pacific harbor seal (Iliamna lake))**

Listed status: candidate

Designated critical habitat? no

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? yes (1)

Population size (most current estimate): 250-350 (3)

Body weight (in g): 110,000 (1)

 Females: 65,000-142,000 (3)

 Male: 87,000-170,000 (3)

 Newborns: 8,000-12,000 (3)

Breeding Season:

Generally for Pacific harbor seals, February to October is the breeding season and pupping peaks sometime between April and July. Iliamna Lake seals have unique reproductive timing, pupping about one month later than the closest population of harbor seals in Bristol Bay. Peak pupping for Iliamna Lake seals is mid-July (3,4).

Hibernation period: none

Migratory: not likely. (3)

Locations known to occur: East and West coast of US (1) Iliamna lake (5)

Federal lands or Indian reservations where species is known to occur: None (2)

Diet: mainly fish, shellfish, and crustaceans (1)

Relevant EFED model(s): KABAM

Habitat: coastal ocean habitats, use terrestrial (rocks, reefs, beach) and ice (1)

Only population of resident freshwater seals in the U.S. known to live exclusively in an inland lake environment (3)

Elevation restriction: none

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Dive deep and shallow for food (1)

Diet: Freshwater fish including grayling, stickleback, whitefish, pike and sculpin provide a year-round food source. Unlike species of saltwater seals, Iliamna Lake seals are heavily reliant on salmon, which comprise 90 percent of their prey during the summer and fall. (3)

Iliamna lake description: This large glacial lake is often described as an “inland sea” and covers a total of 1,600 sq. mi (2,590 sq. km). At 77 mi (124 km) long, up to 22 mi (35 km) wide, and 984 ft (300 m) deep (3)

Name of data extractor (date): Kris Garber (5/7/15)

QC reviewer (date): Elyssa Arnold (5/18/15), modified by K. Garber (12/4/15)

Sources:

1. <http://www.nmfs.noaa.gov/pr/species/mammals/pinnipeds/harborseal.htm>
2. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
3. <http://www.nmfs.noaa.gov/pr/species/petitions/iliamna_lake_seal_petition_11-19-12.pdf>
4. http://seamap.env.duke.edu/species/180649
5. Hooper, T. NMFS. Personal Communication. 9/9/15.

**Species (common name): *Phocoena phocoena* (Harbor porpoise (Baltic Sea))**

Listed status: Not warranted

Designated critical habitat? no

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? yes (1)

Population size (most current estimate): 600 (3)

Body weight (in g): 61,000-77,000 (1)

Breeding Season:

Sexual maturity is generally reached at 3-4 years of age, with geographic and density-dependent variation. Sn some areas of this species’ range, females give birth every year, while in others harbor porpoises give birth every other year. Prgnancy lasts 10.6 months, most calves being born from spring through midsummer. Lactation is thought to last between 8 and 12 months. (4)

Hibernation: none (5)

Migratory: no, restricted to the Baltic Sea (5)

Locations known to occur: Alaska, Eastern and Western Coast (1)

Limited to Baltic Sea (3)

Federal lands or Indian reservations where species is known to occur: None (2)

Diet: herring, capelin, and cephalopods (1)

Demersal and benthic species (1)

Relevant EFED model(s): KABAM

Habitat: coastal waters and offshore ocean (1)

Elevation restriction: none

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

In the Baltic, the Harbour Porpoise’s main prey species are herring, sprat, and cod. Many prey species are benthic or demersal. (3)

The Baltic Sea is a semi-enclosed, relatively shallow shelf sea with some deeper basins of more than 200 m depth. There is a gradient in salinity with declining salinity towards the east and north. Winter sea-ice normally covers the northern and eastern parts of the Baltic Sea. (3)

Name of data extractor (date): Kris Garber (5/7/15)

QC reviewer (date): Elyssa Arnold (5/18/15), modified by K. Garber (12/4/15)

Sources:

1. <http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/harborporpoise.htm>
2. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
3. http://www.nmfs.noaa.gov/pr/species/petitions/81\_multi\_species\_marine\_petition\_2013.pdf
4. <http://seamap.env.duke.edu/species/tsn/180473>
5. Hooper, T. NMFS. Personal Communication. 9/9/15.

**Species (common name): *Physeter macrocephalus* (Sperm Whale)**

Listed status: Endangered (2)

Designated critical habitat? No (2)

Primary Constituent Elements: Not applicable

Map of range/occurrences in recovery plan? No (2)

Population size (most current estimate): Total in US waters = 7,316 whales (sum of California-Oregon-Washington, North Pacific, Hawaii, Northern Gulf of Mexico, and North Atlantic stocks (1)

Western North Atlantic stock: 1815- 2,288 (4)

Northern Gulf of Mexico: 560- 763 (4)

Pacific Ocean: 26,300-32,100 (North Pacific) and 14,800-34,600 (eastern tropical Pacific) (4)

California/Oregon/Washington stock: 1332-2,106 (4)

Hawaii stock: 2539- 3,354 (4)

Mediterranean Sea: 400 (4)

Worldwide: 300,000-450,000 (2002) (4)

Body weight (in g): 13,607,000 – 40,823,000 (1)

Dates of hibernation period: None

Dates of breeding period: Winter (5)

Migration:

Sperm whales are present in many warm-water areas throughout the year, and such areas may have discrete “resident” populations. Typically adult males move into the higher latitudes and all age classes and both sexes range throughout tropical and temperate seas. However, there are areas where at least some individual males and females are present year-round in the higher latitudes. It appears that only males penetrate to truly arctic waters, having been observed to move towards colder waters in the summer feeding seasons and return to warmer water to breed. (6)

Locations known to occur: Alaska (Valdez – Cordova counties) including Alaska maritime national wildlife refuge, California (Del Norte, Humboldt, and Mendocino counties), North Carolina, Puerto Rico, and Virgin Islands (2).

Federal lands or Indian reservations where species is known to occur: None (3)

Diet: Large organisms that occupy deep waters of the ocean (squid, sharks, skates and fishes) (1)

Primarily cephalopods (5)

Relevant EFED model(s): KABAM

Habitat:

Ocean/ Water depth of 1968 feet or more (1)

Habitat size: Not specified

Elevation restriction: sea level (assumed by reviewer)

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Five different stocks included (CA/OR/WA, Hawaii, North Pacific, Northern Gulf of Mexico, Puerto Rico and USVI) (5)

Sperm whales hunted in Japan for scientific research (4).

Found in temperate and tropical waters from the equator to around 45°N throughout the year (rarely found at latitudes higher than 50°N and 50°S) (4)

Whales often concentrate around oceanic islands in areas of upwelling, and along the outer continental shelf, continental slope, and mid-ocean waters (4).

Sperm whales show a strong preference for deep waters (4)

Name of data extractor (date): Steve Carey March 13, 2012

QC reviewer (date): Brian Anderson, 5/4/12, K. Garber (February 1, 2013), updated 11/24/15

Sources:

1. NMFWS. 2012. Sperm whales (*Physeter catodon*). National Marine Fisheries Service. Available online at: <http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/spermwhale.htm>
2. USFWS. 2012. Species profile for Sperm whale (*Physeter catodon*). United States Fish and Wildlife Service. Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A02T>
3. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
4. <http://www.fisheries.noaa.gov/pr/species/Status%20Reviews/sperm_whale_5-year_review_final_june_2015.pdf>
5. Hooper, T. NMFS. Personal Communication. 9/9/15.
6. http://www.fisheries.noaa.gov/pr/pdfs/recovery/final\_sperm\_whale\_recovery\_plan\_21dec.pdf

**Species (common name): *Pseudorca crassidens* (false killer whale (Main Hawaiian Islands Insular DPS))**

Listed status: endangered

Designated critical habitat? no

Primary Constituent Elements: not applicable

Map of range/occurrences in recovery plan? yes (1)

Population size (most current estimate): 51-170 (3)

Body weight (in g): 700,000 (1)

Breeding Season:

Gestation has been estimated to last 11-16 months. Females with calves lactate for 18-24 months. Females ovulate spontaneously one or more times per year and calving in tropical waters may occur year-round. (3)

Hibernation: none

Migration: No. However, regular movement throughout the main Hawaiian Islands is documented by re-sightings of photographically-identified individuals over several years. (3)

Locations known to occur: The Main Hawaiian Islands insular stock includes animals inhabiting waters within 140 km (approx. 75 nmi) of the main Hawaiian Islands (3).

Federal lands or Indian reservations where species is known to occur: None (2)

Diet: fishes and cephalopods (1)

Relevant EFED model(s): KABAM

Habitat: tropical to temperate ocean >1000 m deep (1)

Elevation restriction: none

Obligate relationships: None noted in available NMFS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

Fish in diet include: yellowfin tuna, albacore tuna, skipjack tuna, scrawled file fish, broadbill, swordfish, mahimahi, wahoo, lustrous pomfret, and threadfin jack (3)

Hawaiian insular false killer whales remain close to the islands and primarily use waters that are relatively shallow and productive compared to surrounding oligotrophic waters (3).

There are four other stocks of this species that are not part of this listing (Northwestern Hawaiian Islands stock, the Hawaii pelagic stock, the Palmyra Atoll stock, and the American Samoa stock) (3)

Name of data extractor (date): Kris Garber (5/7/15), updated 11/24/15

QC reviewer (date): Elyssa Arnold (5/18/15)

Sources:

1. <http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/falsekillerwhale.htm>
2. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.
3. http://www.nmfs.noaa.gov/pr/pdfs/statusreviews/falsekillerwhale\_hi.pdf

**Species (common name): *Trichechus manatus* (West Indian Manatee)**

Listed status: Endangered (1, p. 3); (2, p. 1)

Designated critical habitat? Yes (1, p. 3); (4, p. 47841); (5, p. 1574, 1581)

Primary Constituent Elements: Not defined in FR for designation of critical habitat (4)

Map of range/occurrences in recovery plan? Yes (2, p. 3); (3, p. 5a-b)

Population size (most current estimate): Per a 2009 survey, minimum of 3800 Florida manatees (5, p. 1576); per a 2005 survey, Antillean manatees in Puerto Rico are thought to include between 150-360 animals (1, p. 28).

Body weight (in g):

Adults: 1,000,000 - 1,620,000 (2, p. 6)

Newborns average: 30,000 g (2, p. 6)

Adult range: 363,000 to 1,200,000 (5, p. 1575)

Dates of hibernation period: None

Dates of Breeding Period: March - November, but reported in all seasons (2, p. 22); one or more males (5-22) attracted to an estrous female forming an ephemeral mating herd lasting up to 4 weeks (2, p. 22); gestation 11-14 months (2, p. 5, 23); calves are weaned between 9-24 months (3, p. 9)

Locations known to occur: Southeastern United States to Massachusetts (rarely) (includes: AL, CT, FL, GA, LA, MA, MS, NC, NJ, NY, RI, SC, TX, VA) (1, p. 12; Caribbean and Gulf of Mexico (3, p. 1; Puerto Rico, Cuba, U.S. Virgin Islands, and the Lesser Antilles (1, p. 27; Greater Antilles, Mexico, Central America, North and Northeastern coast of South America (2, p. 4

Federal lands or Indian reservations where species is known to occur: (7)

|  |  |  |
| --- | --- | --- |
| Federal Land or Indian Reservation Name | Owner | State(s) |
| Alligator River National Wildlife Refuge | FWS | NC |
| Bayou Sauvage National Wildlife Refuge | FWS | LA |
| Blackbeard Island National Wildlife Refuge | FWS | GA |
| Camp Lejeune Marine Corps Base | DOD | NC |
| Cape Hatteras National Seashore | NPS | NC |
| Cumberland Island National Seashore | NPS | GA |
| Dare County Range (Air Force) | DOD | NC |
| Fort Pulaski National Monument | NPS | GA |
| Fort Raleigh National Historic Site | NPS | NC |
| Fort Stewart (Army) | DOD | GA |
| Gulf Islands National Seashore | NPS | MS |
| Harris Neck National Wildlife Refuge | FWS | GA |
| Hunter Army Airfield | DOD | GA |
| Kings Bay Naval Submarine Support Base | DOD | GA |
| Mackay Island National Wildlife Refuge | FWS | NC, VA |
| Military Ocean Terminal Sunny Point (Army) | DOD | NC |
| Pea Island National Wildlife Refuge | FWS | NC |
| Sabine National Wildlife Refuge | FWS | LA |
| Saint Marks National Wildlife Refuge | FWS | FL |
| Savannah National Wildlife Refuge | FWS | GA, SC |
| Swanquarter National Wildlife Refuge | FWS | NC |
| Timucuan Ecological And Historic Preserve | NPS | FL |
| Wassaw National Wildlife Refuge | FWS | GA |
| Wolf Island National Wildlife Refuge | FWS | GA |
| Wright Brothers National Memorial | NPS | NC |

Diet: Submerged, floating, and emergent aquatic vegetation ((2, p. iv) including: smooth cordgrass (Florida-Georgia); *Hydrilla* sp. (1, p. 15); seagrass (*i.e.,* turtle grass (*Thallassia testudinium*), shoal grass (*Halodule wrightii*), manatee grass (*Syringodium fliforme*), eel grass, and star grass (*Halophila* spp.)); mangroves, green algae; water hyacinth; and other plant types (1, p. 29, 68); rhizomes and roots of marine angiopserms (3, p. 6); calves are weaned between 9-24 months (3, p. 9); calf diets are highest in shoal grass (*Halodule*) (1, p. 29)

Relevant EFED model(s): KABAM

Habitat: Seagrass beds, freshwater springs; coastal tidal rivers and streams, quiet backwaters (canals, creeks, embayments, lagoons, coves); mangrove swamps; salt marshes; and open water (1, p. 15, 29;) (3, p. 6); industrial (*i.e.,* power plants) warm-water discharge areas; deep dredged areas (1, p. 15).

Habitat/range size: In Florida, range over large areas during the summer - can cover up to 200 linear km of river or coastline (3, p. 7); Males tend to move over larger distances than females (3, p. 7); long distance travels of *approx.* 600 km (or more) have been documented (3, p. 7-8)

Elevation restriction: None

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments:

2 subspecies: *Trichechus manatus latirostris* (Florida Manatee) & *Trichechus manatus manatus* (Antillean Manatee) (4, p. 1)

Springs and freshwater runoff sites are used for drinking water (1, p. 15); annual mean food consumption at 33.2 kg/day/manatee (4-9% of body weight per day (depending on season)) (2, p. 21; move in and out of warm-water sites during winter (3, p. 8); year-round presence in Florida represents the northern limit of their winter range (5, p. 1575); primary human-related threat is collisions with watercraft (1, p. 34).

Name of data extractor (date): Lewis Brown (January 27, 2012)

QC reviewer (date): Christina Wendel (March 29, 2012), modified by K. Garber (12/4/15)

Sources:

1. U.S. Fish and Wildlife Service. 2007. West Indian Manatee (*Trichechus manatus*) 5-Year Review: Summary and Evaluation. Jacksonville, Florida and Boquerón, Puerto Rico. 79 pp. Available online at: <http://ecos.fws.gov/docs/five_year_review/doc3771.pdf>.
2. U.S. Fish and Wildlife Service. 2001. Florida Manatee(*Trichechus manatus latirostris*) Recovery plan Third Revision. Atlanta, Georgia. 144 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/011030.pdf>.
3. U.S. Fish and Wildlife Service. 1986/ Recovery plan for the Puerto Rico Population of the West Indian (Antillean) Manatee (*Trichechus manatus manatus*). Atlanta, Georgia. 28 pp. Available online at: <http://ecos.fws.gov/docs/recovery_plan/861224.pdf>.
4. Federal Register. 1977. Department of the Interior. 50 CFR Part 17, Endangered and Threatened Wildlife and Plants; Final Rule; Correction and Augmentation of Published Rulemaking on Critical Habitats. Vol. 42, No. 184, Thursday, September 22, 1977. Pgs 47840-47845. Available online at: <http://ecos.fws.gov/docs/federal_register/fr161.pdf>.
5. Federal Register. 2010. Department of the Interior. 50 CFR Part 17, Endangered and Threatened Wildlife and Plants; 12-month Finding on a Petition to revise Critical Habitat for the Florida Manatee (*Trichechus manatus manatus*). Vol. 75, No. 7, Tuesday, January 12, 2010. Pgs 1574-1581. Available online at: [http://www.gpo.gov/fdsys/pkg/FR-2010-01-12/pdf/2010-325.pdf#page=1](http://www.gpo.gov/fdsys/pkg/FR-2010-01-12/pdf/2010-325.pdf%23page%3D1).
6. U.S. Fish and Wildlife Service. 2012. Species Profile, West Indian Manatee (*Trichechus manatus*). Available online at: <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A007>. Date Accessed: March 27, 2012.
7. FESTF. 2012. Coincidence of ESA-listed species with federal lands and proximity to outer boundary. FIFRA Endangered Species Task Force. Data submitted to EPA March 2012.

**Species (common name): *Ursus maritimus* (Polar Bear)**

Listed status: Threatened (1, p. 28212)

Designated critical habitat? Yes (3, p. 76086)

Primary Constituent Elements: (3)

(1) Sea ice habitat used for feeding, breeding, denning, and movements, which is sea ice over waters 300 m (984.2 ft) or less in depth that occurs over the continental shelf with adequate

prey resources (primarily ringed and bearded seals) to support polar bears.

(2) Terrestrial denning habitat, which includes topographic features, such as coastal bluffs and river banks, with suitable macrohabitat characteristics. Suitable macrohabitat characteristics

are: (a) Steep, stable slopes (range 15.5– 50.0°), with heights ranging from 1.3 to 34 m (4.3 to 111.6 ft), and with water or relatively level ground below the slope and relatively flat terrain above the slope; (b) unobstructed, undisturbed access between den sites and the coast; (c) sea ice in proximity of terrestrial denning habitat prior to the onset of denning during the fall to provide

access to terrestrial den sites; and (d) the absence of disturbance from humans and human activities that might attract other polar bears.

(3) Barrier island habitat used for denning, refuge from human disturbance, and movements along the coast to access maternal den and optimal feeding habitat. This includes all barrier islands along the Alaska coast and their associated spits, within the range of the polar bear in the United States, and the water, ice, and terrestrial habitat within 1.6 km (1 mi) of these islands (no-disturbance zone).

Map of range/occurrences in recovery plan? No recovery plan is available (map of range (1, p. 28216); (3, p. 76088)

Population size (most current estimate): Total of ~3500 bears in Alaska (Chukchi and Southern Beaufort Seas) (2, p. 28217; 20,000 to 25,000 worldwide (1, p. 28215)

Body weight (in g): (1, p. 28212)

 Male = up to 654,000

 Female = 181,000-317,000

Dates of hibernation period: None; but pregnant females excavate dens in snow (on land) in fall-early winter (Nov. - Dec.), often near the coast for birthing purposes, and emerge in March-April (1, p. 28215); (3, p. 76090).

Dates of breeding period: Mating occurs between May and June, ovulation is induced by mating, and implantation is delayed until autumn; total gestation is 195-265 days, cubs are born in maternity dens and emerge in the spring (1, p. 28214).

Locations known to occur: Ice-covered seas of the Northern Hemisphere (circumpolar Arctic); the northern and northwestern coasts of Alaska (Chukchi and Beaufort Sea populations) (1, p. 28212-28214). Southern Beaufort Sea population occurs south of Banks Island and east of the Baille Islands, Canada and ranges west to Point Hope, Alaska; and includes the coastline of Northern Alaska and Canada up to 40 km (25 mi) inland (3, p. 76088). Chukchi-Bering Seas population is widely distributed on sea ice in the Chukchi Sea and northern Bering Sea (and adjacent coastal areas of Alaska and Russia), the southern boundary is determined by the annual extent of the ice pack (3, p. 76088).

**Alaska** (Nome, North Slope, and Northwest Arctic counties) (2)

Federal lands or Indian reservations where species is known to occur: None (4)

Diet: (1, p. 28213)

 Marine Mammals

 “Ice Seals” (*i.e.,* ringed seals (*Phoca hispida*) and bearded seals (*Erignathus barbatus*))

 Young walrus (*Odobenus rosmarus*),

 Carrion of whales (*i.e.,* narwhal (*Monodon monoceros*) and belugas (*Delphinapterus leucas*)

 Suggested that when food is scarce, can consume coastal marine and terrestrial plants, and human garbage (but rarely)

Relevant EFED model(s): KABAM

Habitat:

Sea-ice (1, p. 28212); land (coastline/shore/coastal bluffs, river banks) (1, p. 28213); (3, p. 76091)

Range size: Known to move 1,000 km (621 mi) to stay with pack ice (1, p. 28213)

Females in the Chukchi-Bering Seas population = avg. range 244,463 km2 (144,659 to 351,369km2)

 Females in the Beaufort Sea population = avg. range 166,694 km2 (14,440 to 616,800 km2)

Elevation restriction: None

Obligate relationships: None noted in available USFWS documentation. Reviewer believes that there are no obvious obligate relationships related to diet or habitat.

Comments: Considered a marine mammal, as its primary habitat is sea ice (1, p. 28212); largest living bear species (1, p. 28212); on average adult polar bears need approx. 2 kg (4.4 lbs) of seal fat per day to survive (1, p. 28213); pregnant females fast up to 8 months (1, p. 28214); Often during food shortages polar bears shift metabolism into a hibernation-life pattern, while remaining active (3, p. 76090).

This species primarily eats marine mammals. At this time, KABAM does not estimate pesticide concentrations in marine mammals. As a surrogate, the large fish category will be used to estimate dietary-based exposures to polar bears. With this approach, it is assumed that the pesticide concentration in the tissue of a fish-eating mammal (which is the prey of a polar bear) is equivalent to the concentration in fish. Although this species will eat grass when food is scarce, T-REX is not recommended for estimating direct effects because grass is not considered a major dietary item.

Name of data extractor (date): Steve Carey (January 18, 2012)

QC reviewer (date): Christina Wendel (March 23, 2012), Kris Garber (February 1, 2013), modified by K. Garber (12/4/15)

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