UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

October 18, 2016

Mr. Earl Stewart, Forest Supervisor
Tongass National Forest
USDA Forest Service
Alaska Region
648 Mission Street
Ketchikan, AK 99901

Re: Tongass Forest Plan Amendment Letter of Concurrence, NMFS #AKR-2016-9574

Dear Mr. Stewart:

The National Marine Fisheries Service (NMFS) has completed informal programmatic consultation under section 7(a)(2) of the Endangered Species Act (ESA) regarding the proposed amendment to the Tongass National Forest Management Plan (Forest Plan) in Southeast Alaska. The U.S. Department of Agriculture, Forest Service (Forest Service) requested written concurrence that the proposed action may affect, but is not likely to adversely affect, the following populations: six Chinook salmon evolutionarily significant units (ESUs); one sockeye salmon ESU; one coho salmon ESU; one chum salmon ESU; five steelhead trout ESUs; one green sturgeon ESU; Mexico distinct population segment (DPS) humpback whale; fin whale; sperm whale; western DPS Steller sea lion; and Steller sea lion critical habitat. Based on our analysis of the information you provided to us, and additional literature cited below, NMFS concurs with your determination. A complete administrative record of this consultation is on file in this office.

An earlier draft of this letter was inadvertently transmitted to you on October 14, 2016. This letter supersedes that one.

Consultation History

NMFS received your request for consultation on June 29, 2016. NMFS met with Forest Service staff on August 12, 2016 to discuss our approach to this programmatic consultation. NMFS received an email from Forest Service staff on August 18, 2016 with a requested change in approach for the current consultation. NMFS requested additional information via email, which Forest Service staff provided. NMFS and Forest Service continued to communicate via email and telephone during the consultation process.

Description of the Proposed Action

The Forest Service is proposing an amendment to the Forest Plan to transition to young-growth management in order to support the timber industry in Southeast Alaska. Changes to the Forest Plan may result in young-growth harvest, road construction, and the development of renewable

energy facilities, but no details regarding such future actions are presently available. As a result, no specific harvest or construction activities are covered under this consultation, and all future on-the-ground projects that result from the proposed changes to the Forest Plan and may affect threatened or endangered species under NMFS's jurisdiction will require additional consultation under section 7 of the ESA.

New components of the Forest Plan which may have future on-the-ground activities are listed in Table 1 and discussed below. More detailed information is available in the Environmental Impact Statement prepared by the Forest Service that describes these changes to the Forest Plan (USFS 2016).

Table 1. Proposed New Plan Components (USDA 2016).

1. Young-growth plan components added to Forest Plan.
2. Renewable Energy plan components added to Forest Plan.
3. Transportation Systems Corridor plan components added to Forest Plan.

Young-Growth Management

Aspects of future actions under the amended Forest Plan that may affect federally-listed marine species include changes in young-growth management within the beach and estuary fringe and upstream riparian habitats. The beach and estuary fringe currently constitute an area of approximately 1,000 feet slope distance inland from mean high tide around all marine coastline and identified estuaries. Currently, areas within the beach and estuary fringe are generally classified as unsuitable for timber harvest, with exceptions including salvage sales, specialty wood products, habitat restoration treatments, customary and traditional subsistence uses, and for infrastructure and access development on the landward edges of the fringe where there are no feasible alternatives in project design. The proposed action will allow subsequent authorization of future young-growth harvest in the beach and estuary fringe buffer in all but the first (shoreward) 200 feet of the buffer. These areas will be subject to commercial thinning or patch cuts no greater than 10 acres in size, a maximum of 35% removal, a single entry young-growth harvest, and only within the first 15 years after Forest Plan approval. No young-growth harvest will occur on islands <1,000 acres in size. Young-growth management objectives within the beach and estuary fringe under the proposed action will include dual intents of facilitating recovery of old-growth conditions, while also producing commercial timber byproducts. Although the precise location, timing, and extent of the site-specific activities are unknown, the Forest Service generally predicts that the proposed action will result in 3,903 acres of young-growth harvest within the beach and estuary fringe that would not occur under current management direction (current = 0 acres). The proposed action is also predicted to result in 67 miles of new and reconstructed roads within the beach and estuary fringe associated with this predicted young-growth harvest.

The proposed action will open up Riparian Management Areas (RMAs) outside of the 100-foot Tongass Timber Reform Act (TTRA) buffer to young-growth harvest under the same restrictions as those in the beach and estuary fringe (≤ 10 acre openings, ≤35% removal, single entry, first 15 years). Young-growth management objectives within RMAs under the proposed action will include dual intents of facilitating recovery of old-growth conditions to improve riparian

functions for resources such as soil, water, fish, wildlife, while also providing commercial timber byproducts. The proposed action is predicted to result in 1,089 acres of young-growth harvest within RMAs. The proposed action is predicted to result in 214 miles of associated new and reconstructed roads within RMAs. A summary of some of the potential actions associated with changes in forest management resulting from this plan amendment is presented in Table 2.

Table 2. Potential timber harvest and road construction associated with forest plan amendment.

Where in Action Area	Acres of young-growth harvest	Miles of new and reconstructed roads
Beach and Estuary Fringe	3,903 acres outside of a 200-foot buffer from the coastline	67
Riparian Management Areas	1,089 acres outside of TTRA buffers	214

Renewable Energy Installation and Transportation Systems Corridors
Another key element of the proposed action that could lead to future effects on listed marine species relates to increased flexibility in siting development of renewable energy facilities and infrastructure. The timing, location, scope, and extent of such future actions, however, are not currently known.

The proposed action will replace the Transportation and Utility System LUD in the 2008 Forest Plan with a series of renewable energy and Transportation Corridor System standards and guidelines. Currently, renewable-energy site selection requires substantial documentation as to why projects could not be developed in allowable areas ("window" categories) instead of areas designated for avoidance, which applies to most lands on the Tongass. Proposed changes under the proposed action will allow renewable-energy projects to be authorized in the future on any Tongass lands without requiring this justification, as long as all other standards and guidelines, regulations, and laws are addressed.

Specific Activities Associated with these Forest Plan Changes
Future site-specific and interrelated and interdependent activities, within and near beach, estuary, and marine habitats that could result from management changes under the proposed action include: young-growth tree harvesting; vessel, large equipment, and personnel presence along shorelines; vehicle travel on beaches; log loading and yarding; transport of logs; grounding and/or anchoring of barges; vessel transit; development and operation of log transfer facilities; development and maintenance of facilities for hydroelectric, wind, solar, geothermal, tidal, wave, biomass and other types of renewable energy; and maintenance, access, and road infrastructure associated with these actions. The timing, location, scope, and extent of such future actions are not currently known. Those attributes will determine the nature and magnitude of potential effects, which, as noted earlier, will be addressed in future consultations under the ESA.

Action Area

The action area is defined in the ESA regulations (50 CFR 402.02) as the area within which all direct and indirect effects of the project will occur. The action area is distinct from and larger than the project footprint because some elements of the project may affect listed species some distance from the project footprint. The action area, therefore, extends out to a point where no measurable effects from the project are expected to occur.

The action area for this consultation encompasses the entire Tongass National Forest and adjacent marine waters and lands (Figure 1). The action area includes all areas that are likely to be directly and indirectly affected by the proposed action from changes in management direction associated with timber harvest, thinning treatments, road construction and renewable energy development. The action area also includes areas that may be affected by interrelated and interdependent actions of the proposed action.

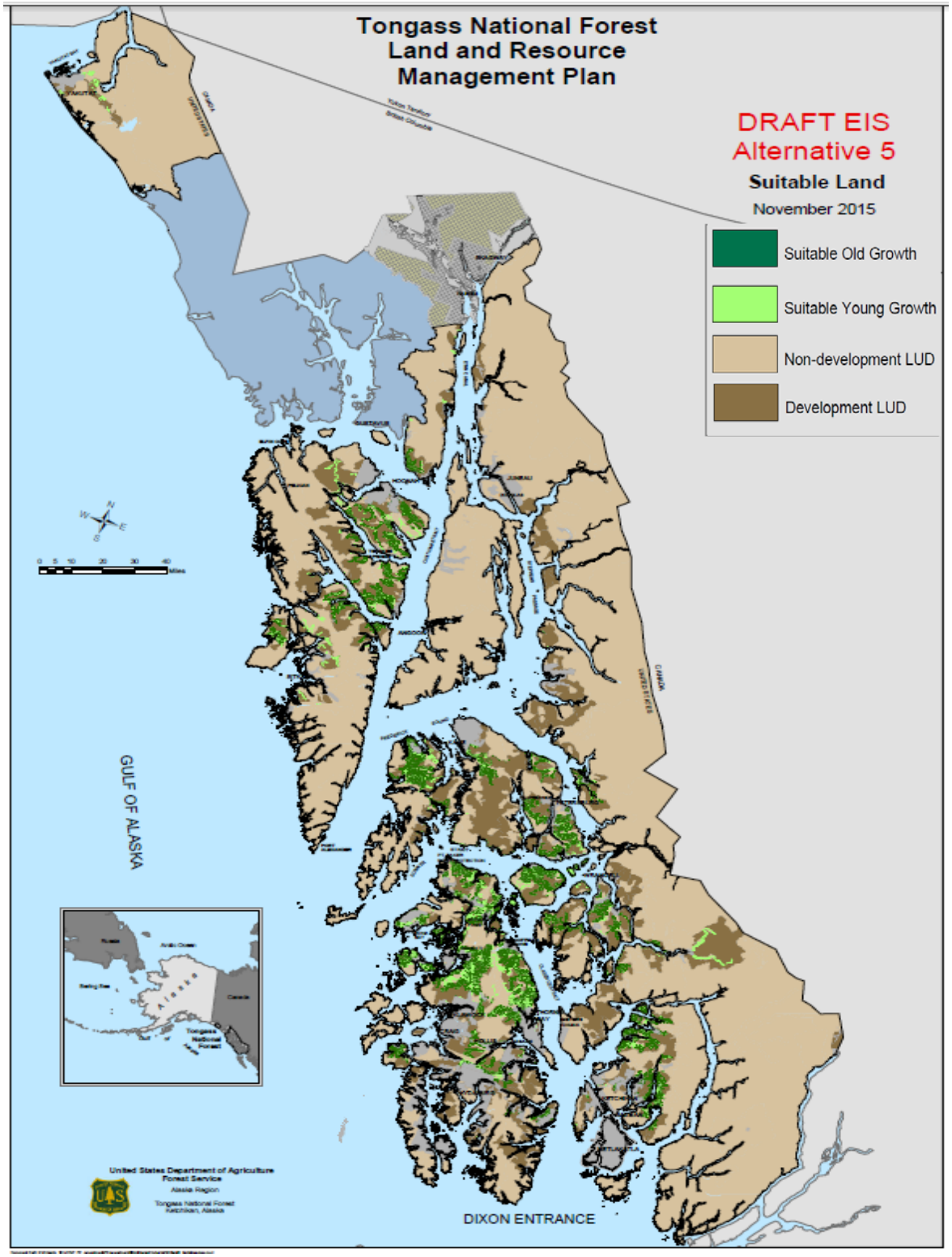

Figure 1. **Tongass National Forest and adjacent waters. Colors depict the land use designations associated with the changes to the Land Management Plan discussed in this consultation.**

Listed Species and Critical Habitat

Species and critical habitat included in this letter of concurrence are listed in Table 3 below.

Table 3. Federally-listed species found within the action area. ESU = evolutionary significant unit. DPS = distinct population segment.

Species/Stock	Scientific Name	ESU/DPS Designation	ESA Status[1]	Recovery Plan (Year)
Marine Mammals				
Humpback Whale	*Megaptera novaeangliae*	Mexico	T	1991
Fin Whale	*Balaenoptera physalus*		E	2010
Sperm Whale	*Physeter microcephalus*		E	2010
Steller Sea Lion	*Eumetopias jubatus*	Western	E	2008 (revised); 1992 (original)
Fish				
Green Sturgeon	*Acipenser medirostris*	Southern	T	
Chinook Salmon	*Oncorhynchus tshawytshca*	Lower Columbia River	T	2013
Chinook Salmon	*Oncorhynchus tshawytshca*	Upper Columbia River Spring	E	2007
Chinook Salmon	*Oncorhynchus tshawytshca*	Puget Sound	T	2007
Chinook Salmon	*Oncorhynchus tshawytshca*	Snake River Spring/Summer	T	
Chinook Salmon	*Oncorhynchus tshawytshca*	Snake River Fall	T	Draft 2015
Chinook Salmon	*Oncorhynchus tshawytshca*	Upper Willamette River	T	2011
Sockeye Salmon	*Oncorhynchus nerka*	Snake River	E	2015
Coho Salmon	*Oncorhynchus kisutch*	Lower Columbia River	T	2013
Chum Salmon	*Oncorhynchus keta*	Hood Canal Summer	T	2007
Steelhead	*Oncorhynchus mykiss*	Lower Columbia River	T	2013
Steelhead	*Oncorhynchus mykiss*	Middle Columbia River	T	2009
Steelhead	*Oncorhynchus mykiss*	Snake River Basin	T	
Steelhead	*Oncorhynchus mykiss*	Upper Columbia River	T	2007
Steelhead	*Oncorhynchus mykiss*	Upper Willamette River	T	2011

Species/Stock	Scientific Name	ESU/DPS Designation	ESA Status[1]	Recovery Plan (Year)
Critical Habitat				
Steller Sea Lion	*Eumetopias jubatus*	Western	E	2008 (revised); 1992 (original)

[1]E = endangered, T = threatened.

Western DPS Steller Sea Lions

The Steller sea lion was listed as a threatened species under the ESA on November 26, 1990 (55 FR 49204). In 1997, NMFS reclassified Steller sea lions into two distinct population segments (DPS) based on genetic studies and other information (62 FR 24345); at that time the eastern DPS was listed as threatened and the western DPS was listed as endangered. On November 4, 2013, the eastern DPS was removed from the endangered species list (78 FR 66139). Information on Steller sea lion biology and habitat (including critical habitat) is available at: http://alaskafisheries.noaa.gov/pr/steller-sea-lions

The project area contains Steller sea lion haulouts and rookeries. We assume western DPS Steller sea lions may be present in waters adjacent to the Tongass National Forest for the following reasons:

- Steller sea lions are highly mobile and have large ranges.
- The presence of potential prey sources in the project area (ADF&G 2014):
- Based on Jemison et al. (2013) and Fritz et al. (2013), NMFS concludes that western DPS Steller sea lions are common north of Sumner Strait (see http://alaskafisheries.noaa.gov/protectedresources/stellers/esa/wdps_sect7guidance1213%20final.pdf).

The ability to detect sound and communicate underwater is important for a variety of Steller sea lion life functions, including reproduction and predator avoidance. NMFS categorizes Steller sea lions in the otariid pinniped functional hearing group, with an applied frequency range between 60 Hz and 39 kHz in water (NMFS 2016).

Steller Sea Lion Critical Habitat

NMFS designated critical habitat for Steller sea lions on August 27, 1993 (58 FR 45269). In Alaska, designated critical habitat includes the following areas as described at 50 CFR §226.202 (Figure 2):

1. Terrestrial zones that extend 3,000 feet (0.9 km) landward from each major haulout and major rookery.
2. Air zones that extend 3,000 feet (0.9 km) above the terrestrial zone of each major haulout and major rookery in Alaska.
3. Aquatic zones that extend 3,000 feet (0.9 km) seaward of each major haulout and major rookery in Alaska that is east of 144° W longitude.

4. Aquatic zones that extend 20 nm (37 km) seaward of each major haulout and major rookery in Alaska that is west of 144° W longitude.
5. Three special aquatic foraging areas: the Shelikof Strait area, the Bogoslof area, and the Seguam Pass area, as specified at 50 CFR §226.202(c).

The action area does not include the areas listed as number 4 and 5 above and pictured as the larger foraging areas outlined in red west of 144°W below in Figure 2, and so effects to those components of Steller sea lion critical habitat will not be analyzed in this consultation.

The action area includes designated Steller sea lion critical habitat at three rookeries: White Sisters, Hazy Island, and Forrester Island, as well as 11 haulouts (Figure 3). Haulouts at Cape Fairweather and Graves Rock are not within the Tongass National Forest (instead, they are located within Glacier Bay National Park and Preserve).

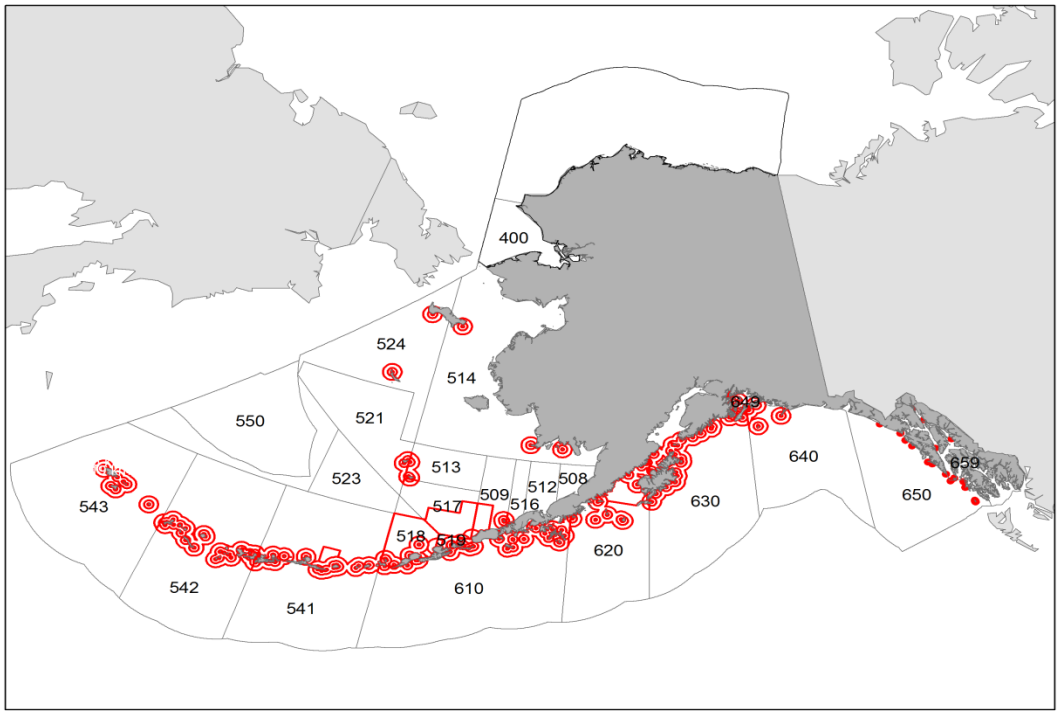

Figure 2. Steller sea lion designated critical habitat, shown in red. Map not to scale.

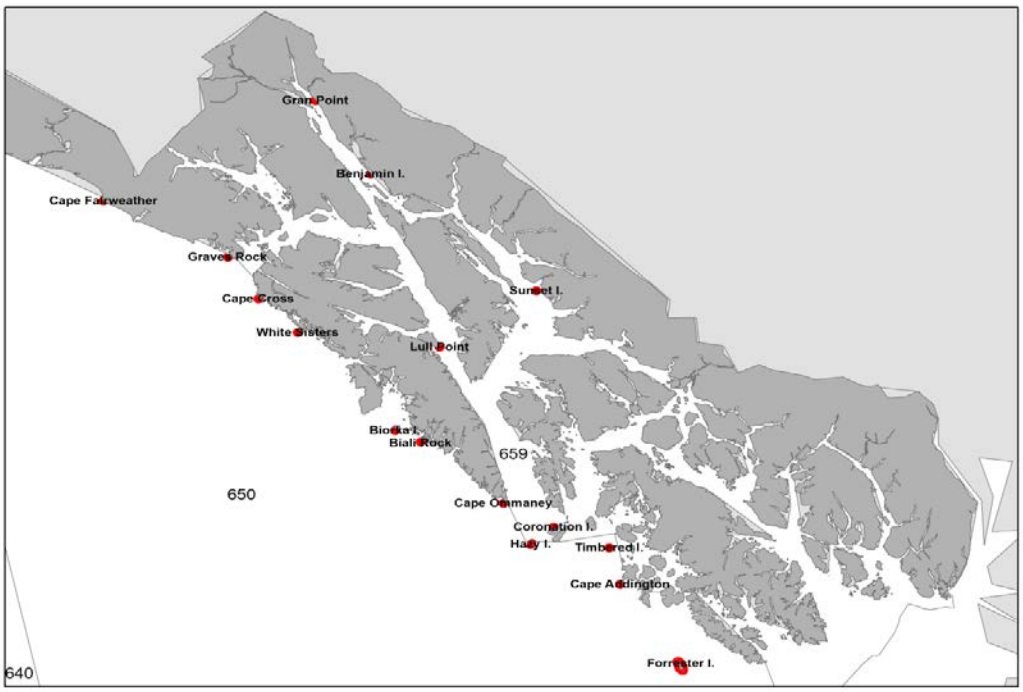

Figure 3. Steller sea lion designated critical habitat in Southeast Alaska is comprised of a zone that extends 3,000 feet landward, seaward, and above major haulouts and rookeries. 50 CFR 226.202. Map not to scale.

Humpback Whales

The humpback whale was listed as endangered under the Endangered Species Conservation Act (ESCA) on December 2, 1970 (35 FR 18319). Congress replaced the ESCA with the ESA in 1973, and humpback whales continued to be listed as endangered. NMFS recently conducted a global status review and changed the status of humpback whales under the ESA. The Mexico DPS (which includes a small proportion of humpback whales found in Southeast Alaska) is listed as threatened, and the Hawaii DPS (which includes most humpback whales found in Southeast Alaska) is not listed, effective October 11, 2016 (81 FR 66260; September 8, 2016). Critical habitat has not been designated for the Mexico DPS.

The abundance estimate for humpback whales in Southeast Alaska is estimated to be between 5,352 and 7,038 animals which includes whales from the Hawaii DPS (94%) and Mexico DPS (6.1%) (Wade et al. 2016). Although migration timing varies among individuals, most whales depart for Hawaii or Mexico in fall or winter and begin returning to Southeast Alaska in spring, with continued returns through the summer and a peak occurrence in Southeast Alaska during late summer to early fall. However, there are significant overlaps in departures and returns (Baker et al. 1985, Straley 1990). Given their widespread range and their opportunistic foraging strategies, humpback whales may be in the vicinity during the proposed project activities.

Humpback whales produce a variety of vocalizations ranging from 20 Hz to 10 kHz (Winn et al. 1970, Tyack and Whitehead 1983, Payne and Payne 1985, Silber 1986, Thompson et al. 1986, Richardson et al. 1995, Au 2000, Frazer and Mercado III 2000, Erbe 2002, Au et al. 2006, Vu et al. 2012). NMFS categorizes humpback whales in the low-frequency cetacean functional hearing group, with an applied frequency range between 7 Hz and 35 kHz (NMFS 2016).

Additional information on humpback whale biology and natural history is available at:
http://www.nmfs.noaa.gov/pr/species/mammals/whales/humpback-whale.html
http://alaskafisheries.noaa.gov/pr/humpback
http://www.fisheries.noaa.gov/pr/sars/pdf/stocks/alaska/2014/ak2014_humpback-wnp.pdf

Fin Whales

The fin whale was listed as an endangered species under the ESA on December 2, 1970 (35 FR 18319), and continued to be listed as endangered following passage of the ESA. Information on fin whale biology and habitat is available at:
http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/finwhale.htm
http://www.fisheries.noaa.gov/pr/sars/pdf/stocks/alaska/2014/ak2014_finwhale.pdf

Fin whales were detected in Southeast Alaska **s**urveys during summer months in Cordova Bay and the southern portions of Clarence Strait, (Dahlheim et al, 2009).

Fin whales produce a variety of low-frequency sounds in the 10 Hz to 0.2 kHz range (Watkins 1981, Watkins et al. 1987, Edds 1988, Thompson et al. 1992). While there is no direct data on hearing in low-frequency cetaceans, the applied frequency range is anticipated to be between 7 Hz and 35 kHz (NMFS 2016). Synthetic audiograms produced by applying models to X-ray computed tomography scans of a fin whale calf skull indicate the range of best hearing for fin whale calves to range from approximately 20 Hz to 10 kHz, with maximum sensitivities between 1 to 2 kHz (Cranford and Krysl 2015).

Sperm Whales

The sperm whale was listed as an endangered species under the ESCA on December 2, 1970 (35 FR 18319), and continued to be listed as endangered following passage of the ESA. Information on sperm whale biology and habitat is available at:
http://www.fisheries.noaa.gov/pr/species/mammals/whales/sperm-whale.html
http://www.fisheries.noaa.gov/pr/sars/pdf/stocks/alaska/2014/ak2014_spermwhale.pdf

Tagged sperm whales have recently been tracked within Southeast Alaska during late summer and early fall, in areas which include Chatham Strait, Lynn Canal, and Icy Strait (SEASWAP 2016).

Sperm whales produce a variety of vocalizations ranging from 0.1 to 20 kHz (Weilgart and Whitehead 1993, Goold and Jones 1995, Møhl et al. 2003, Weir et al. 2007). Sperm whales are odontocetes (tooth whales) and are considered mid-frequency cetaceans with an applied frequency range of 150 Hz to 160 kHz (NMFS 2016). The only direct measurement of hearing was from a young stranded individual from which auditory evoked potentials were recorded and indicated a hearing range of 2.5 to 60 kHz (Carder and Ridgway 1990).

Green Sturgeon

There are two designated DPSs of the North American green sturgeon based on significant genetic differences; the northern DPS, ranging from spawning populations from the Eel River north to the Klamath and Rogue rivers, and the southern DPS which only spawns in the Sacramento River basin (Adams et al. 2007) (Figure 4).

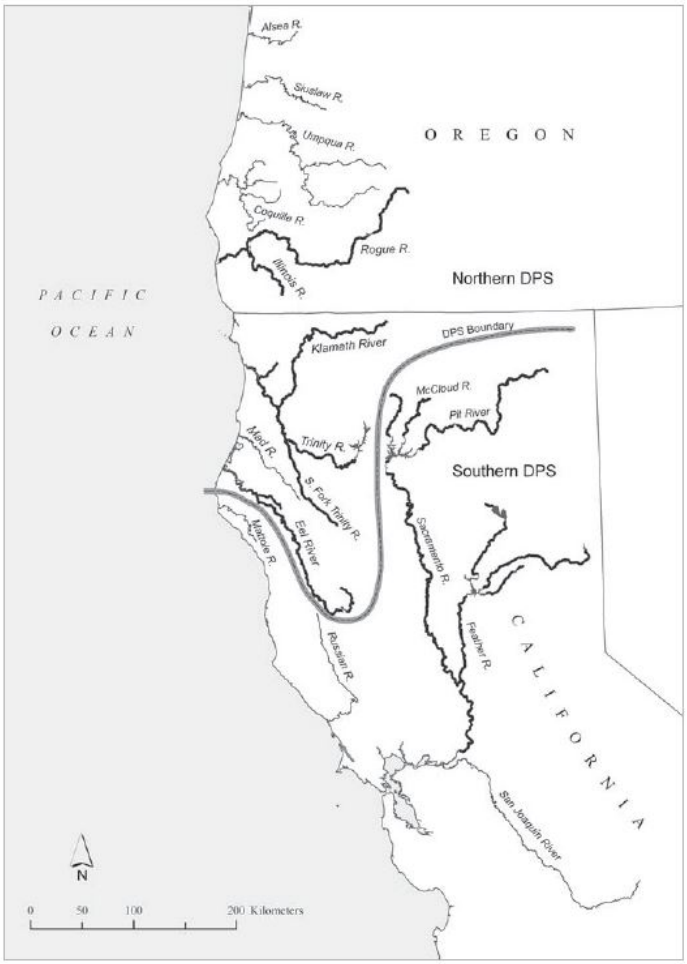

Figure 4. Map showing the delineation between the spawning rivers of the green sturgeon northern and southern DPSs.

NMFS listed the green sturgeon southern DPS as threatened under the ESA in 2006 (71 FR 17757) due to loss of spawning habitat, overharvest, and entrainment threats. The northern DPS is a NMFS Species of Concern. Only the southern DPS has been observed in Alaska's marine waters. Green sturgeon do not spawn in Alaska.

Green sturgeon are long-lived, slow-growing fish, and are the most marine-oriented of the sturgeon species. Mature males range from 4.5-6.5 feet (1.4-2 m) in length and do not mature until they are at least 15 years old (Adams et al. 2002), while mature females range from 5-7 feet (1.6-2.2 m) in length and do not mature until they are at least 17 years old. They can weigh up to 350 pounds (160 kg). Maximum ages of adult green sturgeon are likely to range from 60-70 years (Moyle 2002). Green sturgeon are believed to spend the majority of their lives in

nearshore oceanic waters, bays, and estuaries. Younger green sturgeon reside in fresh water, with adults returning to freshwater to spawn when they are about 15 years of age. Spawning is believed to occur every 2-5 years (Moyle 2002). Adults typically migrate into fresh water beginning in late February, and spawning occurs from March-July, with peak activity from April-June (Moyle et al. 1995). Juvenile green sturgeon spend 1-4 years in fresh and estuarine waters before they leave for saltwater (Adams et al. 2007). They then disperse widely in the ocean.

The only feeding data we have on adult green sturgeon shows that they eat benthic invertebrates including shrimp, mollusks, amphipods, and small fish (Moyle et al. 1992).

Movements in the ocean are not well known, but green sturgeon have been captured in marine waters from Baja California to the Bering Sea. They typically remain in waters less than 100 meters deep (Lindley et al. 2008). North American green sturgeon make a long-distance seasonal migration along the continental shelf of North America (Lindley et al. 2008). This includes a northward migration in fall, overwintering north of Vancouver Island, BC and south of Southeast Alaska, and then returning south in the spring. One tagged fish was detected at an acoustic array in the Cape Spencer area (Lindley et al. 2008). Several specimens have been collected in the Taku River/Stephens Passage area of Southeast Alaska (Mecklenburg et al. 2002).

Green sturgeon could be present in the inside waters of Southeast Alaska, particularly during the winter. However, existing data suggests that most do not migrate this far north and they would only be in the area seasonally.

Chinook Salmon

Many west coast salmonid (*Oncorhynchus* spp.) stocks have declined substantially from their historic numbers and now are at a fraction of their historical abundance. Several factors contributed to these declines, including: overfishing, loss of freshwater and estuarine habitat, hydropower development, poor ocean conditions, and hatchery practices. These factors collectively led to NMFS's listing of 28 salmon and steelhead stocks that spawn in California, Idaho, Oregon, and Washington under the ESA. Six Chinook salmon ESUs are considered in this informal consultation.

There are different seasonal (i.e., spring, summer, fall, or winter) runs in the migration of Chinook salmon from the ocean to freshwater, even within a single river system. These runs have been identified on the basis of when adult Chinook salmon enter freshwater to begin their spawning migration. However, distinct runs also differ in the degree of maturation at the time of river entry, the temperature and flow characteristics of their spawning site, and their actual time of spawning.

NMFS listed two ESUs from the Snake River (the Spring/Summer ESU and the Fall ESU) as threatened under the ESA in 1992 (57 FR 34639 and 57 FR 14653, respectively). The Spring/Summer Snake River Chinook ESU includes naturally spawned spring/summer-run Chinook salmon originating from the mainstem Snake River and the Tucannon River, Grande Ronde River, Imnaha River, and Salmon River subbasins. It also includes spring/summer-run Chinook salmon from 11 artificial propagation programs. Updated spawning abundance

estimates were available from 1999-2008 for 12 of 31 populations, in. All populations with available data showed no trend in abundance, although there was considerable variability over the 10-year period. Typically spawning abundance of populations in this ESU are highly correlated. The Fall Snake River Chinook ESU includes naturally spawned fall-run Chinook salmon originating from the mainstem Snake River below Hells Canyon Dam and from the Tucannon River, Grande Ronde River, Imnaha River, Salmon River, and Clearwater River subbasins. Fall-run Chinook salmon from 4 artificial propagation programs are also included. Spawning estimates from 1998-2007 for this ESU were variable, but indicated no trend in abundance.

NMFS listed the Puget Sound Chinook ESU as threatened in 1999 (64 FR 14308). This ESU includes naturally spawned Chinook salmon originating from rivers flowing into Puget Sound from the Elwha River eastward, including rivers in Hood Canal, South Sound, North Sound, and the Strait of Georgia. It also includes Puget Sound Chinook salmon from 26 artificial propagation programs. Although there was considerable variability in spawning abundance between 1999-2008, the majority of populations showed no significant trend, therefore the overall ESU status is “no trend.”

NMFS listed the Upper Columbia River Spring Chinook ESU as endangered and the Lower Columbia River Chinook ESU as threatened in 1999 (64 FR 14308). The Upper Columbia River Spring Chinook ESU includes naturally spawned spring-run Chinook salmon originating from Columbia River tributaries upstream of the Rock Island Dam and downstream of Chief Joseph Dam (excluding the Okanogan River subbasin). In addition, spring-run Chinook salmon from 6 artificial propagation programs are included. Spawning abundance estimates for all 3 populations from 1999-2008 show considerable variability, but suggest no significant overall change in abundance. The Lower Columbia River Chinook ESU includes naturally spawned Chinook salmon originating from the Columbia River and its tributaries downstream of a transitional point east of the Hood and White Salmon Rivers, and any such fish originating from the Willamette River and its tributaries below Willamette Falls. This ESU also includes Chinook from 15 artificial propagation programs. Spawning abundance estimates from 11 of 32 populations suggest there was no significant trend in abundance of this ESU from 1999-2008.

NMFS listed the Upper Willamette River Chinook ESU as threatened in 1999 (64 FR 14308). This ESU includes naturally spawned spring-run Chinook salmon originating from the Clackamas River and from the Willamette River and its tributaries above Willamette Falls. Additionally, spring-run Chinook salmon from six artificial propagation programs are included. Spawning abundance estimates were only available for 1 of 7 populations for this ESU from 1999-2008. This limited data suggests no significant trend in abundance.

Chinook salmon, also called king salmon, are the largest (average 10-50 pounds, maximum 126 pounds) and least abundant species of Pacific salmon (Wahle et al. 1981). They are anadromous, spending most of their adult lives (2-6 years) in the ocean before returning to their natal streams to spawn and die. Juvenile fish spend 3 months to 2 years in the freshwater streams post-hatching before migrating to the ocean.

Chinook salmon range throughout the North Pacific as far west as waters off the coasts of Japan and Russia, and south to southern California. The six Chinook ESUs considered in this consultation have all been documented in the Gulf of Alaska (GOA), including Southeast Alaska troll fisheries and GOA ground fisheries (Wahle and Vreeland 1978, Wahle et al. 1981, Crane et al. 2000, Templin and Seeb 2004). The Lower Columbia River and Upper Willamette River Chinook ESUs are also found in the Bering Sea (NMFS 2009). Chinook salmon from the six ESA-listed ESUs considered in this consultation are potentially present in Alaska marine waters only as juveniles or adult because their spawning/egg and larval life stages occur exclusively in freshwater streams in Washington, Oregon, and Idaho.

They feed on terrestrial and aquatic insects, amphipods, and other crustaceans while young, and primarily on other fishes when older. Adult Chinook salmon have been found in marine waters with temperatures ranging from 1 to 15º C (USCG and EPA 2014). They tend to be found deeper in the water column than other Pacific salmon species, from 30 to 70 meters, and are commonly harvested by commercial troll fisheries at a depth of 30 meters (USCG and EPA 2014).

Most threats to Chinook salmon occur within the freshwater spawning and rearing habitat. These threats include logging, hydropower, agriculture, predation, and urbanization. Chinook marine life stages (e.g., juvenile and adult) are vulnerable to overfishing and transitory pollution events such as oil spills. Climate change and other factors affecting ocean productivity have the potential to impact the marine life stages of Chinook salmon as well (Mueter et al. 2002).

Coho Salmon

NMFS listed the Lower Columbia River Coho ESU as threatened under the ESA in 2005 (70 FR 37160). This ESU includes naturally spawned coho salmon originating from the Columbia River and its tributaries downstream from the Big White Salmon and Hood Rivers and any such fish originating from the Willamette River and its tributaries below Willamette Falls. In addition, coho salmon from 21 artificial propagation programs are included. Spawning abundance estimates are only available for 2 of 25 populations from 1999-2008. These two populations showed significant variability in spawning abundance over the 10 year period, but no significant trend.

Coho salmon, also called silver salmon, are medium sized (average 8 pounds, maximum 35 pounds) and are the fourth most abundant salmon species in Alaska marine waters (after pink, chum, and sockeye salmon). Coho salmon smolts from the west coast of North America generally leave their freshwater streams in the spring (April – June) to spend their adult lives in marine waters. They return to the freshwater streams at 3-4 years of age to spawn (typically October – December).

Coho salmon are present in most major rivers of the Pacific Rim from Monterey Bay, California, north to Point Hope, Alaska, throughout the Aleutian Islands, and from the Anadyr River in Russia, south to Korea and northern Hokkaido, Japan (Laufle et al. 1986). During their ocean life stage, coho salmon generally do not migrate as far as the other species of Pacific salmon (Behnke 2010). Coho salmon that originate in the rivers of California, Oregon, and Washington tend to feed along the continental shelf associated with their region of origin (Sandercock 1991).

However, distribution patterns of northern and southern stocks of coho salmon at sea vary with latitude. Northern stocks are found farther offshore compared with a more coastal distribution of southern stocks (including the Lower Columbia River coho ESU) (Quinn and Myers 2004).

Migration pathways mapped during coded wire tag studies show the consistent movement of coho salmon north along the continental shelf during their first year of ocean life and continued migration in a counter-clockwise direction around the rim of the Gulf of Alaska (Morris et al. 2007) aided by the Alaska current, which rotates in the same direction (Drinkwater et al. 2009). From 1995 to 2004, over 23 million Columbia River Basin coho salmon, including almost 14 million Lower Columbia River coho salmon, were implanted with coded wire tags and released. The tags were read manually using a microscope, and tagging, coding, or reading errors are possible. Only those coho salmon that were adipose fin-clipped (hatchery-origin) were examined for tags during the NMFS surveys in Alaska (Morris et al. 2007). Of the tagged Lower Columbia River-released coho salmon, 107 juvenile individuals were recaptured (7.7 per million fish), only 17 of which (1.2 per million fish) were recaptured in GOA waters (either in Southeast Alaska or central Alaska near Kodiak Island) over the 10-year period. The majority of these were recovered in the GOA from July through September, with few individuals recaptured from October to November (Morris et al. 2007). Lower Columbia River coho salmon are potentially present in Alaska marine waters only as juveniles or adults because their spawning/egg and larval life stages occur exclusively in freshwater streams in Washington and Oregon.

They feed on terrestrial and aquatic insects, amphipods, and other crustaceans while young, primarily on marine invertebrates when they first enter the ocean, and primarily on other fishes during their adult life stage (USCG and EPA 2014).

Most threats to coho salmon occur within the freshwater spawning and rearing habitat. These threats include logging, hydropower, agriculture, predation, and urbanization. Coho marine life stages (e.g., juvenile and adult) are vulnerable to overfishing and transitory pollution events such as oil spills. Harvest rates of the Lower Columbia River Coho ESU declined from 50 percent in the mid-1990s to recent rates of 8-20 percent, suggesting that overfishing is becoming less of a threat to this ESU.

New information available since the last status review indicates there is an increase in the level of avian and pinniped predation on Lower Columbia River coho, but not enough information exists to quantify this potential stressor (NMFS 2011). Climate change impacts to this ESU are uncertain and include potential changes to prey availability due to ocean acidification and shifts in distribution in response to changes in sea temperatures and upwelling (NMFS 2011).

Chum Salmon

NMFS listed Hood Canal summer-run chum salmon as threatened under the ESA in 1999 (64 FR 14508). This ESU includes naturally spawned summer-run chum salmon originating from Hood Canal and its tributaries as well as from Olympic Peninsula rivers between Hood Canal and Dungeness Bay. It also includes summer-run chum salmon from four artificial propagation programs. Spawning abundance estimates increased significantly for this ESU from 1998-2007, however, productivity in the last 5-year period (2005-2009) has been very low, especially compared to the relatively high productivity observed during the 5-10 previous years (1994-2004).

Second only to Chinook salmon in adult size, chum salmon individuals have been reported up to 3.6 feet (1.1 m) and 46 pounds (20.8 kg). However, average weight is around 8 to 15 pounds (3.6 to 6.8 kg). Age at maturity appears to follow a latitudinal trend in which a greater number of fish mature at a later age in the northern portion of the species' range. Most chum salmon mature and return to their birth stream to spawn between 3 and 5 years of age, with 60 to 90 percent of the fish maturing at 4 years of age.

Chum salmon have the largest range of natural geographic and spawning distribution of all the Pacific salmon species (Pauley et al. 1988). Historically, in North America, chum salmon occur from Monterey, California to the Arctic coast of Alaska and east to the Mackenzie River which flows into the Beaufort Sea. Present spawning populations are now found only as far south as Tillamook Bay on the northern Oregon coast (Salo 1991). Juvenile chum occur along the coast of North America and Alaska in a band that extends out to 19 nm (36 km) (Salo 1991). Chum salmon are more dependent on estuaries and marine waters than the other Pacific salmon species with the exception of ocean-type Chinook salmon (Salo 1991).

Early life history stages for chum salmon occur in freshwater but juveniles and adults use marine habitats within the GOA. Juvenile chum migrations follow the GOA coastal belt to the north, west, and south during their first summer at sea (Salo 1991). While overall migrations patterns of juvenile chum salmon within the GOA are understood, nearshore residency times and offshore migrations patterns are still unclear (Salo 1991). Migrations of immature fish during the late summer/fall and winter occur in a broad southeasterly fashion, primarily south of 50°N and east of 155°W in the GOA. During the spring and early summer, chum salmon migrate to the north and west (Salo 1991). Maturing fish destined for North American streams are widely distributed throughout the GOA during the spring and summer (Salo 1991).

Chum salmon feed on insects and marine invertebrates while in rivers. As adults, their diet consists of copepods, fishes, mollusks, squid, and tunicates.

Most threats to chum salmon occur within the freshwater spawning and rearing habitat. These threats include logging, hydropower, agriculture, predation, and urbanization. Chum salmon marine life stages (e.g., juvenile and adult) are vulnerable to overfishing and transitory pollution events such as oil spills. There are no directed fisheries for Hood Canal summer chum salmon, although they are taken indirectly in other fisheries. Co-managers have constrained harvest impacts on fisheries for other species since the 1990s in order to protect Hood Canal summer chum salmon.

Sockeye Salmon

NMFS listed the Snake River sockeye salmon as endangered under the ESA in 1991 (56 FR 58619). This ESU includes naturally spawned anadromous sockeye salmon originating from the Snake River basin, and also sockeye salmon from one artificial propagation program (the Redfish Lake Captive Broodstock Program). A majority of this ESU is from the hatchery program, and there was no trend in the spawning abundance estimates from 1997-2006. There was consideration variation in spawning abundance between years. Adult returns in 2008 and 2009 were the highest since the current captive brood-based program began, with a total of 650 and 809 adults returning to the Sawtooth Hatchery weir.

Spawning populations of sockeye salmon occur from the Sacramento River in California, north to Kotzebue Sound, but commercially important stocks range from the Columbia River to the Kuskokwim River in the Bering Sea (Burgner 1991). Their oceanic distribution ranges throughout the Pacific Ocean from the Bering Sea south to approximately 45°N (Burgner 1991). Early life history stages for sockeye salmon occur in lakes and streams but juveniles and adults utilize marine habitats within the GOA and vicinity. Seaward migrations in Alaska begin in mid-May in association with salinity gradients. Soon after entering the ocean, juvenile sockeye salmon (excluding those from Bristol Bay) begin moving north into the GOA where they remain along the coastal belt until late-fall or early-winter. They then disperse offshore moving west and south (Wood et al. 1993). In the GOA, sockeye salmon migrate north during the spring and summer then south and west during the winter.

After migration into marine waters sockeye smolts initially stay close to the shore and feed on insects and plankton. Once they move offshore, their diet turns mainly to amphipods, copepods, squid, and some fishes. Most sockeye salmon stay at sea for two years, returning to spawn in their fourth year, but some may be five or six years old when they spawn.

A variety of factors (including overfishing, irrigation diversions, obstacles to migrating fish, and eradication through poisoning) led to the demise of most Snake River sockeye populations except for those returning to Redfish Lake, Idaho. The Redfish Lake Captive Broodstock Program has maintained a viable population that appears to be slowly recovering or stabilizing.

Steelhead Trout

NMFS listed the Upper Columbia River Steelhead ESU as endangered under the ESA in 1997 (63 FR 43937) and down-listed it to threatened in 2006 (71 FR 834). This ESU includes naturally spawned anadromous steelhead originating below natural and manmade impassable barriers from the Columbia River and its tributaries upstream of the Yakima River to the U.S.-Canada border. Steelhead from six artificial propagation programs are also included. All four populations of this ESU showed no trend in spawning abundance estimates between 2000 and 2009, although there was considerable variability over the 10 year period.

The Middle Columbia River Steelhead ESU was listed as threatened in 1999 (64 FR 14517). This ESU includes naturally spawned anadromous steelhead originating below natural and manmade impassable barriers from the Columbia River and its tributaries upstream of the Wind and Hood Rivers (exclusive) to and including the Yakima River. This ESU does not include steelhead originating from the Snake River basin, but does include steelhead from seven artificial propagation programs. Spawning abundance estimates for 14 of 17 populations from 1996 to 2004 or 2005 showed no trend or significant increase over this time period.

The Lower Columbia River Steelhead ESU was listed as threatened in 1998 (63 FR 13347). This ESU includes naturally spawned anadromous steelhead originating below natural and manmade impassable barriers from rivers between the Cowlitz and Wind Rivers (inclusive) and the Willamette and Hood Rivers, but excludes such fish originating from the upper Willamette River basin above Willamette Falls. This ESU also includes steelhead from seven artificial propagation programs. Few data are available for the abundance of this ESU, but 4 of 23 populations remained stable between 1999 and 2008.

NMFS listed the Snake River Basin Steelhead ESU as threatened in 1997 (62 FR 43937). This ESU includes naturally spawned anadromous steelhead originating below natural and manmade impassable barriers from the Snake River basin, and steelhead from six artificial propagation programs. Spawning abundance estimates are available for only 2 of the 26 populations from 1997 to 2006. Although there was considerable variability in spawning abundance over that ten year period, the two populations showed no significant trend. A separate analysis of Lower Granite Dam counts of wild steelhead also showed no trend in spawning abundance.

The Upper Willamette River Steelhead ESU was listed as threatened in 1999 (64 FR 14517). This ESU includes naturally spawned anadromous winter-run O. mykiss (steelhead) originating below natural and manmade impassable barriers from the Willamette River and its tributaries upstream of Willamette Falls to and including the Calapooia River. Spawning abundance estimated for 4 of 5 populations showed considerable variability between 1999 and 2008, but no significant trend.

Steelhead trout are a medium to large sized salmonid and can weigh up to 55 pounds. Most juvenile steelhead spend 1 to 3 years in freshwater streams post-hatching before heading to sea. Some spend as long as 7 years in freshwater before migrating into marine waters. Most adult steelhead return to spawn in their natal freshwaters streams after 1 to 2 years in the ocean, but can remain in marine waters up to 3 years before they spawn for the first time. Unlike the other salmon species described above, steelhead trout generally return to their natal freshwater streams multiple times to spawn. Eggs hatch approximately 3 to 4 weeks after spawning occurs, and maximum lifespan of steelhead trout is 11 years.

In the United States, steelhead trout are found along the entire Pacific Coast. Worldwide, steelhead are naturally found in the Western Pacific south through the Kamchatka Peninsula, Russia. Steelhead trout hatched in freshwater streams in the Pacific Northwest are known to occur in Alaska marine waters during their juvenile or adult life stages. Steelhead tagged at the Skamania Hatchery in Washington were recovered 72 km (45 mi) south of Adak Island in the Aleutian Islands three years later (Sheppard 1972). In their first few years of life, North American steelhead trout were observed aggregated in the western GOA and off the coast of the eastern Aleutian Islands (Burgner et al. 1992). A more detailed study was conducted to assess the distribution of North American hatchery steelhead stock in the GOA and Aleutian Islands using coded wire tag mark and recapture data collected by the NMFS Auke Bay Laboratories in Juneau, Alaska, and the Pacific Biological Station in Nanaimo, British Columbia, from 1981 through 1994 (McKinnell et al. 1997). These data showed that tagged steelhead from hatcheries in the upper, middle, and lower Columbia River, the Snake River basin, and coastal Washington were recaptured in the northern and southern GOA and the Aleutian Islands. However, the total number of tagged steelhead recovered from the Columbia and Snake River basins was very low (i.e., fewer than 100 fish per year) (McKinnell et al. 1997). These studies indicate that although steelhead from the ESUs reviewed in this informal consultation are indeed present in Alaska waters, they do not comprise a large percentage of the steelhead found there.

Young steelhead trout feed primarily on zooplankton. Adults feed on aquatic and terrestrial insects, mollusks, crustaceans, fish eggs, minnows, and other small fishes (including other trout).

Most threats to steelhead trout occur within the freshwater spawning and rearing habitat. These threats include logging, hydropower, agriculture, predation, and urbanization. Steelhead trout marine life stages (e.g., juvenile and adult) are vulnerable to overfishing and transitory pollution events such as oil spills. Unlike other Pacific salmon species, steelhead trout are not commercially harvested, but the numbers of steelhead caught as bycatch are not commonly recorded or well understood.

Effects of the Action

For purposes of the ESA, "effects of the action" means the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action (50 CFR 402.02). The applicable standard to find that a proposed action is "not likely to adversely affect" listed species or critical habitat is that all of the effects of the action are expected to be insignificant, discountable, or completely beneficial. Insignificant effects relate to the size of the impact and are those that one would not be able to meaningfully measure, detect, or evaluate, and should never reach the scale where take occurs. Discountable effects are those that are extremely unlikely to occur. Beneficial effects are contemporaneous positive effects without any adverse effects to the species.

The change to the Forest Plan that is the subject of this analysis may lead to future specific activities with potential effects to listed species. Due to the unknown quantity, location, timing, duration, and intensity of future activities, the Forest Service and NMFS are not able to estimate possible future effects to listed species at this point in time. NMFS considers the present action to be solely administrative. All future Forest Service actions that may affect listed resources will require subsequent ESA consultation.

Potential effects to ESA-listed marine mammals and fish from future actions may include:

1. Risk of vessel strike
2. Acoustic noise and disturbance
3. Habitat Alteration
4. Oil Spills/Contaminants

Risk of Vessel Strike

Vessels transiting the marine environment have the potential to collide with, or strike, marine mammals (Laist et al. 2001, Jensen and Silber 2003). The probability of strike events depends on the frequency, speed, and route of the vessels, as well as distribution of marine mammals in the area. Humpback and fin whales are especially susceptible to ship strike injury and mortality in narrow bottleneck passages (Williams and O'Hara 2010), and there have been many documented ship strikes in Southeast Alaska's inside passage with a variety of vessels types (Neilson et al. 2012).

Although risk of ship strike has not been identified as a significant concern for Steller sea lions (Loughlin and York 2000), the Recovery Plan for this species states that Steller sea lions may be more susceptible to ship strike mortality or injury in harbors or in areas where animals are

concentrated (e.g., near rookeries or haulouts) (NMFS 2008). Since 2000, there have been four reported ship strikes of Steller sea lions within Alaska, with three occurring in Southeast Alaska. There is no evidence to suggest that injury or mortality of salmon, steelhead, or sturgeon from collisions with ships or propellers is a significant stressor in Alaska. These fish species are highly mobile and can remain subsurface to avoid contact with vessels and propellers.

Because we do not have information about the timing, location, duration, scope, or extent of any site-specific projects to be authorized under the amended Forest Plan, NMFS is not able to estimate effects from vessels associated with hypothetical future activities related to the proposed action. Once again, no specific activities are authorized at this time, and all subsequent actions will be subject to section 7 consultation and the implementation of mitigation measures.

Acoustic Noise and Disturbance

Possible impacts to marine mammals exposed to loud underwater or in-air noise include mortality (directly from the noise, or indirectly from a reaction to the noise), injury, and disturbance ranging from severe (e.g., abandonment of vital habitat) to mild (e.g., startle response). Dredging and pile driving and extraction introduce noise into the underwater environment that has the potential to negatively impact marine mammals (Thompson et al. 2013).

Since 1997 NMFS has used generic sound exposure thresholds to determine whether an activity produces underwater sounds that might result in impacts to marine mammals (70 FR 1871). NMFS recently developed comprehensive guidance on sound levels likely to cause injury to marine mammals through onset of permanent and temporary threshold shifts (PTS and TTS; Level A harassment) (81 FR 51693).

NMFS is in the process of developing guidance for behavioral disruption (Level B harassment). However, until such guidance is available, NMFS uses the following conservative thresholds of underwater sound pressure levels[1], expressed in root mean square[2] (rms), from broadband sounds that cause behavioral disturbance, and referred to as Level B harassment under section 3(18)(A)(ii) of the Marine Mammal Protection Act (MMPA):

- impulsive sound: 160 dB re 1 μPa_{rms}
- continuous sound: 120 dB re 1μPa_{rms}

Under the PTS/TTS Technical Guidance, NMFS uses the following thresholds for underwater sounds that cause injury, referred to as Level A harassment under section 3(18)(A)(i) of the MMPA (NMFS 2016). These acoustic thresholds are presented using dual metrics of cumulative sound exposure level (L_E) and peak sound level (PK) for impulsive sounds and L_E for non-impulsive sounds in Table 4.

[1] Sound pressure is the sound force per unit micropascals (μPa), where 1 pascal (Pa) is the pressure resulting from a force of one newton exerted over an area of one square meter. Sound pressure level is expressed as the ratio of a measured sound pressure and a reference level. The commonly used reference pressure level in acoustics is 1 μPa, and the units for underwater sound pressure levels are decibels (dB) re 1 μPa.

[2] Root mean square (rms) is the square root of the arithmetic average of the squared instantaneous pressure values.

Table 4. Acoustic thresholds for the onset of permanent threshold shift.

	PTS Onset Acoustic Thresholds* (Received Level)	
Hearing Group	**Impulsive**	**Non-impulsive**
Low-Frequency (LF) Cetaceans	$L_{pk,flat}$: 219 dB $L_{E,LF,24h}$: 183 dB	$L_{E,LF,24h}$: 199 dB
Mid-Frequency (MF) Cetaceans	$L_{pk,flat}$: 230 dB $L_{E,MF,24h}$: 185 dB	$L_{E,MF,24h}$: 198 dB
High-Frequency (HF) Cetaceans	$L_{pk,flat}$: 202 dB $L_{E,HF,24h}$: 155 dB	$L_{E,HF,24h}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	$L_{pk,flat}$: 218 dB $L_{E,PW,24h}$: 185 dB	$L_{E,PW,24h}$: 201 dB
Otariid Pinnipeds (OW) (Underwater)	$L_{pk,flat}$: 232 dB $L_{E,OW,24h}$: 203 dB	$L_{E,OW,24h}$: 219 dB

* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.

Note: Peak sound pressure (L_{pk}) has a reference value of 1 µPa, and cumulative sound exposure level (L_E) has a reference value of 1µPa²s. The subscript "flat" is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (i.e., varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

In addition, NMFS uses the following thresholds for in-air sound pressure levels from broadband sounds that cause Level B behavioral disturbance under section 3(18)(A)(ii) of the MMPA:

- 100 dB re 20µPa_{rms} for non-harbor seal pinnipeds

The significance of potential impacts of noise to marine mammals is dependent on a number of factors including the magnitude of sound pressure levels, species receiving the sound, exposure type (e.g., continuous vs. pulse), duration, site characteristics, species' auditory characteristics, and individual marine mammal characteristics (e.g., habituation, season, motivation) (Dazey et al. 2012, Ellison et al. 2012).

Noise generated from vibratory or impact hammers can reduce the fitness and survival of fish in areas used by foraging marine mammals (Fay and Popper 2012).

Because we do not have information about the timing, location, duration, scope, or extent of any site-specific projects to be authorized under the amended Forest Plan, NMFS is not able to estimate source level, transmission loss, or propagation distance. No specific activities are authorized at this time, and all subsequent actions will be subject to section 7 consultation and the implementation of mitigation measures.

Habitat Alteration

Benthic disturbance associated with future projects under the amended Forest Plan would likely result in temporary suspension of sediments in the water column. Effects to listed species resulting from sediment suspension due to construction projects are usually localized in space and time. Suspended sediments do not usually persist in the area for more than a few hours because tidal action sufficiently disperses re-suspended sediments to a point there they are not detectably different from surrounding waters. Much of the larger diameter re-suspended sediment quickly settles back into the substrate. The small number of prey that could be affected by such projects typically has no measurable effect on overall prey availability in the project areas.

Because we do not have information about the timing, location, duration, scope, or extent of any site-specific projects to be authorized under the amended Forest Plan, NMFS is not able to estimate the duration or intensity of habitat alteration. No specific activities are authorized at this time, and all subsequent actions will be subject to section 7 consultation and the implementation of mitigation measures.

Oil Spills/Contaminants

Oil spilled into the marine environment can result in harmful or lethal effects to marine mammals, including inhalation or ingestion of toxins, and surface oiling.

Because we do not have information about the timing, location, duration, scope, or extent of any site-specific projects to be authorized under the amended Forest Plan, NMFS is not able to estimate the risk of oil spills or contaminant exposure. No specific activities are authorized at this time, and all subsequent actions will be subject to section 7 consultation and the implementation of mitigation measures.

Steller Sea Lion Critical Habitat

NMFS identified physical and biological features essential for conservation of Steller sea lions in the final rule to designate critical habitat (58 FR 45269; August 27, 1993) including terrestrial, air, and aquatic habitats (as described at 50 CFR §226.202) that support reproduction, foraging, rest, and refuge. Future actions under the amended Forest Plan could impact critical habitat by causing disturbance and habitat alteration at rookeries and haulouts, as well as increased risk of vessel strike during vessel transit and shore-based work.

1. Terrestrial zones that extend 3,000 feet (0.9 km) landward from each major haulout and major rookery in Alaska.

It is possible that future actions could disturb hauled out Steller sea lions within this terrestrial zone; however, NMFS is unable to evaluate the intensity of disturbance without knowing specifics about future proposed actions. No activities are authorized at this time, and all subsequent actions would be subject to section 7 consultation.

2. Air zones that extend 3,000 feet (0.9 km) above the terrestrial zone of each major haulout and major rookery in Alaska.

It is possible that future actions including the use of helicopters could disturb hauled out Steller sea lions; however, NMFS is unable to evaluate the intensity of disturbance without knowing specifics about future proposed actions. No activities are authorized at this time, and all subsequent actions would be subject to section 7 consultation.

3. Aquatic zones that extend 3,000 feet (0.9 km) seaward of each major haulout and major rookery in Alaska that is east of 144° W longitude.

NMFS is unable to evaluate the intensity of effects without knowing specifics about future proposed actions. Any future actions proposing construction with acoustic stressors and/or vessel traffic disturbance would be subject to section 7 consultation.

Conclusion

This informal consultation addresses only the proposed amendment to the Forest Plan. Based on this analysis, NMFS concludes that the amendment of the Forest Plan will not result in any on-the-ground effects. Rather, it is an administrative action with non-measurable (i.e., insignificant) effects to listed species. Any future Forest Service actions pursuant to the amended Forest Plan would be subject to additional section 7 consultation. Therefore, NMFS concurs with your determination that the proposed action may affect, but is not likely to adversely affect, the species and critical habitat listed in Table 1**.** Reinitiation of consultation is required where discretionary federal involvement or control over the action has been retained or is authorized by law and if (1) take of listed species occurs, (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered, (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter, or (4) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16).

All future actions associated with these changes to the Forest Plan will require separate consultation under the ESA. All future requests for consultation on site-specific actions that fall under this programmatic consultation should reference this programmatic consultation and include our tracking number AKR-2016-9574.

Please direct any questions regarding this letter to Kristin Mabry at Kristin.Mabry@noaa.gov or 907.586.7490.

Sincerely,

for James W. Balsiger, Ph.D.
Administrator, Alaska Region

cc: Bonnie Bennetsen - bbennetsen@fs.fed.us

References

2012. National Best Management Practices for Water Quality Management on National Forest System Lands: Volume 1: National Core BMP Technical Guide. Technical Guide, USDA Forest Service, Washington, D.C.

Adams, P. B., C. Grimes, J. E. Hightower, S. T. Lindley, M. L. Moser, and M. J. Parsley. 2007. Population status of North American green sturgeon, *Acipenser medirostris*. Environmental Biology of Fishes 79:339-356.

Adams, P. B., C. B. Grimes, S. T. Lindley, and M. L. Moser. 2002. Status review for North American green sturgeon, *Acipenser medirostris*. Page 57 NOAA, National Marine Fisheries Service, Southwest Fisheries Science Center, Santa Cruz, California.

ADF&G. 2014. Fish resource monitor, version 2.3.3.9775. Research and Tech Services, Division of Sport Fish, Alaska Department of Fish and Game. Available online at http://extra.sf.adfg.state.ak.us/FishResourceMonitor/?mode=awc.

Au, W. W. L. 2000. Hearing in whales and dolphins: An overview. Pages 1-42 *in* W. W. L. Au, A. N. Popper, and R. R. Fay, editors. Hearing by Whales and Dolphins. Springer-Verlag, New York.

Au, W. W. L., A. A. Pack, M. O. Lammers, L. M. Herman, M. H. Deakos, and K. Andrews. 2006. Acoustic properties of humpback whale songs. Journal of the Acoustical Society of America 120:1103-1110.

Baker, C. S., L. M. Herman, A. Perry, W. S. Lawton, J. M. Straley, and J. H. Straley. 1985. Population characteristics and migration of summer and late-season humpback whales (*Megaptera novaeangliae*) in Southeastern Alaska. Marine Mammal Science 1:304-323.

Behnke, R. 2010. Trout and Salmon of North America. Simon and Schuster, Inc., New York, NY.

Blackwell, S. B. 2005. Underwater measurements of pile driving sounds during the Port MacKenzie Dock modifications, 13–16 August 2004. Report from Greeneridge Sciences, Inc., Goleta, CA, and LGL Alaska Research Associates, Inc., Anchorage, AK, in association with HDR Alaska, Inc., Anchorage, AK, for Knik Arm Bridge and Toll Authority, Anchorage, AK, Department of Transportation and Public Facilities, Anchorage, AK, and Federal Highway Administration, Juneau, AK. 33 p.

Burgner, R., J. Light, L. Margolis, T. Okasaki, A. Tautz, and S. Ito. 1992. Distribution and origins of steelhead trout (*Oncorhynchus mykiss*) in offshore waters of the North Pacific Ocean. International North Pacific Fisheries Commission Bulletin 51:92.

Burgner, R. L. 1991. Life history of sockeye salmon (*Oncorhynchus nerka*). Pages 3-117 *in* C. Groot and L. Margolis, editors. Pacific salmon life histories. UBC Press, Vancouver, Canada.

Carder, D. A., and S. H. Ridgway. 1990. Auditory brainstem response in a neonatal sperm whale, *Physeter* spp. Journal of the Acoustical Society of America 88:S4.

Crane, P. A., W. D. Templin, D. M. Eggers, and L. W. Seeb. 2000. Genetic stock identification of Southeast Alaska Chinook salmon fishery catches. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J00-01, Alaska Department of Fish and Game, Anchorage.

Cranford, T. W., and P. Krysl. 2015. Fin whale sound reception mechanisms: skull vibration enables low-frequency hearing. PLoS ONE 10:e0116222.

Dahlheim, M. E., J. M. Waite, P. A. White (2009). Cetaceans of Southeast Alaska: Distribution and Seasonal Occurrence. *Journal of Biogeography*, 410-426. doi:10.1111/j.1365-2699.2008.02007.x

Dazey, E., B. McIntosh, S. Brown, and K. M. Dudzinski. 2012. Assessment of underwater anthropogenic noise associated with construction activities in Bechers Bay, Santa Rosa Island, California. Journal of Environmental Protection 3:1286-1294.

Dickerson, C., K. J. Reine, D. G. Clarke, and R. M. Engler. 2001. Characterization of underwater sounds produced by bucket dredging operations DOER Technical Notes Collection (ERDC TN-DOER-E14), US Army Engineer Research and Development Center, Vicksburg, MS.

Drinkwater, K. F., F. Mueter, K. D. Friedland, M. Taylor, G. L. Hunt Jr, J. Hare, and W. Melle. 2009. Recent climate forcing and physical oceanographic changes in Northern Hemisphere regions: A review and comparison of four marine ecosystems. Progress in Oceanography 81:10-28.

Edds, P. L. 1988. Characteristics of finback Balaenoptera physalus vocalizations in the St. Lawrence Estuary. Bioacoustics 1:131-149.

Ellison, W. T., B. L. Southall, C. W. Clark, and A. S. Frankel. 2012. A new context-based approach to assess marine mammal behavioral responses to anthropogenic sounds. Conservation Biology 26:21-28.

Erbe, C. 2002. Hearing abilities of baleen whales. Defense Research and Development Canada.

Fay, R. R., and A. N. Popper. 2012. Fish hearing: New perspectives from two senior bioacousticians. Brain, Behavior and Evolution 79:215-217.

Frazer, L. N., and E. Mercado III. 2000. A sonar model for humpback whale song. IEEE Journal of Oceanic Engineering 25:160-182.

Goold, J. C., and S. E. Jones. 1995. Time and frequency domain characteristics of sperm whale clicks. Journal of the Acoustical Society of America 98:1279-1291.

Hildebrand, J. A. 2009. Anthropogenic and natural sources of ambient noise in the ocean. Marine Ecology Progress Series 395.

ICF, Jones & Stokes. 2009. Final technical guidance for assessement and mitigation of the hydroacoustic effects of pile driving on fish. Prepared for California Department of Transportation, Sacramento, CA.

Jensen, A. S., and G. K. Silber. 2003. Large whale ship strike database. NOAA Technical Memorandum NMFS-OPR:39.

Laist, D. W., A. R. Knowlton, J. G. Mead, A. S. Collet, and M. Podesta. 2001. Collisions between ships and whales. Marine Mammal Science 17:35-75.

Laufle, J. C., G. B. Pauley, and M. F. Shepard. 1986. Species profiles: Life histories and environmental requirements of coastal fishes and invertebrates (Pacific Northwest). Coho salmon. USFWS Biological Report 82(11.48). 27 p. Washington, DC.

Lindley, S. T., M. L. Moser, D. L. Erickson, M. Belchik, D. W. Welch, E. L. Rechisky, J. T. Kelly, J. Heublein, and A. P. Klimley. 2008. Marine migration of North American green sturgeon. Transactions of the American Fisheries Society 137:182-194.

Loughlin, T. R., and A. E. York. 2000. An accounting of the sources of Steller sea lion, *Eumetopias jubatus*, mortality. Marine Fisheries Review 62:40-45.

McKinnell, S., J. J. Pella, and M. L. Dahlberg. 1997. Population-specific aggregations of steelhead trout (*Oncorhynchus mykiss*) in the North Pacific Ocean. Canadian Journal of Fisheries and Aquatic Sciences 54:2368-2376.

Mecklenburg, C. W., T. A. Mecklenburg, and L. K. Thorsteinson. 2002. Fishes of Alaska. American Fisheries Society, Bethesda, MD.

Møhl, B., M. Wahlberg, P. T. Madsen, A. Heerfordt, and A. Lund. 2003. The monopulsed nature of sperm whale clicks. Journal of the Acoustical Society of America 114:1143-1154.

Morris, J. F., M. Trudel, M. E. Thiess, R. M. Sweeting, J. Fisher, S. A. Hinton, E. A. Fergusson, J. A. Orsi, E. Farley, and D. W. Welch. 2007. Stock-specific migrations of juvenile coho salmon derived from coded-wire tag recoveries on the continental shelf of western North America. Page 81 *in* American Fisheries Society Symposium. American Fisheries Society.

Moyle, P. B. 2002. Inland fishes of California. University of California Press, Berkeley, CA.

Moyle, P. B., P. J. Foley, and R. M. Yoshiyama. 1992. Status of green sturgeon, *Acipenser medirostris*. Page 11 California. Report by University of California at Davis to the National Marine Fisheries Service, Terminal Island, CA.

Moyle, P. B., R. M. Yoshiyama, J. E. Williams, and E. D. Wikramanayake. 1995. Fish species of special concern in California, Second Edition. Final Report for Contract No. 2128IF, Department of Wildlife & Fisheries Biology, University of California, Davis, Davis, California. Prepared for the California Deparment of Fish and Game, Inland Fisheries. Page 277.

Mueter, F. J., R. M. Peterman, and B. J. Pyper. 2002. Opposite effects of ocean temperature on survival rates of 120 stocks of Pacific salmon (*Oncorhynchus* spp.) in northern and southern areas. Canadian Journal of Fisheries and Aquatic Sciences 59:456-463.

Neilson, J.L, C. M. Gabriele, A. S. Jensen, K. Jackson, and J. M. Straley. 2012. Summary of Reported Whale-Vessel Collisions in Alaskan Waters. Journal of Marine Biology, vol. 2012, Article ID 106282, 18 pgs.NMFS. 2008. Recovery plan for the Steller sea lion (*Eumetopias jubatus*). Revision. National Marine Fisheries Service, Silver Spring, MD:325.

NMFS. 2009. Bering Sea Chinook salmon bycatch management, regulatory impact review/initial regulatory flexibility analysis: Volume 1, Environmental Impact Statement. North Pacific Fisheries Management Council, National Marine Fisheries Service, Juneau, AK.

NMFS. 2011. 5-Year Review: Summary & Evaluation of Lower Columbia River Chinook, Columbia River Chum, Lower Columbia River Coho, and Lower Columbia River Steelhead. National Marine Fisheries Service Northwest Region, Portland, OR. 59 pp.

NMFS. 2016. Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing: Underwater Acoustic Thresholds for Onset of Permanent and Temporary Threshold Shifts. U.S. Dept. of Commer., NOAA. NOAA Technical Memorandum NMFS-OPR-55, 178 p.

Pauley, G. B., K. L. Bowers, and G. L. Thomas. 1988. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Pacific Northwest), chum salmon. Washington Cooperative Fishery Unit, School of Fisheries, University of Washington, Seattle, WA. Report to USACE, Waterways Experiment Station, Vicksburg, MS and USFWS, National Wetlands Research Center, Washington, DC.

Payne, K., and R. Payne. 1985. Large scale changes over 19 years in songs of humpback whales in Bermuda. Zeitschrift fur Tierpsychologie 68:89-114.

Quinn, T. P., and K. W. Myers. 2004. Anadromy and the marine migrations of Pacific salmon and trout: Rounsefell revisited. Reviews in Fish Biology and Fisheries 14:421-442.

Richardson, W. J., C. R. Greene Jr., C. I. Malme, and D. H. Thomson. 1995. Marine Mammals and Noise. Academic Press, San Diego, California.

Salo, E. O. 1991. Life history of chum salmon (*Oncorhynchus keta*). Pages 233-309 Pacific salmon life histories. UBC Press, Vancouver, Canada.

Sandercock, F. 1991. Life history of coho salmon (*Oncorhynchus kisutch*). Pages 396-445 Pacific salmon life histories.

Sheppard, D. 1972. The present status of the steelhead trout stocks along the Pacific Coast. Pages 519-556 *in* D. Rosenberg, editor. A review of the oceanography and renewable resources of the northern Gulf of Alaska. Report R72-73. Alaska Institute of Marine Science, University of Alaska, Fairbanks, AK.

Silber, G. K. 1986. The relationship of social vocalizations to surface behavior and aggression in the Hawaiian humpback whales (*Megaptera novaeangliae*). Canadian Journal of Zoology 64:2075-2080.

Straley, J. M. 1990. Fall and winter occurrence of humpback whales (*Megaptera novaeangliae*) in southeastern Alaska. Report of the International Whaling Commission Special Issue 12:319-323.

Templin, W. D., and L. W. Seeb. 2004. Clues to Chinook salmon nearshore migration in Southeast Alaska from estimates of stock composition in troll harvests. NPAFC Technical Report No. 5. Alaska Department of Fish and Game, Gene Conservation Laboratory, Anchorage, AK. pp 72-73.

Thompson, P. M., G. D. Hastie, J. Nedwell, R. Barham, K. L. Brookes, L. S. Cordes, H. Bailey, and N. McLean. 2013. Framework for assessing impacts of pile-driving noise from offshore wind farm construction on a harbour seal population. Environmental Impact Assessment Review 43:73-85.

Thompson, P. O., W. C. Cummings, and S. J. Ha. 1986. Sounds, source levels, and associated behavior of humpback whales, Southeast Alaska. Journal of the Acoustical Society of America 80:735-740.

Thompson, P. O., L. T. Findley, and O. Vidal. 1992. 20-Hz pulses and other vocalizations of fin whales, *Balaenoptera physalus*, in the Gulf of California, Mexico. Journal of the Acoustical Society of America 92:3051-3057.

Todd, V. L., I. B. Todd, J. C. Gardiner, E. C. Morrin, N. A. MacPherson, N. A. DiMarzio, and F. Thomsen. 2015. A review of impacts of marine dredging activities on marine mammals. ICES Journal of Marine Science: Journal du Conseil 72:328-340.

Tyack, P., and H. Whitehead. 1983. Male competition in large groups of wintering humpback whales. Behaviour 83:132-154.

USCG, and EPA. 2014. Biological Assessment of the Alaska federal/state preparedness plan for response to oil & hazardous substance discharges/releases (Unified Plan). Prepared by Windward Environmental, LLC and ERM. Page 426 plus appendicies, Anchorage, AK.

Vu, E. T., D. Risch, C. W. Clark, S. Gaylord, L. T. Hatch, M. A. Thompson, D. N. Wiley, and S. M. Van Parijs. 2012. Humpback whale song occurs extensively on feeding grounds in the western North Atlantic Ocean. Aquatic Biology 14:175-183.

Wahle, R., E. Chaney, and R. E. Pearson. 1981. Areal distribution of marked Columbia River Basin spring chinook salmon recovered in fisheries and at parent hatcheries. Marine Fisheries Review 43:1-9.

Wahle, R. J., and R. R. Vreeland. 1978. Bioeconomic contribution of Columbia River hatchery fall chinook salmon, 1961 through 1964 broods, to the Pacific salmon fisheries. Fisheries Bulletin 76:179-208.

Watkins, W. A. 1981. Activities and underwater sounds of fin whales. Scientific Reports of the Whales Research Institute 33:83-117.

Watkins, W. A., P. Tyack, K. E. Moore, and J. E. Bird. 1987. The 20-Hz signals of finback whales (*Balaenoptera physalus*). Journal of the Acoustical Society of America 82:1901-1912.

Weilgart, L. S., and H. Whitehead. 1993. Coda communication by sperm whales (*Physeter macrocephalus*) off the Galápagos Islands. Canadian Journal of Zoology 71:744-752.

Weir, C. R., A. Frantzis, P. Alexiadou, and J. C. Goold. 2007. The burst-pulse nature of 'squeal' sounds emitted by sperm whales (*Physeter macrocephalus*). Journal of the Marine Biological Association of the United Kingdom 87:39-46.

Williams, R., and P. O'Hara. 2010. Modelling ship strike risk to fin, humpback and killer whales in British Columbia, Canada. Journal of Cetacean Research and Management 11:1-8.

Winn, H. E., P. J. Perkins, and T. C. Poulter. 1970. Sounds of the humpback whale. Pages 39-52 Seventh Annual Conference on Biological Sonar and Diving Mammals, Stanford Research Institute, Menlo Park, California.

Wood, C. C., N. B. Hargreaves, D. T. Rutherford, and B. T. Emmett. 1993. Downstream and early marine migratory behaviour of sockeye salmon (*Oncorhynchus nerka*) smolts entering Barkley Sound, Vancouver Island. Canadian Journal of Fisheries and Aquatic Sciences 50:1329-1337.