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## 3.6 Fish



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## 3.6 FISH

### 3.6.1 AFFECTED ENVIRONMENT

For purposes of this Supplemental Environmental Impact Statement (EIS)/Overseas EIS (Supplemental EIS/OEIS), the Region of Influence (ROI) for fish remains the same as that identified in the March 2011 Gulf of Alaska (GOA) Navy Training Activities Final EIS/OEIS and includes the Temporary Maritime Activities Area (TMAA) (the Study Area).

#### 3.6.1.1 Existing Conditions

The following discussion provides an overview of the predominant fish species and habitat types known to occur in the TMAA. Two fish categories are described: salmonids and groundfish. The TMAA is over 12 nautical miles offshore, includes primarily offshore open ocean habitats such as pelagic, continental shelf, slope, and abyssal plain, which are influenced by both the Alaska Coastal Current and the Alaska Gyre.

##### 3.6.1.1.1 Salmonid and Groundfish Species

The life histories of the dominant species of salmonids and groundfish that occur in the Gulf of Alaska are described in the 2011 GOA Final EIS/OEIS. The species of salmonids present in the GOA include: Chinook (*O. tshawytscha*), coho (*O. kisutch*), chum (*O. keta*), pink (*O. gorbuscha*), sockeye (*O. nerka*), and steelhead (*O. mykiss*). Groundfish species in the GOA include flatfish, rockfish, roundfish, skates, sharks, and chimeras. Neither the species nor the species status of salmonids and groundfish have changed from that described in the 2011 GOA Final EIS/OEIS. Therefore, the information and analysis presented in the 2011 GOA Final EIS/OEIS remains valid.

##### 3.6.1.1.1.1 Summary of Fisheries Management

The historical accounts for Pacific halibut (*Hippoglossus stenolepis*) management occurring prior to the 2011 GOA Final EIS/OEIS, are fully described in the 2011 GOA Final EIS/OEIS. Following a review of recent stock assessment reports, the Pacific halibut fishery commercial catch decreased 6 percent between 2009 and 2010 with only a 1 percent decrease in effort in the Gulf of Alaska (International Pacific Halibut Commission 2013). However, the overall trend does not indicate declines in abundance throughout the Gulf of Alaska. Additionally, no new or additional United States (U.S.) Department of the Navy (Navy) training activities are being proposed in this Supplemental EIS/OEIS that would affect fish resources in the Study Area. Since the changes presented in the Pacific halibut stock assessment reports relate to landings, catch-per-unit-effort, and variable abundance across the GOA, the information and analysis presented in the 2011 GOA Final EIS/OEIS remains valid.

##### 3.6.1.1.2 Fish Habitat in the Gulf of Alaska Temporary Maritime Activities Area and Offshore Habitats

The habitat characteristics, which include geomorphic, physical, biological, and chemical parameters, as well as islands, biogenic habitats, benthic habitats, and the water column, are described in the 2011 GOA Final EIS/OEIS. Additionally, offshore areas, such as corals, sponge habitats, benthic habitats, artificial habitats, and the water column, are also described in the 2011 GOA Final EIS/OEIS. These habitat descriptions and locations within the TMAA, as listed in the 2011 GOA Final EIS/OEIS, have not changed due to their intrinsic static nature. Since the habitats types have remained the same, the information and analysis presented in the 2011 GOA Final EIS/OEIS remains valid.

### 3.6.1.2 Essential Fish Habitat

Descriptions of essential fish habitat (EFH) in the Gulf of Alaska were presented in the 2011 GOA Final EIS/OEIS. This Supplemental EIS/OEIS addresses the same activities within the TMAA as did the 2011 GOA Final EIS/OEIS. The North Pacific Fishery Management Council has three Fishery Management Plans (FMP) in effect for the Gulf of Alaska, including the scallop, groundfish, and the high seas salmon fisheries, which are described below. Although a few updates have occurred to the FMPs since the 2011 GOA Final EIS/OEIS, none have changed or affected the previous information or analyses. As such, the general description of the EFH within the TMAA in the 2011 GOA Final EIS/OEIS has not changed; thus, the information presented remains valid. However, the updates to each FMP are presented below, by species group.

#### 3.6.1.2.1 Scallop Fishery Management Plan

As presented in the 2011 GOA Final EIS/OEIS, there is a scallop FMP for the Gulf of Alaska. A recent review of the FMP and associated documents indicated that the National Marine Fisheries Service (NMFS) approved an amendment to the scallop fishery management plan in October 2011. This amendment implemented an annual catch limit and accountability measures to prevent overfishing. Since the new amendment was included to facilitate support for a sustainable scallop fishery and did not include changes to fishable habitat area or impose new environmental baseline restrictions, the information presented in the 2011 GOA Final EIS/OEIS remains valid. Therefore, no additional update to the 2011 GOA Final EIS/OEIS is required.

#### 3.6.1.2.2 Ground Fishery Management Plan

As presented in the 2011 GOA Final EIS/OEIS, there is a groundfish FMP for the Gulf of Alaska. A recent review of the FMP and associated documents indicated that NMFS issued several amendments to the management plan. Amendments 76 through 93 have been implemented following the completion of the 2011 GOA Final EIS/OEIS. The additional amendments focused on stricter regulations on quotas, licenses, gear, and annual catch rates, as well as the implementation of an observer program for the commercial halibut sector and the removal of the dusky rockfish (*Sebastes ciliates*) from federal management. Since the 17 new amendments were included to help facilitate a sustainable groundfish fishery by reducing overall catch and did not impose new environmental baseline restrictions, the information in the 2011 GOA Final EIS/OEIS remains valid. Therefore, no additional update to the 2011 GOA Final EIS/OEIS is required.

#### 3.6.1.2.3 High Seas Salmon Fishery Management Plan

As presented in the 2011 GOA Final EIS/OEIS, there is a high seas salmon FMP for the Gulf of Alaska. A recent review of the FMP and associated documents showed that NMFS had issued Amendments 10 through 12 to the management plan. Amendment 10 allows NMFS to recover administration costs associated with processing permit applications. Amendment 11 extended the time period to solicit proposals for habitat areas of particular concern from every 3 years to every 5 years. Amendment 12 revises the plan in order to better facilitate the State of Alaska salmon management. Since the three new amendments were administrative (e.g., permit cost recovery and proposal review period) and resource management related and did not propose any new restrictions on the habitat or the species, the information and analyses presented in the 2011 GOA Final EIS/OEIS remains valid. Therefore, no additional update to the 2011 GOA Final EIS/OEIS is required.

### 3.6.1.3 Threatened and Endangered Species

#### 3.6.1.3.1 Salmonids

Following a review of literature published since the 2011 GOA EIS/OEIS, including the National Marine Fisheries Office of Protected Resources website, Federal Registrar publications, and online scientific journal databases (such as BIOSIS), the most recent information pertaining to threatened and endangered salmonids is presented in Table 3.6-1. Chinook, coho, chum, pink, and sockeye salmon and steelhead trout do not have any listing designations in the Gulf of Alaska, and thus are absent from the table. Table 3.6-1 describes listed salmonid species in California, Oregon, and Washington for comparison purposes.

**Table 3.6-1: Pacific Salmonid Evolutionarily Significant Units and Distinct Population Segments in the Temporary Maritime Activities Area and Vicinity**

Species	ESU <sup>1</sup> /DPS <sup>2</sup>	ESA Listing Status	Critical Habitat in the TMAA
Chinook Salmon	Sacramento River Winter-run ESU	Endangered	No
	Upper Columbia River Spring-run ESU	Endangered	No
	Snake River Spring/Summer-run ESU	Threatened	No
	Snake River Fall-run ESU	Threatened	No
	Central Valley Spring-run ESU	Threatened	No
	California Coastal ESU	Threatened	No
	Puget Sound ESU	Threatened	No
	Lower Columbia River ESU	Threatened	No
	Upper Willamette River ESU	Threatened	No
	Upper Klamath and Trinity Rivers Basin ESU <sup>3</sup>	Candidate Species <sup>3</sup>	No <sup>3</sup>
	Central Valley Fall, Late Fall ESU	Species of Concern	No
Coho Salmon	Central California Coast ESU	Endangered	No
	Southern Oregon/Northern California Coasts ESU	Threatened	No
	Lower Columbia River ESU	Threatened	No
	Oregon Coast ESU	Threatened	No
	Puget Sound/Strait of Georgia ESU <sup>3</sup>	Species of Concern <sup>3</sup>	No <sup>3</sup>
Chum Salmon	Hood Canal Summer-run ESU	Threatened	No
	Columbia River ESU	Threatened	No
Sockeye Salmon	Snake River ESU	Endangered	No
	Ozette Lake ESU	Threatened	No
	Southern California DPS	Endangered	No
	Upper Columbia River DPS	Threatened	No
	Snake River Basin DPS	Threatened	No
	Middle Columbia River DPS	Threatened	No
	Lower Columbia River DPS	Threatened	No
	Upper Willamette River DPS	Threatened	No
	South-Central California Coast DPS	Threatened	No
	Central California Coast DPS	Threatened	No
	Northern California DPS	Threatened	No
	California Central Valley DPS	Threatened	No
	Puget Sound DPS	Threatened	No
Oregon Coast DPS	Species of Concern	No	

<sup>1</sup> ESU is a population of organisms that is considered distinct for purposes of conservation.

<sup>2</sup> A species with more than one DPS can have more than one ESA listing status, as individual DPSs can be either not listed under the ESA or can be listed as endangered, threatened, or a candidate species.

<sup>3</sup> New/updated information differing from the Final Environmental Impact Statement/Overseas Environmental Impact Statement  
Notes: DPS = Distinct Population Segment, ESA = Endangered Species Act, ESU = Evolutionarily Significant Unit,  
TMAA = Temporary Maritime Activities Area

#### **3.6.1.3.1.1 Chinook Salmon**

Of the 17 Chinook salmon distinct population segments (DPSs), 11 have current listing status with 2 listed as endangered, 7 as threatened, and 1 each as a candidate species and a species of concern (National Marine Fisheries Service 2012a). Critical habitat for nine Chinook salmon DPSs has been designated (National Marine Fisheries Service 2012a). Most of the DPSs have a low abundance relative to historical levels (National Marine Fisheries Service 2012a). NMFS has reported population sizes from individual DPSs, but because all of these fish school while at sea, it is difficult to accurately estimate the marine life stage population. Specific population estimates based on freshwater adult returns within each of the DPSs can be found in Good et al. (2005). With the exception of this additional information about the new critical habitat and the variability of the adult population, the information regarding Chinook salmon presented in the 2011 GOA Final EIS/OEIS remains valid. Therefore, no additional update to the 2011 GOA Final EIS/OEIS is required.

#### **3.6.1.3.1.2 Coho Salmon**

Of the seven coho DPSs, five are recorded as listed, three listed as threatened, and one each is listed as endangered and a species of concern (National Marine Fisheries Service 2012b). Most of the DPSs have a low abundance relative to historical levels and have seen decreases in recent years (National Marine Fisheries Service 2012b). NMFS has reported population sizes from individual DPSs, but because all of these fish likely school while at sea, it is difficult to accurately estimate the marine population. Specific population numbers, based on freshwater adult returns, within each of the DPSs can be found in Good et al. (2005). With the exception of this additional information citing population decreases, the information regarding coho salmon presented in the 2011 GOA Final EIS/OEIS remains valid. Therefore, no additional update to the 2011 GOA Final EIS/OEIS is required.

#### **3.6.1.3.1.3 Chum Salmon**

The two evolutionarily significant units (ESUs) of chum salmon were listed as threatened in 1999, with the status reaffirmed in 2005 (70 Federal Register 37160). Some of the populations have shown increases in numbers, but the status review report indicates that the overall population trend has decreased by 6 percent per year (Good et al. 2005). With the exception of this additional information regarding the overall population decline, the information regarding chum salmon presented in the 2011 GOA Final EIS/OEIS remains valid. Therefore, no additional update to the 2011 GOA Final EIS/OEIS is required.

#### **3.6.1.3.1.4 Sockeye Salmon**

Sockeye salmon is the third-most abundant of the seven species of Pacific salmon after pink salmon and chum salmon (Burgner 1991). However, the Snake River ESU has remained at very low levels of only a few hundred fish, though recent hatchery-reared fish have returned to spawn (National Marine Fisheries Service 2012c). Data collection practices for the Ozette Lake ESU makes differentiating between the number of hatchery and natural spawners difficult; however, the size of the population is small, though possibly growing (National Marine Fisheries Service 2012c). NMFS has reported population sizes from individual DPSs, but because all of these fish school while at sea, it is difficult to estimate the marine population. Specific population numbers, based on freshwater adult returns, within each of the DPSs can be found in Good et al. (2005). With the exception of this additional information regarding the fluctuating population and apparent need to implement new ways to distinguish hatchery stock from wild fish, the information presented in the 2011 GOA Final EIS/OEIS remains valid. Therefore, no additional update to the 2011 GOA Final EIS/OEIS is required.

### 3.6.1.3.1.5 Steelhead Trout

Of the 15 steelhead DPSs, 12 have listing status with two listed as endangered, nine as threatened, and one as a species of concern (National Marine Fisheries Service 2010). Critical habitat for 10 west coast steelhead DPSs was designated in 2005, although none occur in the Study Area (National Marine Fisheries Service 2012d). Most of the DPSs have a low abundance relative to historical levels, and there is widespread occurrence of hatchery stock spawning with natural populations (Good et al. 2005; National Marine Fisheries Service 2010). NMFS has reported population sizes from individual DPSs, but because all of these fish likely school while at sea, it is difficult to accurately estimate the marine population. Specific population numbers based on freshwater adult returns within each of the DPSs is found in Good et al. (2005). No new or additional information or analyses on steelhead trout has been developed, hence the information regarding steelhead presented in the 2011 GOA Final EIS/OEIS remains valid. Therefore, no additional update to the 2011 GOA Final EIS/OEIS is required.

### 3.6.1.4 Hearing in Fish

Following a recent review of government technical documents and scientific literature, additional relevant information pertaining to fish hearing is presented below. A fish's gas-filled swim bladder can enhance sound detection by converting acoustic pressure into localized particle motion, which may then be detected by the inner ear. Fish with swim bladders generally have better sensitivity and better high-frequency hearing than fish without swim bladders. In reality, many fish species possess a continuum of anatomical specializations that may enhance their sensitivity to pressure (versus particle motion), and thus higher frequencies and lower intensities (Popper and Fay 2011). However, additional studies have shown that there are more fish species than originally investigated by researchers, such as deep sea fish, that may have evolved morphological adaptations to enhance hearing capabilities (Buran et al. 2005; Deng et al. 2011). There is also evidence, based on the structure of the ear and the relationship between the ear and the swim bladder, that some deep sea species, including myctophids (lanternfishes), may have hearing specializations and thus are able to hear higher frequencies (Popper 1977; Popper 1980; Deng et al. 2011). However, it has not been possible to conduct actual measures of hearing on these fish species from great depths. Marine fishes species investigated lack mid-frequency hearing (i.e., greater than 1,000 Hertz [Hz]). Lake sturgeon (*Acipenser fulvescens*) have been recorded to detect sound up to 400 or 500 Hz (Meyer et al. 2010; Lovell et al. 2005). Atlantic salmon (*Salmo salar*) (Hawkins and Johnstone 1978) and steelhead trout (Kane et al. 2010) can detect sound up to about 500 Hz. This additional information does not contribute to nor conflict with the information regarding fish hearing presented in the 2011 GOA Final EIS/OEIS. Additionally, no new relevant studies have produced data to initiate the re-analysis of the environmental impacts presented in the 2011 GOA Final EIS/OEIS. Therefore, no additional update to the 2011 GOA Final EIS/OEIS is required.

### 3.6.1.5 Current Requirements and Practices

As stated in the 2011 GOA Final EIS/OEIS, the comprehensive suite of protective measures and standard operating procedures implemented by the Navy to reduce impacts to marine mammals and sea turtles, also offer protections to habitats associated with the fish assemblage and communities. Mitigation is discussed in more detail in Chapter 5 (Standard Operating Procedures, Mitigation, and Monitoring) of this Supplemental EIS/OEIS.

## 3.6.2 ALTERNATIVES ANALYSIS

All three alternatives (No Action Alternative, Alternative 1, and Alternative 2), as discussed in the 2011 GOA Final EIS/OEIS, remain the same for this Supplemental EIS/OEIS. The Navy conducted a review of existing federal and state regulations and standards relevant to fish, as well as a review of new

literature, to include laws, regulations, and publications pertaining to fish. Although additional information relating to existing conditions was found, the new information does not indicate an appreciable change to the existing environmental conditions as described in the 2011 GOA Final EIS/OEIS. Because the existing conditions have not changed appreciably, and no new Navy training activities are being proposed to occur in the TMAA in this Supplemental EIS/OEIS, re-analysis of the alternatives with respect to fish is not warranted. Subsequently, the conclusions made for the alternatives analyzed in the 2011 GOA Final EIS/OEIS remain unchanged in this Supplemental EIS/OEIS.

### **3.6.3 CONCLUSION**

As described above, there is new information on existing environmental conditions as well as updated fish stock assessment reports and information on fish hearing. However, this new information does not change the affected environment, which forms the environmental baseline of the fish analysis in the 2011 GOA Final EIS/OEIS. Additionally, no new Navy training activities are being proposed in this Supplemental EIS/OEIS that would affect fish in the TMAA. Therefore, conclusions for fish impacts made for the alternatives analyzed in the 2011 GOA Final EIS/OEIS remain unchanged in this Supplemental EIS/OEIS. For a summary of effects of the No Action Alternative, Alternative 1, and Alternative 2 on fish under both the National Environmental Policy Act and Executive Order 12114, please refer to Table 3.6-11 (Summary of Effects by Alternative) in the 2011 GOA Final EIS/OEIS.

According to 50 Code of Federal Regulations (C.F.R.) Section 600.920(a), a supplemental consultation for EFH is required for renewals, reviews, or substantial revisions of actions if these actions may adversely affect EFH. There are no changes to Navy activities or designated EFH in the TMAA that are substantial in nature and that may adversely affect EFH previously analyzed. The analysis previously captured in Appendix C of the 2011 GOA Final EIS/OEIS (U.S. Navy, August 2010, Gulf of Alaska (GOA) Navy Training Activities Essential Fish Habitat Assessment) remains unchanged.

As part of the SEIS, the Navy is consulting under Section 7 of the ESA with NMFS for the ESA-listed fish, but will continue to rely on the prior analysis from the 2011 GOA Final EIS/OEIS and Biological Evaluation, as it remains valid. Specifically, there has not been an exceedance of incidental take for listed fish under the current Biological Opinion; there is no new information that reveals new effects to listed fish species or critical habitat for listed fish that were not previously considered; Navy training activities in the TMAA are not being substantially modified in a manner that would cause effect to listed fish species or their critical habitat that was not previously considered; and there has not been a new species of fish listed or critical habitat for other fish species created within the TMAA.

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