



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, Washington 98115

NMFS Tracking No.:
2011/03113

February 3, 2012

Department of the Army
Directorate of Public Works
Attention: Bill Van Hoesen
Environmental Division
Building 2012, Room 302, Liggett Ave.
Box 339500 MS17
Joint Base Lewis McChord, WA 98433-9500

Re: Informal Consultation for the Department of the Army Training Operations involving the Department of the Army 160th Special Operations Aviation Regiment at various locations in and over: Clackamas, Columbia, Deschutes, Hood River, Jefferson, Lane, Linn, Marion, Multnomah, Wasco, Washington, and Yamhill Counties in Oregon; and Clark, Cowlitz, Grays Harbor, Jefferson, Klickitat, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, and Yakima Counties in Washington (Fourth Field HUC numbers: 17030001-Upper Yakima, 17030002-Naches, 17030003-Lower Yakima, 17070105-Middle Columbia-Hood, 17070106-Klickitat, 17070301-Upper Deschutes, 17070305-Lower Crooked, 17070306-Lower Deschutes, 17080001-Lower Columbia-Sandy, 17080002-Lewis, 17080003-Lower Columbia-Clatskanie, 17080004-Upper Cowlitz, 17080005-Lower Cowlitz, 17090001-Middle Fork Willamette, 17090003-Upper Willamette, 17090004-McKenzie, 17090006-South Santiam, 17090007-Middle Willamette, 17090009-Molalla-Pudding, 17090012-Lower Willamette, 17100102-Queets-Quinalt, 17100103-Upper Chehalis, 17100103-Upper Chehalis, 17100104-Lower Chehalis, 17100105-Gray Harbor, 17100106-Willapa Bay, 17110015-Nisqually, 17110016-Deschutes, and 17110019-Puget Sound).

Dear Mr. Van Hoesen:

This correspondence is in response to your request for informal consultation under the Endangered Species Act (ESA).

Endangered Species Act

The National Marine Fisheries Service (NMFS) has reviewed the Draft Biological Assessment, received on May 10, 2011 and the July 2011 Final Biological Assessment (BA) for the above-referenced proposal, received on July 13, 2011. The U.S. Department of the Army (DOA) is requesting concurrence with its determination that the proposed action "may affect, but is not likely to adversely affect" certain ESA listed species of fish, marine mammals, sea turtles and designated critical habitat for those species. This informal consultation with NMFS is conducted under section 7(a)(2) of the ESA, and its implementing regulations, 50 CFR Part 402.



Proposed Action

The Department of the Army (DOA) 160th Special Operations Aviation Regiment (SOAR), based out of Joint Base Lewis-McChord (JBLM), is proposing to establish three new helicopter aerial refueling routes (Routes 1-3), see Figure 1; extend one existing aerial refueling route (AR304), see Figure 2; make use of an existing aerial refueling route (AR305), see Figure 2; establish a new low-level flight training area, see Figure 3; and establish a new terrain following multi-mode radar training route (TF/MMR), see Figure 4. The routes and training area would support training operations based out of JBLM, but would be located off-post, primarily in western Washington and northwestern Oregon. Training operations would be conducted by the 160th SOAR, with MH-60 Blackhawk helicopters and MH-47 Chinook helicopters. Aerial refueling operations would also involve C-130 Hercules tankers. The 4th Battalion of the 160th SOAR is expected to begin off-post training as soon as the appropriate approvals are granted. Additionally, 160th SOAR units from other installations would use the training routes and area. The proposed routes range from 30-43 nautical miles in length, and each route would include an area of airspace extending out 2-6 nautical miles from each side of the center line (route buffer), depending on the route. The proposed low level training area would cover approximately 496,500 acres (776 square miles). The routes and training area would be available for use 24 hours a day, 365 days a year, with some restrictions on weekend and holiday use during the summer.



Figure 1. Proposed Aerial Refueling Routes 1, 2, and 3.

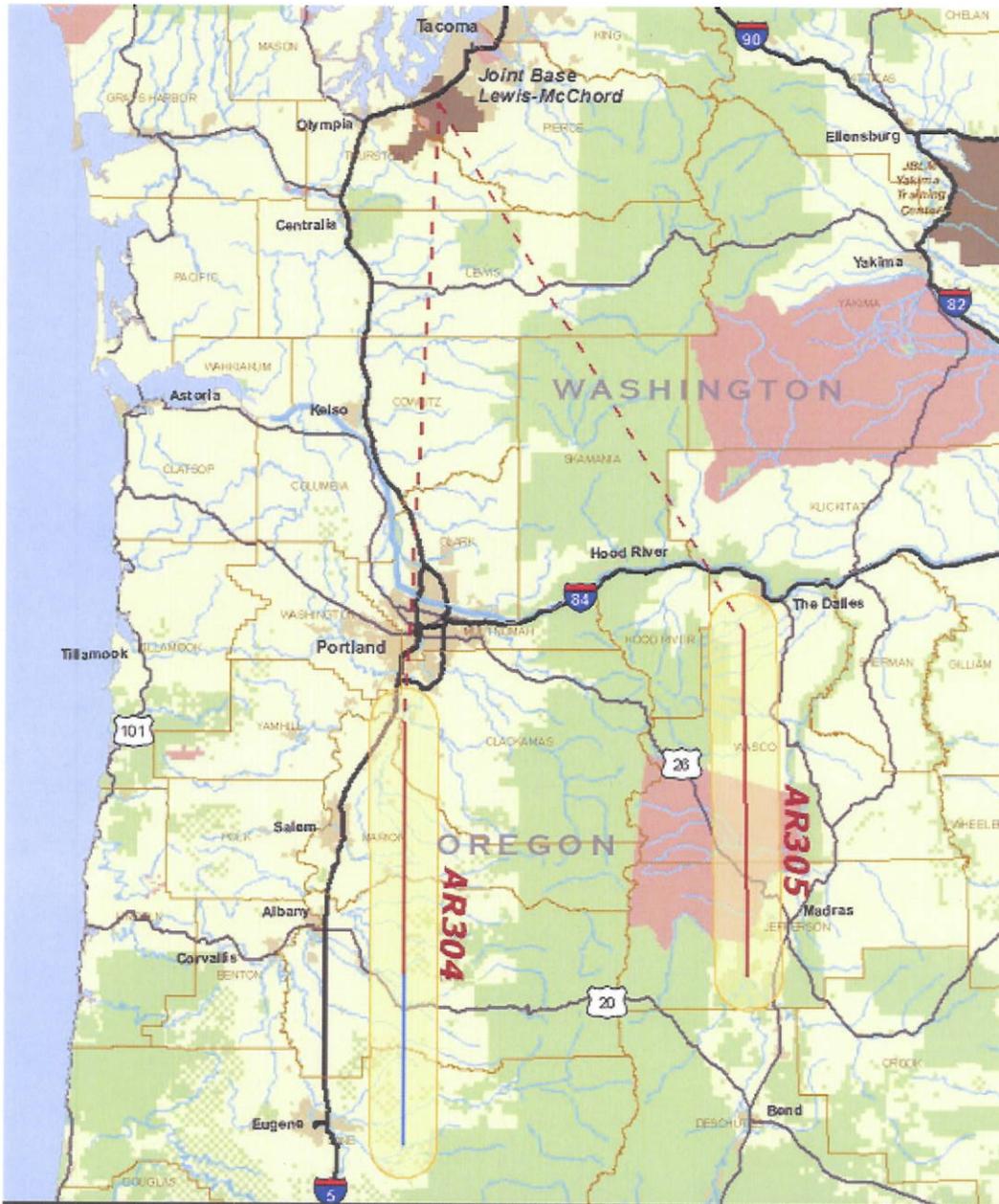


Figure 2. Proposed Aerial Refueling Routes AR304 and AR305

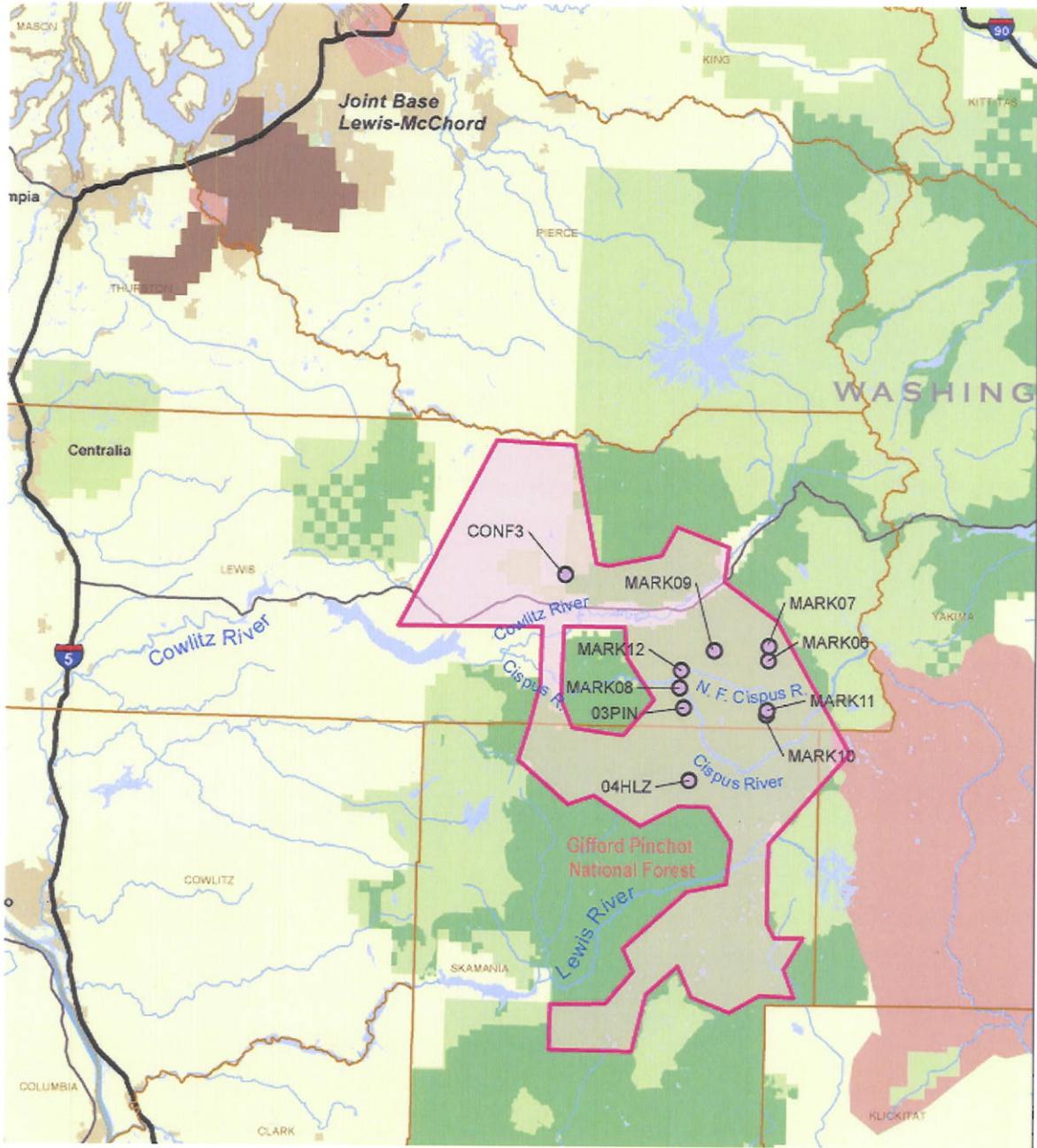


Figure 3. Proposed Low Level Training Area

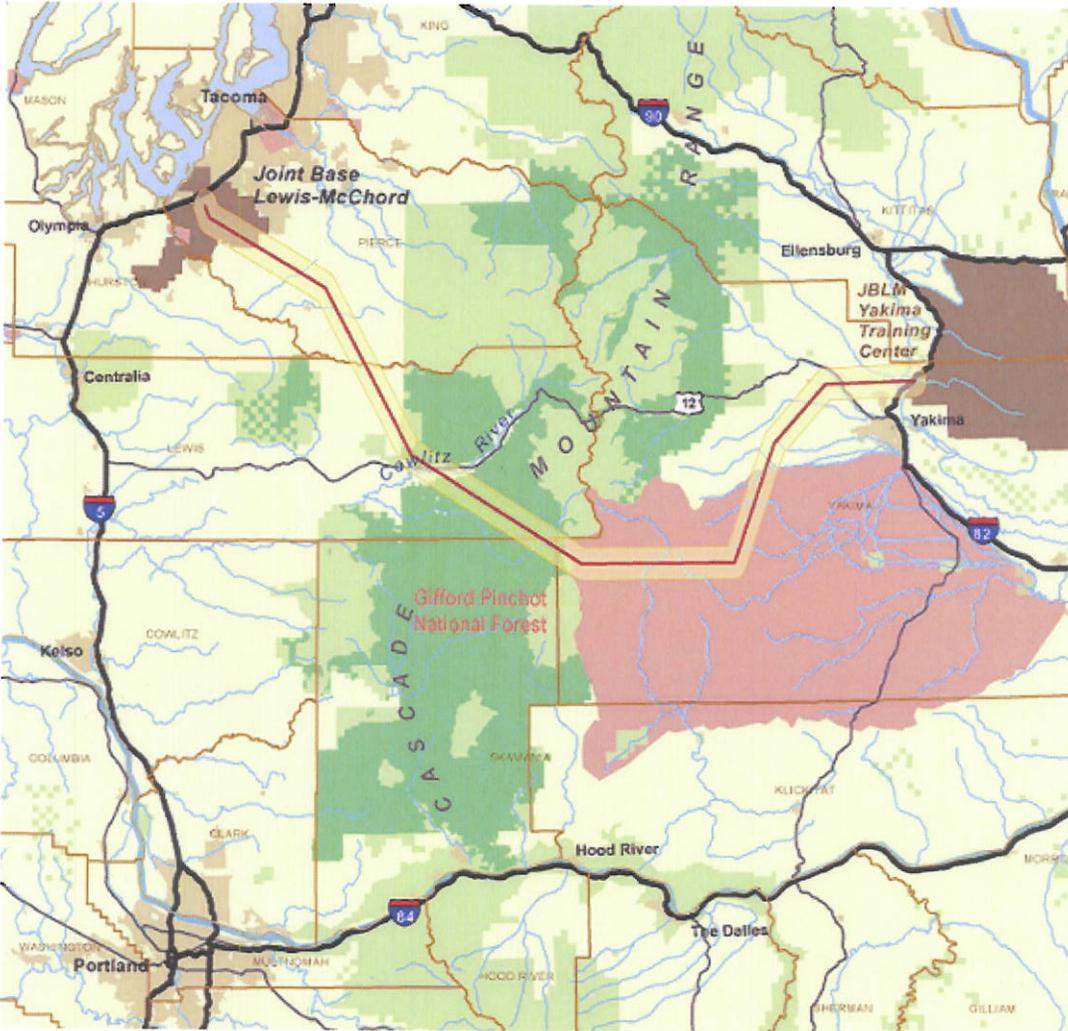


Figure 4. Proposed Terrain-Following/Multi-Mode Radar Route

The proposed frequency of use is 50 times per year for each refueling route, with each training period lasting a maximum of three hours. Fuel transfer would take place during a 30-minute time frame within the training period, and the remainder of the time would be used for dry contacts and disconnects to gain proficiency. A typical training mission would involve completion of four tasks while flying along the refueling route; link-up, hook-up, transfer of fuel, and disconnect. During each training mission, from two to ten aircraft would be utilized. Aircraft would typically operate at speeds ranging from 121 to 132 miles per hour. During one training session, aircraft may use the entire route or just portion of it, and could complete one or more runs down the route and back up. Typical exercises for the three proposed new routes would entail six passes along Routes 1 and 2, twelve passes along Route 3, and five passes along existing Route AR304 with its proposed extension and existing Route AR305. Aircraft traveling to and from the proposed routes would not follow a set flight path.

Within the low level training operations area (located over 45 miles from Puget Sound and over 100 miles from the Pacific Ocean, associated bays and harbors), helicopters would perform various mission-essential tasks that involve flying at low altitudes, from the ground surface to a height of 500 feet above treetop

level. Tasks could include following the contours of the earth as low as 50 feet above the highest obstacle, formation flight, confined area approaches, hovering, low-level navigation, sling load operation, and other flight and maneuvering of helicopters. Pilots would also land at various locations within the training area to practice tasks such as confined area landings. There would be no refueling, expending of live ordnance, or actual movement of troops or equipment between helicopters and the ground within the low level training area. It is estimated that 10-20 landings would occur during each training session, which would last approximately three hours, and involve no more than two helicopters. Landings would take place at one or more of 10 identified zones that include abandoned rock quarry locations, rocky peaks, and roads. Landing zones vary in size from approximately 10,000 square feet to 5 acres and all are presently cleared of larger vegetation. It is assumed that these zones would not require any alterations or maintenance to make them usable for training purposes.

The proposed TF/MMR route is a new instrument rules route between JBLM and JBLM-Yakima Training Center (YTC). Use of this route would include flying during periods of inclement weather, and proficiency/qualification training in terrain following using multi-mode radar. During these exercises aircraft would fly at altitudes of 300 to 500 feet above treetop level and take place approximately 60 times per year. A typical exercise would be conducted by two helicopters, leaving 15 minutes apart, flying to JBLM-YTC and back. Total time in the air would be about two hours.

Action Area

The proposed action would occur in western and central Washington and northwestern Oregon. The project location would include: 1) airspace along the five aerial fueling routes (three new routes, one extended route, and one existing route), see Figures 1 and 2; 2) a 496,500 acre low-level training area, see Figure 3; and 3) one new TF/MMR route, see Figure 4.

The action area is comprised of the project locations (including land and water areas underneath the airspace component of the project locations); land and water areas underneath the airspace used when flying to and from the routes and low-level training area; and, route buffers extending out 2-6 nautical miles on each side of each route's centerline. This buffer variation allows aircraft room to maneuver in response to weather, aircraft traffic, geographic constraints, turning and course reversal needs, and local ordinance buffers. The project location is very large in geographic extent, which encompasses diverse conditions that include; managed forests (private, state and federal), Native American reservations, rural and urban communities, and a wide range of water bodies.

Species Determination

NMFS has determined that the range of 21 ESA-listed species, attributed to multiple evolutionarily significant units (ESUs) or distinct population segments (DPSs), overlap with the broad geography of the action area and are therefore considered for the potential effects of the action. These species and their listing status are summarized in Table 1 appended to this letter.

ESA-listed Salmonids of the Columbia Basin and Puget Sound, Puget Sound/Georgia Basin Rockfish, Southern DPS Eulachon, and Southern DPS North American Green Sturgeon

The southern DPS of Pacific eulachon, southern DPS of North American green sturgeon, Columbia River salmon and steelhead, and Puget Sound salmon and steelhead all occur within the action area. Eulachon generally occur in nearshore ocean water to depths of 1,000 feet and make spawning runs into their birth streams from December through February. The only known spawning population of Southern DPS North American green sturgeon occurs in the Sacramento River. Adults migrate into the river to spawn between April and July. Juveniles spend 1 to 4 years in freshwater before migrating to the ocean. During late summer and early fall, sub-adult and non-spawning adult green sturgeon can frequently be found aggregating in estuaries along the Pacific Coast, particularly in the area covered by aerial refueling route 2 (Figure 1).

Freshwater life history stages for salmonids encompass adult upstream migrants (spawning run), adult spawners, downstream migrating adults (steelhead only), rearing fry and juveniles, and downstream migrating fry and juveniles. Upon entering the marine environment, salmonids use estuaries, coastal areas, and make extensive offshore migrations for rearing before returning to their natal streams to spawn. They remain at sea for a period ranging from 2-3 months up to 6 years dependent upon race and species. Location and time of year will determine how many life stages of the above mentioned fish species will be present and potentially exposed to effects of this action.

Puget Sound/Georgia Basin bocaccio, yelloweye rockfish and canary rockfish can be found throughout the water column with larvae and juveniles remaining in open waters for several months. Juveniles and sub-adults are associated with nearshore area (less than 100 feet deep) habitats such as rocky reefs, kelp canopies, and artificial structures. Adults generally move into deeper water as they age and are very long lived, in some cases exceeding 50 years old. Location and time of year will determine how many life stages of the above mentioned fish species will be present and potentially exposed to effects of this action.

Sea Turtles and Marine Mammals

Four species of sea turtles, listed in Table 1, are known to occur in marine waters within the action area, including the green, leatherback, Olive Ridley, and loggerhead. These sea turtle species are generally migratory and pelagic in nature, except during egg laying and a brief period as hatchlings. For the most part, these species are uncommon and historically have not bred or nested in or near the action area. Life history stages that may be exposed to the effects of this action include juveniles, sub-adults and adults.

Seven species of marine mammals, listed in Table 1, are also known to occur in marine waters within the action area. The blue, sperm and sei whales are expected to rarely make use of the action area. Blue whales are highly migratory, their distribution is largely determined by food resources, and they are often seen adjacent to the California coast south of Monterey Bay. Populations typically move pole-ward in spring to reach areas of high zooplankton productivity, and towards the tropics in winter to breed and avoid ice entrapment. Blue whales have been observed just three times in the last 50 years off the Washington coast. Sperm whales are the most abundant of the large species and are present off the Oregon and Washington coast during all seasons except for mid-winter (December-February) months. They prefer ocean waters far from land, deeper than 2,000 feet and are uncommon in depths of 1,000 feet or less. Sperm whales feed primarily on medium to large squid, breed in the spring, and have a very low

reproductive rate (4-6 year inter-birth interval). Sei whales are most frequently found in deep water of the open ocean in temperate latitudes where food items include krill, copepods, squid, and schooling fish (anchovy, herring, etc.). Females typically give birth every 2-3 years.

Killer whales, fin whales and humpback whales can be found in the action area more frequently. Killer whales are the most widely distributed cetacean in the world with three distinct forms recognized in the eastern North Pacific; resident whales, transient whales and offshore whales. The southern resident DPS of killer whales is the only population listed as endangered and consists of three pods that reside in the inland waters of Washington and British Columbia from spring to fall. This population is found in shallower coastal and inland waters and is strongly associated with areas of high salmon abundance. From 1996 to 2001 this population has declined by nearly 20 percent and is currently estimated to consist of approximately 88 individuals. Fin whales typically utilize mixing zones between coastal and oceanic waters, which occur along the edge of the continental shelf. They are known to congregate off the coast of Oregon during the summer and acoustic signals have been detected off both the Washington and Oregon coasts. There are no resident humpback whales in Washington or Oregon but they can be seen feeding off the coasts of these states during fall and spring when migrating. In summer, this species feeds on krill and schooling fish such as mackerel, herring and cod in southern Alaskan waters. They migrate to warmer waters near the Hawaiian Islands in the fall where breeding occurs and calves are born and raised.

Steller sea lions reside year-round along the outer coast of Washington and Oregon and make use of the action area. However, no rookeries or critical habitat have been identified within the action area. This species makes use of a variety of terrestrial and marine habitats but are typically found near shore. Steller sea lions are generalist predators that eat a variety of fish, cephalopods and occasionally other marine mammals and birds.

None of the training routes pass over Puget Sound or the Strait of Georgia, where listed rockfish reside. However, SOAR helicopters could potentially pass over Puget Sound and other aquatic habitats for listed fish on their way to and from the proposed routes. Training routes are situated over locations where eulachon, sea turtles, whales, Steller sea lions and salmonids are known to occur.

Effects of the Action

Potential effects of the action on ESA listed salmonids, green sturgeon, rockfish and eulachon (Table 1) includes noise disturbance, shadows from aircraft passing over streams, siltation due to rotor wash in landing zones, and accidental releases of fuel. In general, the greatest impacts could occur within the low-level training area, where low-altitude helicopter flights and landings would take place, and helicopters would be closest to fish-bearing waters. Helicopter refueling Routes 1 and 2 would pass over the Pacific Ocean adjacent to Washington where listed species of sea lion, sea turtles and whales (Table 1) occasionally occur. Potential effects of the action on these species include noise disturbance and accidental fuel spills. The NMFS has analyzed the potential impacts of the project actions and has determined that effects would be insignificant or discountable. Rationale for these determinations is provided below for each potential effect and each species evaluated.

Sound Effects

Effects on listed fish species are expected to be minimal as sound transmits poorly from air to water and aircraft in the majority of the action area would be flying at altitudes of at least 500 feet or greater. In the low altitude training area, helicopters would practice landing and other low level maneuvers, likely creating greater noise levels. Of the 10 proposed landing zones, the two closest to fish bearing waters (Cispus River) are LZMark8 and LZMark12, at approximately 650 and 450 feet respectively. Dense forest exists between these two sites and the Cispus River that would further dampen noise to some degree. In consideration of this information, effects of sound on listed fish species would be discountable.

Refueling operations conducted along proposed Routes 1 and 2 would pass over the Pacific Ocean where listed species of sea turtles, whales, and Steller sea lions occasionally occur. Recent information provided by the Department of the Navy suggest that sea turtles at or near the water surface can hear sound from low-flying aircraft but behavioral reactions are based more on visual cues than auditory cues (Department of the Navy 2010). Guidance for whale watching typically requires aircraft to be at a minimum altitude of 1,000 feet to avoid disturbing whales. The Olympic Coast National Marine Sanctuary, located within the action area beneath Route 1, prohibits flying motorized aircraft less than 2,000 feet. It is possible that aircraft traveling between JBLM and the proposed refueling routes would pass over habitats utilized by Steller sea lions. But, SOAR pilots would also comply with the Olympic Coast National Marine Sanctuary regulations when traveling between JBLM and refueling routes 1 and 2. The proposed training along the above mentioned routes would occur at a minimum elevation of 2,300 feet on up to 5,000 feet. Given the high altitudes that will be maintained during refueling activities no visual disturbance is anticipated and sound effects are expected to be minimal. Also, the limited frequency of the training activity (six passes along each route, 50 times per year) will minimize impacts as well. Considering the above information, effects of sound on sea turtles, whales and Steller sea lions would be insignificant.

Shadow Effects

Aircraft flying over streams could produce shadows that might be interpreted by fish as predators, causing them to seek cover. If frequent enough, this action would have energetic costs on individuals resulting in an adverse effect. It is presently unknown how much helicopters passing over streams might alter the behavior of listed fish. Over most of the action area aircraft would fly high enough (as mentioned above) that shadow effects would be unlikely. However, on the low level training route and in the low altitude training area, helicopters flying at low levels over streams could potentially create shadows over that habitat. Fish bearing waters do not occur within any of the proposed landing zones, which would be a minimum of 450-650 feet away. Because shadows will occur extremely infrequently from overhead traffic, their effect is considered insignificant.

Rotor Wash Effects

Helicopter training in the low altitude training area might stir up soil through rotor wash and cause some minor sedimentation into streams where salmonids reside. The greatest risk for effects would be in those locations where loose, highly erodible soil exists. Dense forest exists between the two landing zones nearest to fish bearing water that are 450 and 650 feet away. The landing zones are not newly created and have been well established (with some vegetation) for many years. Only minor amounts of dust will be

produced by rotor wash that will not likely be transported to fish bearing waters. Therefore, effects from rotor wash will be discountable.

Accidental Fuel Spill Effects

In the event of hose damage during refueling, the resulting release of fuel could affect aquatic habitats that support listed fish species or cause direct adverse health effects should fuel reach fish bearing waters in toxic concentrations. To prevent a loss of fuel, aircraft are equipped with shut-off valves that automatically stop the flow of fuel in the event that a refueling hose breaks. So, the amount of fuel released during such an event would be limited to the amount of fuel present in the hose at the time of breakage, which would be approximately 34 gallons. The amount of fuel reaching the ground would vary depending upon factors such as the altitude and speed of the tanker, as well as atmospheric conditions. Under a worst case scenario, the amount reaching the ground would range from 16 gallons under average conditions to 25 gallons on a cold day. Fuel would be dispersed over a wide area, given the height of aerial refueling would be 1,500 feet and higher. In a similar study for refueling operations at 2,000 feet (610 meters), it was predicted that the spilled fuel would be spread out over an area of 31 acres (13 hectares), or about 0.75 milliliters of fuel per square meter of land (Dial Cordy and Associates, Inc. 2006a and b). At 1,500 feet the area would be smaller depending upon conditions.

Polycyclic aromatic hydrocarbons (PAHs) in fuel are toxic to fish in high concentrations, particularly during early life history stages. Chronic exposures can also cause lethal and sub-lethal effects. It is unlikely that the small amount of fuel potentially released during a refueling mishap would be large enough to kill any fish present in exposed aquatic habitats. The small amount of fuel that may reach the ocean surface would be spread out over a large area and at that quantity will be quickly diluted, dispersed and dissipated by wind and currents. Similarly, any amount reaching surface streams or rivers would also be quickly diluted. Chronic effects are also unlikely given the very low rates of fuel spills by the 160th SOAR and the environmental degradability of PAH compounds. Since 1972 there have only been three occasions, on all its refueling routes worldwide, where damage to refueling equipment likely resulted in fuel releases. This corresponds to a rate of less than 1 event per 13,000 hours flown. Risk is further reduced given the limited frequency of the training activity (six passes along each route, 50 times per year). The 160th SOAR will notify the Washington State Habitat Conservation Division Office in Lacey, Washington of any fuel spills within eight hours of the accident. Considering the above information, effects from accidental fuel spills are considered insignificant.

Effects Summary

Based on the above factors, NMFS concurs with the determination that the project “may affect, but is not likely to adversely affect” the species listed in Table 1.

Critical Habitat

Critical habitat within the action area has been designated for Columbia River and Puget Sound salmon and steelhead, North American green sturgeon, killer whales, leatherback sea turtles, and is proposed for eulachon.

Columbia River and Puget Sound Salmon and Steelhead

The NMFS has designated critical habitat as shown for the salmon listed in Table 1. The Primary Constituent Elements (PCEs) for critical habitat in the action area are:

1. Offshore marine areas with water quality conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation.
2. Nearshore marine areas free of obstruction and excessive predation with: (i) water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and (ii) natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.
3. Estuarine areas free of obstruction and excessive predation with: (i) water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater; (ii) natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels; and (iii) juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation.
4. Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development.
5. Freshwater migration corridors free of obstruction and excessive predation with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival.
6. Freshwater rearing sites with: (i) water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; (ii) water quality and forage supporting juvenile development; and (iii) natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.

The NMFS has analyzed the potential impacts of the project on these PCEs and determined that the potential effects will be insignificant or discountable for the following reasons. The effects of noise disturbance and shadows from aircraft passing over streams are temporary and of short duration, which would not permanently alter critical habitat. Sound transmits poorly from air to water and shadows produced by aircraft will be moving quickly in association with the low level training route. Landing zones in the low altitude training area are no closer than 450 feet to fish bearing water. Travel to and from refueling routes will also maintain elevations greater than 500 feet. Refueling routes will all occur at elevations greater than 1,500 feet. The potential for siltation associated with rotor wash in landing zones is very unlikely due to distances from fish bearing water. Accidental releases of fuel by SOAR occur at a rate of less than 1 event per 13,000 hours flown. Under a worst case scenario, the amount reaching the ground would range from 16 gallons under average conditions to 25 gallons on a cold day. Fuel would be dispersed over a wide area, given the height of aerial refueling. Risk is further reduced given the limited frequency of the training activity (six passes along each route, 50 times per year). Therefore, NMFS

concur with your determination that the project “may affect, but is not likely to adversely affect” designated critical habitat of the salmonid species listed in Table 1.

Southern Distinct Population Segment North American Green Sturgeon

The primary constituent elements essential for the conservation of the Southern DPS of green sturgeon in the action area are:

For freshwater riverine systems:

1. Abundant prey items for larval, juvenile, subadult, and adult life stages.
2. Substrates suitable for egg deposition and development (e.g. bedrock sills and shelves, cobble and gravel, or hard clean sand, with interstices or irregular surfaces to “collect” eggs and provide protection from predators, and free of excessive silt and debris that could smother eggs during incubation), larval development (e.g. substrates with interstices or voids providing refuge from predators and from high flow conditions), and subadults and adults (e.g. substrates for holding and spawning).
3. A flow regime (i.e. the magnitude, frequency, duration, seasonality, and rate-of-change of fresh water discharge over time) necessary for normal behavior, growth, and survival of all life stages.
4. Water quality, including temperature, salinity, oxygen content, and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages.
5. A migratory pathway necessary for the safe and timely passage of Southern DPS fish within riverine habitats and between riverine and estuarine habitats (e.g. an unobstructed river or dammed river that still allows for safe and timely passage).
6. Deep (≥ 5 m) holding pools for both upstream and downstream holding of adult or subadult fish, with adequate water quality and flow to maintain the physiological needs of the holding adult or subadult fish.
7. Sediment quality (i.e. chemical characteristics) necessary for normal behavior, growth, and viability of all life stages

For estuarine habitats:

1. Abundant prey items within estuarine habitats and substrates for juvenile, subadult, and adult life stages.
2. Water quality, including temperature, salinity, oxygen content, and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages.
3. A migratory pathway necessary for the safe and timely passage of Southern DPS fish within estuarine habitats and between estuarine and riverine or marine habitats.

4. A diversity of depths necessary for shelter, foraging, and migration of juvenile, subadult, and adult life stages.
5. Sediment quality (i.e. chemical characteristics) necessary for normal behavior, growth, and viability of all life stages.
6. A migratory pathway necessary for the safe and timely passage of Southern DPS fish within marine and between estuarine and marine habitats.

For nearshore coastal marine areas:

1. Nearshore marine waters with adequate dissolved oxygen levels and acceptably low levels of contaminants (e.g. pesticides, organochlorines, elevated levels of heavy metals) that may disrupt the normal behavior, growth, and viability of subadult and adult green sturgeon.
2. Abundant prey items for subadults and adults, which may include benthic invertebrates and fishes.

The NMFS has analyzed the potential impacts of the project on the above features and determined that effects on them will be insignificant or discountable for the same reasons as those listed above for salmon and steelhead. Therefore, NMFS concurs with your determination that the project “may affect, but is not likely to adversely affect” proposed critical habitat of the southern DPS North American green sturgeon.

Southern Distinct Population Segment Pacific Eulachon

The NMFS proposed critical habitat for eulachon on January 5, 2011 (76 FR 515), which identified those physical or biological features essential to the conservation of the species that require special management considerations or protection. The essential features for freshwater critical habitat in the action area are:

1. Freshwater spawning and incubation sites with water flow, quality and temperature conditions and substrate supporting spawning and incubation.
2. Freshwater migration corridors free of obstruction and with water flow, quality and temperature conditions supporting larval and adult mobility, and with abundant prey items supporting larval feeding after the yolk sac is depleted.

The NMFS has analyzed the potential impacts of the project on the above features and determined that effects on them will be insignificant or discountable for the same reasons as those listed above for salmon and steelhead. Therefore, NMFS concurs with your determination that the project “may affect, but is not likely to adversely affect” proposed critical habitat of the southern DPS Pacific eulachon.

Southern Resident Killer Whale

The NMFS designated critical habitat for killer whales on November 29, 2006 (71 FR 229), which identified those physical and biological features essential to the conservation of the species and they are:

1. Water quality to support growth of the whale population and development of individual whales.
2. Prey species of sufficient quantity, quality and availability to support individual growth, reproduction and development, as well as overall population growth.
3. Passage conditions to allow for migration, resting, and foraging.

The NMFS has analyzed the potential impacts of the project on the above features and determined that effects on them will be insignificant or discountable for the following reasons. Only aircraft traveling between JBLM and Routes 1 and 2 would potentially fly over critical habitat for killer whales. A minimum 2,300 foot elevation has been established that will be maintained when flying between those points. This will preclude the occurrence of any potential sound effects. None of the training routes for refueling are located over critical habitat for killer whales, so there is no risk of accidental spills. Therefore, NMFS concurs with your determination that the project “may affect, but is not likely to adversely affect” designated critical habitat of the southern resident killer whale.

Leatherback Sea Turtle

The NMFS designated critical habitat for leatherback sea turtles on January 26, 2012 (77 FR 4170), which identified those physical and biological features essential to the conservation of the species. The primary constituent element essential for the conservation of the leatherback sea turtle in the action area is: The occurrence of prey species, primarily scyphomedusae of the order Semaestomeae (e.g., *Chrysaora*, *Aurelia*, *Phacellophora*, and *Cyanea*), of sufficient condition, distribution, diversity, abundance and density necessary to support individual as well as population growth, reproduction, and development of leatherbacks.

The NMFS has analyzed impacts of the project on this PCE and determined that the potential effects will be insignificant for the following reasons. The effects of noise disturbance and shadows from aircraft passing overhead would be temporary and of short duration, which would not permanently alter critical habitat. Accidental releases of fuel by SOAR occur at a rate of less than 1 event per 13,000 hours flown. Under a worst case scenario, the amount reaching the ground would range from 16 gallons under average conditions to 25 gallons on a cold day. Fuel would be dispersed over a wide area, given the height of aerial refueling. Risk is further reduced given the limited frequency of the training activity (six passes along each route, 50 times per year). Therefore, NMFS concurs with your determination that the project “may affect, but is not likely to adversely affect” designated critical habitat for leatherback sea turtles.

This concludes informal consultation pursuant to the regulations implementing the ESA, 50 CFR 402.13. The DOA must reinitiate this ESA consultation if: (1) new information reveals effects of the action that may have affected listed species in a way not previously considered; or (2) the action is subsequently modified in a manner that caused an effect to the listed species or critical habitat that was not previously considered, or (3) a new species is listed or critical habitat for another species is designated that may be affected by this project. In addition, if the proposed action continues more than 10 years from the date of this LOC, it will be necessary to reinitiate consultation. The effects analysis in this LOC is based on the best information currently available. After 10 years of the proposed action, NMFS does not expect that information to be reliably current. Accordingly, this LOC covers the proposed action only to the extent that it occurs within 10 years of the signature date.

The NMFS appreciates your efforts to comply with requirements under the ESA. If you have questions, please contact Tim Rymer at the Washington State Habitat Office, (360) 753-4126), or email Tim.Rymer@noaa.gov.

Sincerely,



 William W. Stelle, Jr.
Regional Administrator

Table 1. Federal Register notices for final rules that list threatened and endangered species, designate critical habitats, or apply protective regulations to listed species considered in this consultation.

Species	ESU or DPS	Original Listing Notice	Listing Status Reaffirmed	Critical Habitat	Protective Regulations
Chinook salmon (<i>Oncorhynchus tshawytscha</i>)	Lower Columbia River	3/24/99 64 FR 14308 Threatened	8/15/1176 FR 50448 Threatened	9/02/05 70 FR 52630	6/28/05 70 FR 37160
	Upper Willamette River spring-run	3/24/99 64 FR 14308 Threatened	8/15/1176 FR 50448 Threatened	9/02/05 70 FR 52630	6/28/05 70 FR 37160
	Upper Columbia River spring-run	E 3/24/99 64 FR 14308 Endangered	8/15/1176 FR 50448 Endangered	9/02/05 70 FR 52630	ESA section 9 applies
	Snake River spring/summer run	4/22/92 57 FR 14653 Threatened	8/15/1176 FR 50448 Threatened	10/25/99 64 FR 57399	6/28/05 70 FR 37160
	Snake River fall-run	4/22/92 57 FR 14653 Threatened	8/15/1176 FR 50448 Threatened	12/28/93 58 FR 68543	6/28/05 70 FR 37160
	Puget Sound	3/24/99 64 FR 14308 Threatened	8/15/11 76 FR 50448 Threatened	9/02/05 70 FR 52630	6/28/05 70 FR 37160
Chum salmon (<i>O. keta</i>)	Columbia River	3/25/99 64 FR 14507 Threatened	8/15/1176 FR 50448 Threatened	9/02/05 70 FR 52630	6/28/05 70 FR 37160
Coho salmon (<i>O. kisutch</i>)	Lower Columbia River	6/28/05 70 FR 37160 Threatened	8/15/1176 FR 50448 Threatened	In development	6/28/05 70 FR 37160
Sockeye salmon (<i>O. nerka</i>)	Snake River	11/20/91 56 FR 58619 Endangered	8/15/1176 FR 50448 Endangered	12/28/93 58 FR 68543	ESA section 9 applies
Steelhead (<i>O. mykiss</i>)	Lower Columbia River	3/19/98 63 FR 13347 Threatened	8/15/1176 FR 50448 Threatened	9/02/05 70 FR 52630	6/28/05 70 FR 37160
	Upper Willamette River	3/25/98 64 FR 14517 Threatened	8/15/1176 FR 50448 Threatened	9/02/05 70 FR 52630	6/28/05 70 FR 37160
	Middle Columbia River	3/25/98 64 FR 14517 Threatened	8/15/1176 FR 50448 Threatened	9/02/05 70 FR 52630	6/28/05 70 FR 37160
	Upper Columbia River	8/18/97 62 FR 43937 Endangered	8/15/1176 FR 50448 Endangered	9/02/05 70 FR 52630	6/28/05 70 FR 37160
	Snake River Basin	8/18/97 62 FR 43937 Threatened	8/15/1176 FR 50448 Threatened	9/02/05 70 FR 52630	6/28/05 70 FR 37160
	Puget Sound	5/11/07 72 FR 26722 Threatened	8/15/11 76 FR 50448 Threatened	In development	9/25/08 73 FR 55451
Pacific eulachon (<i>Thaleichthys pacificus</i>)	Southern DPS	3/12/10 75 FR 13012 Threatened	Not applicable	10/20/11 76 FR 65324	In development
North American Green Sturgeon (<i>Acipenser medirostris</i>)	Southern DPS	04/07/06 71 FR 17757 Threatened	Not applicable	10/09/09 74 FR 52300	06/02/2010 74 FR 30714 Proposed
Yelloweye rockfish (<i>Sebastes ruberrimus</i>)	Puget Sound/ Georgia Basin	4/28/2010 75 FR 22276 Threatened	Not applicable	In development	In development
Canary rockfish (<i>S. pinniger</i>)	Puget Sound/ Georgia Basin	4/28/2010 75 FR 22276 Threatened	Not applicable	In development	In development

Species	ESU or DPS	Original Listing Notice	Listing Status Reaffirmed	Critical Habitat	Protective Regulations
Bocaccio (<i>S. paucispinis</i>)	Puget Sound/ Georgia Basin	4/28/2010 75 FR 22276 Threatened	Not applicable	In development	In development
Leatherback Sea Turtle (<i>Dermochelys coriacea</i>)	All Populations	6/2/1970 35 FR 8491 Endangered	Not applicable	9/26/1978 43 FR 43688	ESA section 9 applies
				3/23/1979 44 FR 17710	ESA section 9 applies
				1/26/2012 77 FR 4170	ESA section 9 applies
Green Sea Turtle (<i>Chelonia mydas</i>)	All other Populations	7/28/1978 43 FR 32800 Threatened	Not applicable	9/2/98 63 FR 46693	7/28/1978 43 FR 32800
Olive Ridley Sea Turtle (<i>Lepidochelys olivacea</i>)	Mexican Pacific coast breeding populations	7/28/1978 43 FR 32800 Endangered	Not applicable	Not applicable	ESA section 9 applies
	All other populations	7/28/1978 43 FR 32800 Threatened	Not applicable	Not applicable	7/28/1978 43 FR 32800
Loggerhead Sea Turtle (<i>Caretta caretta</i>)	Northeast Atlantic Ocean, Mediterranean Sea, North Indian Ocean, North Pacific Ocean, and South Pacific Ocean	9/22/2011 76 FR 58868 Endangered	Not applicable	Not applicable	ESA section 9 applies
	Northwest Atlantic Ocean, South Atlantic Ocean, Southeast Indo-Pacific Ocean, and Southwest Indian Ocean	9/22/2011 76 FR 58868 Threatened	Not applicable	Not applicable	7/28/1978 43 FR 32800
Killer Whale (<i>Orcinus orca</i>)	Southern Resident	11/18/2005 70 FR 69903 Endangered	3/17/11 5-year status review summary and evaluation	11/29/2006 71 FR 69054	3/22/2007 72 FR 13464 Proposed
Blue Whale (<i>Balaenoptera musculus</i>)	All Populations	12/2/1970 35 FR 18319 Endangered	Not applicable	Not applicable	ESA section 9 applies
Fin Whale (<i>Balaenoptera physalus</i>)	All Populations	12/2/1970 35 FR 18319 Endangered	Not applicable	Not applicable	ESA section 9 applies
Sei Whale (<i>Balaenoptera borealis</i>)	All Populations	12/2/1970 35 FR 18319 Endangered	Not applicable	Not applicable	ESA section 9 applies
Sperm Whale (<i>Physeter macrocephalus</i>)	All Populations	12/2/1970 35 FR 18319 Endangered	Not applicable	Not applicable	ESA section 9 applies
Humpback Whale (<i>Megaptera novaeangliae</i>)	All Populations	12/2/1970 35 FR 18319 Endangered	Not applicable	Not applicable	ESA section 9 applies
Steller Sea Lion (<i>Eumetopias jubatus</i>)	Eastern	11/26/1990 55 FR 49204 Threatened	Not applicable	8/27/1993 58 FR 45269	ESA section 9 applies

REFERENCES

- Department of the Navy, 2010. Final Environmental Impact Statement/Overseas Environmental Impact Statement, Northwest Training Range complex. Silverdale, Washington.
- Dial Cordy and Associates, Inc.. 2006a. Final Environmental Assessment for Aerial Refueling Training Routes, 160th Special Operations Aviation Regiment, Fort Campbell, Kentucky. Prepared for U.S. Army Special Operations Command and U.S. Army Corps of Engineers, Savannah District. Wilmington, North Carolina.
- Dial Cordy and Associates, Inc.. 2006b. Final Environmental Assessment for Aerial Refueling Training Routes, 160th Special Operations Aviation Regiment, Hunter Army Airfield, Georgia. Prepared for U.S. Army Special Operations Command and U.S. Army Corps of Engineers, Savannah District. Wilmington, North Carolina.