



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
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Refer to NMFS No:
WCRO-2022-03081

January 3, 2023

Todd Tillinger
Regulatory Branch
U.S. Army Corps of Engineers, Seattle District
4735 East Marginal Way South, BLDG 1202
Seattle, Washington 98134-2388

Re: Reinitiation of Endangered Species Act Section 7(a)(2) Concurrence Letter for the SPARO Aquatics Polyculture project, HUC 171100191200 (WCRO-2022-03081 / NWS-2020-1058-AQ)

Dear Mr. Tillinger:

On December 12, 2022, NOAA's National Marine Fisheries Service (NMFS) received your request for a written concurrence that the United States Army Corps of Engineers (USACE) proposal to permit the SPARO Aquatics polyculture farm in King County under the Rivers and Harbors Act is not likely to adversely affect (NLAA) species listed as threatened or endangered or critical habitats designated under the Endangered Species Act (ESA). This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA and implementing regulations at 50 CFR 402.

On July 5, 2022, the U.S. District Court for the Northern District of California issued an order vacating the 2019 regulations that were revised or added to 50 CFR part 402 in 2019 ("2019 Regulations," see 84 FR 44976, August 27, 2019) without making a finding on the merits. On September 21, 2022, the U.S. Court of Appeals for the Ninth Circuit granted a temporary stay of the district court's July 5 order. On November 14, 2022, the Northern District of California issued an order granting the government's request for voluntary remand without vacating the 2019 regulations. The District Court issued a slightly amended order two days later on November 16, 2022. As a result, the 2019 regulations remain in effect, and we are applying the 2019 regulations here. For purposes of this consultation and in an abundance of caution, we considered whether the substantive analysis and conclusions articulated in the letter of concurrence would be any different under the pre-2019 regulations. We have determined that our analysis and conclusions would not be any different.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). A complete record of this consultation is on file electronically at the Oregon Washington Coastal Office.

WCRO-2022-03081



Consultation History

The proposed project underwent pre-consultation review in March 2022 with NMFS providing feedback on March 18, 2022.

In April 2022, NMFS received a request from the USACE for informal consultation with a request for our concurrence that the proposed SPARO Aquatics kelp and shellfish farm is not likely to adversely affect (NLAA) ESA listed species (Puget Sound Chinook salmon, Puget Sound steelhead, Puget Sound/Georgia Basin bocaccio, Puget Sound/Georgia Basin yelloweye rockfish, and Southern Resident killer whale) or their designated critical habitat.

A biological evaluation and memorandum for the services (MFS) for the proposed action was included. On May 23, 2022, we received an email identifying a mistake in the MFS and confirming the NLAA determinations for ESA-listed species. With this clarification and the other documents provided by the Corps, we determined that we had all information necessary to complete Section 7 consultation and informal consultation as initiated on May 23, 2022. The completed LOC was shared with the Corps on June 24, 2022 (WCRO 2022-00938).

In October 2022, it was brought to NMFS' attention from a third party that humpback whales may be present in the action area. On October 19, 2022, during a phone call with the Protected Resources Division, it was determined that three DPSs of humpback whales may occur in the action area: the Hawaii DPS (found predominately off Washington and southern British Columbia (SBC)), which is not listed under the ESA; the Mexico DPS (found all along the west coast), which is listed as threatened under the ESA; and the Central America DPS (found all along the west coast, but most common off California and Oregon), which is listed as endangered under the ESA.

On November 2, 2022, NMFS communicated with USACE a recommendation to re-initiate consultation in light of the aforementioned information. On November 3rd and November 7th 2022, the Corps requested additional information to consider the effect determination of the species in relation to the project. On November 14, 2022, NMFS responded to the requests from the Corps recommending that they review a document submitted to them in relation to a different consultation (WCRO-2022-02395 / NWS-2022-0584-AQ, Vashon Kelp Forest LLC) depicting the use of the same water body by humpback whales. While the document is specifically about humpback whales in North Colvos Passage, NMFS believed that it was still relevant to this consultation.

On December 14, 2022, USACE informed NMFS that they would like to reinitiate consultation WCRO-2022-00938, with the effects determinations remaining unchanged with the exception of adding an NLAA effect determination for humpback whale.

On December 22, 2022, NMFS reinitiated consultation, assigning a new consultation number (WCRO 2022-03081).

Proposed Action and Action Area

The applicant is proposing to install and maintain a commercial 10-acre polyculture farm off of the south west corner of Vashon Island, WA in Colvos Passage (47.337227 N latitude, -122.523749 W longitude). The following species will be grown and harvested: sugar kelp (*Saccharina latissima*), Manila clam (*Ruditapes philippinarum*), blue mussel (*Mytilus trossulus* or *M. galloprovincialis*), Pacific oyster (*Crassostrea gigas*), and possibly scallops. Efforts will begin in the fall of 2022 and in-water work will take place over two non-consecutive weeks in a one-month period.

The project would require the use of anchors, buoys, cages, and lines. The site footprint, including the gear area and regulatory markers, would be approximately 1,200 feet by 350 feet, for a total of 9.6 acres (see Figure 1). The farmed area where the cages and grow lines are located would be approximately 6-7 acres. The site will be entirely in open water between depths of 30 feet and 80 feet relative to MLLW, and will not modify the shoreline or tidal lands, as it is approximately 300 feet waterward of the mean low tide line. The culture gear will be installed in each of 25 rows, spaced 15 feet apart (see Figure 2).

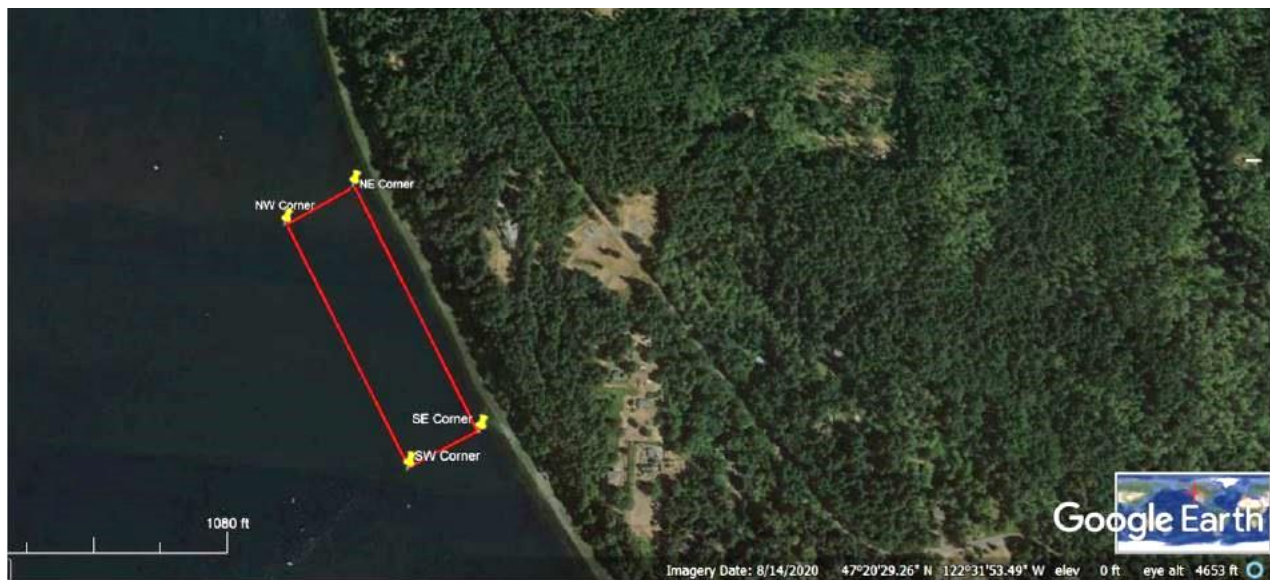


Figure 1. Project Site Location, Colvos Passage off of Vashon Island, WA

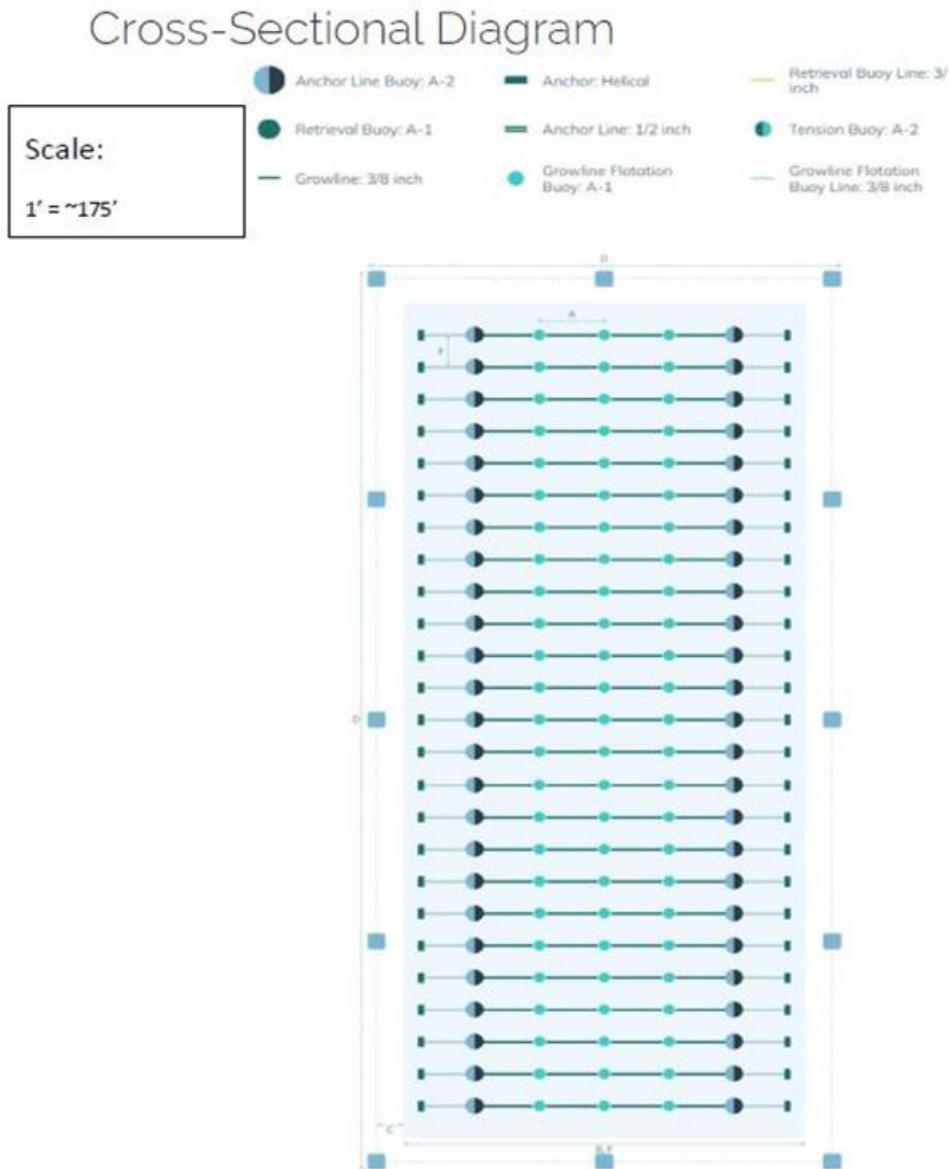


Figure 2. Culture Gear and Cross-Sectional Diagram

The process to establish the farm would include the installation of the anchor system, primary mooring buoys, and attaching mooring lines and depth control lines. Native kelp seed and local shellfish stock material will be sourced from Puget Sound and will be outplanted in November 2022. In March or April 2023, kelp will be ready to harvest. The shellfish will not be ready for harvest until 2024. Inspection and maintenance of the farming system will occur on a weekly basis. Checking the grow lines and crop (kelp and shellfish) harvest will be conducted by hand. This process would be repeated yearly. Construction sequencing details can be found in Table 1.

Helical anchors will be used throughout the farm pending on-site analysis by an established helical anchor installer to determine substrate condition and whether or not the cobbles are too large for the anchors to be screwed into the seafloor. If the latter scenario is the case, four to eight concrete blocks (totaling less than 20 square feet) will be used. If helical anchors can be

used, they will be installed by a scuba diver using a hydraulic drill. If concrete anchors will be used, they will be moved into place using a tug, barge, and crane.

Table 1. Project Elements and Sequencing

Stage	Date and Duration	Activity
1. Install Farming System	Fall 2022, 1 Week	<ul style="list-style-type: none"> • Install anchor system. • Install primary mooring buoys to bottom anchors via mooring chains/line. • Fasten main line between anchors via shackled holdfast. • Attach secondary depth control lines with floats and weight at 6-8 feet
2. Seed Lines with Kelp and Shellfish	November, 2022, 1 Week	<ul style="list-style-type: none"> • Obtain seeding stock materials sourced in the Puget Sound and attach to mainlines. A thin line with small kelp growing on it will be attached to main line. • Obtain local shellfish stock and outplant in cages attached to long lines.
3. Seasonal Maintenance	Weekly	<ul style="list-style-type: none"> • Inspection of farming system via boat to measure growth and ensure continuing integrity. • Perform Ad-hoc repairs and/or modifications as needed. • Inspection of entire farm via ROV (remote operated vehicle). • Inspection of farm via SCUBA as needed.
4. Kelp Harvest	March/April 2023	<ul style="list-style-type: none"> • Harvest kelp via boat by hand. • Sort and consolidate product into insulated totes. • Boat to Quartermaster Harbor or Dockton (Vashon Island) and trucked to processor.
5. Continued Maintenance	Year Round	<ul style="list-style-type: none"> • All anchors, mooring buoys, anchor lines, main kelp and shellfish lines, and secondary depth controlling lines (floats and weights) will be checked and maintained weekly. • Analyze project for performance and efficiency and adjust as necessary.
6. Process Repeated	November 2023-March/April 2024	<ul style="list-style-type: none"> • Repeat steps 2-5.
7. Harvest Shellfish	2024	<ul style="list-style-type: none"> • Mussels, clams, and oysters typically take approximately 2 years to grow to harvestable size. • Harvest will be done via boat by hand.

Best Management Practices to minimize effects include:

- Kelp and/or shellfish will not be harvested if any attached spawned fish eggs are observed; if observed, WDFW will be contacted;
- If Pacific herring spawn on the cultivated kelp project operators will contact the Area Habitat Biologist of WDFW, and not harvest the kelp until after hatching occurs;
- Prior to installation of farming infrastructure, operators will visually scan the area to determine if Southern Resident Killer Whales (SRKW) are present. If SRKW are observed, SPARO Aquatics will consult with ORCA-Network and delay in-water activities (including farm maintenance and harvest) until this species is no longer near the action area.
- To protect local wild kelp genetics, a small amount of cultivated sugar kelp (less than 5 pounds) will be originally sourced from local sugar kelp in accordance with WDNR harvest regulations. Source material will be collected from the proposed action area after receiving the necessary permits and grown by SPARO aquatics to produce sugar kelp “seed”;
- All harvesting will be done manually with no mechanical equipment except for an electric/battery powered winch to raise long lines and shellfish cages;
- All shellfish (and other) gear shall either be secured to longlines and/or anchors or will be removed from the area and kept in a storage area that is landward of mean higher high water (MHHW);
- All shellfish bags and cages will be clearly, indelibly, and permanently marked;
- All buoys/floatation devices will be constructed of commercial grade marine material;
- Weekly maintenance and surveillance of farm area, including adjacent beach, will be done to remove any project debris;
- Vessels used in operations will be maintained to avoid release of any grease/gas and will carry absorbent pads in the unlikely event of a spill; and
- Operators will maintain infrastructure to avoid release of any marine debris such as cultivation lines.

The proposed project is located on the southwest side of Vashon Island, in the Puget Sound Colvos Passage. The action area is defined as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” In this case, this includes up to 1/4-mile radius of in-water area due noise associated with anchor installation and a small vessel (less than 22 feet with a 50-horsepower outboard motor) operating around the

immediate farm area. For the purpose of this consultation, airborne noise will not be considered as it would be unlikely to modify aquatic habitat or be experienced by listed species.

The action area contains Puget Sound Chinook salmon and its critical habitat, Puget Sound steelhead, Puget Sound/Georgia Basin bocaccio and its critical habitat, Puget Sound/Georgia Basin yelloweye rockfish and its critical habitat, humpback whale, and SRKW and its critical habitat. We considered under the ESA whether or not the proposed action would cause any other activities and determined that it would not.

Action Agency's Effects Determination

The USACE made the determinations of “may affect, not likely to adversely affect” for Puget Sound Chinook salmon (*Oncorhynchus tshawytscha*) Evolutionarily Significant Unit (ESU), Puget Sound steelhead (*O. mykiss*) Distinct Population Segment (DPS), Puget Sound/Georgia Basin DPS of bocaccio (*Sebastes paucispinis*), Puget Sound/Georgia Basin DPS of yelloweye rockfish (*Sebastes ruberrimus*), and SRKW (*Ornicus orca*). The USACE also made the determination of “may affect, not likely to adversely affect” for Puget Sound Chinook salmon, Puget Sound/Georgia Basin DPS of bocaccio, Puget Sound/Georgia Basin DPS of yelloweye rockfish, and SRKW critical habitat.

ENDANGERED SPECIES ACT

Effects of the Action

Under the ESA, “effects of the action” are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR 402.02). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b). When evaluating whether the proposed action is not likely to adversely affect listed species or critical habitat, NMFS considers whether the effects are expected to be completely beneficial, insignificant, or discountable. Completely beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Effects are considered discountable if they are extremely unlikely to occur.

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The effects of the proposed action are reasonably likely to be elevated levels of turbidity, substrate disturbance, shade, gear/equipment in aquatic habitat, noise, and disturbance of species

by the movement of divers and boats. Some long-term effects on water quality may also occur, as well as beneficial effects. When effects are not discountable, we evaluate the effects to discern if they are insignificant to the critical habitat and listed species. The Physical and Biological Features (PBFs) of PS Chinook salmon, PS/GB bocaccio and yelloweye rockfish, and SRKW critical habitat that may occur in the action area are as follows:

PS Chinook salmon critical habitat PBFs

- Estuarine areas free of obstruction and excessive predation with:
 - Water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater;
 - Natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels; and
 - Juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation.

- Nearshore marine areas free of obstruction and excessive predation with:
 - Water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and
 - Natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.

PS/GB bocaccio and yelloweye rockfish critical habitat PBFs

- Juvenile bocaccio settlement habitats located in the nearshore with substrates such as sand, rock and/or cobble compositions that also support kelp with the following attributes:
 - Quantity, quality, and availability of prey species to support individual growth, survival, reproduction, and feeding opportunities; and
 - Water quality and sufficient levels of dissolved oxygen to support growth, survival, reproduction, and feeding opportunities.

- Adult benthic habitats or sites deeper than 30 meters (98 feet) (both species) that possess or are adjacent to areas of complex bathymetry consisting of rock and or highly rugose habitat with the following attributes:
 - Quantity, quality, and availability of prey species to support individual growth, survival, reproduction, and feeding opportunities;
 - Water quality and sufficient levels of dissolved oxygen to support growth, survival, reproduction, and feeding opportunities; and
 - The type and amount of structure and rugosity that supports feeding opportunities and predator avoidance.

SRKW critical habitat PBFs

- Water quality to support growth and development;
- Prey species of sufficient quantity, quality, and availability to support individual growth, reproduction, and development, as well as overall population growth; and
- Passage conditions to allow for migration, resting, and foraging.

Critical Habitat

Features of critical habitat likely to be affected (by elevated levels of turbidity, and shade, and gear in aquatic habitat, as described above), are water quality, substrate, prey, and passage.

Water Quality:

Substrate in the vicinity of the project area is dominated by small cobble with larger rocks strewn about. The installation of helical screws or concrete anchors could cause measurable, but temporary, increases in turbidity (suspended sediment) that temporarily diminishes water quality. Due to high currents in the area and the absence of sand/silt in the substrate, turbidity and sedimentation will be short-term and localized and will disperse and/or settle within a few tidal cycles. As such, baseline water quality levels are re-gained quickly. Suspended sediment effects on water quality are insignificant to the designated critical habitat of PS Chinook salmon, PS/GB bocaccio and Yelloweye, and SRKW.

Disturbed Substrate:

Anchoring of equipment or gear will modify substrate at the site of the anchors, and areas immediately adjacent as suspended sediment settles out. Substrate is a feature of critical habitat for both rockfish species, adult and juvenile. Because the footprint of the screws or anchors is small, and the amount of sediment to be disturbed is expected to be low, we expect effects on substrate (sand and rock) will be insignificant and the habitat will retain unimpaired feeding, growth, and survival for bocaccio juveniles. Similarly, effects on rugosity for adults of both species will be insignificant; the habitat will retain sufficient features for survival, growth, and reproduction of these species.

Prey:

Prey abundance may be affected by shade. The site footprint will be approximately 1100 feet by 350 feet with the growlines being 15 feet apart. The growlines will be located roughly between -30 feet MLLW to -80 feet MLLW. Macroalgal cover of sugar wrack kelp and various anchored red seaweeds were found at depths less than -40 MLLW but decreased with increasing depth. Little to no macroalgae was found at depths over -60 MLLW.

The growlines themselves are mostly open to sunlight and will cast some shadows in shallower areas. In these shallower areas, shade can impair growth of vegetation and of prey communities that rely on substrate and/or vegetation. Also, the kelp itself will grow up to 10 feet or longer before being harvested, which may impede some light transmission. Kelp, however, hosts prey communities.

Any shade cast by gear will not be in a constant location as the kelp and shellfish cages will be continuously moved by wave action. Thus, any shade effects will not be continuously in one location of aquatic habitat, reducing the intensity of effect, and allowing adequate light in shallower areas to support both vegetation and the prey communities that rely on substrate and vegetation. Additionally, kelp harvest will occur in the spring avoiding the onset of most macrofaunal growth occurring in the late spring/summer months. Due to only a small portion of the project coinciding with SAV and with the crop being exposed to wave action which will limit benthic shading, effects of shade on prey are expected to be insignificant. Prey will continue to support growth, maturation, fitness or fecundity conservation values of critical habitat designated for PS Chinook, bocaccio, yelloweye, or SRKW. Effects on prey are insignificant.

Safe Passage:

PS Chinook -In-water equipment could represent an obstruction to fish movement due to the presence of kelp and shellfish cages hanging through the water column. The lines will sit ~4 feet down and the kelp will hang below as it grows up to 10 feet before harvest creating 30-85 feet between the bottom of the kelp and the substrate. Juvenile Chinook salmon emigrate from natal streams out to marine waters primarily using the upper nearshore zone. We do not expect there to be any overlap between juvenile salmonid utilization of the upper near shore zone and the deeper zones where the farm will be located in Colvos Passage. Adult salmonids that stay within Puget Sound to rear (e.g., residualized Chinook salmon) or are returning from the ocean to spawn can utilize the upper near shore zone but typically utilize deeper waters (Fresh 2006, Goetz et al. 2015). The lines are spaced 15 feet apart and have abundant space around and underneath to allow for fish passage. Adult salmonids are larger, more agile and will have the ability to navigate around and through the lines and cages. If adult salmonids do pass through the action area, they will be able to easily navigate around the lines and cages. The effect of movement impairment on critical habitat for PS Chinook salmon is insignificant.

SRKW - While SRKW may occasionally utilize Colvos Passage, their echolocation capabilities suggest that it is unlikely that lines will be an entanglement hazard. Even though aquaculture has been long practiced in Puget Sound, no cases have been reported in the Puget Sound of entanglement by any cetacean. Further, the area being farmed is approximately 6-7 acres of Colvos Passage's approximately 9,819.97 acres, indicating that passage is largely unaffected. Thus, the effect of movement impairment on critical habitat for SRKW is insignificant.

Noise

Noise in the aquatic environment would occur during the installation of gear, and when vessels are operating at the project site. Noise disrupts the aquatic condition by sending vibration through the water. Such vibration ceases when equipment ceases operating, when vessel motors are turned off, and when operating vessels leave the action area. When the source of these sounds cease, the action area immediately returns to the baseline level of noise. Critical habitat is only briefly diminished, occurring at installation and intermittently to maintain gear or conduct harvest, therefore all values of the critical habitat to support PS Chinook bocaccio, yelloweye, and SRKW are retained.

Long-Term Effects

Long term, an indirect benefit of the farm is improved water quality and clarity by reducing the amount of nitrogen and phosphorus in the water when it is harvested, thus indirectly alleviating harmful algal blooms (Jiang, et al., 2020; Yang et al., 2015). Kelp aquaculture is known for providing a three-dimensional habitat for juvenile fish and small invertebrates and studies have shown an increase in benthic infaunal species abundance and diversity (Visch et al., 2020). Kelp also sequesters carbon allowing for ocean acidification to be locally ameliorated.

Oysters filter small phytoplankton, sediments, and detritus allowing for increased light penetration by improving water clarity through the water column. This benefits kelps, eelgrass, and other submerged aquatic vegetation. Shellfish aquaculture also provides structural habitat for the colonization of small organisms, acting as a refuge against predators and allowing for safe foraging.

Species

Effects on Critical Habitat, described above, are effects that listed species may be exposed to. This includes potential exposure of PS steelhead and humpback whale, despite the fact that habitat is not designated as critical for them in Puget Sound. Listed species present in the action area may also experience long-term beneficial effects from the proposed project.

Suspended Sediment/Water Quality:

Rockfish, steelhead, adult Chinook, humpback, and SRKW could be briefly exposed to areas of reduced water quality while sediment is suspended during the installation of gear. Typical response of salmonids is avoidance, so no injury from exposure to sediment is anticipated among individuals from PS Chinook or PS steelhead. Juvenile bocaccio mature in sandy/silty conditions, and we expect brief exposure to elevated sediment will produce insignificant response. Adult rockfish are located in deeper areas, and exposure to suspended sediment may be discountable given the limited amount of fine material to be suspended, and given the distance between the source of the sediment and the location of these fish, any exposure would be at very low intensity or duration so that no adverse response is expected. SRKW and humpback whale exposure is unlikely based upon the monitor/observation and delay-work protocols to be employed if species are observed.

Modified Substrate

Anchoring of equipment or gear would modify substrate at the site of the anchors, and areas immediately adjacent as suspended sediment settles out. Helical anchors would be screwed into the substrate, creating discountable effects to the substrate, yelloweye, and bocaccio in the action area. If it is determined that concrete anchors will be required, the addition of said anchors may affect yelloweye and bocaccio. The four to eight concrete anchors would modify around 20 square feet of substrate. Rocks of similar size (4-5 feet wide and or tall) are presently located within the action area and thus the size and placement of the anchors is not dissimilar to what currently exists. Additionally, the surface of the concrete has the potential to provide invertebrate habitat thus increasing foraging potential for rockfish. Thus, effects to rockfish from the anchors are insignificant.

Prey Reduction

The effect of the project on prey communities is insignificant, as shading that might impact benthic prey species is offset in part by the prey communities hosted by the kelp. This may cause a small, slight, and localized reduction in prey availability for rockfish, and a shift in prey communities for steelhead, and Chinook. We expect that response of fish species to this insignificant change or slight reduction will also be insignificant. Because effects on salmonids is insignificant, we expect that any change in the availability or quality of these species, as prey for SRKW, as a result of the proposed action will be discountable.

Gear in Aquatic Habitat/Passage

Fishes - As described above, effects on passage are insignificant. Salmonids that encounter the kelp crop and shellfish cages (exposure) are, as juveniles or adults, highly mobile with good swimming strength, making them able to swim through or around these features of the proposed action. The equipment and crop do not create a stark dark/light shade effect that could impair passage of these fish. Given the mobility and swimming strength of steelhead and Chinook salmon by the time they reach marine waters, we expect the response of steelhead and adult Chinook to these features in areas used for passage will be insignificant.

SRKW and Humpback Whale - While the risk of the cultured kelp obstructing or entangling either species of whale as they utilize Colvos Passage is not zero, the history of entanglement with aquaculture equipment in Puget Sound is that none has occurred, indicating risk is very low.

The NMFS does not have an estimate of the abundance of humpbacks that may be foraging north of California/Oregon and only within U.S. waters. However, without available current mixing rates or Washington specific abundance information, NMFS applied the Wade (2017) movement probabilities of humpbacks feeding off Washington to breeding areas off Central America and Mexico. This means we assume that around 28 percent of whales feeding off Washington originate from the Mexico DPS, and approximately 9 percent originate from the Central America DPS. The majority of the humpback whales (63 percent) feeding in this area would originate from the non-listed Hawaii DPS (Wade, 2017). This also suggests that risk to listed DPSs of humpbacks is very low as they are not the more commonly occurring species in the action area.

Evidence suggests that the potential for entanglement in gear is low, especially considering the shallow draft of floating gear. A recent review of entanglements within aquaculture gear (specifically gear for longline mussel culture) found just 19 occurrences globally since 1982 (Price et al. 2016). It is notable that these examples were associated with offshore shellfish aquaculture operations in deep water habitat. By contrast, global annual entanglements and bycatch of marine mammals within fishery gear (e.g., gill nets, trawl nets) numbers in the hundreds of thousands (Reid et al. 2006).

But as described above, considering the size of the farm in comparison to the passage in its entirety, SRKW's echolocation abilities, historically no reported entanglements with humpback whales or SRKW with kelp aquaculture farms, and the lower probability of an ESA listed DPS of humpback whale in the action area, the effect of the gear and farm in the water column on both species' movement is considered insignificant.

Noise:

Fishes - Fish may be exposed to noise as described above. Fish are not expected to vacate an area when there is noise from equipment or vessels. Juvenile salmonids and juvenile bocaccio may have reduced ability to detect prey or predators during episodes of noise, and elevated cortisol and respiration during sound, abating shortly after sound ceases. However, the exposure to sound is expected to be brief and responses are brief (typically several minutes after noise ceases), thus these effects are considered insignificant. Adult rockfish are likely to be far enough from the source of sound that the noise has attenuated when it reaches them so that exposure itself is discountable or at an insignificant level.

SRKW and Humpback Whale - While SRKW and humpback whales might be present in nearby areas when vessels transit one time per week to/from the action area, we expect this to occur infrequently for SRKW and rarely for humpback whales. Within the inland waters of Washington State, it is unlawful under federal regulations for any person to cause a vessel to approach, in any manner, or to position a vessel to be in the path of any killer whale at any point located within 200 yards of any killer whale (50 CFR 224; 76 FR 20870 pp 20820-90, 04/14/2011). State regulations also mandate protections for SRKWs (see RCW 77.15.740, mandating 300-yard approach restriction and 400-yard pathway restriction, and requirement for vessels to maintain 7 knots or less speed when within ½ nautical mile of the whales). We expect the applicant to follow these approach regulations. There are no state or federal laws that set a minimum distance between vessels and humpback whales in Washington.

The applicant's BMPs include monitoring/scanning the area for presence of SRKW and humpback whales prior to work in the action area, and delay work until the species are no longer present, which would constrain the duration of exposure to sound. If, despite these measures, listed whales are present when construction barges arrive or leave the project site, they will notice and are likely to respond to vessel noise.

Observed responses of SRKW and humpback to noise includes disrupted foraging behavior when vessels are nearby (Holt et al., 2021; Blair et al., 2016). Small crafts with high-speed engines and propellers generally produce higher frequency noise, within the hearing range of killer whales and may have masking effects (i.e., sound that precludes the ability to detect and transmit biological signals used for communication and foraging). Large vessels, including the cruise ships and tour vessels, generate substantial low frequency noise (Arveson & Vendittis 2000). Because of their low frequency, large vessels have more potential to cause noise-related effects to humpback whales. As discussed in the sections above, the use of large vessels is not anticipated for this project thus avoiding this potential negative effect to humpback whales.

The period of vessels transiting to or from the action area each week is expected to be very brief (measured in hours, at a maximum) and stop-operating procedures are expected to be adhered to. Any co-occurrence of SRKW, humpback whales and transiting boats is expected to be short-term and transitory, such that we do not expect to be able to meaningfully detect a measurable impact from vessel traffic. Based on the brevity of potential exposure and the adherence to federal and state regulations, we consider exposure and response to vessel noise among SRKW and humpback whales during project operations to be insignificant.

General Disturbance

Fishes - Fish respond when they detect movement in water, and shadows above water. This is typically a startle response that is adaptive to predator avoidance. The brief disturbance caused by boat operations and diver presence may cause localized, short-term avoidance of areas where active project work is occurring, but would not be of a long enough duration or over a large enough area to affect the health, growth, or fitness of any exposed Chinook, steelhead, bocaccio, or yelloweye. The effect of this disturbance is considered insignificant.

SRKW and Humpback Whale – While co-occurrence of these species with moving boats and diver presence is expected to be rare, it could occur. Exposure to these sources of general disturbance may cause SRKW or humpback whales to avoid the area potentially modifying their feeding pattern. The applicant intends to scan the area for presence of these species prior to work in the action area, and delay work until the species are no longer present. If, despite these measures, SRKW or humpback whales are present when boats and divers are present, avoidance response would be short-term, and by moving away from the disturbance these species are likely to resume foraging; the disruption to their normal behavior is expected to be transitory. Therefore, the effect of this disturbance is considered insignificant.

Long-Term Beneficial Effects:

Individuals from all species considered in this consultation document that rely on the action area would be slightly benefited in their feeding, growth, maturation, and survival by improved water quality. Any exposure would result slightly beneficial response at the individual scale (although difficult to detect or document) for listed fishes, SRKW, and humpback whale.

Conclusion

Based on this analysis indicating that all effects on species and designated habitat are discountable, insignificant, or beneficial, NMFS concurs with USACE that the proposed action is not likely to adversely affect the subject listed species and designated critical habitats.

Conservation Recommendations

NMFS recommends that marine mammals are not approached by vessels or employees associated with project work. Please post signs in the vessels reminding operators to stay a minimum of 200 yards away from marine mammals at all times.

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by USACE or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) the proposed action causes take; (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 identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the written concurrence; or (4) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This concludes the ESA consultation.

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of threatened and endangered species. The USACE also has the same responsibilities, and informal consultation offers action agencies an opportunity to address their conservation responsibilities under section 7(a)(1).

Please direct questions regarding this letter to Maria Pazandak, contract fisheries biologist, Central Puget Sound Branch, maria.pazandak@noaa.gov.

Sincerely,



Bonnie Shorin
Chief, Central Puget Sound Branch
Oregon Washington Coastal Office

cc: Rory Lee, USACE

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