



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.:
2010/06456

November 29, 2011

rec'd 6 Dec 2011
PM-ER

Evan Lewis, Chief
Environmental Resources Branch
U.S. Army Corps of Engineers
Post Office Box 3755
Seattle, Washington 98124-3755

Re: Endangered Species Act Section 7 Informal Consultation for the Continued Use of Puget Sound Dredged Disposal Analysis Program Dredged Material Disposal Sites, Puget Sound, Washington (HUCs, 171100200306 Lower Dungeness River, 171100200403 Ennis/Tumwater Creek, 171100020204 Anacortes, 171100020104 Lower Whatcom Creek, 171100110202 Lower Snohomish River, 171100130399 Lower Green River, 171100140599 Lower Puyallup River, 171100190503 Anderson Island). NMFS Consultation Number: 2010/06456

Dear Colonel Wright:

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

Endangered Species Act

The Army Corps of Engineers (COE) submitted a Biological Evaluation (BE) to the National Marine Fisheries Service (NMFS) for the above referenced project on August 27, 2010. Additional information was provided via numerous e-mails and meetings throughout 2010, with information provided on August 31, 2010 to address marine mammal effects. Additionally, the COE and NMFS staff met on October 6, 2010 and by phone on November 16, 2010 to discuss the proposed action. The COE requested NMFS' concurrence with a determination of "may affect, not likely to adversely affect" for Puget Sound (PS) Chinook salmon (*Oncorhynchus tshawytscha*) and its critical habitat, Hood Canal summer run chum salmon (*O. keta*) and its critical habitat, PS steelhead (*O. mykiss*), eulachon (*Thaleichthys pacificus*), green sturgeon (*Acipenser medirostris*) and its critical habitat, Southern Resident (SR) killer whales (*Orcinus orca*) and its critical habitat, humpback whales (*Megaptera novaeangliae*), Steller sea lions (*Eumetopias jubatus*), and the Puget Sound/Georgia Basin Distinct Population Segments (DPSs) of yelloweye rockfish (*Sebastes ruberrimus*), canary rockfish (*S. pinniger*), and bocaccio (*S. paucispinis*).

NMFS previously consulted on this proposed action informally for ESA-listed salmonids and marine mammals (NMFS Nos. 1999/01195, 1999/01261, 2000/00696, 2005/00484 and 2007/03507). Upon further review, NMFS determined that the proposed action was likely to adversely affect yelloweye rockfish, canary rockfish, and bocaccio, and provided a Biological Opinion on December 22, 2010 (NMFS No. 2010/04249). This is a re-initiation of consultation with the COE under section 7(a)(2) of the ESA, and its implementing regulations, 50 CFR 402.

The COE proposes to continue disposing of dredge material at the Puget Sound Dredge Disposal Analysis (PSDDA) sites. The Dredged Material Management Program (DMMP, formally called the PSDDA program) manages dredged material disposal and the DMMP agencies include the COE (Seattle District), the Environmental Protection Agency, Region 10 (EPA), the Washington Department of Natural Resources (DNR), and Washington Department of Ecology (Ecology). The COE serves as the lead agency for implementation of the DMMP. The COE did not request consultation for the projects that generate sediment. Separate consultations occur with NMFS, which allows a site-specific assessment of the direct and indirect effects of the proposed dredge project. The COE administers the DMMP on a five-year cycle after which they would reinitiate consultation. We do not anticipate any additional effects will occur from this action than what is discussed below. Further, we do not anticipate that effects will persist beyond the five-year cycle. The DMMP manages the operation and monitoring of eight dredge disposal sites, five non-dispersive and three dispersive. The non-dispersive sites are located in Bellingham Bay, Port Gardner, Elliot Bay, Commencement Bay, and between Anderson and Ketron islands. These non-dispersive sites have maximum bottom current velocities of 25 centimeters per second. Monitoring at non-dispersive sites consists of determining if material remains onsite, if site conditions are being met, and if biological resources are being affected. Material dumped into these sites is expected to remain within the site. The dispersive sites are located in Rosario Strait near Anacortes, in the Strait of Juan de Fuca near Port Townsend, and the Strait of Juan de Fuca near Port Angeles. The dispersive sites have bottom current velocities in excess of 100 centimeters per second. Baseline and post-monitoring of the physical conditions of the sites is conducted to determine if material is remaining at site. Material dumped into dispersive sites is dispersed and does not accumulate in the site. The dredge disposal sites are located in waters deeper than 96 feet and greater than 2,500 feet from shore.

Sediment quality is evaluated before dredging to determine its suitability for open-water disposal. The BE (referenced as COE 2010) describes the sediment evaluation process which involves a four-tiered approach to assess possible contaminant levels in the sediment to be dredged. The material placed in PSDDA sites is relatively clean and may not exceed specific criteria for contaminants. The PSDDA sediment screening process also requires the assessment of some chemicals based on their potential for bioaccumulation. Bioaccumulation triggers have been developed for 10 metals, one organometallic compound, two organics, one chlorinated hydrocarbon, one phenol, and four pesticides/ polychlorinated biphenyls (PCBs)¹, but have not been developed for polybrominated diphenyl ethers (PBDEs). Significant bioaccumulation of chemicals of concern in test species relative to reference areas may signify food-web effects. Material that exceeds the criteria is deposited in approved upland landfills.

¹ http://www.nws.usace.army.mil/PublicMenu/documents/DMMO/Nov_2009_UM.pdf

Dredge material is generally transported to the PSDDA sites via modern bottom dump (split-hull) barges that are designed to minimize the loss of dredge material during transit. The barges are towed at the minimum speed necessary to maintain control and the barges can transport between 1,200 and 2,000 cubic yards of material each trip. The distance traveled and the number of trips required varies depending on the dredging project. Dredging projects dictate the timing of sediment disposal. Most dredging takes place between July 16 and February 15. The disposal sites near Port Townsend and Port Angeles are closed from September 1 to November 30 to protect a shrimp fishery, and the Bellingham Bay site is closed from November 1 to February 28 to protect crab and shrimp resources.

“Action area” means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). The COE determined that the action area is the entire Puget Sound that includes the Strait of Georgia westward to Low Point and north to the Canadian Border.

Species Determinations

Puget Sound Chinook Salmon
Puget Sound Steelhead
Hood Canal Summer-run Chum

The NMFS listed PS Chinook salmon as threatened under the ESA on March 24, 1999 (64 FR 14308) and listed Hood Canal Summer-run chum salmon as threatened on March 25, 1999 (64FR 14507). Following listing, NMFS designated critical habitat for PS Chinook salmon and for Hood Canal Summer-run chum salmon on September 2, 2005 (70 FR 52630). On June 11, 2007, NMFS listed the PS steelhead Distinct Population Segment (DPS) as threatened under the ESA (72 FR 26722).

The short and long-term effects to PS steelhead will be discountable because they are seldom observed in Puget Sound or upper sound at any life stage. Juvenile steelhead rear in freshwater for over a year and are thought to pass quickly through estuarine areas in May or June. Adult PS steelhead that return to spawn are expected to avoid the barges that would be carrying dredged materials. Therefore PS steelhead would not be exposed to dredge materials when they are released.

Juvenile PS Chinook and Hood Canal Summer-run chum salmon are not expected to be present at the disposal sites. Juveniles will pass the sites as they migrate to sea but should be considerably closer to shore than any of the disposal sites. Adult and sub-adult salmon may be present in the sound throughout the year but are expected to avoid barges transporting the sediments. Consequently they would not occur at the disposal sites during a disposal event.

If a few listed salmon or PS steelhead do occur in the action area, the effects will be insignificant because the potential effects are temporary and very localized. Increased turbidity will cause reduced water quality during the disposal events but the duration of exposure will be too short to adversely affect salmonids.

Because all potential adverse effects are discountable or insignificant, NMFS concurs with the COE's effect determination of "may affect, not likely to adversely affect" for PS Chinook salmon and PS steelhead.

Eulachon

The NMFS listed Eulachon (*Thaleichthys pacificus*) as threatened on March 18, 2010 (75 FR 13012). Critical habitat was not proposed because sufficient information was not available to assess the impacts of designation, identify the geographic area occupied by the species or describe the biological and physical features essential to conservation.

Eulachon spawn in major rivers such as the Columbia, and larger tributaries to the Columbia, such as the Cowlitz. The nearest know spawning river to the project area is the Fraser River (WDFW, 2008). Although there are historical reports of eulachon in Puget Sound, many of those reports are likely to have mis-identified the species (NMFS 2010). The NMFS believes eulachon are currently rare in Puget Sound (DeLacy et al 1972, Miller and Borton 1980). During fish seining to determine potential locations for open water disposal sites for the Puget Sound Dredged Disposal Analysis, one eulachon was reported at Port Angeles in April of 1987 and one was reported at Port Townsend in April of 1988 (Donnelly et al 1988, Donnelly and Burr 1995). No eulachon were caught in any other location south of Admiralty Inlet. Because eulachon are unlikely to be present, adverse effects of the proposed action are discountable.

If some individual fish do occur during a disposal event, adverse effects will be insignificant. The short-term and temporary nature of disposal operations will limit the duration of exposure. Because only clean sediments can be discharged at PSSDA sites, fish will not be exposed to contaminants in the water column or from the sediments.

Because potential adverse effects are discountable or insignificant, NMFS concurs with the COE determination that the proposed action is not likely to adversely affect eulachon.

Green Sturgeon

The NMFS listed Green Sturgeon (*Acipenser medirostris*) as threatened on April 7, 2006 (71 FR 17757). Critical habitat for Green Sturgeon Was designated on October 9, 2009 (74 FR 52303).

The green sturgeon is a widely distributed, anadromous fish species that is long-lived and among the most marine oriented sturgeon species. Green sturgeon range from the Bering Sea, Alaska to Ensenada, Mexico (NOAA 2007). Two distinct population segments (DPS) have been defined - a northern DPS with spawning populations in the Klamath and Rogue rivers and a southern DPS that spawns in the Sacramento River (NOAA 2007). The southern DPS was listed as threatened in 2006. According to the Final Rule, the southern DPS includes all spawning populations of green sturgeon south of the Eel River in California. The northern DPS remains a species of concern.

Green sturgeon spawn in the Sacramento, Klamath and Rogue rivers in the spring (NOAA 2007). Spawning occurs in deep pools or holes in large, turbulent river mainstreams. Specific

characteristics of spawning habitat are not well known. Although they may prefer large cobbles, spawning substrate can range from clean sand to bedrock (NOAA 2007).

Green sturgeon congregate in coastal waters and estuaries, including non-natal estuaries. Their estuarine/marine distribution and the seasonality of estuarine use are largely unknown. Green sturgeon are known to enter Washington estuaries during summer when water temperatures are more than 2 degrees Celsius warmer than adjacent coastal waters (Moser and Lindley 2007). Information from fisheries-dependent sampling suggests that in the northwestern United States green sturgeon only occupy large estuaries during the summer and early fall. Commercial catches of green sturgeon peak in October in the Columbia River estuary, and records from other estuarine fisheries (Willapa Bay and Grays Harbor, Washington) support the idea that sturgeon are only present in these estuaries from June until October.

Bemis and Kynard (1997) suggested that green sturgeon move into estuaries of non-natal rivers to feed. In the Columbia River, the empty gut contents of green sturgeon captured in gillnet fishery suggests that they were not actively foraging in the estuary although they are occasionally caught on baited hooks during the sport season for white sturgeon. In California sturgeon generally feed on benthic invertebrates, such as shrimp, crabs, worms, mollusks, and epibenthic crustaceans. Adult green sturgeon caught in Washington had preyed on sand lance and callinassid shrimp (Moyle et al 1992).

Green sturgeon are rare in Puget Sound, and are unlikely to be found at the depths of the open-water DMMP disposal sites. Therefore NMFS expects effects of the propose action to be discountable for green sturgeon.

If some individual fish do occur during a disposal event, adverse effects will be insignificant. The short-term and temporary nature of disposal operations will limit the duration of exposure. Because only clean sediments can be discharged at PSSDA sites, fish will not be exposed to contaminants in the water column or from the sediments.

Because potential adverse effects are discountable or insignificant, NMFS concurs with the COE determination that the proposed action is not likely to adversely affect green sturgeon.

Southern Resident Killer Whales
Steller Sea Lions
Humpback Whales

Background information on species status and distribution relative to the action area is provided below, followed by the effects analysis.

Species Distribution

Southern Resident killer whales: The final rule listing SR killer whales as endangered identified several potential factors that may have caused their decline or may be limiting recovery. These are: quantity and quality of prey, toxic chemicals which accumulate in top predators, and disturbance from sound and vessel traffic. The rule also identified oil spills as a potential risk

factor for this species. The final recovery plan includes more information on these potential threats to SR killer whales (73 FR 4176).

SR killer whales spend considerable time in the Georgia Basin from late spring to early autumn, with concentrated activity in the inland waters of the state of Washington around the San Juan Islands, and then move south into Puget Sound in early autumn. While these are seasonal patterns, Southern Resident killer whales have the potential to occur throughout their range (from Central California north to the Queen Charlotte Islands) at any time of the year. Additionally, SR killer whales have been observed in the vicinity of all eight PSDDA disposal locations.

Steller sea lions: Steller sea lions in Washington are from the eastern DPS. For the past 25 to 30 years, the eastern DPS has grown steadily at about 3 percent per year. In the final recovery plan (73 FR 11872) no threats to the continued recovery of the eastern DPS were identified. Nevertheless, NMFS evaluates whether the proposed action has the potential to affect Steller sea lions.

Steller sea lions can occur in Washington waters throughout the year, however there are no breeding rookeries in Washington. Occurrence in inland waters of Washington is limited to primarily male and sub-adult Steller sea lions in fall, winter and spring months. Steller sea lions use haulout locations in coastal and inland waters of Washington. The nearest consistently used haulouts to the disposal sites is located at the Toliva Shoals buoy, approximately 4 miles north of the Anderson/Ketron Island disposal site, and at Bird Rocks, approximately 3 miles south of the Rosario Strait disposal site. Steller sea lions that use these haulouts may forage in the dredge disposal site vicinities. Steller sea lions are generalist predators that eat a variety of fishes and cephalopods, including salmon.

Humpback whales: Humpback whales of the eastern North Pacific stock occur in coastal waters off the U.S. west coast, including waters of Washington State. The stock feeds off the U.S. west coast, with winter migratory destination in coastal waters of Mexico and Central America. In recent years humpback whales are sighted with increasing frequency in the inland waters of Washington, including Puget Sound (primarily during the fall and spring); however, occurrence is uncommon. Humpback whales more commonly occur in coastal waters and forage on a variety of crustaceans, other invertebrates and forage fish.

Effects Analysis

NMFS analyzed the potential effects of the proposed dredge disposal operations on the above ESA-listed marine mammals. Potential effects may occur from transport and open water disposal of dredged material.

Prey Quantity and Quality: The proposed action is not likely to adversely affect salmonids, as described above. NMFS anticipates similar effects on non-listed fishes. Based on the above analysis and similar effects anticipated for non-listed fishes, the proposed action will not affect the quantity of salmonids and other prey available to the aforementioned marine mammal species.

The proposed action may affect the quality of prey for these marine mammal species by introducing contaminants into their food chain. PCBs, PBDEs and metals can be part of dredge

spoils that are disposed of at marine disposal sites through the proposed program. These contaminants persist in the environment and in the organisms that ingest them. As these organisms are consumed at higher trophic levels, the contaminants can accumulate. For top predators like SR killer whales and other marine mammals, this bioaccumulation of contaminants can affect health and reproductive success. Thus, our analysis examines the extent to which lower trophic organisms would ingest these contaminants in dredge material disposed of at PSDDA sites, and any potential food web transfer of these contaminants that may result. This would determine the extent to which the proposed action could result in bioaccumulation in these marine mammal species.

The DMMP uses dredged material testing protocols to ensure the suitability of materials for unconfined, open-water discharge and conducts site-monitoring activities to assess impacts at disposal sites. The DMMP designed their sediment screening process to assess existing pollutant levels of benthic sediments proposed for dredge disposal. However, this screening process does allow for low levels of some contaminants to transfer from the dredge sites in relatively shallow waters of rivers and marinas to the deep-water disposal sites. The DMMP does not have screening standards for PBDEs, but considering the prevalence of PBDEs throughout Puget Sound, it is likely they would be present at dredge sites and in dredge spoils proposed for disposal at PSDDA sites. However, the COE has tested PBDE levels at some disposal sites, and recent data at the Port Gardner site indicates that PBDE levels are less than reference sites (COE 2010).

Contaminants such as PCBs, PCDD/F and PBDEs can slowly leach from sediments in soluble form and be exposed to and ingested by phytoplankton, zooplankton, benthic invertebrates, demersal fish, forage fish and other fishes. However, the selection of PSDDA disposal locations was based on an evaluation of fish and invertebrate assemblages and benthic resources at candidate sites in order to minimize potential effects to prey resources (COE 2010). Furthermore, even in the event that low levels of contaminants moved into the pelagic food web, salmonids (prey of SR killer whales and Steller sea lions) are not expected to be present in disposal areas as discussed above, and other fish would at most spend very little time in the disposal areas. Thus, 1) very few salmonids or other fish will be exposed to PBDEs or metals at the disposal sites; 2) fish that are exposed would accumulate extremely small amounts of PBDEs or metals because the fish would spend very little time in the area; and 3) SR killer whales, Steller sea lions and humpback whales would be extremely unlikely to consume one of the few salmonids or other fish that may pass through these disposal sites, and potential effects are therefore discountable. For this reason, the COE does not expect that the low concentration of contaminants in dredge materials disposed of at PSDDA sites will lead to bioaccumulation in these ESA-listed marine mammals.

Vessel Effects and Sound: Vessels associated with the proposed transport and disposal activities are primarily tug/barges, which are slow moving, follow a predictable course, do not target whales, and should be easily detected by ESA-listed marine mammals. Vessel strikes are extremely unlikely and any potential for effects from vessel strikes is therefore discountable. Vessel operations may cause temporary disturbance; however, such disturbance is likely to be short-term and localized, with no lasting effects, and therefore insignificant. Most of the sound pressure produced by a tug towing a loaded barge is expected to be below the level of peak

hearing sensitivity for SR killer whales. Thus, tug/barge sound is unlikely to mask acoustic signals of biological significance to SR killer whales. When in motion, sound produced by the tug will be transient and expected to be below background levels a short distance from any one location with no lasting effects, and therefore insignificant.

Because all potential adverse effects are discountable or insignificant, NMFS concurs with the COE's effect determination of "may affect, not likely to adversely affect" for SR killer whales, Steller sea lions, and humpback whales.

Critical Habitat

Puget Sound Chinook Salmon
Hood Canal Summer-run Chum Salmon

The proposed action will have discountable effects to critical habitat of PS Chinook salmon and Hood Canal Summer-run chum salmon.

Although NMFS recognized that "Offshore marine areas with water quality conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation" are essential for conservation, critical habitat for offshore areas was not designated for any specific areas. Therefore there is no critical habitat at the disposal sites and any potential effects to habitat characteristics will be immeasurable at the boundary with designated critical habitat.

Therefore, the NMFS concurs with the COE's effect determination that the proposed action is not likely to adversely affect critical habitat for PD Chinook salmon and Hood Canal summer-run chum salmon.

Green Sturgeon

Critical habitat for green sturgeon was designated October 2009, and includes waters in the Strait of Juan de Fuca east to the northwestern shoreline of Whidbey Island, and then across Puget Sound from Partridge Point to Point Wilson at Port Townsend, and north up to the southern edge of the San Juan Islands. Designated critical habitat includes two of the DMMP disposal sites: Port Angeles and Port Townsend. The Rosario Strait disposal site is just north of the northern extent of designated critical habitat. In nearshore coastal marine habitats, the Primary Constituent Elements of Critical Habitat are

1. Migratory Corridor – a migratory pathway necessary for the safe and timely passage of Southern DPS fish within marine and between estuarine and marine habitats.
2. Water quality – nearshore marine waters with adequate dissolved oxygen levels and acceptably low levels of contaminants that may disrupt the normal behavior, growth and viability of sub-adult and adult green sturgeon.
3. Food resources – Abundant prey items for subadults and adult, which may include benthic invertebrates and fishes.

NMFS expects the proposed action to have insignificant effects to critical habitat of green sturgeon in the action area. Only two of the disposal sites (Port Townsend and Port Angeles) are within critical habitat. These sites were the two least used sites for the previous 16 years and are expected to be rarely used in the future. Disposal at these sites is expected to have no effect on the migratory corridor and insignificant effects to water quality and food resources. Water quality will be adversely affected temporarily if sediments are released at these sites. Effects will be short-lived and not reduce the conservation value of the water quality PCE. Similarly effects to food resources will be insignificant because substrate composition will not be significantly changed.

Because potential adverse effects are insignificant, the conservation value of PCEs in the action area will not be reduced. Therefore, NMFS concurs with the COE determination that the proposed action is not likely to adversely affect critical habitat of green sturgeon.

Southern Resident Killer Whale

Critical habitat includes approximately 2,560 square miles of Puget Sound, excluding areas with water less than 20 feet deep relative to extreme high water. The PCEs for SR killer whale critical habitat are:

- (1) Water quality to support growth and development;
- (2) prey species of sufficient quantity, quality, and availability to support individual growth, reproduction and development, as well as overall population growth; and
- (3) passage conditions to allow for migration, resting, and foraging.

The PSDDA disposal locations occur in critical habitat for SR killer whales. NMFS analyzed the potential impacts of the project on SR killer whale critical habitat and determined that effects on that habitat will be discountable or insignificant for the following reasons.

The proposed program will not affect the quantity of salmonid prey for SR killer whales, and any effects on prey quality are likely to be discountable or insignificant, as described above. The potential for the project to interfere with passage conditions is expected to be insignificant. There is sufficient space for the whales to navigate around the PSDDA sites during the short duration of dredge disposal activities. Additionally, the potential for vessels to interfere with SR killer whale passage is expected to be insignificant, because any vessel disturbance will be short-term and localized with no lasting effects. For these reasons, effects on passage conditions during proposed dredge disposal activities are considered insignificant.

Because all potential adverse effects are discountable or insignificant, NMFS concurs with the COE's effect determination of "may affect, not likely to adversely affect" for SR killer whales critical habitat.


This concludes informal consultation according to the regulations implementing the ESA, 50 CFR 402.10. The EPA must re-initiate the ESA consultation if new information reveals effects of the action that may affect listed species in a way not previously considered, the action is

modified in a manner that causes an effect to the listed species that was not previously considered, or a new species is listed that may be affected by the identified action.

If you have questions regarding the marine mammal determinations, please contact Teresa Mongillo of the Protected Resources Division at (206) 526-4749, or by electronic mail at Teresa.Mongillo@noaa.gov. If you have questions regarding the fish determinations, please contact Tom Sibley of the Habitat Conservation Division at (206) 526-4446, or by electronic mail at Thomas.Sibley@noaa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "William W. Stelle, Jr.", written in a cursive style.

 William W. Stelle, Jr.
Regional Administrator

References

- Army Corps of Engineers (COE). 2010. Biological Assessment of the PSDDA dredge management program.
- Bemis, W.E. and B. Kynard. 1997. Sturgeon rivers: an introduction to acipenseriform biogeography and life history. *Environmental Biology of Fishes* 48: 167-183.
- DeLacy, A.C., B.S. Miller and S.F. Borton. 1972. Checklist of Puget Sound fishes. Washington Sea Grant 72-3. Seattle, Wash. 43pp.
- Donnelly R.F. and R. L. Burr. 1995. Relative abundance and distribution of Puget Sound trawl caught demersal fishes. Puget Sound Research Conference.
- Donnelly, R.F., B.S. Miller, J.H. Stadler, L. Christensen, K. Larsen and P.A. Dinnel. 1988. Puget Sound dredge disposal analysis (PSDDA) phase H disposal site bottomfish investigations. Final report to Washington Sea Grant Program and U.S Army Corps. FRI-UW-8819. 149pp.
- Miller, B.S. and S. F. Borton. 1980. Geographical distribution of Puget Sound Fishes: Maps and data source sheets. University of Washington, Fisheries Research Institute. Seattle, WA. 689p.
- Moser, M. and S. Lindley. 2007. Use of Washington estuaries by subadult and adult green sturgeon. *Environmental Biology of Fishes* 79:243-253.
- Moyle, P.B., P.J. Foley, and R.M. Yoshiyama. 1992. Status of green sturgeon, *Acipenser medirostris*, in California. Final Report submitted to National Marine Fisheries Service. 11 p. University of California, Davis, CA 95616.
- Moyle, P.B., R.M. Yoshiyama, J.E. Williams, and E.D. Wikramanayake. 1995. Fish Species of Special Concern in California. Second edition. Final report to CA Department of Fish and Game, contract 2128IF.data source sheets. University of Washington, Fisheries Research Institute. Seattle, WA. 689p.
- NMFS. 2010. Status Review Update for Eulachon in Washington, Oregon, and California. (Prepared by the Eulachon Biological Review Team, 20 January 2010)