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Salish Sea Ecosystem Conference

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## NOAA rockfish recovery management and research in the Salish Sea, Washington

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# ESA Rockfish Recovery Management, Research, and Outreach in the Salish Sea, Washington



Jamey Selleck and Dan Tonnes  
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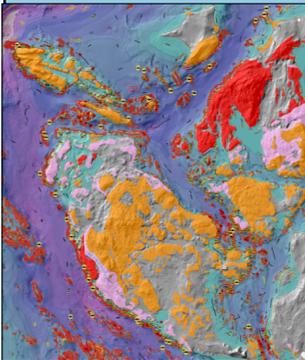
## Rockfish Recovery Plan

Rockfish are a long-lived species group that provide an important function for the food web dynamics in the Salish Sea (Puget Sound/Gorgia Basin), as both a mid-level trophic predator and important prey source. Rockfish are comprised of 28 different species locally, and over 60 species along the North American West Coast. Total rockfish abundance in Washington has declined approximately 70 percent in the last 40 years. In particular, Distinct Population Segments (DPS) for yelloweye (*Sebastes ruberrimus*) and Bocaccio (*S. paucispinus*) have declined to a point of being listed respectively as threatened and endangered under the Endangered Species Act (ESA). The DPS includes waters of Puget Sound, the San Juan Islands, Hood Canal, Strait of Juan de Fuca, and southern Strait of Georgia. The Rockfish Recovery Plan for both species was finalized in 2017, and outlines management actions and research programs to fill data gaps and develop monitoring programs to assess conservation and survival of each species.



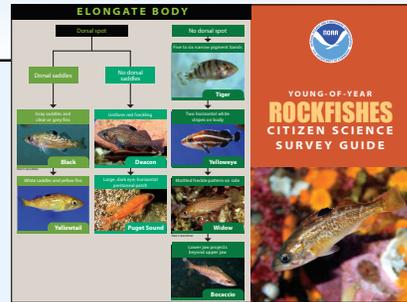
## Habitat Maps

NOAA worked with WDFW and Tomboleo Mapping Lab to create high resolution bathymetry and benthic habitat-modeling maps of the Salish Sea. Maps combined statistical analyses, interpretations of geomorphic features, historical rockfish data, and results of the WDFW ROV surveys. The maps will be used to identify potential long-term monitoring sites for ESA-listed rockfish.



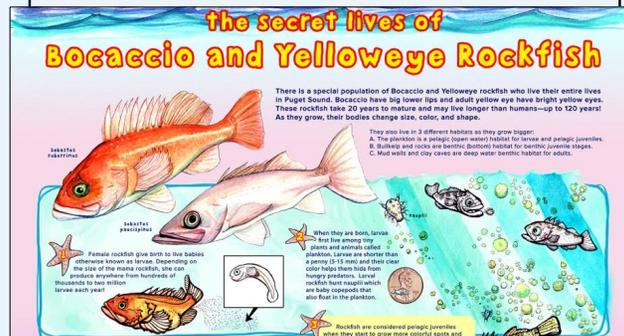
## Young-of-Year Surveys

The ability to capture episodic spawning events of rockfish is limited by funding and resources. Observing young-of-year (YOY) rockfish helps managers monitor cohort abundance and distribution over time. In order to address this known monitoring gap, NOAA partnered with the Seattle Aquarium to create a fold-out YOY identification and survey methodology pamphlet. Presentations to local dive groups and higher education institutes are given to help distribute the pamphlet and recruit citizen science divers for data collection. Data is entered into an online database, and models have been developed to correlate YOY observations with habitat maps. Results from citizen science YOY monitoring efforts were compiled in a 2017 report.



## Outreach and Education

Public outreach for the recovery plan includes actions and items aimed at a broad range of individuals. These include public signage at boat launches, fish descending devices to reduce recreational fishing bycatch barotrauma mortality, an online video, informational posters on rockfish life history, a children's book, and presentations to local volunteer dive groups and public schools.



## YOY Rockfish Monitoring Workshop

Monitoring YOY and juvenile rockfish are complicated by highly variable patterns of recruitment, cryptic behavior, and changing habitat needs. A workshop was held in September 2017 at the NOAA NW Fisheries Science Center. Regional partners gathered in an effort to coordinate monitoring efforts and develop a model for robust statistical analyses of YOY rockfish data from a variety of sources. NOAA is working with the guidance and support from partners to integrate these field survey design methods into a concise YOY Rockfish Monitoring Plan, and improve rockfish distribution and abundance estimates.



## Supporting Kelp Recovery

Specific conservation goals for nearshore and benthic habitat improvement include the development of a Kelp Recovery Plan. Kelp, especially bull kelp (*Nereocystis luetkeana*), is of particular importance as habitat for YOY and juvenile rockfish. A cooperative monitoring and research plan on recovering kelp habitats at index sites is currently ongoing. This includes seasonal monitoring for invertebrate grazers, general fish species assemblages, habitat classifications, and algae species complex classification. Sites range from existing seasonal kelp presence to sites with known historical kelp loss. Sites are being selected for experimental out-planting and kelp restoration.



For More Information on Rockfish in the Salish Sea  
Google – NOAA Rockfish  
[http://www.westcoast.fisheries.noaa.gov/protected\\_species/rockfish/rockfish\\_in\\_puget\\_sound.html](http://www.westcoast.fisheries.noaa.gov/protected_species/rockfish/rockfish_in_puget_sound.html)

## Partners

