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Pacific Marine and Estuarine Fish Habitat Partnership 2015 Annual Report

Southern Flow Corridor Project. Photo credit: Tillamook Estuaries Partnership.

Our mission is to work with partners to *protect, enhance, and restore ecological processes and habitats within estuaries and nearshore marine environments to sustain healthy native fish communities and support sustainable human uses that depend on healthy fish populations.*

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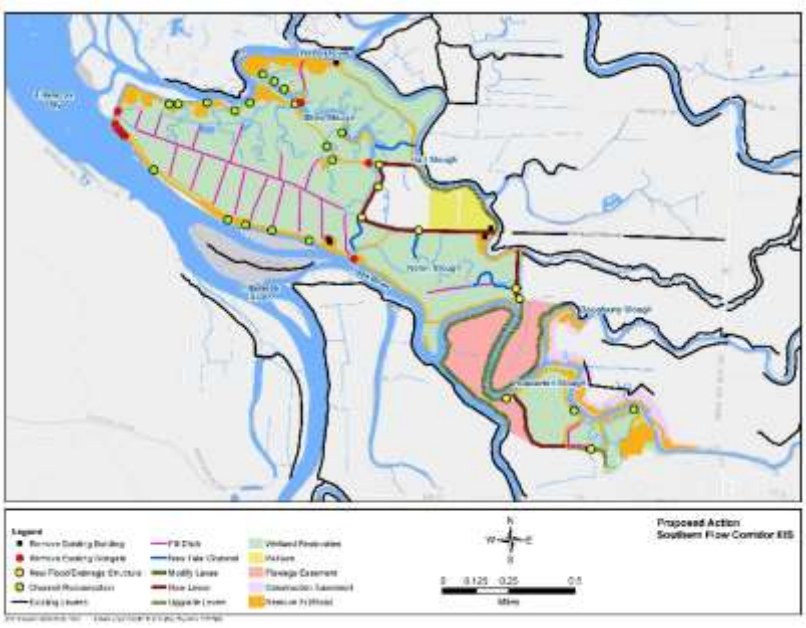
On-the-Ground Restoration

In 2015, the Pacific Marine and Estuarine Fish Habitat Partnership (PMEP) provided $167,176 in funding to help support three prioritized projects focused on estuarine protection and restoration—the Southern Flow Corridor Project ($40,000), Spatial and Temporal Analysis of Fish Assemblages in Tidal Estuarine Habitats ($59,176), and Sullivan Gulch Bottomland Restoration ($68,000).

Southern Flow Corridor Project (Oregon)

An estimated 86% of the 6,035 acres of historic tidal wetlands in the Tillamook Bay estuary have been lost. These tidal wetland habitats include forested and shrub tidal swamps and grassy tidal marsh. Remaining habitats also tend to be degraded and fragmented along outmigration corridors for salmonid species. This project will protect and enable restoration of an ecologically diverse site that spans a rapid transition zone, from freshwater spruce forest, tidally influenced freshwater wetlands, high salt marsh down to low marsh and intertidal mudflats. Removing the levees surrounding the site and along the sloughs will allow full connection with the Wilson and Trask rRivers and increased tidal influence within the site. The 646-acre project is one of the largest tidal restoration efforts on the Oregon Coast. Of this area, 513 acres will be permanently protected in public ownership. The project will create a large scale, contiguous land block composed entirely of priority habitats and restore approximately 10% of Tillamook Bay's historic tidal wetlands. **PMEP funding supported cleanup and remediation on four acres to support the overall goals of the project to improve declining fish populations and mitigate flooding.**

When completed this project will directly benefit many Oregon coastal salmonids, including spring and fall Chinook, coho, and chum salmon, and coastal cutthroat trout, by providing access to more and better habitat. The project will restore 519 acres of marsh and wetland fringe habitat by: 1) creating 14 miles of newly connected slough and channel habitat; and 2) creating new habitats, such as low salt



marsh, through re-establishing natural hydrologic conditions. The project's location is considered to be ideal, largely because it lies within the migration pathway of these species as they emigrate as juveniles from the Wilson, Trask, and Tillamook rivers; it is also within the potential home range of juveniles from other tributaries and rivers.

Spatial and Temporal Analysis of Fish Assemblages in Tidal Estuarine Habitats (Oregon)

The Coos estuary is located in southern Oregon and is the second largest estuary in the state. Encompassing about 13,348 acres and capturing the drainage of 387,200 acres of upland, this large and complex estuary provides critical rearing habitat for dozens of marine and anadromous fishes and is home to many more resident fish species that spend their entire life cycle in estuarine habitats. Commercial fisheries have been critical to the economy of the region, and the Coos estuary has been an important system in recovery planning for endangered salmonids and estuarine restoration.

Estuaries provide critical habitat for many marine, amphidromous, and resident estuarine fish species. While several studies document the importance of estuaries as rearing habitats for juveniles of individual species, much less work has focused on fish assemblages. The few studies that have examined estuarine fish assemblages are generally older, limited to short-term sampling periods, or utilize life-stage specific sampling gear. Because variability in habitat and water quality conditions can influence fish presence and abundance, long-term studies of fish assemblages are needed. For the Coos estuary in particular, a large data gap has already been identified for non-salmonid fishes in the estuary. These fish include those with commercial, recreational, and cultural value.

The goal of this project was to better understand the diversity and distribution patterns of resident and migratory fish that use habitats in the Coos estuary. This information is needed to better inform permitting for current and future shoreline development proposals and will contribute to estuarine habitat conservation, restoration, and compensatory mitigation planning.

Three interrelated fish assessments characterized the temporal and spatial patterns of fish assemblages in the Coos estuary: Broad-scale trends were assessed using long-term fish sampling datasets throughout the Coos estuary. Fine-scale, monthly fish sampling in South Slough was combined with the collection of water quality data to examine trends in the fish assemblages related to environmental conditions over two sampling years. Seasonal sampling at locations in the upper region of the Coos estuary allowed for spatial comparisons between fish communities in two distinct regions of the estuary.

Information was synthesized into formats that are easily accessible to scientists, land managers, decision makers, planners and community stakeholders to facilitate the integration of findings into strategic action plans and other planning documents.

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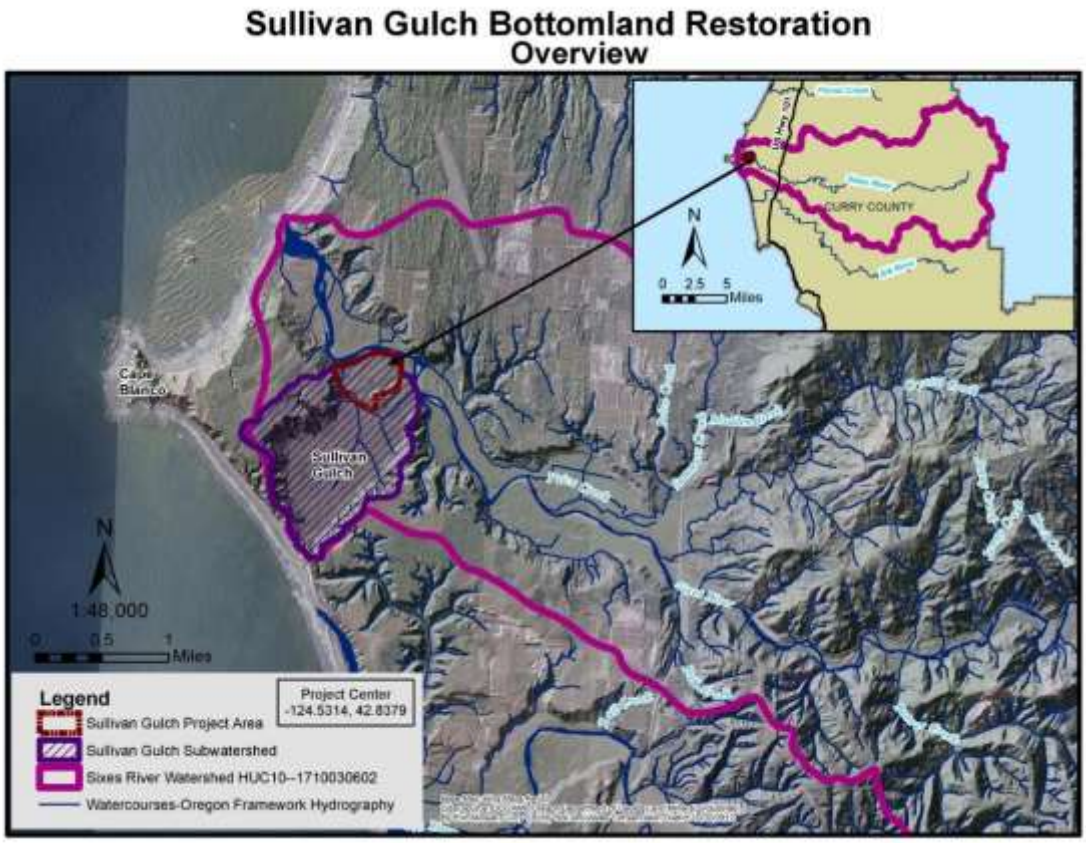
Sullivan Gulch Bottomland Restoration (Oregon)

Sullivan Gulch is a 700-acre watershed on the south side of the Sixes River estuary. The gulch owes its existence to a prehistoric river that carved a large floodplain into the uplifted coastal terrace that terminates at the Pacific Ocean as Cape Blanco. The prehistoric floodplain is about 300 acres in size and dominated by wetland habitat. The terrace slopes down into the bottomlands, which include multiple small perennial and intermittent stream channels. The Sullivan Gulch bottomlands are a geologic anomaly on the southern Oregon coast that rival in scale and complexity the estuarine and floodplain habitats to the north—in New River, the Coquille Valley and Coos Bay. The location of the bottomlands relative to the Pacific Flyway and Cape Blanco make them of particular importance to waterfowl and migratory songbirds (for breeding habitat as well as refugia from winter storms and summer winds). The bottomlands support extensive wetland plant communities, including two rare assemblages: Hardstem bulrush (*Scirpus acutus*) marsh and Pacific reedgrass (*Calamagrostis nutkaensis*) fen; as well as intact stands of late-seral Sitka spruce forest. The bottomlands also function as overwintering habitat for native fishes, including Oregon coast coho and large scale suckers. Overwintering habitat is of particular importance because the geology of the Siskiyou Mountains and the rate of tectonic uplift constrain valley development, and thus naturally limit floodplain size and connectivity. Furthermore, such overwintering habitat was ditched and drained by early settlers for conversion into pasture for sheep and cattle.

The Sullivan Gulch Bottomland Restoration project began in 2009 over concerns that the 'inset' beaver dams constructed within the incised Sullivan Gulch ditch channel were impeding juvenile fish from accessing the 200-acre wetland habitat upstream of the Cape Blanco road. The objectives of the project were to:

- Construct fish passage and grade control that (a) provides upstream juvenile fish migration at winter base flow and greater discharge, (b) minimizes the risk that future beaver dams will create barriers, and (c) stabilizes hydrologic conditions upstream of the Cape Blanco road.
- Increase and enhance instream habitat by restoring channel morphology, installing log structures, and revegetating the riparian zone.
- Increase off-channel open water habitat and near-shore wetlands for fish rearing, waterfowl and shorebirds, amphibians, and plant diversity.
- Preserve the existing riverine oxbow.
- Revegetate the project area with native herbaceous and woody species to increase wildlife habitat (especially for migratory songbirds) and to limit invasive weeds.
- Preserve and enhance quality pasture for livestock production.



Fish passage-grade control rock structure. The rock features in the lower end of the alignment (pool-riffle) will be below groundwater, but they were designed and constructed to withstand southward migration of the Sixes River channel, which would change the overall slope of the lower Sullivan Gulch channel. Photo credit: Curry Watersheds Partnership.

Science and Data

Background

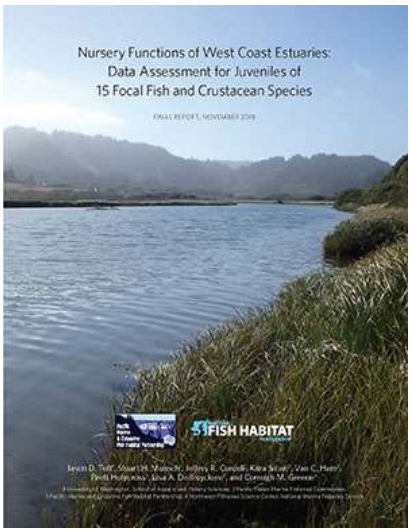
The PMEP and its assessment partners continued implementation of three Pacific Coast fish habitat assessments to inform future estuary resource protection and restoration efforts along the West Coast and enhance understanding of the role estuaries play in the health and production of commercially important marine fishes:

(1) PMEP's Nursery Habitat Assessment, focusing on nursery functions for juvenile fish in West Coast estuaries (completed 2015).

(2) The National Fish Habitat Plan (NFHP) National Estuary Assessment, focusing on condition and key threats to habitats of recreationally and commercially important fish and shellfish stocks (ongoing collaboration with NOAA Fisheries in the Office of Science & Technology).

(3) A Nearshore Forage Fish Assessment, focusing on habitat-related changes over time in distribution and abundance of nine species of forage fish inhabiting estuary and nearshore habitats (on going collaboration with NOAA Fisheries and the Northwest Fisheries Science Center.

Progress in 2015

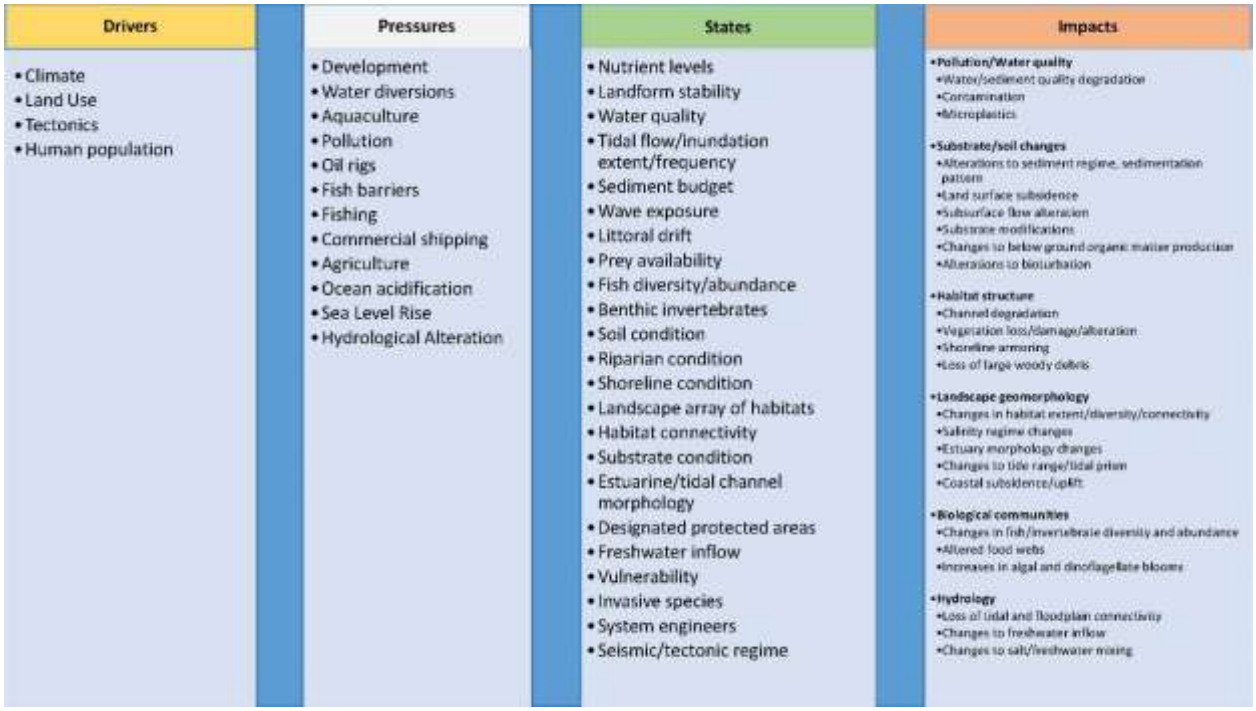


- Produced "Nursery functions of West Coast estuaries: Data assessment of juveniles of 15 focal fish and crustacean species."
- On-going work to update West Coast tidal wetland maps to provide comprehensive coverage with improved accuracy and suitability for restoration planning, match very closely to historic wetland maps (as modeled by exceedance data), and provide a solid base layer for West-coast-scale analysis of wetland losses, restoration and conservation opportunities. These maps are compatible with the national assessment, use newly available LiDAR data, and classify habitats using the national Coastal Marine Ecological Classification Standard.
- PMEP is working to develop an estuary restoration prioritization scheme to guide conservation and restoration actions supporting fish habitat functions in West Coast estuaries. To do so it first reviewed, compiled and summarized international, national, and

regional schemes and literature for setting ecological priorities for restoration and habitat protection within estuaries. It then reviewed outcomes with leading experts to inform the development of such a scheme for the West Coast. The PMEP Prioritization Committee then prioritized the drivers, pressures, states, and impacts and the respective datasets and information associated with the impacts. PMEP determined its prioritization scheme should:

- Have clearly defined goals
- Have clear and thorough documentation
- Answer these questions:
  - What is the desired outcome of the prioritization?
  - Who are the users?
  - What is the scale of the prioritization? Specially, what are the units you want to rank?
  - How does this work align with other work or assessments (e.g., PMEP's Nursery Assessment)?

Answers to these questions will help shape the prioritization process and provide direction in refining criteria and weighing alternative approaches.



Next steps in the process will be to develop a set of restoration strategies to address key stressors by ecoregion on the West Coast.

- PMEP is building a spatial data framework that supports asking West Coast-wide, spatially explicit questions about estuaries, their fish habitats, condition, and use to serve the needs of many efforts and to provide a spatial basis for comparing estuaries and easing the flow of data among collaborators.
- Planned, moderated and conducted a pair of back-to-back sessions to present the PMEP Nursery Assessment at the Coastal and Estuarine Research Federation' biennial conference in Portland, Oregon in November.
- In preparation for 2016, PMEP solicited project proposals for 2016 NFHP funding from West Coast entities.

Outreach and Education

The Coastal Fish Habitat Partnerships and Other FHPs

The PMEP Coordinator is facilitating regular conference calls with the coastal fish habitat partnerships in the United States, and launched the development of quarterly coastal FHP newsletters.

2015 10 Waters to Watch

PMEP was selected by NFHP to highlight the Kilchis Estuary in the national "10 Waters to Watch" campaign. PMEP has helped to promote awareness of the current and past restoration activities in this estuary through assistance with press releases and information. Tillamook Bay is the third largest estuary on the Oregon coast, and is fed by five rivers, one of which is the Kilchis River. A primary limiting factor for salmonids in the Kilchis system is the availability of off-channel habitat in low-lying areas, especially habitat in the saltwater-freshwater transition zone of the estuary. A restoration project occurred in 2015 to improve habitat for coho, Chinook and chum salmon, steelhead and cutthroat trout and many other wetland species, including colonial nesting waterbirds, migrating waterfowl, juvenile marine fishes and resident mammals. Human alterations of the estuary (e.g., dredging, diking, draining, filling, dairy pasture creation, jetty construction, sedimentation) as well as species loss have resulted in loss of habitats and their associated biotic communities. Restoration will increase protections for existing salmonid core areas, restore tidal marsh habitat, re-create tidal channels, and restore connectivity between tidal sloughs and the Kilchis River. Past restoration efforts have occurred above the project site and complement existing restoration efforts.

Removing dikes to reconnect the floodplain with the river, creating tidal channels that provide rearing habitat for salmonids, and planting native species to restore spruce swamp wetlands are key goals of the Kilchis restoration project. Photo credit: The Nature Conservancy.

Finances

The PMEP received a total of $278,631 in funding in 2015:

- Multi-state conservation grant—$42,500
- National Fish Habitat Partnership (USFWS)—$236,131

The $167,176 PMEP provided for three projects in 2015 was matched with $11,069,808 in funding from other sources and partners.