Columbia River Estuary and Nearshore Data Products and Tools

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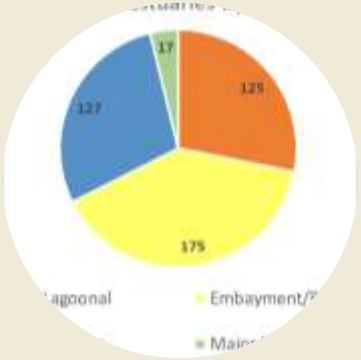
Pacific Marine and Estuarine Fish Habitat Partnership

www.pacificfishhabitat.org

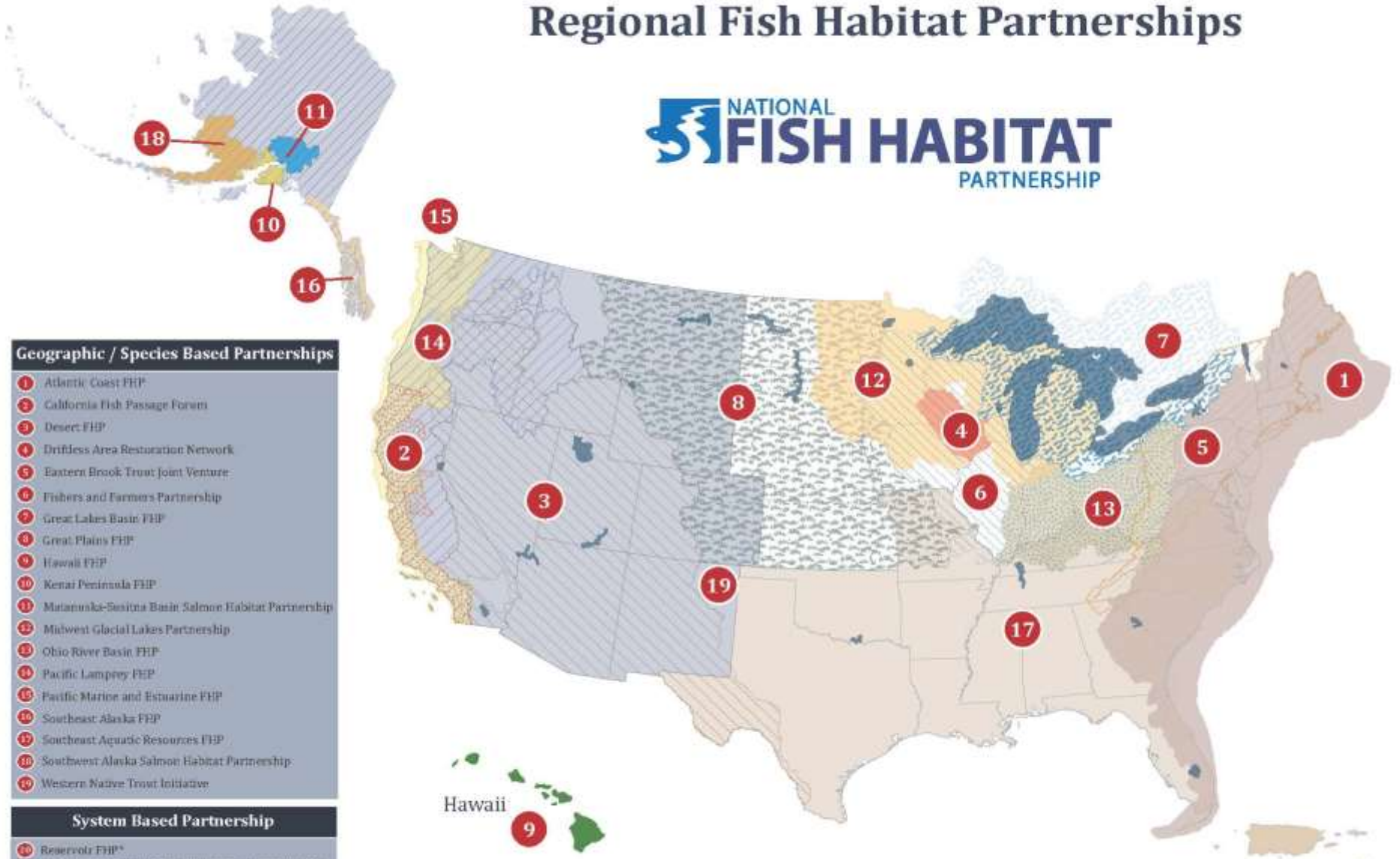
- Gathers expertise to synthesize best available information estuaries, nearshore, and connectivity
- Develops and compiles new datasets to fill high-priority data gaps in our understanding of fish habitats of fish habitats including estuary extent, estuary loss by type, and extent of eelgrass.
- Provides targeted funding for high-priority restoration and conservation projects



PMEP

Regional Fish Habitat Partnerships

NATIONAL FISH HABITAT PARTNERSHIP



Geographic / Species Based Partnerships

1. Atlantic Coast FHP
2. California Fish Passage Forum
3. Desert FHP
4. Driftless Area Restoration Network
5. Eastern Brook Trout Joint Venture
6. Fishers and Farmers Partnership
7. Great Lakes Basin FHP
8. Great Plains FHP
9. Hawaii FHP
10. Kenai Peninsula FHP
11. Matanuska-Susitna Basin Salmon Habitat Partnership
12. Midwest Glacial Lakes Partnership
13. Ohio River Basin FHP
14. Pacific Lamprey FHP
15. Pacific Marine and Estuarine FHP
16. Southeast Alaska FHP
17. Southeast Aquatic Resources FHP
18. Southwest Alaska Salmon Habitat Partnership
19. Western Native Trout Initiative

System Based Partnership

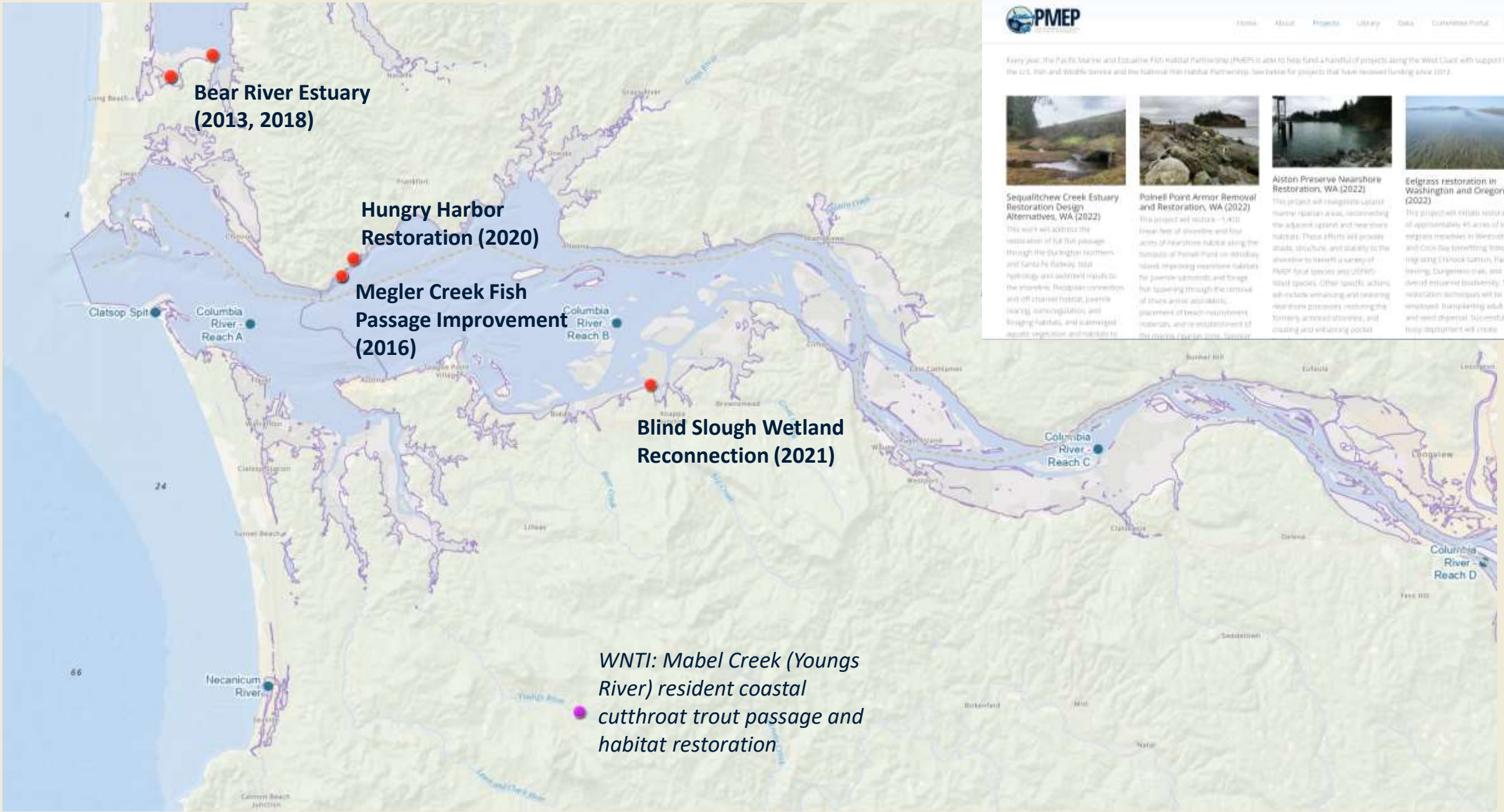
20. Reservoir FHP*

**the Reservoir FHP is a system based partnership that covers reservoirs across the country*

Note: Alaska and islands not to scale

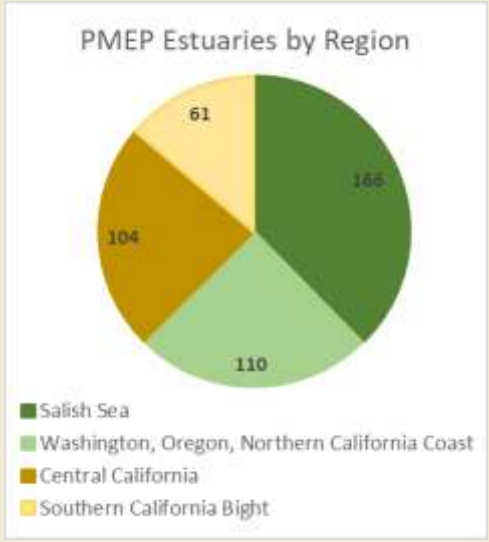
Includes current fish habitat partnerships, approved by the NFHP Board, June 2016.

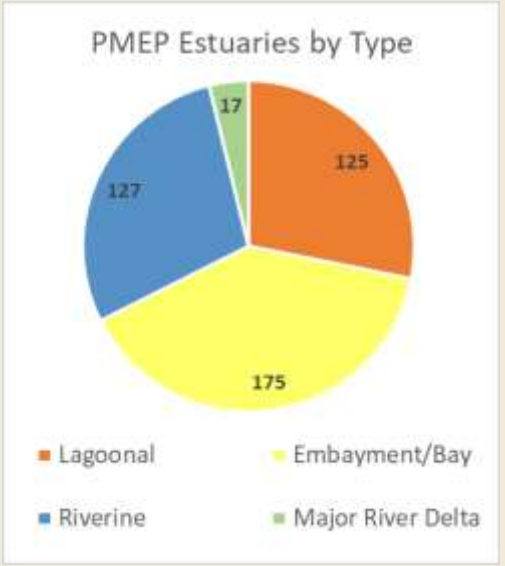
https://www.pacificfishhabitat.org/pmep-funded-projects/

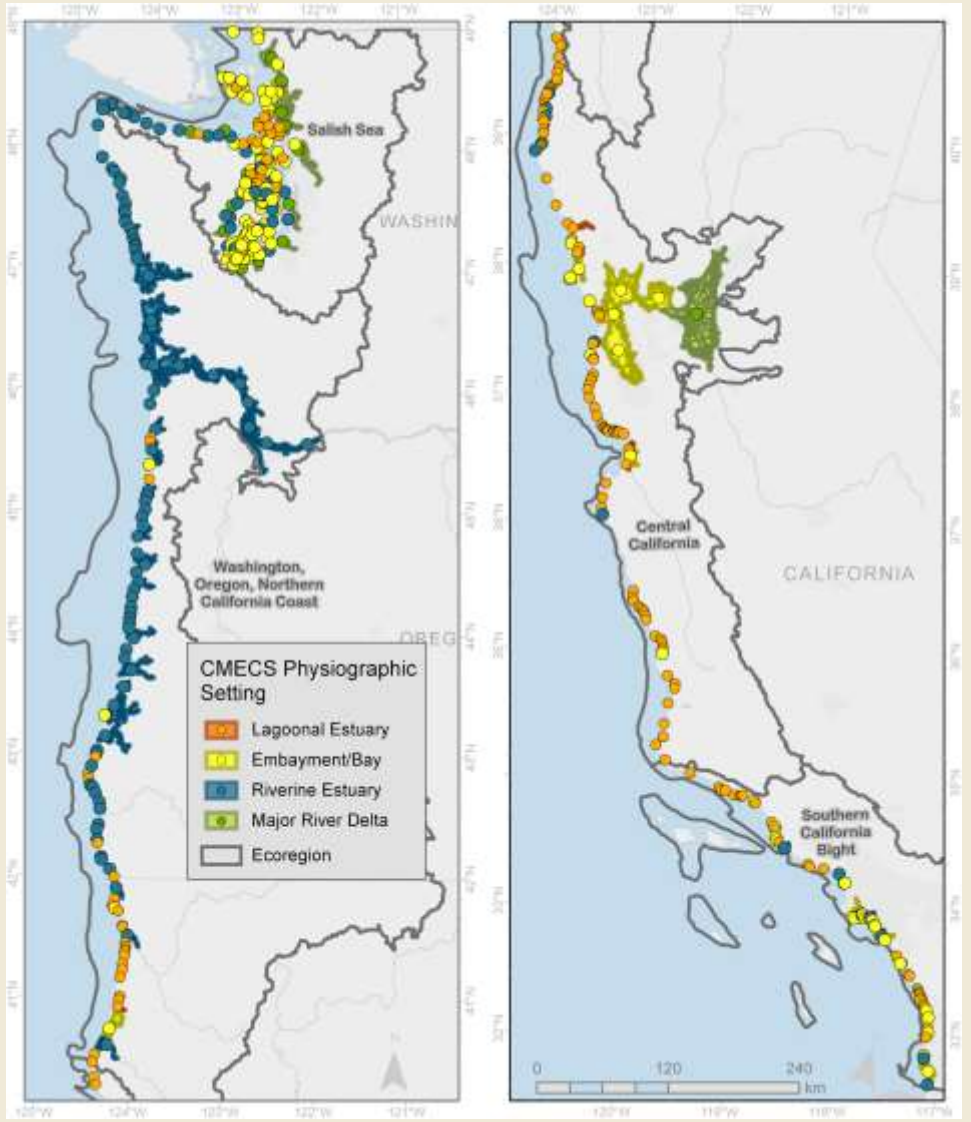


Spatial Data System: *Estuaries*

- Ecoregion (CMECS / MEOW)
- Estuary Extent (50% exceedance methodology)
- Classification (CMECS)
- Focal species presence (JP, P)
- Biotic Habitat Types (CMECS)
  - Eelgrass
- Tidal wetland loss rapid assessment (55 estuaries)
  - Tidally Restored Areas Mapping
  - *Columbia River: 93% agreement with LCEP assessment of tidally restricted areas*







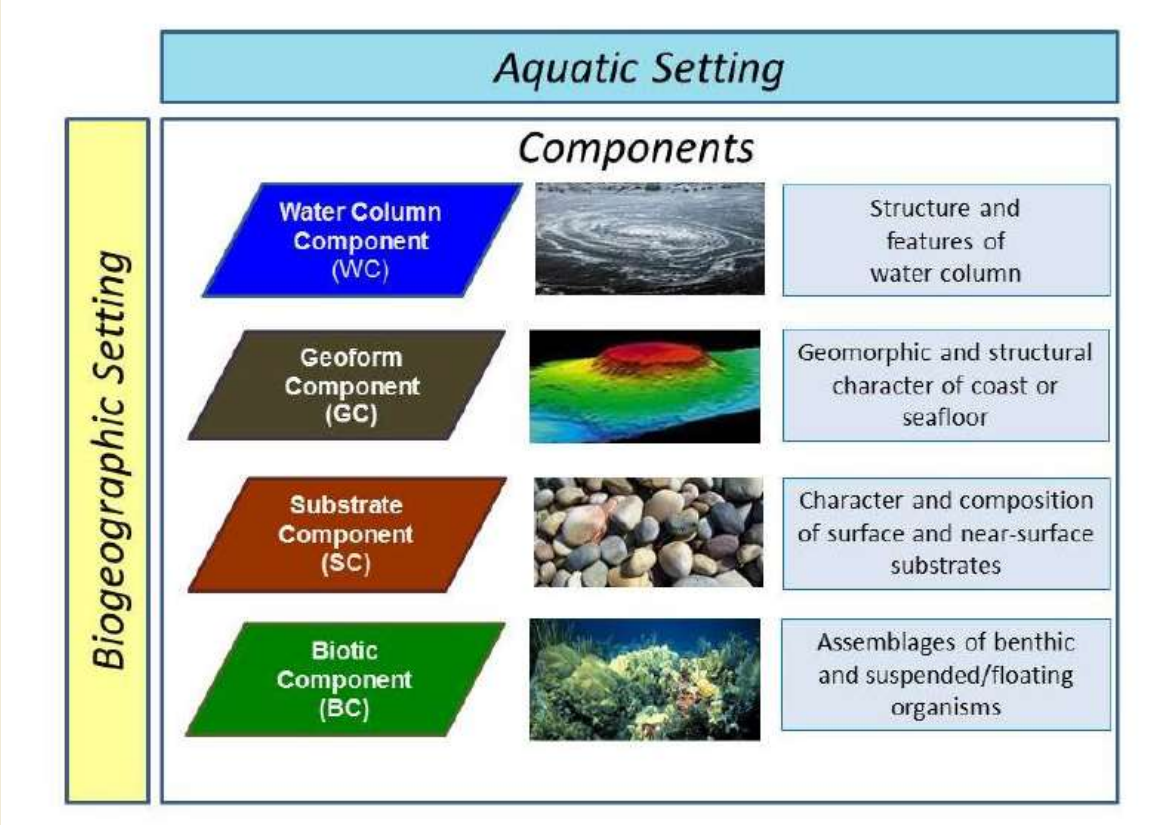
Data maintained by PSMFC GIS, and updated as needed for mission of PMEP and partners.

Coastal Marie and Ecological Classification Standard (CMECS)

Recognized by the FGDC as the federal standard for classifying coastal and estuarine habitats

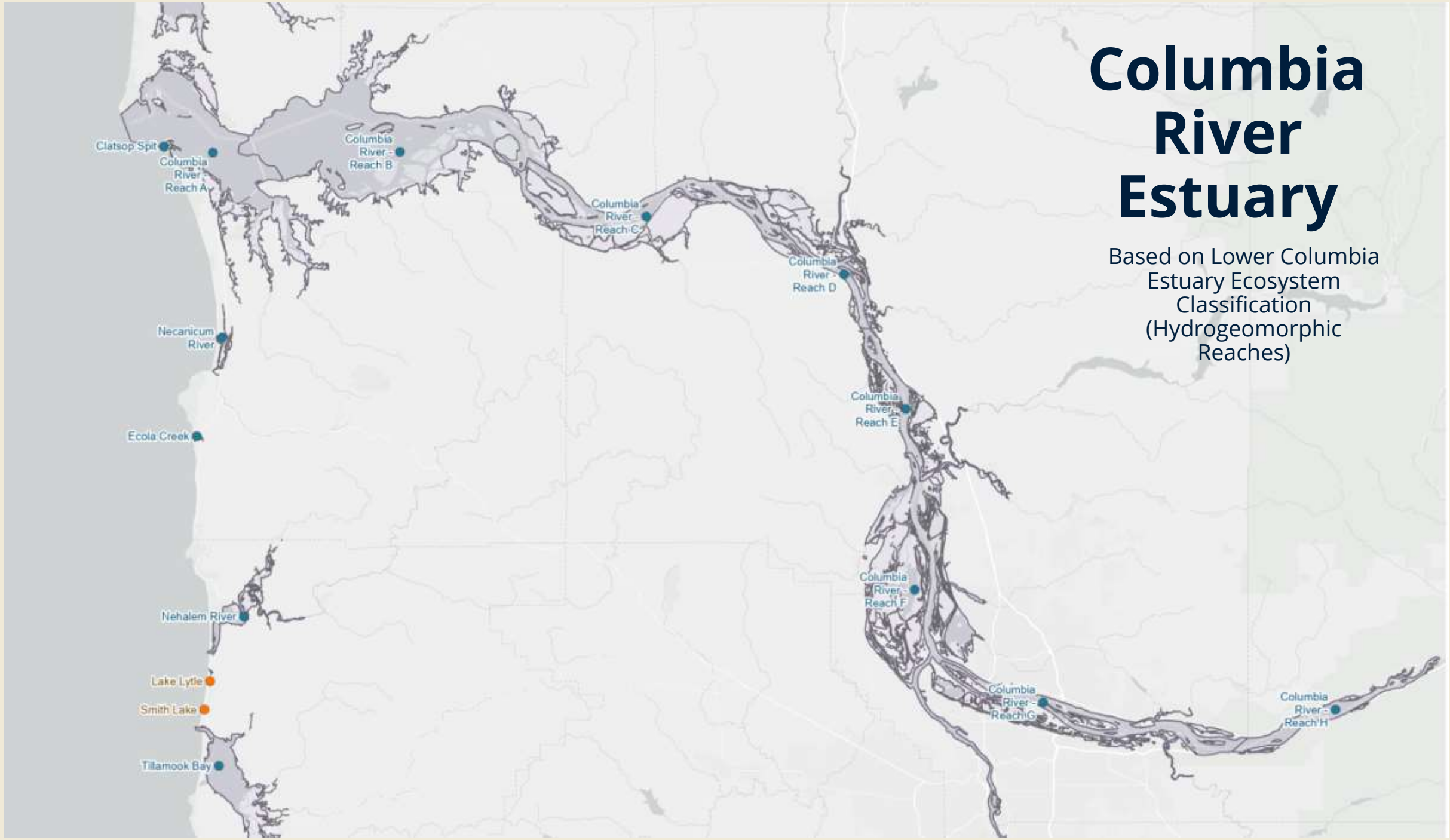
PMEP and OCMP use CMECS to classify habitats along the West Coast

- Biogeographic Setting (Ecoregion)
- Aquatic Setting (System)
  - Estuaries
    - West Coast: biotic component
    - Oregon (and WA portion of Columbia River): 3 components
  - Nearshore
    - West Coast: Biotic and Substrate components



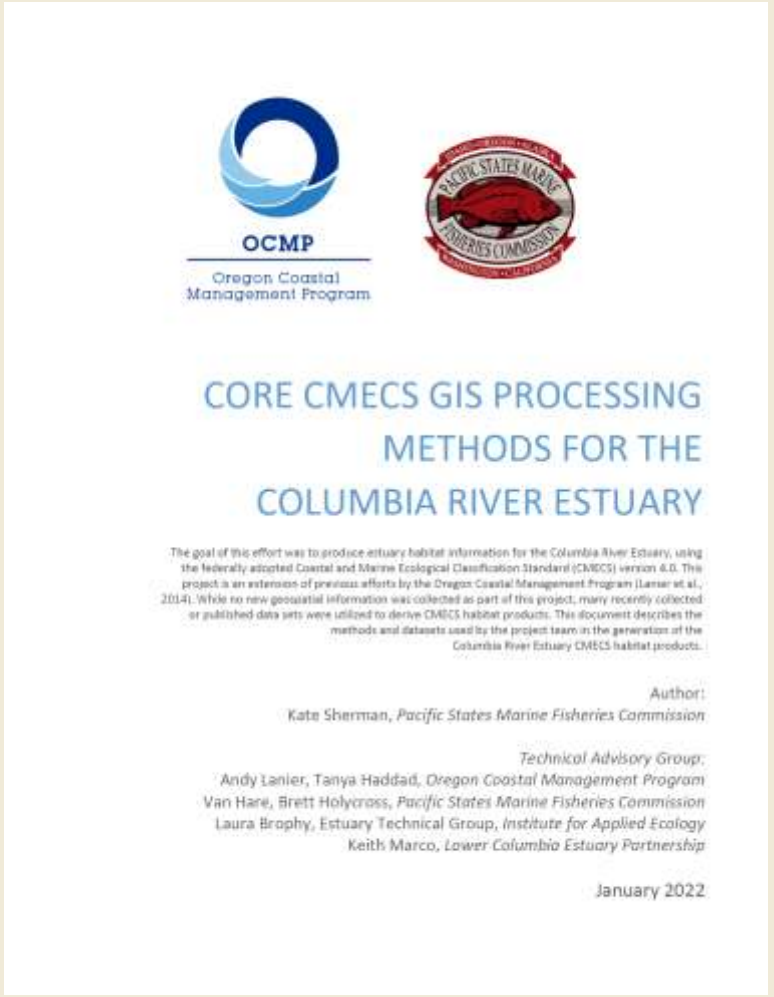
Columbia River Estuary

Based on Lower Columbia Estuary Ecosystem Classification (Hydrogeomorphic Reaches)



Columbia River CMECS Project

- Support the Oregon Coastal Management Program (OCMP)'s efforts to expand their spatial data framework within the Oregon Coastal Zone.
  - The goal of this project was to use current geospatial data to modernize the informational foundation for Oregon's estuary management program.
  - Fill an important data gap and create spatial data in Oregon's estuary data
  - OCMP partnered with PSMFC to complete the whole estuary.
  - Technical Advisory Group


OCMP
Oregon Coastal Management Program

CORE CMECS GIS PROCESSING METHODS FOR THE COLUMBIA RIVER ESTUARY

The goal of this effort was to produce estuary habitat information for the Columbia River Estuary, using the federally adopted Coastal and Marine Ecological Classification Standard (CMECS) version 4.0. This project is an extension of previous efforts by the Oregon Coastal Management Program (Lanier et al., 2014). While no new geospatial information was collected as part of this project, many recently collected or published data sets were utilized to derive CMECS habitat products. This document describes the methods and datasets used by the project team in the generation of the Columbia River Estuary CMECS habitat products.

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Andy Lanier, Tanya Haddad, *Oregon Coastal Management Program*
Van Hare, Brett Holycross, *Pacific States Marine Fisheries Commission*
Laura Brophy, Estuary Technical Group, *Institute for Applied Ecology*
Keith Marco, *Lower Columbia Estuary Partnership*

January 2022

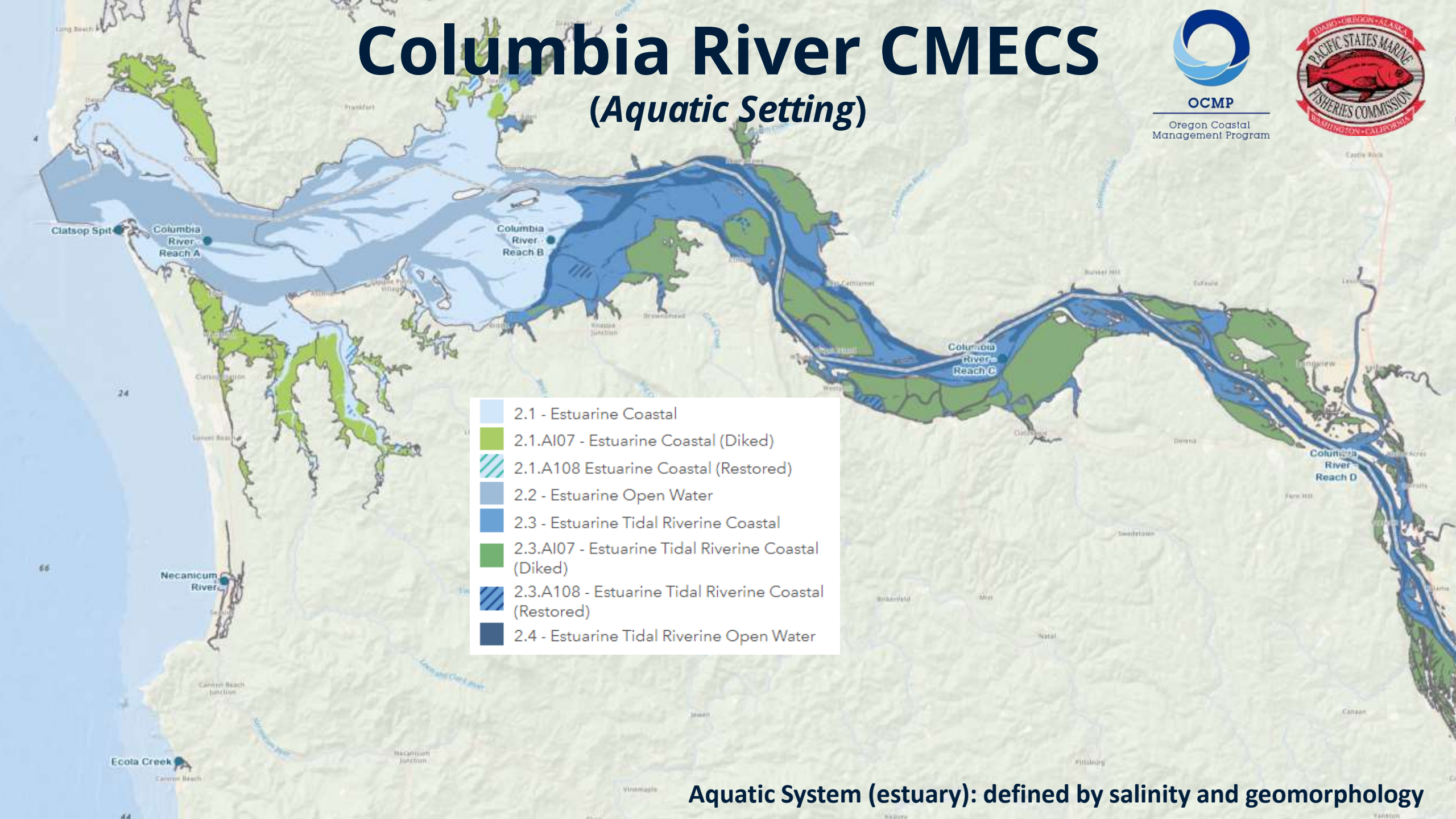
Methods

- Technical Work Group
- Identify existing datasets and source data screening
    1. Existing datasets
    2. Interpolations
    3. Digitized new data
- Anchor layer (50% exceedance estuary extent)
- Retain source geometry
- Cartographic smoothing

Jetty Lagoon, Oregon ShoreZone

Columbia River CMECS

(*Aquatic Setting*)

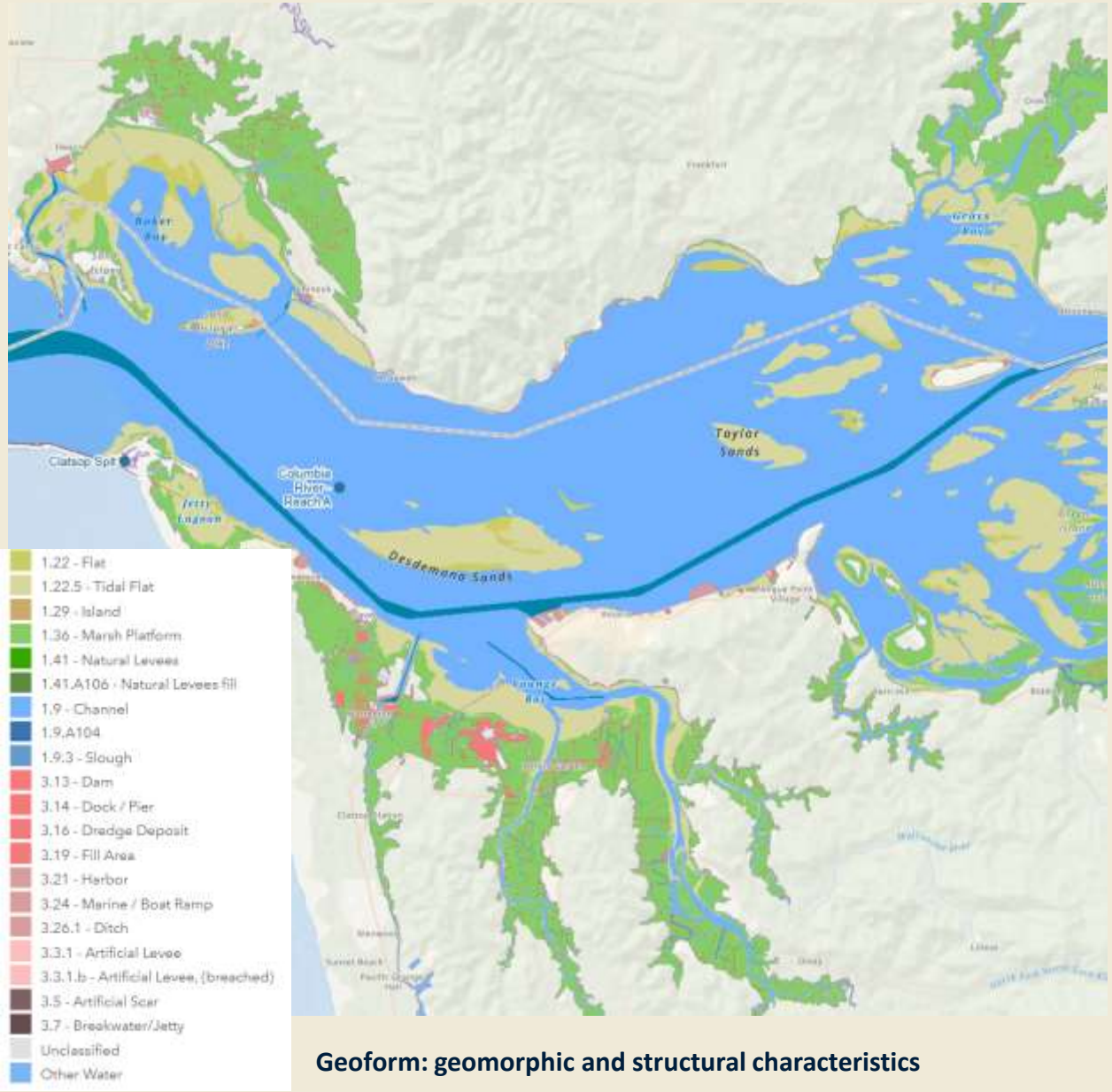


OCMP
Oregon Coastal Management Program

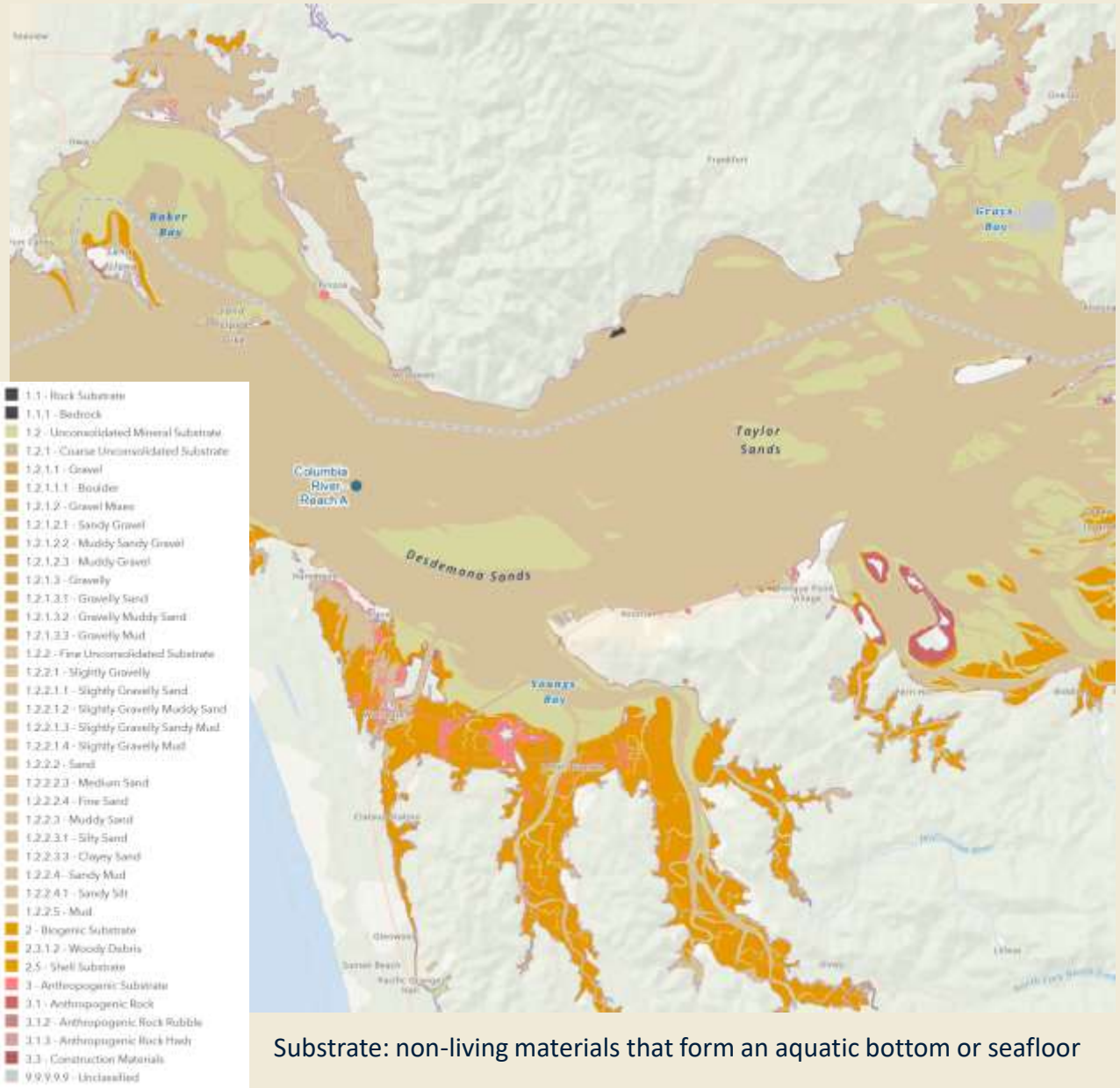
Pacific States Marine Fisheries Commission

Aquatic System (estuary): defined by salinity and geomorphology

Columbia River CMECS (*Geoform and Substrate Components*)

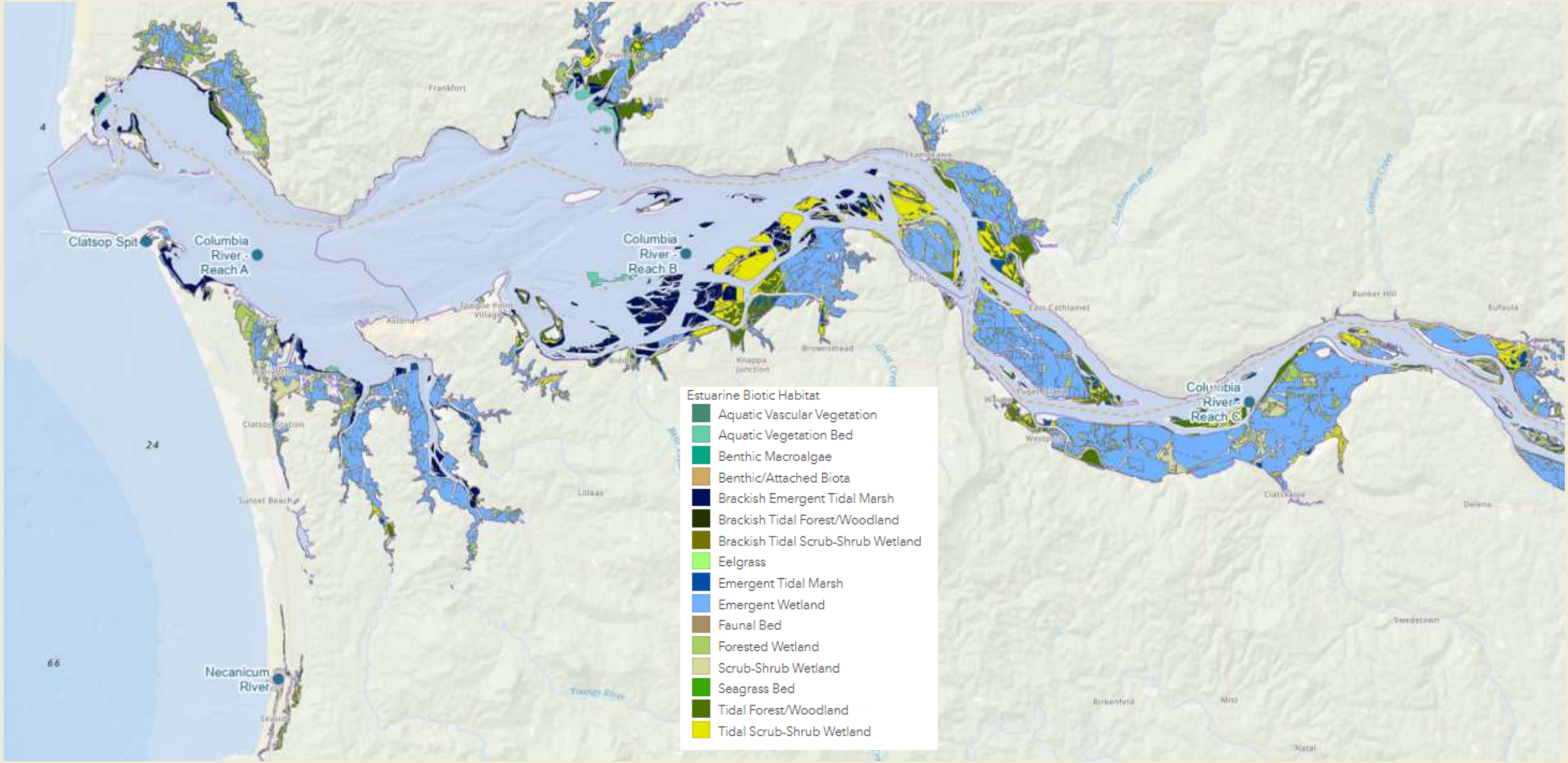


Geoform: geomorphic and structural characteristics



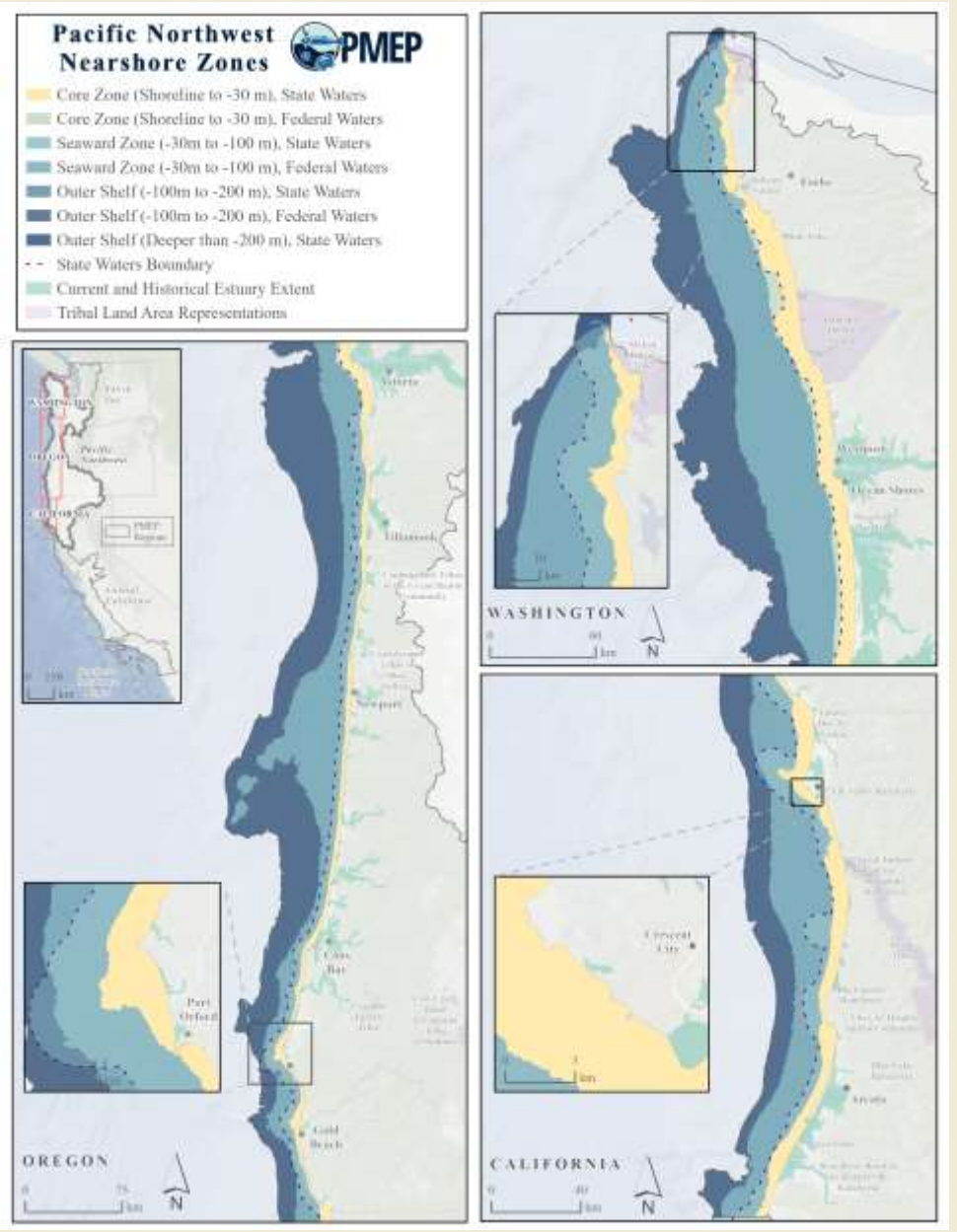
Substrate: non-living materials that form an aquatic bottom or seafloor

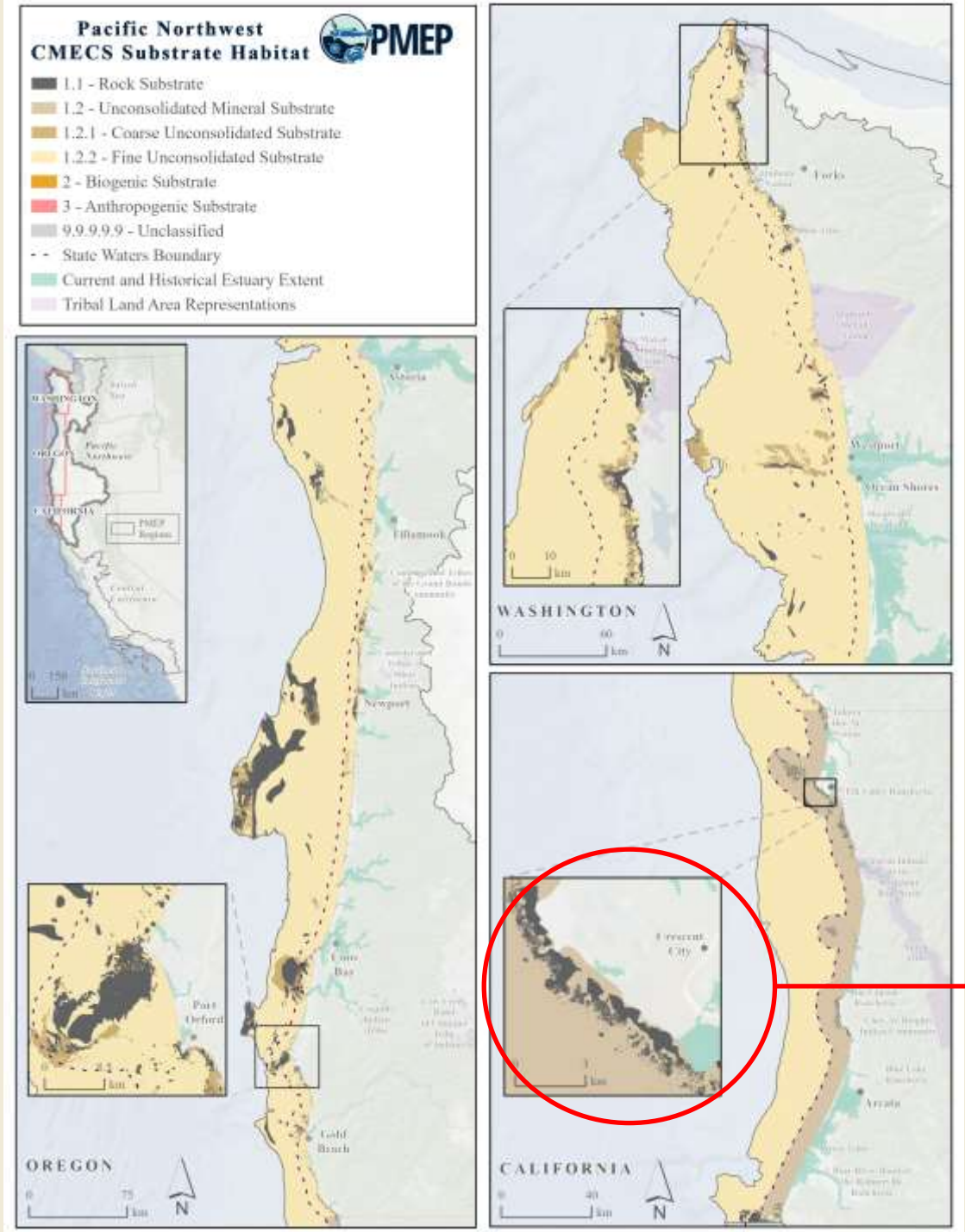
Columbia River CMECS (*Biotic Component*)

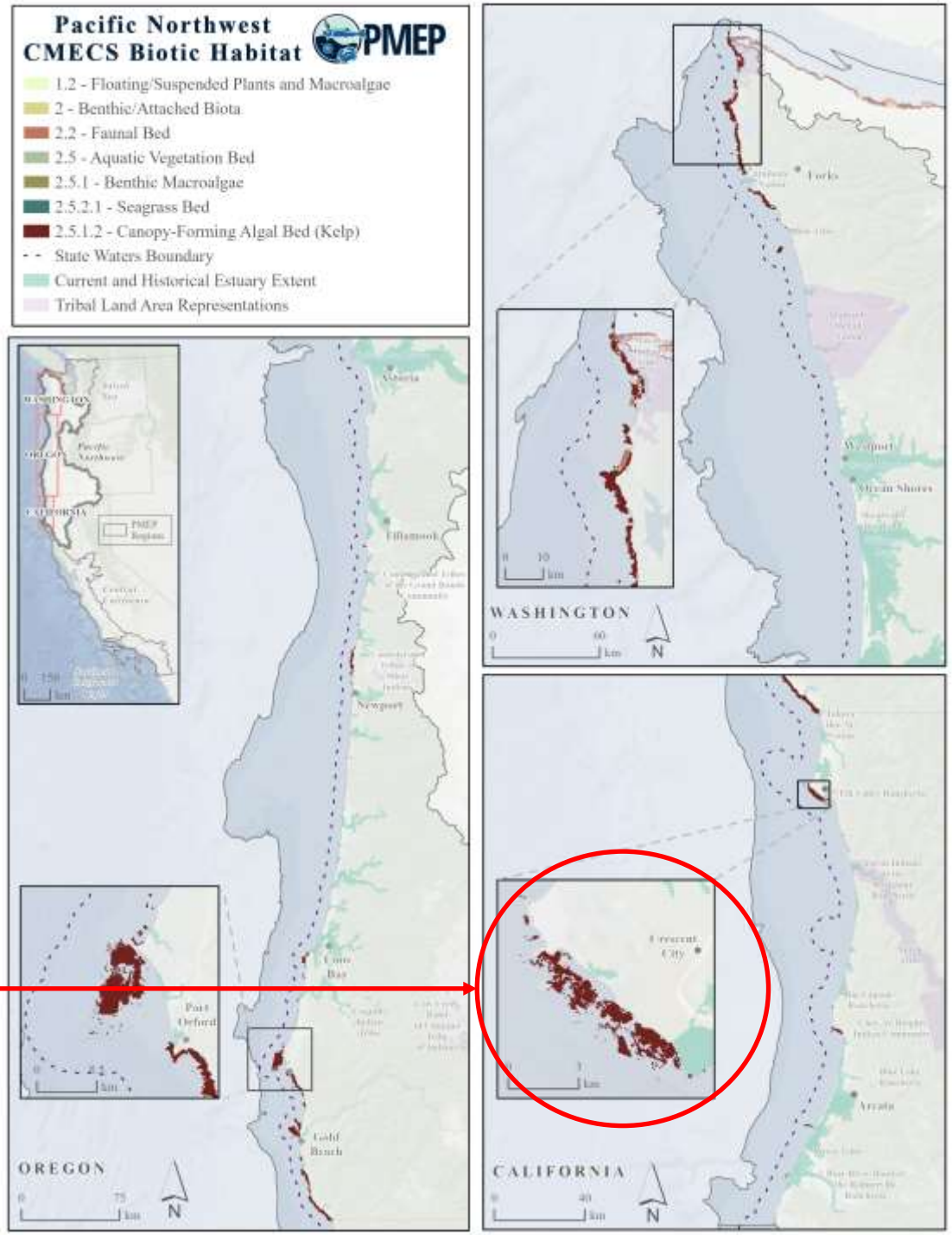


Spatial Data System: Nearshore

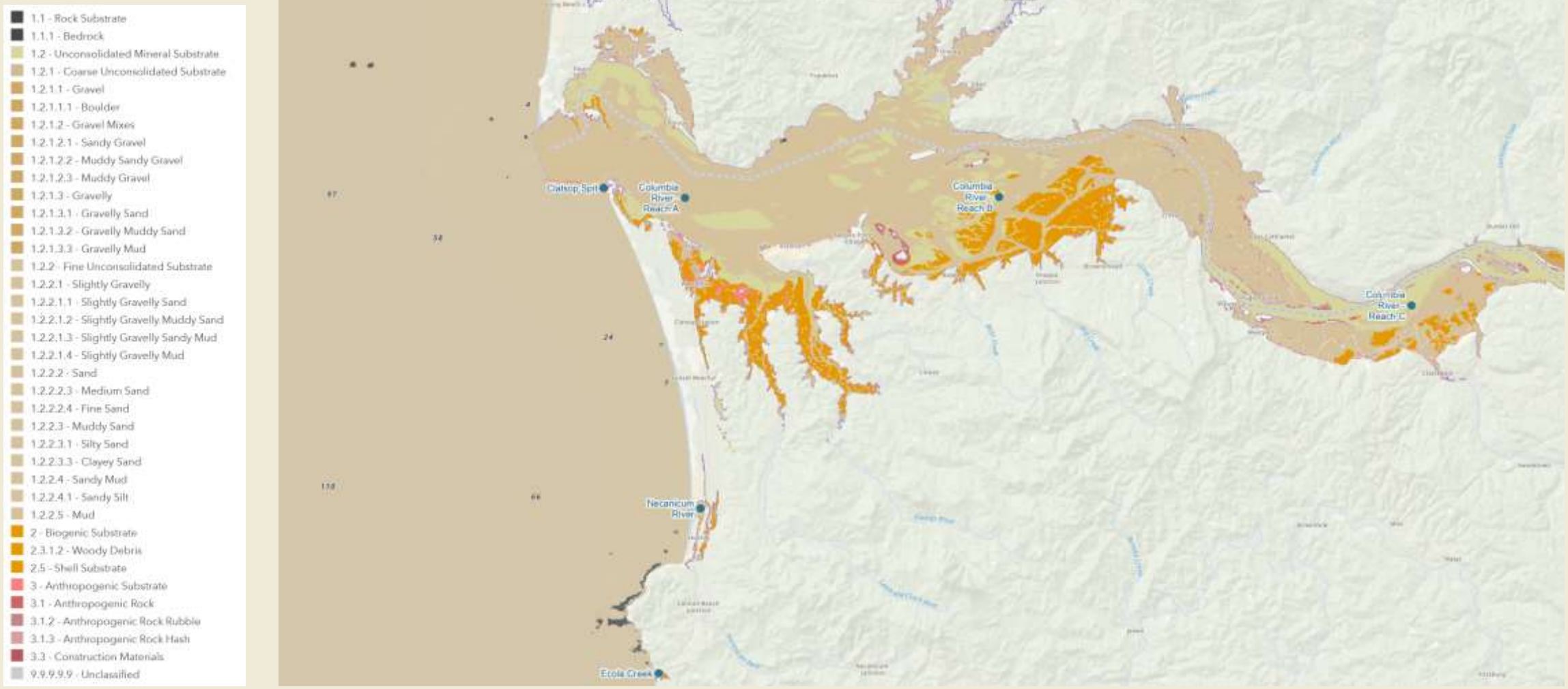
1. *Develop nearshore zones for PMEP's spatial data system*
2. *Compile and standardize nearshore habitat spatial dataset*
3. *Review state of the knowledge (SOK) of nearshore fish habitat*




Pacific Northwest
CMECS Substrate Habitat
PMEP
1.1 - Rock Substrate
1.2 - Unconsolidated Mineral Substrate
1.2.1 - Coarse Unconsolidated Substrate
1.2.2 - Fine Unconsolidated Substrate
2 - Biogenic Substrate
3 - Anthropogenic Substrate
9.9.9.9.9 - Unclassified
State Waters Boundary
Current and Historical Estuary Extent
Tribal Land Area Representations
WASHINGTON
OREGON
CALIFORNIA
N


Pacific Northwest
CMECS Biotic Habitat
PMEP
1.2 - Floating/Suspended Plants and Macroalgae
2 - Benthic/Attached Biota
2.2 - Faunal Bed
2.5 - Aquatic Vegetation Bed
2.5.1 - Benthic Macroalgae
2.5.2.1 - Seagrass Bed
2.5.1.2 - Canopy-Forming Algal Bed (Kelp)
State Waters Boundary
Current and Historical Estuary Extent
Tribal Land Area Representations
WASHINGTON
OREGON
CALIFORNIA
N

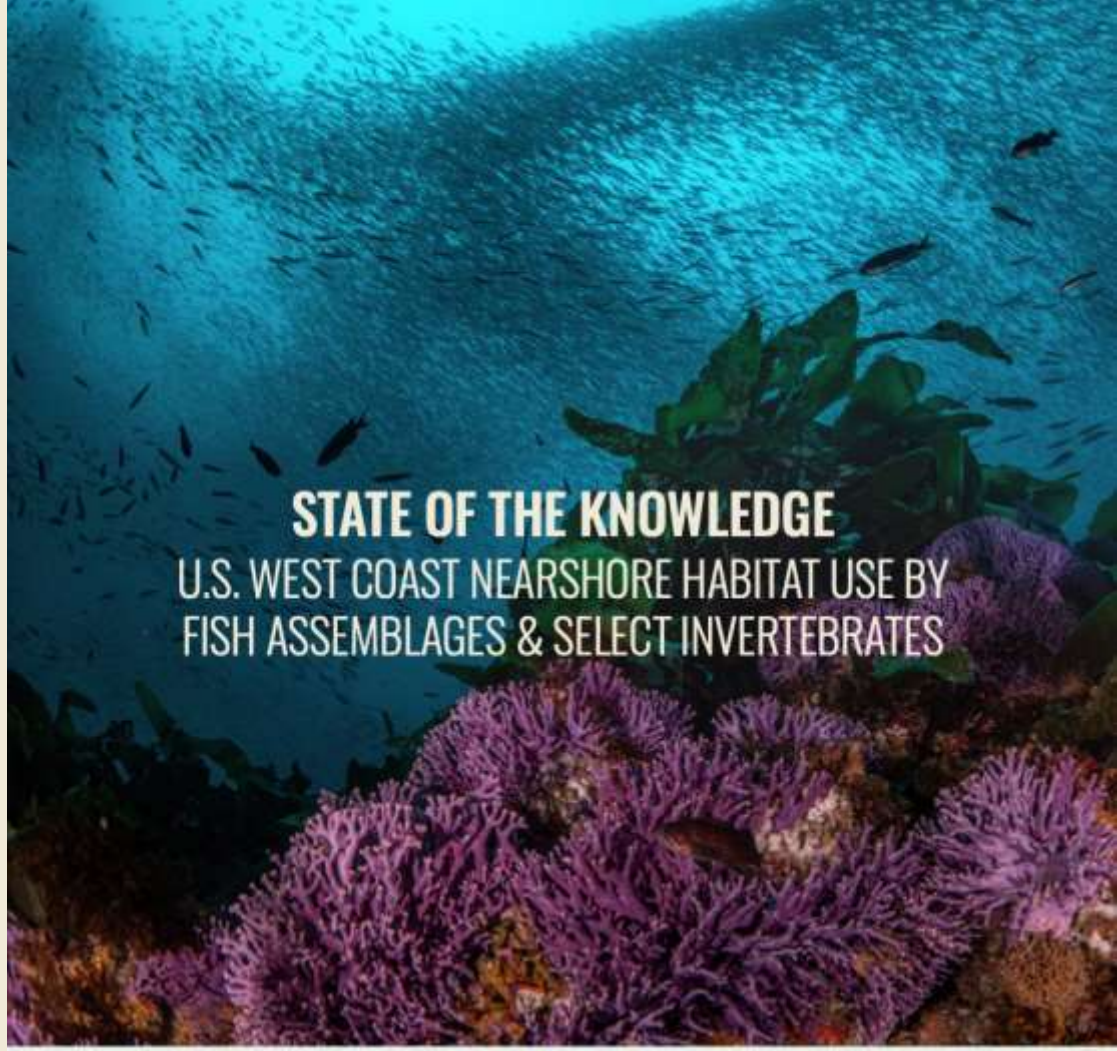
Columbia River Estuary and Nearshore



Nearshore State of the Knowledge Report

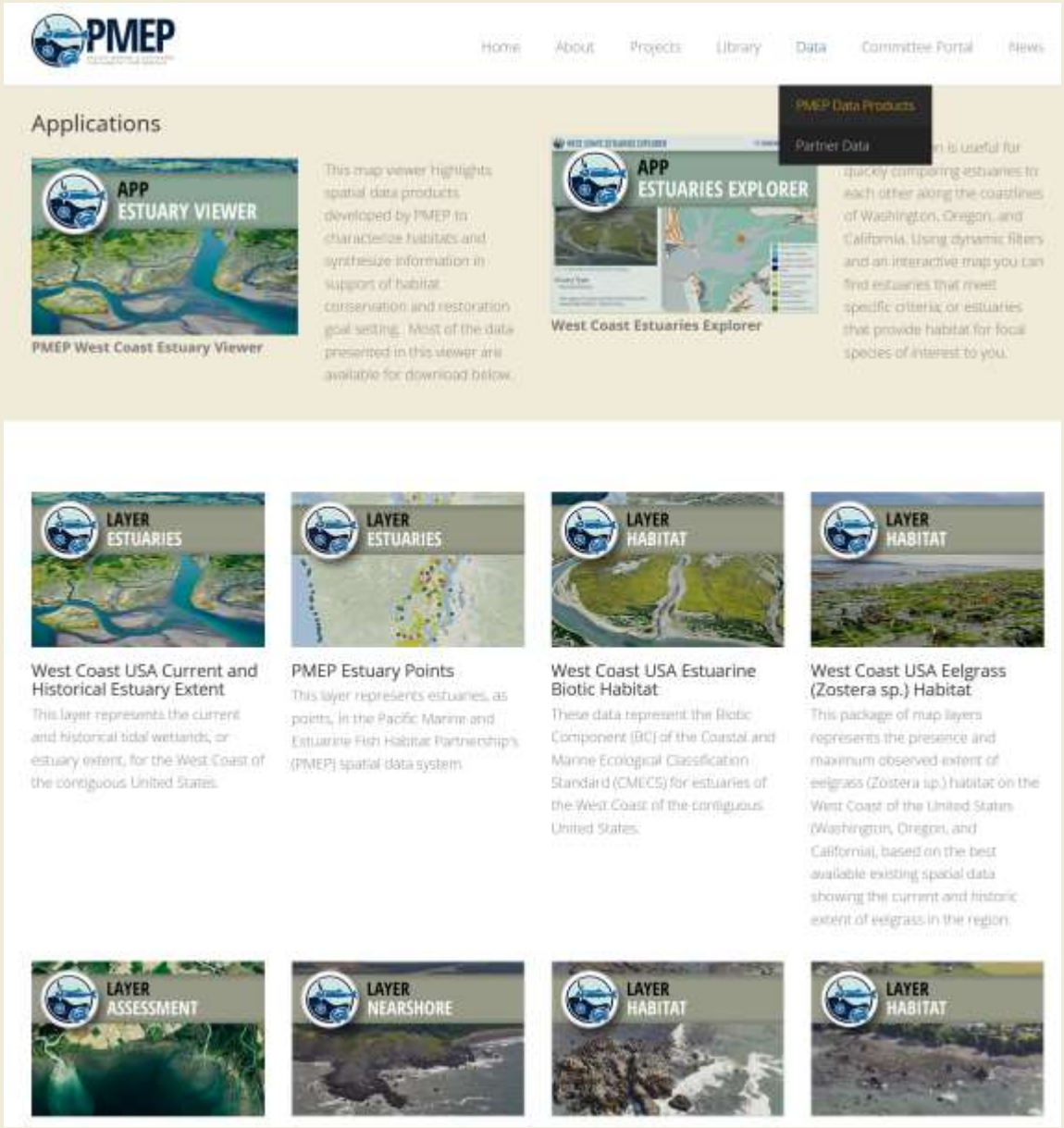
- Identified need to understand large-scale processes and connectivity between species and habitats for nearshore and offshore along the U.S. West Coast

- To provide the best available science and inform opportunities to conserve, protect, restore, and enhance fish habitat in nearshore areas

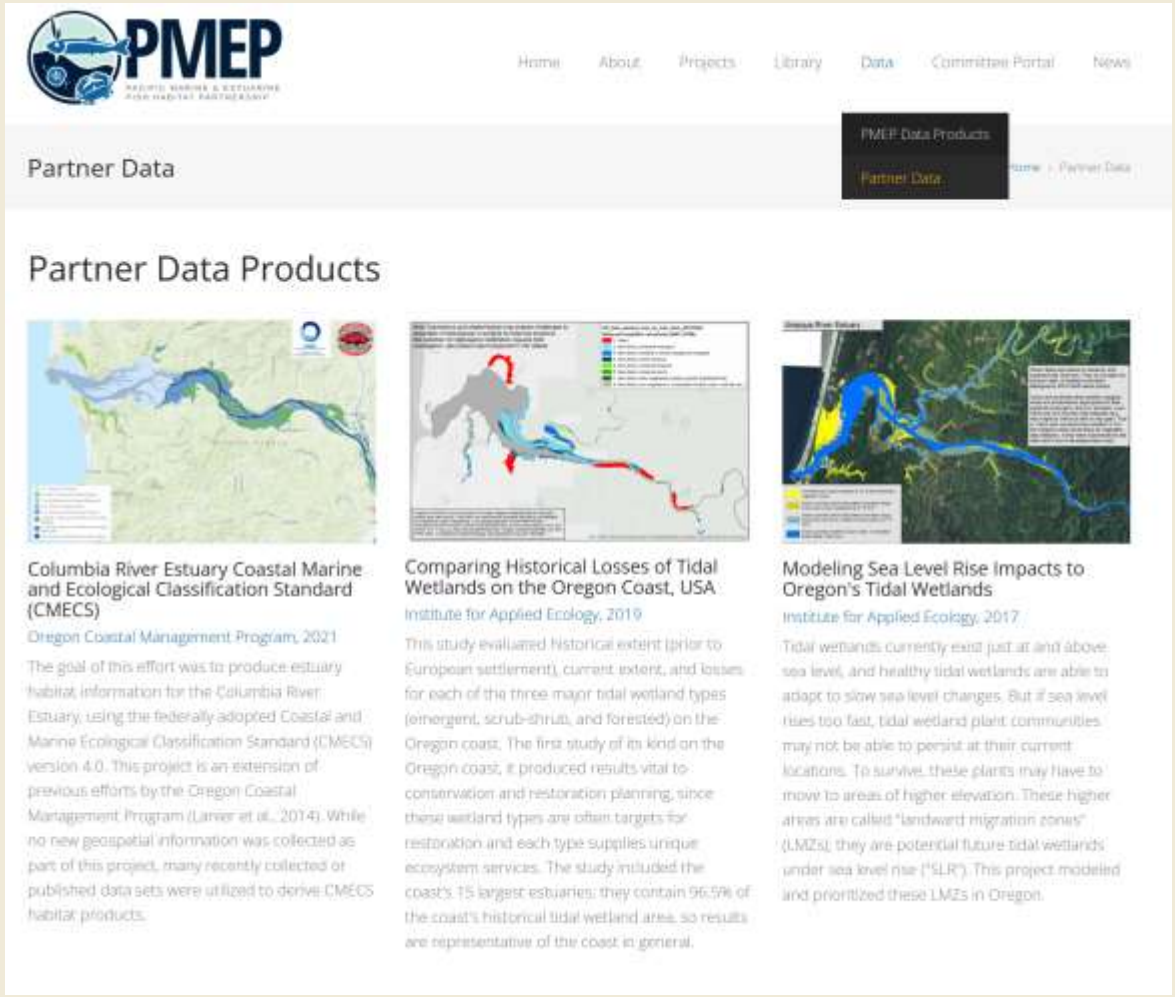


PMEP
PACIFIC MARINE & ESTUARINE FISH HABITAT PARTNERSHIP

Photo by ODFW



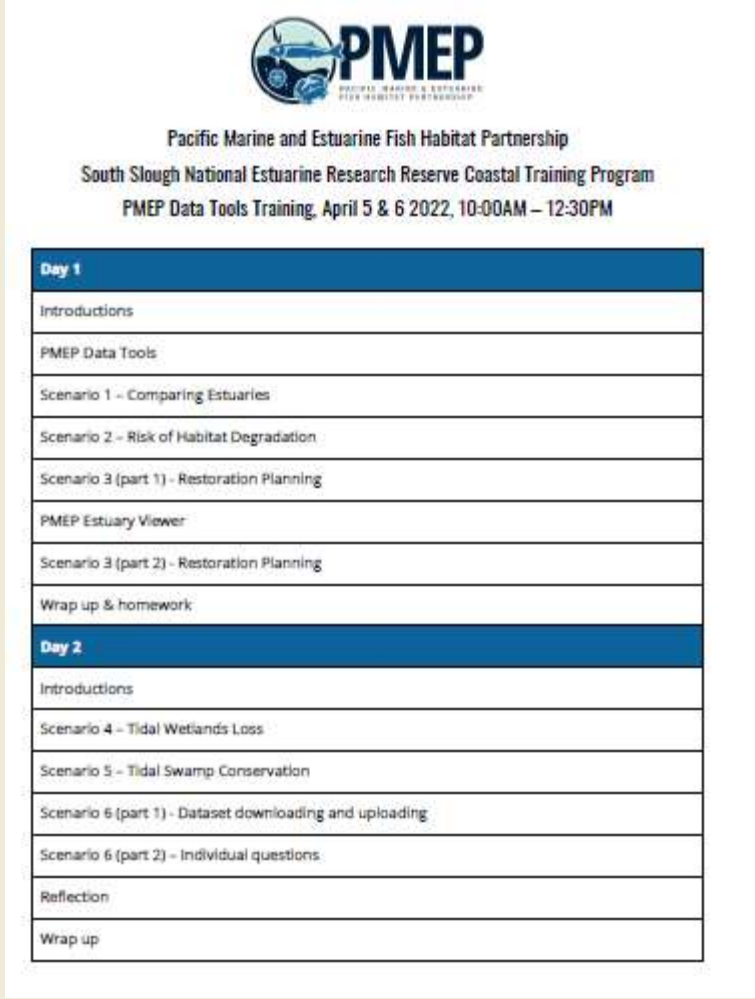
https://www.pacificfishhabitat.org/data/



https://www.pacificfishhabitat.org/partner-data/

Data Tools Trainings

- 2 Day workshop
- Become more familiar with datasets and data tools
- Learn using scenarios applicable to restoration, conservation and management of estuarine and nearshore resources.
- Next data tools training (virtual) – February 6-7, 2024 through WA Coastal Training Program



PMEP

Pacific Marine and Estuarine Fish Habitat Partnership

South Slough National Estuarine Research Reserve Coastal Training Program

PMEP Data Tools Training, April 5 & 6 2022, 10:00AM – 12:30PM

Day 1
Introductions
PMEP Data Tools
Scenario 1 – Comparing Estuaries
Scenario 2 – Risk of Habitat Degradation
Scenario 3 (part 1) - Restoration Planning
PMEP Estuary Viewer
Scenario 3 (part 2) - Restoration Planning
Wrap up & homework
Day 2
Introductions
Scenario 4 – Tidal Wetlands Loss
Scenario 5 – Tidal Swamp Conservation
Scenario 6 (part 1) - Dataset downloading and uploading
Scenario 6 (part 2) – Individual questions
Reflection
Wrap up

Take-aways

- Habitat data available for Columbia River and Nearshore (with West Coast context)
  - All data available for download on PMEP's website for use in Desktop GIS
  - Web services publicly available for use in web-based mapping applications
  - Estuary Explorer and Estuary Viewer are web-based tools for viewing data (no desktop GIS needed)
- *Coming soon: Nearshore Habitat Viewer*
- **Next data tools training (virtual) – February 6 - 7, 2024 through WA Coastal Training Program**

  https://coastaltraining-wa.org/

Photo by Adam Obaza, Paua Marine Research Group

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