

Oregon Coastal Management Program (OCMP) 2015 CZMA §309 Project of Special Merit Grant



Sand Lake Estuary, Tillamook County, Oregon

1. Project Title: Classifying Estuarine Habitats in-depth using CMECS

Applicant Contact Information:

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Project Collaborators: The OCMP has a strong working relationship with the following programs with whom it will collaborate throughout this project (if funded):

Oregon Department of Fish and Wildlife - Marine Resources Program;
South Slough National Estuarine Research Reserve, Charleston, Oregon;
Tillamook Estuaries Partnership, Tillamook, Oregon;
US EPA Coastal Ecology Lab, Newport, Oregon

2. Project Overview:

2.1 Description:

Oregon proposes a Project of Special Merit that will result in substantial improvements to habitat maps in estuaries. The revised maps are needed to better inform estuary planning activities and to assist coastal communities that are engaged in the process of updating their estuary plans. The proposed work will build upon foundational information products developed under a previous PSM award (2012-2014) which resulted in a first generation Coastal and Marine Ecological Classification Standard (CMECS) product for Oregon estuaries.

Our 2012-2014 PSM grant project produced the first ever CMECS digital data products for Oregon estuaries, representing a foundational step forward for estuarine resource characterization in the state. Due to the ambitious project scope (all of Oregon's estuaries south of the Columbia River), initial input datasets were deliberately limited to those with comprehensive coverage (coast-wide data sets). This current PSM proposal seeks to extend the methods developed during the previous PSM work to incorporate additional high-value estuarine data sets that are not coast-wide. Our new work will result in a second generation Oregon Estuaries CMECS product that utilizes the best available modern data for all estuaries encompassed by the 2012-2014 PSM project, and at a spatial scale that is highly relevant for effective resource management practices. The result will be a comprehensive product, tailored for local governments and other agency partners, and an important stepping stone toward the process of updating local estuary plans.

To achieve this goal, OCMP will work closely with key data stewards and partner agencies to incorporate specific high-value data sets into the existing first generation Oregon Estuaries CMECS data products:

- ODFW Marine Resources Program for integration of datasets generated by the Shellfish and Estuarine Assessment of Coastal Oregon (SEACOR);
- South Slough National Estuarine Research Reserve for integration of data for the Coos Estuary Inventory data;
- Tillamook Bay National Estuary Program for integration of tidal wetlands data; and
- US EPA Pacific Coastal Ecology Lab for integration of detailed data to characterizing submerged aquatic vegetation and information about faunal communities.
- Estuary assessments for the Necanicum, Nehalem, Tillamook, Yaquina, Alsea, Siuslaw, and Umpqua estuaries conducted by the Estuary Technical Group, Institute for Applied Ecology and Green Point Consulting

In addition, OCMP will improve the first generation CMECS products by incorporating best available bathymetry from:

- NOAA National Geophysical Data Center;
- US Army Corps National Coastal Mapping Program 2014 West Coast Survey;
- US Army Corps Portland District Navigation Program; and
- Oregon Department of Geology and Mineral Industries.

This Project of Special Merit will result in the following informational products for estuarine planners and resource managers:

- A second generation Oregon estuaries CMECS digital geospatial data set incorporating significant improvements in estuarine bathymetry, aquatic beds, shellfish resources, and other resources specified in Goals 16 and 17;
- Physical map products for each estuary bundled for each planning jurisdiction that mimic the layout and function of existing estuary plan maps for ease of cross referencing and incorporation into existing planning processes; and
- Updates to online Estuary Habitat Atlas pages (to incorporate the second generation data products).

Overall, this PSM will improve the specificity of standardized information about Oregon estuaries and result in the provision of data products tailored to support local governments, state agencies, and others involved in revising local estuary and shoreland management plans required under Oregon's statewide planning program. This PSM will directly support tasks in Oregon's approved [2011-2015 Assessment and Strategy](#).

2.2 Geographic Area Affected:

The project will cover tidally influenced estuarine areas and adjacent shorelands on the Oregon coast and may include work done on any of the more than 40 estuaries south of the Columbia River. Our project will focus on improving the CMECS products in the areas that have had recent estuary-specific or species-focused work including, but not limited, to the systems of the Yaquina Bay, Coos Bay, Alsea Bay, Salmon River, Umpqua River, Tillamook Bay, and Nestucca.

2.3 Total Cost: \$200,000

This proposal is the only PSM submitted by the OCMP in this year's application.

3. Priority Enhancement Areas

As identified in Oregon's approved 2011-2015 §309 Strategy, this proposed project addresses elements of the following Priority Enhancement Areas:

Wetlands;
 Cumulative and Secondary Impacts;
 Coastal Hazards; and
 Special Area Management Planning.

Application of the project results to all four Priority Enhancement Areas is discussed in Section 5.3.

4. Associated Program Change:

The primary program change resulting from the proposed project will be an improved scientific and technical foundation for the enforceable policies of local estuary management plans and ordinances and for decisions made based on these plans and ordinances. The need for updated scientific and technical inventory information for estuary planning and management of Oregon's estuaries was identified in Oregon's 2011-2015 §309 Assessment and is widely acknowledged by local governments and state agencies.

5. Project Description

5.1 Background

Oregon manages its estuarine and shoreland areas through the implementation of Statewide Planning Goals 16 ([Estuarine Resources](#)) and 17 ([Coastal Shorelands](#)) through the adoption and compliance with estuary and shorelands management plans by local governments. The quality of those plans (and the resulting ecosystem management activities) depends upon the quality of the resource information available for decision making. While most local estuary management plans have not been updated since their original adoption in the early 1980's, many communities are again looking toward their estuaries for economic development opportunities and are considering updates and modifications to their plans. It was with this understanding that the OCMP successfully completed work on the 2012-2014 PSM grant resulting in the production of a first generation Coastal and Marine Ecological Classification Standard (CMECS) product for Oregon estuaries.

Previous to this work, existing estuarine digital resource information existed in a variety of spatial classification systems that were designed for a variety of purposes. Our information products merged the existing statewide data sets into a single, comprehensive set of data using the CMECS standard which can be applied to many different thematic investigations. The implementation of CMECS at a statewide level in the estuarine environment is unique in the country, and much time was spent during phase I of the project to build the capacity required for successful translation of data from other formats and classification systems into the unified framework of CMECS. While the results from the initial project represent an enormous improvement in the extent and quality of available resource information, utility of the data products for local governments and decision making is currently limited because they do not yet incorporate valuable site specific data.

Through the work completed as part of our earlier 2012-2014 PSM effort we established several foundational aspects required to move forward into a second phase of work, including:

- 1) formation of a Technical Advisory Committee (TAC) that collects input from a panel of estuarine science experts from state and federal agencies, academic institutions, and NGO's;
- 2) completion of a comprehensive GIS data inventory which identified much of the site-specific data that will be incorporated into the products of this grant, and;
- 3) production of first generation estuary CMECS GIS data products.

If successful in this grant application we will be able to leverage all of the aforementioned items in the production of high resolution CMECS-based estuarine information.

5.2 Goal and Objectives

The primary goal of the project is to incorporate valuable and readily-available site specific estuarine resource data into revisions of the 2012-2014 PSM CMECS products. Accomplishment of that goal will constitute an important step toward modernization of the informational foundation for Oregon's estuary management program under the [Statewide Land Use Planning Program](#).

Objectives: The specific objectives of the proposed PSM are to:

- a. Create a geospatial database for each estuary that refines the mapping of estuarine and shoreland habitats, building upon the work completed in phase I of the CMECS project work;
- b. Deliver the recently published (2014) GIS data of estuarine and shoreland areas provided through the CMECS framework to local governments in a user-friendly format;
- c. Build a catalog of web mapping and catalog services that will help connect our products to statewide and regional data networking efforts. The [Oregon Coastal Atlas](#) will serve as the delivery mechanism (data portal) for accessing data from this project; and
- d. Formalize a mechanism for the long-term maintenance and growth of the estuary habitat information as a statewide framework data set, resulting in a “living data product.”

5.3 Addressing Priority Enhancement Areas

This project is straightforward and foundational ensuring that end users (those charged with making planning and management decisions) have easy access to and the training required to use the best available data to support their estuary management decisions. On another level, however, the entire project is innovative; modern digital geospatial data will be transformed to comply with CMECS and then distributed to end users via Web-based technologies and decision-support tools.

As identified in Oregon’s approved 2011-2015 §309 Strategy, this proposed project will address elements of four Priority Enhancement Areas:

- a. **Wetlands:** Conserving, protecting, and restoring the tidal and freshwater wetlands of estuarine systems are the principal policy reasons behind Oregon’s Coastal Management Program as expressed in Statewide Planning Goals 16, Estuarine Resources, and 17, Coastal Shorelands. This project will result in the improvement of publically-accessible geospatial data and data products
- b. **Cumulative and Secondary Impacts:** Estuarine shorelands comprise a critical interface between estuarine, terrestrial, and freshwater ecosystems and are especially subject to cumulative and secondary effects of upland and in-water uses and development. Upwards of 90 percent of tidal wetlands have been lost in some estuaries due to shoreline development. The data and data products resulting from this project will enable measurable assessments and monitoring of cumulative and secondary impacts to each estuary and, cumulatively, coast wide.
- c. **Coastal Hazards:** Estuaries and their shorelands are at sea-level and are thus highly vulnerable to coastal hazards presented by winter riverine flooding, storm surge and ocean wave incursion, tsunamis, and increasing tidal elevations due to sea level rise. The results of this project will enable local planners, state and federal agencies, land owners, and others to better plan for avoiding, mitigating, or adapting to these hazards.
- d. **Special Area Management Planning:** Each estuary in Oregon is subject to an Estuary Management Plan adopted as part of the relevant county comprehensive plan required under state law. In many cases, portions of an estuary lie within a city’s boundaries. Consequently, elements of the Estuary Management Plan pertaining to that city are adopted as part of that city’s comprehensive plan. Both county and city implementing ordinances for the estuary must be consistent with the plan. Thus, each estuary in Oregon is subject to a Special Area

Management Plan. The results of this project will enable coastal cities and counties to use up-to-date technical and scientific data in their plans and to review and amend policies and regulations through an improved knowledge of the ecosystem.

5.4 Project Activities:

The OCMP will provide leadership and management oversight for this project, while working collectively with a suite of partner agencies to update the specific information products generated in phase I of the CMECS project. To facilitate this work the OCMP will contract with a project coordinator to help manage activities and duties associated with the grant. This professional will be the primary point person for OCMP Coastal staff and experts from other agencies while working to complete the following grant program activities:

- Produce physical map products for each estuary that are bundled for each planning jurisdiction and designed similar to the layout and function of existing [Estuary Plan Book](#) maps for ease of cross referencing and incorporation into existing planning processes.
- Contract with an estuary habitat specialist to help review the implementation of the CMECS classification work and to help in the facilitation of workshops.
- Schedule, host, and help to facilitate two or more meetings of the previously established estuary technical advisory committee for the purpose of reviewing the CMECS data products.
- Coordinate and oversee the data production activities of our project partners (ODFW, SSNERR, and TBNEP) in the generation of new habitat map features that will be incorporated into the statewide CMECS data framework.
- Enable the generation of CMECS estuarine data products by our project partners by providing capacity to their programs in different ways, including (but not limited to):
 - ODFW will gain capacity through the hiring of an Oregon Sea Grant Fellow to work with the Shellfish and Estuarine Assessment of Coastal Oregon (SEACOR) project staff that have collected detailed data about shellfish populations, faunal communities, eelgrass beds, sediment types, and other characteristics of habitats within several Oregon estuaries.
 - South Slough National Estuarine Research Reserve will be provided staff time through an IGA, thereby tasking an existing member of staff to work on the CMECS project. SSNERR staff will ground-truth current statewide CMECS data layers using data derived specifically from the Coos estuary and work to include Coos estuary data, currently being compiled in the Coos Estuary Inventory Project (e.g. native oyster beds, water quality information).
 - Providing OCMP staff time to work on the synthesis of bathymetric data for the production of high resolution data sets.
 - Providing OCMP staff time to incorporate spatial data for submerged aquatic vegetation (and possibly faunal communities) data from resources published by the US EPA Coastal Ecology Branch (Newport Office).
 - Providing OCMP staff time to incorporate the tidal wetlands assessment data produced through studies completed by the Institute for Applied Ecology.
- Update and deliver the final CMECS products to local governments and interested agency and NGO partners through a training workshop(s) and generation of user-friendly information products.

- Formation of a plan within the state geospatial framework for continual maintenance and improvement of the estuary CMECS information through adoption of an approved update mechanism.

As a general guideline for the timeline of activities, work conducted by the agency partners will be scheduled to occur during the first 12 months of the grant period. That up-front work will be followed by OCMP staff time designated to bring the new data products into the CMECS framework, followed by the outreach activities, training opportunities, and development of outreach materials.

6. Benefits to Coastal Management

6.1 Benefits to the Oregon Coastal Management Program

Completion of this project will result in several benefits to the OCMP, including improvement in the quality of available resource inventory information, improved understanding of the new technical information by local governments and sister agencies, and establishment of a formal mechanism for updating the resource inventory information through the Oregon Coastal and Marine Data Network. In short, this work is crucial to ensure effective and successful management of estuarine resources in the State of Oregon.

6.2 Transferability:

Our work will extend direct benefits to other coastal programs around the nation by establishment of methods to translate existing data types into the CMECS system at a statewide level. Oregon is unique in the nation for its adoption of CMECS for use in the re-classification of estuarine habitats at the scale of the state. Many lessons were learned during Phase I of the estuary PSM grant program, and that work will continue to be published and available for others to benefit from.

In addition to promoting the use of CMECS within the state of Oregon, our project team also intends to continue to investigate the relationship between estuary science and the CMECS system. During phase I of the project, our estuary team established the upper bounds of the estuarine systems using NOAA exceedance water level probability levels and modern LiDAR data to establish the estuarine boundaries (both present and former). That information will continue to be evaluated as part of this project, and the findings communicated to audiences interested in delineating the boundaries of tidal wetlands through modeling of the landscape. In one example of this transferability, during phase I, our project team shared the established methods with a team from the Pacific Marine and Estuarine Fish Habitat Partnership working to improve tidal wetland mapping for juvenile fish habitat assessment in both Washington and California. Our project team will continue to investigate the application of CMECS in Oregon with an eye toward adoption throughout the Pacific Northwest.

7. Documentation of Fiscal and Technical Needs and Past Performance

The OCMP does not have the personnel or funding to complete this project without the CZMA§309 grant funding. Although the agency is prepared to move ahead with the more limited §309 work with formula-based funding, the products from this project will greatly enhance the

outcomes of estuary management plan modifications in the future by our partner cities and counties.

One of the OCMP program weaknesses is the lack of a technical expert in the field of estuarine science. It was due to this fact that in Phase I PSM grant work, the OCMP contracted with an estuarine science specialist to provide oversight and guidance on the project tasks. If successful in this application cycle, the OCMP will again contract with an estuarine scientist to continue the development of our products.

The OCMP has a positive record of using §309 funds to enhance the Oregon Coastal Management Program, especially through the generation of capacity in OCMP program partners. The OCMP also has an excellent record of completing its §309 work tasks, as reflected in semi-annual grant performance reports, and as demonstrated by the completion of the 2012-2015 PSM grant work program.

8. Project Work Plan

While the work plan tasks are laid out in sequential order, it is possible that the project lead will choose to overlap work tasks as needed.

8.1 Project Timetable: Oct 1, 2015 – June 30, 2017

8.2 Description of Activities

Task 1: Setting the Stage (October - December, 2015)

Subtask A: Issue an RFP and implement a contract for the project coordinator.

Subtask B: Initiate project subcontracts (SSNERR Intergovernmental Agreement, OCMP estuarine scientist through a Public RFP process), ODFW fellowship recruitment (through Oregon Sea Grant) and interagency agreements.

Subtask C: Compile the estuary GIS data produced during the 2012-2014 PSM and generation of local government information products.

Subtask D: Provide training opportunities for local government planners and others for acquiring the data via the Atlas and using the data, either directly or via the Estuary Planning Atlas Tool, to support estuary planning and decision-making.

Subtask E: Hold a workshop of technical and scientific experts and stakeholders to share project information and proposed habitat information updates.

Task 2: Producing the New CMECS Data Products (January 2016– January 2017)

Subtask A: The project coordinator will work with our partner organizations to ensure that they have the resources they need to generate CMECS products from their existing resource inventory information.

Subtask B: The project coordinator will work to receive the updated CMECS information products and ensure that they meet the needs for incorporation into the statewide CMECS framework.

Subtask C: OCMP staff will work on the development of improved CMECS products in the topic areas of estuarine bathymetry and tidal wetlands.

Task 3: Incorporating the New Data into CMECS (October 2016 – Jan 2017)

Subtask A: Using the updated information the OCMP staff will update the Estuary and Shoreland Habitat Atlas CMECS data.

Subtask B: The updated information will be reviewed by the estuary technical consultant

Subtask C: The project coordinator will organize (with the help of OCMP staff) and host a workshop with the technical advisory committee and other stakeholders to review the revised CMECS products and discuss formalizing the long-term maintenance and upkeep of this product as a “living data product.”

Task 4: Updating the Information Products and Applications (January 2017 – April 2017)

Subtask A: OCMP staff will update the data and information products available on the Oregon Coastal Atlas and hard copy products. The products will be made available to resource managers, planners and the public through a hosted workshop(s).

Subtask B: The OCMP staff will produce OGC compliant data and metadata service layers for the consumption by other parties, including the West Coast Ocean Data Portal.

8.3 Activities/Milestones/Date of Completion:

- Getting the project coordinator contract implemented, and subcontracts and intergovernmental agreements implemented (October – December 2015)
- Generating information products for local governments and hosting the technical advisory committee workshop to go over planned inventory updates (October – December 2015)
- Completion of thematically updated CMECS data sets by OCMP staff and project partners (January 2016 – January 2017)
- Completion of the updated statewide CMECS data products, incorporating the new information provided by project partners and OCMP staff (October 2016 – January 2017).
- Review of the updated CMECS products by the technical advisory committee (January 2017)
- Finalization of the updated information products (hard copy, GIS data, and web services) and conduct of a local government training workshop (January – April 2017).

8.5 List of Final Products:

- Local Government tailored estuarine habitat information products will be provided to our OCMP partners in both digital and hard copy format.
- A set of thematic information from our project partners in GIS data format that will be used to update the statewide CMECS data.
- A completed update to the statewide CMECS data framework that has incorporated high resolution information on the important aquatic resources managed through Goal 16.
- A catalog of web service data and metadata layers representing the completed CMECS products.
- A formalized agreement on the future maintenance and upkeep of estuarine data with the Oregon geospatial framework.

9. Project Budget:

9.1 Total requested

\$200,000

9.2 Budget Narrative

The project work program will be managed by OCMP staff, but organized and coordinated through professional services to be acquired through contract with both a project coordinator and technical input from a contracted estuarine scientist. Work on the thematic data updates will be carried out by increasing capacity within other programs or agencies when possible, and by the project coordinator or OCMP staff as noted in the above project description. Specifically, capacity will be added within ODFW through the implementation of an Oregon Sea Grant Natural Resources Fellowship, and within SSNERR for professional services supported through the implementation of an intergovernmental agreement.

As needed, other professional services (GIS, data processing, and web technologies) will be provided to the project through existing OCMP staff supported by other funds, including the state's federal Coastal Zone Management Grant.

Supplies and travel cost estimates are based on projects of similar scope undertaken with a NOAA Fellow over the past two years. The supplies line item includes the cost for a dedicated computer and necessary special software required to complete the work tasks.

Budget

Salary & Benefits		Salary	Benefits	Total
Project Director:	.145 FTE 18 months	16,348	9,236	25,584
Coastal Atlas Administrator	.14 FTE 18 months	19,785	10,597	30,382
Travel				2,534
Workshops				1,500
Contracts/Agreements				
Project Coordinator Contract				65,000
Sea Grant Fellow with ODFW				40,000
SSNERR Interagency Agreement				20,000
Estuary Scientist Contract				15,000
Total				\$200,000