



Washington Sea Grant
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December 1, 2018

Re: Initial report on a three-year study to identify best management practices related to shellfish production (Engrossed Substitute Senate Bill 6032 Sec 602 (31) of 2018).

To Whom It May Concern:

During the 2018 legislative session the Governor proposed, and the Legislature passed, a supplemental appropriation of \$200,000 to Washington Sea Grant (WSG) to “complete a three-year study to identify best management practices related to shellfish production.” The focus for the project is understood to be shellfish aquaculture’s interactions with burrowing shrimp and eelgrass—primarily as they affect the continued sustainability of the industry in Willapa Bay and Grays Harbor.

The bill language requires an annual report by December 1 of each year, of which this is the first. State funding became available July 1, 2018. This report covers activities from the inception of the project to November 30, 2018 (five months).

WSG is housed within the University of Washington’s College of the Environment and is a unique unit with federally designated responsibilities to support ocean-related research, education, outreach and communications. WSG serves coastal communities and resource managers by providing grants for applied research, fielding a team of technical specialists based in coastal communities, and engaging the public in activities that promote ecosystem health and ocean literacy. WSG has a decades-long history assisting shellfish aquaculture businesses and public agencies to navigate challenges and environmental change.

Summary of Progress

An outline for this project was included as Action Item 3.9 in the Phase II Work Plan for the Washington Shellfish Initiative (Office of the Governor, 2016). WSG’s goal is to provide shellfish growers and public resource managers with the information and assessment tools needed to support a collaborative, ecosystem-based management approach to shellfish farming’s

interactions with burrowing shrimp and eelgrass. The action item—together with grant proposals to fund elements of the work—is being used as initial guidance. The scope of work will be adapted in response to information being collected from stakeholders and resource managers in the first year of the project.

Here is how the project was described in the action plan:

3.9 Promote collaborative, ecosystem-based management in Willapa Bay and Grays Harbor.

Willapa Bay and Grays Harbor are complex estuarine ecosystems that support wild stocks of finfish and Dungeness crab and a historic shellfish aquaculture industry, as well as a rich array of other species. Management challenges at the system scale—such as sea level rise, ocean acidification, nutrient and sediment transport, burrowing shrimp and Japanese eelgrass—are affecting both natural and anthropogenic processes. Resolving these challenges requires adaptive management and collaborative actions built on a commonly shared understanding of how the ecosystems function, how they have changed over time and what future conditions may be like. The steps below will promote cooperative, system-scale management by compiling and synthesizing information and addressing important information gaps:

- a) Compile, synthesize and maintain historical data, management plans and research findings relevant to system-scale management challenges in Willapa Bay and Grays Harbor, focusing on how these ecosystems function, how they have changed over time and projections of changes that can affect management options. Make the information available via a purpose-built website.
- b) Convene resource managers, scientists and stakeholders to verify a common understanding of the ecosystems and the top-priority management challenges in each of them, and to identify research needs and information gaps that represent barriers to tackling the management challenges at a system scale.
- c) Help address the needs identified in (b) by matching them with appropriate potential funding sources, sharing the information with other participants and promoting collaborative project proposals.

Prior to receiving state funding, WSG worked with potential collaborators to develop proposals for the research, scientific synthesis and engagement needed to support Action Item 3.9. We also sought the advice of resource management agencies, growers and other stakeholders as we developed those proposals. As a consequence, we entered the current project with a solid initial scope of work, in which projected scientific advancements and further engagement with stakeholders and agencies are understood to be equally important elements. We also recognize that the state's funding to WSG—at \$200,000 per year—would not be sufficient to support the work; hence item (c), above, is an element continued in this project.

Between July 1 and November 30, 2018, WSG accomplished the following:

- Put financial and administrative arrangements in place and assembled WSG's team for the project. The team includes:
 - Paul Dye, Assistant Director of Outreach, WSG
 - Dr. Kevin Decker, Coastal Economist, WSG
 - Dr. Brent Vadopalas, Principal Research Scientist, School of Aquatic and Fishery Sciences, University of Washington
 - Jackson Blalock, Environmental Outreach Specialist, WSG

- Alexandra Stote, Research Assistant, School of Marine and Environmental Affairs, University of Washington
- Initiated a literature review and source compilation project that will lead to a synthesis report and a publicly accessible on-line database of relevant prior research. Initial work has focused on collecting and cataloguing source documents recommended by scientists, growers and agency personnel. Many are currently available only as paper copies.
- Met with leading members of the Willapa Bay Grays Harbor Oyster Growers Association (WGHOGA)—followed by an ongoing series of one-on-one meetings with additional growers—to explain the project, get early feedback and learn more about their individual concerns and information needs.
- With assistance from the Governor’s staff, identified key resource management agency representatives for a future working group. (Initial conversations with those individuals will begin early in 2019.)
- Met with prospective research collaborators to review the scope of work, priorities for field studies, and a strategy to augment the state appropriation with proposals to competitive grant programs.
- Began exploring and documenting options for structuring and facilitating a future working group.
- Contributed to related dialogues, specifically the Washington Department of Natural Resources Rural Communities Partnership Initiative with the Willapa and Grays Harbor Oyster Growers Association (WGHOGA) and discussions between the growers and the Washington State Department of Agriculture.

Looking Ahead

Between December 1, 2018 and June 30, 2019, WSG intends to achieve the following milestones:

1. Complete the initial round of engagement with shellfish farmers, agency personnel and stakeholders to introduce the project and get early feedback.
2. Refine the priorities and scope of work for new research, and join/encourage proposals to secure additional funding from competitive grant programs.
3. Make substantial progress on the literature review and synthesis report, prioritizing content needed to support a public informational workshop in summer or fall of 2019.
4. Develop infographics and other outreach materials that help explain the issues being addressed and findings from prior research to a wide range of people.
5. Identify working group members and develop options for the group’s organization and operation, anticipating an initial meeting in summer or fall of 2019.
6. Flesh out emerging needs and challenges using early feedback and revise the initial scope, timeline and cost estimates to include actions that address them.

We expect to use all of the FY2019 funds appropriated to WSG by the end of the fiscal year.

Addendum: Additional Project Context

Washington leads the nation in farmed shellfish, and the state's Pacific Coast estuaries have been top producers for more than a century. The effort described here responds to a confluence of long-standing but continually evolving issues facing shellfish farmers and resource management agencies in Willapa Bay and Grays Harbor, as well as in other estuaries and bays in the Northwest.

The general approach embodied in Action Item 3.9 is to sustain shellfish aquaculture in Willapa Bay and Grays Harbor under changing environmental conditions by establishing an adaptive, ecosystem-based management framework similar to those established by forest management collaboratives in the state. Forest management collaboratives address ecosystem-scale challenges that cannot be met by a single owner—public or private—managing only their own property, such as dealing proactively with fuel loads on timberlands to reduce catastrophic forest fires. Collaboratives agree on system-scale goals, identify appropriate management practices and support one another in taking action. The pattern of private shellfish farms in the midst of publicly owned tidelands managed by various agencies sets up a parallel opportunity in Washington's coastal bays.

This three-year project will apply the ecosystem-based management approach to two significant barriers to sustaining farmed shellfish production:

- Perceived conflicts between shellfish farming practices and the conservation of eelgrass habitat, and
- Lack of an effective, sustainable approach for managing burrowing shrimp—native species that can change the bay bottom and cause shellfish to sink and suffocate.

Substantial past work has addressed these issues, but they persist and are currently increasing as significant barriers to shellfish growers.

Growers' uncertainty about the future viability of shellfish farming, as well as resource managers' uncertainty about ecosystem-scale impacts on protected and managed species, is driving conflicts over aquaculture practices and regulations. As both the industry and resource managers try to adapt to large-scale environmental changes that are affecting conditions in the bays, new culture practices are being implemented quickly with limited information on their impacts to adjacent shellfish farms or the environment. Meanwhile, the public remains largely uninformed about shellfish growing practices, and some stakeholder opinions appear to be influenced by misinformation.

Two recent meetings in Washington laid additional groundwork for this project. It directly addresses issues identified by regulators at the "Washington Eelgrass and Shellfish Aquaculture Workshop" held in Seattle on April 11, 2017. The workshop, convened by NOAA's regional aquaculture coordinator, brought together scientists, regulators, tribes and the shellfish industry to address inconsistencies in eelgrass management related to aquaculture. Based on workshop discussion, a critical next step is likely to be an interagency discussion on acceptable management approaches for developing shellfish aquaculture projects. This project will help fill important data gaps identified by scientists and managers who participated in the workshop and will support interagency dialogues.

Second, the acute need for shellfish growers to control burrowing shrimp—and the projected economic impact if production declines significantly—triggered new dialogues between shellfish farmers and state agencies. A meeting convened by the Governor’s Office on February 14, 2018, brought the various conversations together in support of a collaborative approach. The Department of Natural Resources created a Rural Communities Partnership Initiative with WGHOGA, the Washington Department of Agriculture and the Washington State Conservation Commission to specifically focus on alternative control measures for burrowing shrimp. This project is being coordinated with the DNR/WGHOGA partnership through WSG’s participation on the partnership’s working group.

A key milestone in this project will also be to convene a working group: in this case one that includes the resource managers, scientists and stakeholders who will be important to implementing a future management collaborative that can persist beyond this project’s timeline. Through a facilitated workshop process WSG and its collaborators will support that working group in assembling an ecosystem-based framework with the following components:

- a shared understanding among scientists, resource managers and stakeholders of how the ecosystem functions, how shellfish farming interacts with the system, and what is at risk;
- objective methods for assessing how shellfish farms and other tidelands contribute to habitat values and ecosystem processes in the bays;
- ecosystem-based aquaculture practices that optimize the value of shellfish farms for both shellfish production and as habitat; and
- an ongoing structure for collaborative management, patterned after forest management collaboratives or other proven models.

The dialogue and consensus building process will be as important as scientific and technical information in determining the success of this project. A diverse constituency will be able to participate in the process through public workshops, working group meetings and outreach efforts. Information from the project will be widely available on websites and in publications and outreach materials.