Alaska Mariculture Task Force

Established by Governor Walker's Administrative Order #280

Directive: *"to provide recommendations to develop a viable and sustainable mariculture industry producing shellfish and aquatic plants for the long-term benefit of Alaska's economy, environment and communities*

AGENDA - *Draft*

May 24, 2017, 8:30am-12:30pm

DCCED Commissioner's Conference Room, 333 W Willoughby 9th Floor, Juneau, AK

Teleconference info: 1-800-315-6338 access code: 29660

1) Roll Call
2) Review and approve agenda
3) Review and approve minutes: April 26, 2017 (attached)
4) Public introductions & comments
5) Old business:
    a. McDowell Group discussion:
        i. Report on progress to date – Ch. 1 revisions; Ch. 2 & 3
        ii. Discuss in context of outline of Phase 2 (attached)
    b. Updates from Advisory Committee (AC) Chairs:
        i. Mike Stekoll – Research, Development & Environmental Info AC
        ii. Sam Rabung – Regulatory Issues AC
        iii. Angel Drobnica & Jeff Hetrick – Investment & Infrastructure AC
        iv. Paula Cullenberg – Workforce Development AC
        v. Heather McCarty – Public Education & Marketing AC
    c. Update on legislation – ***all four bills are in Senate Finance Committee***
        i. HB 76 / SB 95 - Mariculture Revolving Loan Fund
        Sponsors (4): REPRESENTATIVES ORTIZ, Kreiss-Tomkins, Kito, Gara, Josephson
        Sponsors (5): SENATORS STEVENS, Costello, Bishop, Micciche, Gardner
        ii. HB 128 / SB 89 – Shellfish Enhancement
        Sponsor (1): REPRESENTATIVE ORTIZ, Josephson
        Sponsors (2): SENATORS STEVENS, Micciche
    d. Grant application updates
    e. Communications:
        i. Past presentations: NXN, Julie Decker, Tamsen Peeples, May 12 in Anchorage; Petersburg Mariculture Q&A, Mark Scheer, May 15 (flyer attached)
        ii. Future presentations: ???
        iii. Press release: draft for review (TBD)

6) New Business:
    a. Discuss 2017 Aquatic Farm Applications (attached)
    b. Discuss Washington Shellfish Initiative – Phase 2 (attached)
    c. Discuss updates to diagram of comprehensive planning process (attached)
7) Next steps & homework assignments
8) Set next 3 meetings - date/time/place (June 27, August 23, ?)
9) MTF sign form for documenting in-kind match (attached)
10) Closing Comments

Attachments:

- MTF Minutes, April 26, 2017 – DRAFT
- Outline of Phase 2 by McDowell Group
- Advisory Committee Agendas/Minutes/Notes (see MTF website)
- HB 76 / SB 95– Mariculture Revolving Loan Fund Bill (see page link)
- HB 128 / SB 89 - Shellfish Enhancement Bill (see page link)
- Flyer - Petersburg Mariculture Q&A
- DRAFT – Press Release – Legislation and new permit applications (TBD)
- 2017 Aquatic Farm Application Summary
- Diagram of Comprehensive Planning Process – Updated (TBD)
- NOAA In-Kind Match Form
- Washington Shellfish Initiative (WSI) – Phase 2 Overview
- Washington Shellfish Initiative (WSI) – Phase 2 Work Plan

THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Commerce, Community, and Economic Development
OFFICE OF THE COMMISSIONER

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Alaska Mariculture Task Force (MTF) Meeting Minutes
April 26, 2017

Attendees
Mariculture Task Force members attending: Julie Decker, Angel Drobnica, Sam Rabung, Jeff Hetrick, Paula Cullenberg, Mike Stekoll, Heather McCarty, Chris Whitehead, Micaela Fowler (delegate for Chris Hladick)
Members of the Public: Tamsen Peeples- Premium Oceanic, Kirsten Shelton-Walker, Jim Calvin, and Bob Koenitzer- McDowell Group, Charlotte Regula-Whitefield- Knauss Fellow at Senator Murkowski's DC office, Chere Klein- Senator Murkowski's Ketchikan office, Tomi Marsh - OceansAlaska, Brian Holst- Juneau Economic Development Council, Bobbi Hudson- Pacific Shellfish Institute, Bill Hines- NOAA, Andy Varner- City manager for Sand Point, AK
Barbara Blake- Office of Lieutenant Governor Byron Mallott
Cynthia Pring-ham and Michelle Morris- Department of Fish and Game
Linda Mattson - Department of Commerce, Community, and Economic Development

Materials distributed to task force members included: Agenda for April 26 meeting, minutes from March 14 meeting, AFDF Documentation form, McDowell Group Draft of Chapter 1, Outline of Phase 2 by McDowell Group, advisory committee minutes, HB 76 Mariculture Revolving Loan Fund bill, HB 128 Shellfish Enhancement bill, MTF Planning diagram, Scotland Strategic Plan, NOAA Strategic Plan

9:00 Co-Chair Julie Decker called meeting to order

Julie Decker added items under new business

- 6b- NOAA plan- discuss recent NOAA interest in reducing the seafood trade deficit and what it might mean for mariculture development
- 6e- letter of support for Alaska Sea Grant project
- 6g- update by Sam Rabung on open application process is going for aquatic farm permits
- Sam Rabung motioned to approve the agenda as amended. Heather McCarty seconded. Motion passed with no opposition.

March 14 meeting minutes were reviewed

- Sam Rabung requested that the dates of the 4/28 meeting be changed to reflect the actual MTF meeting date of 4/26
- Sam Rabung motioned to approved the minutes as amended (change dates to 4/28). Heather McCarty seconded. Motion passed with no opposition.

Public Introductions & Comment
Public Comments opened at 9:06am

Tamsen People- Blue Evolution completed their first commercial harvest of commercial raised kelp at Trevor Sande's farm off of Hump Island near Ketchikan. They harvested about a thousand pounds of ribbon kelp. It was learning experience and they have two more harvests coming up in Kodiak in May.
Public Comment closed at 9:07am

Old Business: McDowell Group Discussion
Jim Calvin began the presentation with a PowerPoint document to outline their work so far. Their plan for the month of May is to talk with the AC Chairs and figure out a plan to integrate input from the ACs. The main discussion centered on how to make decisions going forward in the mariculture industry.

Questions/Comments on Chapter 1

- Mike- p. 29 asked for a clarification on seaweed
- Sam- likes the look but he requested that they switch the years on page 7
- Julie requested that the Task force look at very carefully the sections that pertains to their industry
- Julie asked how McDowell is counting for infrastructure
- Heather asked about the economics of the non-profit hatchery model with benefits coming to both commercial and non-commercial arenas as in the salmon enhancement model. She mentioned that it would be nice to have a model from McDowell group on how to support a hatchery that is non-profit and how does that fit in to the production needs of aquaculture
- Sam reminded the task force the McDowell group has a number of McDowell group studies on the PNP hatchery programs that are linked on the salmon hatchery portion of the ADF&G website for MTF members to reference.
- Julie suggested to break out farming and enhancement on the modeling portion of the chapter and the overlap would be in the hatcheries component and infrastructure portions.
- MTF members had a conversation about the mariculture stakeholders and funding mechanisms
    - Where will funding for mariculture come from- should we expect funding to come from non commercial stakeholders.
    - Sam stakeholder situation is the same across the board for salmon fishery enhancement programs. The Feds and state are different- there are different regions for salmon, they need to fit to be stakeholder driven
    - Heather- mentioned that we need to capture the need for funding (either state or federal)
    - Sam- requested that we include state support for the mariculture industry as a recommendation from the task force
    - Julie- mentioned that state support is key but we also should include private support
- Jeff- recommendations from the task force should be sent to the McDowell group
- McDowell recommended that they should take comments from the MTF any way that they want to submit
- Deadline 5/15 for MTF to submit comments to McDowell
- Linda Mattson will send a reminder
- Mike suggested that they include the scientific names of the species in parenthesis
- Heather- asked for chapter 1 to be sent to the task force in Word format
- McDowell will send out but requested that members only look at content to edit and not formatting

Next MTF Meeting- McDowell will bring recommendations from the AC's to discuss with the MTF as to where they are with opportunities and challenges and the holes still be filled

Old Business: Updates from Advisory Committee Chairs

Mike Stekoll: Research, Development, and Environmental Information- had a meeting on April 14

- They are working on their existing research and future needs document as well as their research priorities near term document
- They plan to have both documents completed by the next MTF meeting
- They are looking at the factors to address for the mariculture of any species which is a listing of all of the issues that exist from the beginning to the end of the process

Sam Rabung: Regulatory Issues- had meetings on March 13, 24, and April 24

- Recommendations and regulations suggestions in narrative format as well as the regulation format were submitted to the task force members.
- Goal of AC- to scratch the surface to just provide recommendations and not dive to deep.
- These are only recommendations and wanted to make sure that they were non binding as directives because they cannot force anyone to do any of the items on the list.
- Mike asked what methods do the agencies have in place for agency personnel to "change their attitudes" with regards to regulations and regulatory issues.
- Sam is working on a guide for Fish & Game to educate his staff on aquaculture as discretion can be used on regulations so that they can work cooperatively on issues.
- Heather asked if the recommendation number 14 was industry wide or species specific.
- Sam- they are looking for an industry perspective; industry could do it themselves but if they're mandated by legislation, they may have more incentive.
- Heather- asked what the process was to amend a regulation.
- Sam- all regulations, except commissioner's regulations, go through the board of fish but every agency has their own process for regulations. For example, DNR and ADF&G work almost exclusively under state jurisdiction, while DEC is required to use federal jurisdiction so they have more processes to go through to amend a regulation.
- Julie suggested that the MTF should identify stakeholders who might take on specific recommendations made by the AC.
- Eric asked how to address recommendation #8 regarding workers compensation insurance.
- Julie suggested that the MTF work with a larger group of stakeholders to discuss the WC issue.

Break
10:48am- meeting called back to order

Angel Drobnica & Jeff Hetrick: Investment & Infrastructure AC- AC Chairs had meeting 4/25 meeting scheduled week of 5/1 for full AC

- Will have their recommendations finalized at the next MTF meeting
- They want to emphasize that Alaska is open for business
- There are opportunities for funding and people need to be aware of them
- They plan to work with McDowell group on the next steps
- Heather asked for an expansion on recommendation #5- explore the potential to seed a private/ public revolving fund program

- Jeff responded that there are private aquaculture investors who are interested in investing and when the private sector commits resources, the public feels more supportive toward a project.
- Paula mentioned that Sea Grant has a proposal submitted that would address recommendation #1

Paula Cullenberg: Workforce Development AC- meeting on April 14

- they are working on their draft recommendations and their draft report
- Goal of their aquaculture specialist- to liaison between industry, research, and state government to advance the aquaculture industry
- Objectives of the Workforce Development AC
  1. To increase the profits and business success for the farmers that are already working
  2. Ensure that hatcheries and nurseries and farms have a skilled workforce to draw from
  3. Inform, recruit, and retain new entries into the industry
- The AC added two recommendations that were not on the handout
  1. To join industry career activities that are happening throughout the state
  2. To develop a good strong evaluation plan to track people into jobs so that there is a link between training opportunities and employment opportunities
- Sam suggested that Sea Grant partner with Future Farmers of America as aquaculture farming could fall under the agriculture industry. Paula will include it in the narrative for her AC

Heather McCarty: Public Education and Marketing AC

- Is looking forward to meeting with McDowell group to craft recommendations to the MTF
- She is drafting recommendations and will send them to the MTF when they are complete.
- She is looking into the differences between public education and marketing and how they translate into the McDowell group as well as what the split is between the two subjects. She believes that much of the marketing part of the AC will be covered in the McDowell group study and anticipates that they will be able to focus more on the public education portion in their recommendations
- Sam recommended that the AC work with ASMI on marketing recommendations
- Heather mentioned that there is a lot of overlap on public education which will be included in her recommendations

Updates on Legislation

- Reception seems positive from both sides in both the House and the Senate
- The thought is that maybe the House will pass the bills but that the Senate is working on other things

Communications

Discussion on press release regarding legislation

- Heather McCarty motioned, Eric Wyatt seconded to have a press release from the MTF on the status of the bills and to thank the people in the legislature worked on it. Motion passes without opposition.
- Julie Decker and Heather McCarty will work to draft the press release and Micaela Fowler will assist on editing and messaging.

Update on ARPA-E

May 15 final application is due- there is a large group working on this

- Goal from the perspective of the Alaska farmers is to focus on figuring out harvest efficiencies over the life of the project
- Mike Stekoll provided an updates on his role to work on ways to find strains that will be most useful and fast growing.
- Goal of the study is how to decrease cost and improve efficiency

New Business

Discussion: Scotland's Aquaculture Strategic Plan

- Eric pointed out that one of the recommendation that they made to have both a shellfish and a seaweed hatchery
- Heather suggested that the MTF dig into the recommendations and noted that their government plays a large role in the industry
- Eric- recommended that the MTF include a recommendation that ideas from government support not just large businesses but medium and small businesses as well

Discuss NOAA Marine Aquaculture Strategic Plan

- Heather asked about the timing for recommendations from this region to submit to NOAA
- Mike stressed that NOAA in Alaska is very open to aquaculture
- Paula stressed the importance of communicating with the federal delegation to encourage them to continue to support NOAA
- Bill Hines from NOAA mentioned that the state should have a comprehensive plan first and then work with NOAA to see how to support their plan
- Julie will check with the congressional delegation staff to check in to see what NOAA's timeline for this region to submit recommendations to the NOAA plan

Discuss Invitations for expert speakers for future Skype conferences

- Heather requested speakers that the task force reach out to representatives New Zealand and Scotland
- Mike recommended that the MTF reach out to other states like Washington to schedule a presentation
- Julie will work on scheduling and a tentative timeline for speakers from these regions near the end of September as was suggested

Discuss diagram of comprehensive planning process

McDowell group submit draft of Chapters 4 and 5 by Aug. 1
McDowell group update May MTF meeting
Sept, Oct- expert speakers to present to MTF (add to the schedule workshop bubble)

Update on Alaska Sea Grant NOAA grant applications

Paula updated the task force on the application

- Paula requested that the MTF draft a letter explaining what the task force does and how the objectives of the Sea Grant proposal are in response to the recommendations that are being developed by the task force so that the MTF can support the Sea Grant's proposals
- Heather McCarty motioned that the MTF authorize the chair and the co-chair of the MTF to draft a letter for Sea Grant's NOAA application; Mike Stekoll seconded. Motion passed with no opposition.

- Proposal is due May 9

Update on old NOAA facility in Juneau
Mike Stekoll updated the MTF on the NOAA facility

- The main building will go to the University of Alaska Southeast
- The rest of the buildings will go to the City of Juneau's Docks and Harbors
- The sciences program will move to the main building

Update on the open application process for aquatic farm permits
Sam Rabung updated the MTF on the application process for aquatic farm permits

- Open application period ends April 30 and they are submitted to DNR, unless they are not on state land/water. ADF&G have been getting inquiries but they have to go through DNR before they go to ADF&G.
- Each application will be posted for public comment individually

Form to document MTF member time for in-kind match to NOAA Grant

- Form was passed around to the task force members to indicate their time worked

Next Steps and Homework
Linda Mattson and Julie Decker will get out a summary email to Task Force members
Advisory Committee chairs and MTF members should get recommendations on Chapter 1 to the McDowell Group by May 15
Julie Decker, Heather McCarty, and Micaela Fowler will work on the press release to thank the members of the legislature for their work on the bills
Julie Decker will draft a letter of support from the MTF on the Sea Grant NOAA application

Next meeting dates:
May 24, 2017 from 8:30am to 12:30pm
June 27, 2017 from 8:30am to 12:30pm
PLANNING PURPOSES: August 23, 2017

12:38pm Meeting adjourned by Co-Chair Decker

Alaska Mariculture Initiative: Economic Analysis to Inform the Comprehensive Plan: Phase 2 Report Outline

Executive Summary

Introduction

(McDowell Group)

Purpose and Scope of Phase 2

Mariculture Defined

Methodology

Report Organization

Chapter 1. Alaska's Mariculture Industry Today

(McDowell Group)

Shellfish (numbers of permits, operating farms, production volume and value, prices, trends, farming practices, current markets and market conditions)

Macroalgae (status of development efforts, production levels, farming practices, etc)

Enhancement Activity (overview of current research activity, plans, goals, budgets)

Integrated Operations (multi-species farm practices, vertical integration, etc.)

Summary Status of Alaska's Mariculture Industry

Chapter 2. Alaska's Mariculture Development Challenges and Opportunities

(McDowell Group and MTF Advisory Committees)

Barriers to Entry

Research Needs/Gaps

Regulatory Framework

Operating Costs/Logistics/Production Inputs

Access to Capital/Capital Requirements

Access to Markets and Market Development

Chapter 3. Investment Sources

(McDowell Group and MTF Advisory Committees)

Current Mariculture Financing Overview

Overview of Investment Strategies

Overview of Investment Opportunities

Sources of Capital **(Private, Public, Public-Private Partnerships, Tribal, other)**

Current State and Federal Funding Environment

Chapter 4. Economic Model for Development of Alaska's Mariculture Industry

(McDowell Group)

Farm Model Assumptions and Inputs

- Development scenarios, 30-year horizon
  - Pace of new farm development
  - Scale of farming operations (small, mid-size, large)
- Critical variables and sources of uncertainty

Farm Economic Impact Model Outputs

- Farm-gate and wholesale production volumes and values
- Employment and labor income (direct and indirect)
- State lease fees and harvest tax revenues

Farm Economic Impact Return on Capital Investment

Enhancement Model Assumptions and Inputs

- Annual investment in research/enhancement activity
- Timing and scale of enhance common property harvests
- Critical variables and sources of uncertainty

Enhancement Economic Impact Model Outputs

- Ex-vessel and first wholesale value of enhanced common property harvests
- Direct and indirect economic impacts (labor income, taxes) of enhanced common property harvests

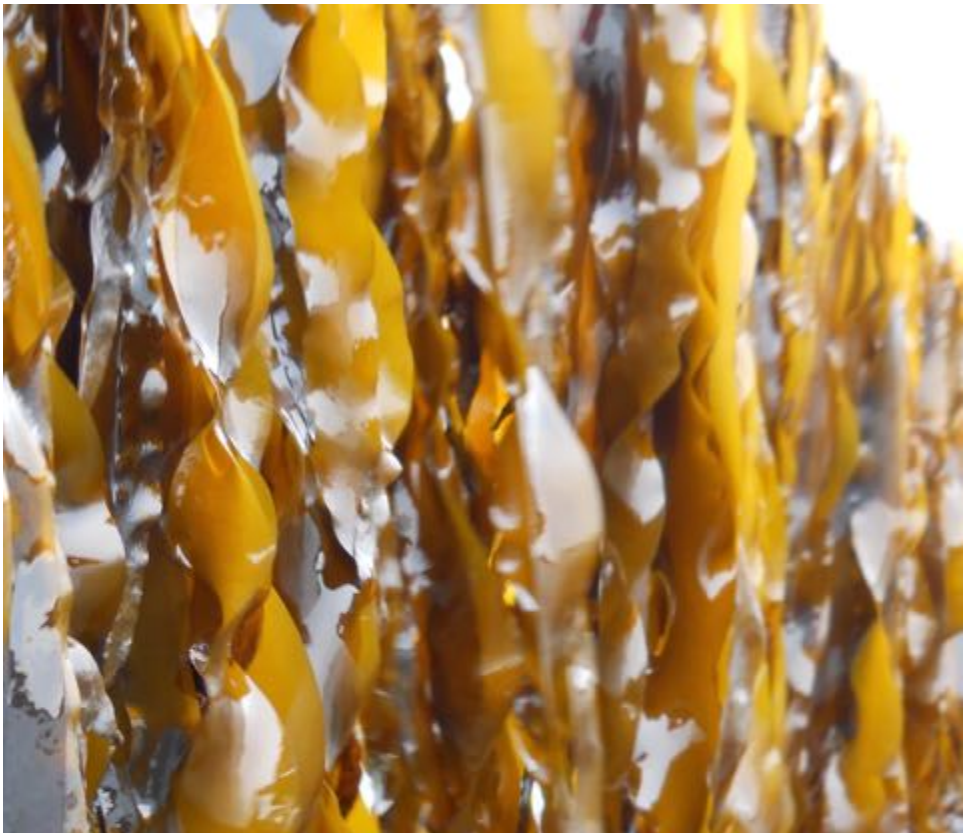
Chapter 5. Strategic Development Goals, Pathways, and Outcomes

(McDowell Group and MTF Advisory Committees)

Economic Analysis of Potential Investment Strategies

- Farm Investment
- Enhancement Investment

Recommendations for Phase 3 Analysis



MARICULTURE FOR FISHERMEN & PROCESSORS

Join Mark Scheer for a Question and Answer session for fishermen, processors, and entrepreneurs on seaweed mariculture in Alaska.

Markos Scheer – Attorney and Member, Williams Kastner & Gibbs, PLLC, with offices in Sitka, Washington and Oregon.

Mr. Scheer is a board member (and officer) of the Alaska Fisheries Development Association. He participates on the Advisory Committee on Infrastructure and Investment for the Mariculture Task Force. Mr. Scheer is originally from Southeast, graduating from Ketchikan High School in 1986 and spent 13 years working in the seafood industry in Southeast Alaska for Silver Lining Seafoods and then NorQuest Seafoods (now part of Trident Seafoods).

PETERSBURG
ECONOMIC DEVELOPMENT COUNCIL

Opportunities in seaweed mariculture

Diversifying existing fishing operations with mariculture

Moving product to market through direct marketing, cooperatives or relationships with existing processors

Developing a mariculture business plan

ASSEMBLY CHAMBERS
12 S. Nordic Dr.

May 15, 2017
4 pm – 5 pm

2017 Aquatic Farm Application Summary

Original spreadsheet from Karen Cougan, DNR - 269-8543

Updated on 5/16/2017 by ADF&G, Cynthia Pring-Ham - 465-6150

ADL	Name (Contact and Company)	Application Type	DNR Received	Acres	Location	Nearest Community	Region	Organisms to Be Cultured
107829	Gregg Parsley, Shikat Bay Oysters, Inc	Amendment	3/1/2017	6	Shikat Bay	Naukati, POW	SE	Kelp (to be added)
106998	Ernieand Carol Gladsjo, Jinhi Bay Oysters	Amendment	4/20/2017	0.19	Jihni Bay	Naukati, POW	SE	Pacific oyster currently, None to be added
227591	Carl R. Liebes, Early Tide Seafarms, LLC	Amendment	4/27/2017	6	Bear Cove, Kachemak Bay	Homer	SC	Pacific oyster currently, None to be added
105346	Greg McMillian, Keta Seafoods	Amendment	5/1/2017	4	Western shore of Peratrovich Island	Klawock, POW	SE	Kelp (to be added)
107362	Cornelis Bakker, Cornelis Bakker, Inc.	Renewal	3/22/2017	2.8	Black Island	Ketchikan	SE	Geoducks currently
232720	Erik O'Brien, Efficient Coastal Resources	New (Lease) & Amendment (Operation Permit)	1/8/2017	198	Larsen Bay	Larsen Bay, Kodiak Island	WE	Kelp (not specified)
232715	Greg and Weatherly Bates, Alaska Shellfish Farms	New	1/9/2017	0.8	Jakolof Bay , Kachemak Bay	Seldovia, Homer	SC	Pacific oysters
232733	Rob Baer, Alaska Ground Swell, LLC	New	2/14/2017	10	Onion Bay adjacent Raspberry Island	Port Lions, Kodiak Island	WE	Sugar and Ribbon Kelp
None	Bill Fejes, Polar Seafoods	New	3/3/2017	15.23	Northeast arm of Uganik Bay	Uganik, Kodiak Island	WE	Pacific oysters
232746	Nicholas Mangini, Kodiak Island Sustainable Seaweed	New (Lease) & Amendment (Operation Permit)	3/13/2017	17	Women's Bay	Kodiak	WE	Kelp (not specified)
232885	Mark Scheer, Premium Aquatics, LLC	New	4/27/2017	318	Bucarreki Bay, adjacent Madrea de Dios	Craig	SE	Pacific oysters, Kelp (not specified)
232886	Troy Denkinger, Silver Bay Seafoods	New	4/28/2017	182	Olga Pt, Krestof Sound	Sitka	SE	Pacific oysters
232887	Troy Denkinger, Silver Bay Seafoods	New	4/28/2017	163	Beehive Island, Nakwasina Sound	Sitka	SE	Pacific oysters
None	Tmi Marsh, OceansAlaska	New	4/28/2017	22.96	George Inlet	George Inlet, Ketchikan	SE	Sugar and Ribbon Kelp
232900	Garry White	New	5/1/2017	4.13	Siginaka Islands, Sitka Sound	Sitka	SE	Pacific oysters
232894	Alf Pryor, Dead Humpy Creations	New	5/1/2017	50.85	Near Woody Island Channel	Kodiak	WE	Sugar and Ribbon Kelp
232893	Roderick Jensen, Sustainable Alaska Farms Enterprise, LLC	New	5/1/2017	24.35	Simpson Bay	Cordova, PWS	SC	Pacific oysters
232899	Seawan Gehleach, Simpson Bay Oyster Company	New	5/1/2017	14.35	Simpson Bay	Cordova, PWS	SC	Pacific oysters
232902	Beau Perry, Premium Oceanic	New	5/1/2017	34.9	Middle Bay	Kodiak	WE	Sugar Kelp
232909	Alexander Schutz, PWS Enterprise LLC	New	5/1/2017	15.25	Cedar Bay	PWS	SC	Pacific oysters

POW - Prince of Wales; PWS - Prince William Sound; SE - Southeast Region; SC - Southcentral Region; WE - Westward Region

Application Type	Numbers
Aquatic Farm Amendment	4
Aquatic Farm Renewal	1
Aquatic Farm New	15
Total applications (all types)	20

(Note: 2 applications for new aquatic farm operations are on private conveyed lands and no DNR lease is required.

New Aquatic Farm Applications Only*

Region	Numbers
Southeast (SE)	5
Southcentral (SC)	4
Westward (WE)	6
Total applications (New Operations Only)	15

* Amendment and Renewal not included

Organisms to be Cultured (New Aquatic Farms Only)*

Organisms	Numbers
Kelp Only	6
Pacific oysters Only	8
Pacific oysters and Kelp combined	1

* Amendment and Renewal not included

Alaska Fisheries Development Foundation
Matching Grant Funds - Documentation Form
Alaska Mariculture Task Force Meetings

Name	Signature	5/24/2017 Number of Hours
Paula Cullenberg		
Julie Decker		
Angel Drobnica		
Jeff Hetrick		
Chris Hladick		
Heather McCarty		
Sam Rabung		
Mike Stekoll		
Kate Sullivan		
Chris Whitehead		
Eric Wyatt		
Linda Mattson		
Micaela Fowler		

The above signatures certify that these members of the Mariculture Task Force spent the hours listed above in either meetings or preparation time for meetings of this group and that these salaries were paid by non-federal funds.

WASHINGTON SHELLFISH INITIATIVE

January 2016

Washingtonians make hundreds of thousands of trips each year to the coast to harvest razor clams. Tribes have harvested shellfish for generations upon generations, feeding their communities with healthy protein from Puget Sound and coastal shores. The shellfish industry is a foundation of Western Washington's rural economy and an integral part of our state's heritage.

Indeed, Washington leads the nation in farmed shellfish production, with approximately 10,500 metric tons of oysters, clams and mussels harvested in 2013. In recent years, this yield contributed $184 million in economic benefits. Washington shellfish growers employed more than 1,900 employees and created 810 indirect and induced jobs across the state.

Our shellfish — a well-deserved source of pride for local growers — are sought by consumers around the world. Shellfish are also a key part of our marine ecosystems, providing habitat and helping filter and cleanse water. For all these reasons, shellfish are an extraordinary state resource.

The Washington Shellfish Initiative

Thousands of acres of shellfish beds that are closed due to pollution need to be cleaned up, and at least two native shellfish species that are either significantly diminished (Olympia oysters) or imperiled (pinto abalone) need to be restored.

To accomplish these actions, Washington must renew its protection, restoration and enhancement work as well as expand public education on the importance of our shellfish resources. These efforts will pay off in more recreation opportunities, additional clean water jobs, and healthier coastal marine waters and Puget Sound.

The Washington Shellfish Initiative is an innovative partnership among state government, federal government, tribes, the shellfish industry and nonprofit organizations to promote clean water commerce, create family-wage jobs and elevate the role that shellfish play in keeping our marine waters healthy.

Launched originally in 2011 following the National Oceanic and Atmospheric Administration's National Shellfish Initiative, Governor Jay Inslee is launching the second phase of the initiative in January 2016.

Jay Inslee
Governor

A history of accomplishments

Through solving water pollution problems, 2,429 acres of commercial shellfish beds have been opened in Oakland Bay (Mason County), Quartermaster Harbor (King County), Belfair (Mason County), Kingston (Kitsap County) and Dungeness Bay (Clallam County) in just the past four years.

In May 2014, NOAA and the Puget Sound Restoration Fund opened a native shellfish restoration hatchery to grow baby Olympia oysters and pinto abalone. This hatchery sets the stage for larger-scale restoration of native species.

The Washington State Blue Ribbon Panel on Ocean Acidification created a comprehensive strategy for addressing ocean acidification in Washington's marine waters.

Governor Inslee and the Legislature created the Marine Resource Advisory Council and the Washington Ocean Acidification Center to advance this strategy. Washington is leading the nation — and garnering international attention — in addressing ocean acidification.

The Shellfish Interagency Permitting team developed

instructions for permit applications and mapped out the permitting steps to assist applicants and permit reviewers in navigating the permitting process.

The Clean Vessel Program paid for the replacement and installation of sewage pumpouts for boaters at 31 locations around Puget Sound and on the coast, which prevents sewage from polluting our waters.

Washington State Parks, along with a number of community partners, hosted six ShellFest events, which connected communities with the unique shellfish resources on their shorelines.

Phase II goals

The Washington Shellfish Initiative advances our goals of healthy, abundant shellfish resources for a thriving shellfish aquaculture industry, tribal ceremonial and subsistence harvest, and recreational harvest. By cleaning our waters, improving permitting processes and restoring native shellfish, we strengthen local economies and create more resilient, healthier coastal communities. Among the initiative's goals are:

- Ensuring clean water.
- Embracing strategies to address ocean acidification's effects on shellfish.
- Advancing shellfish research topics.
- Improving the permitting process to maintain and grow sustainable aquaculture.
- Restoring native shellfish.
- Enhancing recreational shellfish harvest.
- Educating the next generation about shellfish.

Working together through this initiative, we can grow nutritious food, clean up Puget Sound and promote this irreplaceable resource to local communities and world markets.

The Washington State Shellfish Initiative, led by Governor Jay Inslee, is a convergence of the National Oceanic and Atmospheric Administration's National Shellfish Initiative and the state's interest in promoting the environmental, economic and cultural importance of shellfish.

For more information visit, http://bit.ly/WAshellfishinitiative.

Washington Shellfish Initiative – Phase II Work Plan

Washingtonians make hundreds of thousands of trips each year to harvest razor clams on the coast. Tribal governments and their people have harvested shellfish for generations upon generations, feeding their communities with healthy protein from Puget Sound and coastal shores. The shellfish industry is a foundation of Western Washington's rural economy and an important part of our state's heritage. Washington leads the nation in farmed shellfish production with approximately 10,500 metric tons of oysters, clams and mussels in 2013, which generated approximately $184 million in total economic contribution, of which almost $92 million was direct revenue from the industry. Washington shellfish growers also directly employed more than 1,900 employees and created more than 810 indirect and induced jobs across the state. Our shellfish are sought by consumers around the world and are a well-deserved source of pride for local growers. Shellfish are also a key part of our marine ecosystems, providing habitat and helping filter and cleanse water. For all of these reasons, shellfish are an extraordinary resource to Washington state.

The Washington Shellfish Initiative began in late 2011. The first state initiative in the nation, it was launched on the heels of the National Oceanic and Atmospheric Administration's National Shellfish Initiative. This effort supports the long-term goal of enhancing shellfish resources in coastal waters. Much has been accomplished through the Washington Shellfish Initiative, including water quality improvements to support recreational, tribal ceremonial, subsistence, commercial and nontribal commercial harvest, a new native shellfish restoration hatchery, cutting-edge science to monitor ocean acidification and an assessment of the state aquaculture permitting process.

The goals laid out in the Washington Shellfish Initiative from 2011 are ambitious and vital to the long-term and sustained health of shellfish resources and the marine ecosystem. While important steps have been taken in the past four years, we need to continue advancing these goals to ensure clean water; address ocean acidification; establish predictable, timely and protective permitting processes; restore native shellfish to the nearshore habitat; and educate and engage communities about shellfish resources and protecting water quality.

The following work plan describes the next steps in advancing toward these Washington Shellfish Initiative goals. It outlines plans, partners and timelines to map our future.

GOAL 1: ENSURE CLEAN WATER TO PROTECT AND RESTORE SHELLFISH GROWING AREAS IN PUGET SOUND AND ON THE COAST[1].

1.1 Support sustainable local nonpoint source pollution control programs and strategies. (DOH, ECY, WSCC, WSDA)

Protect shellfish beds in counties with significant shellfish resources. Recognize the extensive economic and tribal cultural importance of the state's shellfish harvest and that it is more cost effective to protect healthy resources than to restore them once they are polluted.

Restore shellfish beds where there is a significant number of shellfish acres that have been downgraded due to pollution originating in contributing watersheds and that need to be recovered for commercial, ceremonial, subsistence and recreational purposes. (DOH National Estuary Program Pathogen Grant Implementation Strategy provides a framework for protecting and restoring shellfish growing areas. See Page 38 for a table of restoration efforts by growing area. Note that growing areas downgraded after 2012, such as Portage Bay, are not listed.) Advance the goals of protecting and restoring shellfish growing areas through the Results Washington[2] goals and processes, in addition to a broad range of local, state, federal, tribal, nonprofit and citizen-based efforts.

[1] Throughout this document, the term "coast," in the context of locations, refers to Willapa Bay, Grays Harbor and the outer coast –Washington's Pacific shoreline.

a) Support comprehensive, sustainable pollution identification and correction (PIC) programs in the 14 counties[3] that have shellfish growing areas. Evaluate PIC programs by identifying what it takes for effective coordination, identifying best practices for source identification, correcting the pollution problems identified as necessary to meet water quality standards, including National Shellfish Sanitation Program (NSSP)[4] standards over shellfish growing areas, identifying sources of sustainable and supplemental grant funding, and addressing barriers that reduce the effectiveness of local and multi-agency efforts. (DOH)

b) Develop and implement effective total maximum daily load water cleanup plans (TMDLs) or a straight to implementation (STI) plans for fecal coliform bacteria in watersheds with shellfish growing areas. (ECY)
   - Identify and implement strategies to address outer coast beach bacterial sources along North Beach in Grays Harbor County, including: 1) outreach and education to improve understanding of water quality problems; 2) increase capacity of local jurisdiction to address wastewater infrastructure improvements; and 3) implement appropriate best management practices.
   - Revisit TMDLs in the watersheds such as the Lower Nooksack River and Samish and update implementation plans based on new information and data.

c) Support the development of strong sustainable, on-site sewage management programs in Puget Sound and on the coast by implementing the Puget Sound Septic Financing Advisory Committee's recommendations to:
   - Pursue agency request legislation to provide a sustainable funding source for local on-site sewage management programs, which may include PIC work for the Puget Sound. (DOH)
   - DOH, Ecology and local health jurisdictions will work together to create a regional, low-interest loan program to help system owners repair and replace failing systems for the Puget Sound and the coast through Ecology's water quality combined funding program. (DOH, ECY)
   - Pursue other recommendations of the advisory committee when alternative approaches are needed.

d) Implement agricultural land use pollution reduction strategies to maximize implementation and maintenance of best management practices (BMPs) to meet water quality standards, including National Shellfish Sanitation Program (NSSP) standards at shellfish growing areas. (WSCC, WSDA, ECY, DOH) Use the Results Washington process to open shellfish acreage by conducting analyses of current efforts and addressing barriers to develop strategic, effective approaches that result in meeting water quality standards, including the achievement of NSSP standards in shellfish growing areas.

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[2] Results Washington is Governor Inslee's data-driven continuous improvement system for state government. Using Lean tools, Results Washington works to make government more efficient, effective and transparent. The Shellfish Coordination Group was formed as part of the Sustainable Energy & Clean Environment goal. This group focuses on the Governor's goal of restoring and protecting approved shellfish growing areas by 1) assessing what's truly going on; 2) identifying barriers towards progress; and 3) bringing state agencies together to address those barriers.

[3] Counties with shellfish growing areas are Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pacific, Pierce, San Juan Skagit, Snohomish, Thurston and Whatcom.

[4] The National Shellfish Sanitation Program (NSSP) is the federal/state cooperative program recognized by the U. S. Food and Drug Administration and the Interstate Shellfish Sanitation Conference for the sanitary control of shellfish produced and sold for human consumption. The NSSP water quality standard for approved shellfish growing waters is a fecal coliform geometric mean not greater than 14 organisms/100 mL with an estimated 90th percentile not greater than 43 organisms/100 mL.

- Each agency providing funding to implement agriculture BMPs to protect water quality affecting shellfish beds will, consistent with Results Washington process outcomes, a) report on the BMPs implemented and funds spent in Puget Sound and coastal communities, and b) collaborate to maximize landowner participation in programs to gain broad compliance with water quality standards including NSSP standards in shellfish growing areas.
- Seek funding for additional technical assistance and implementation costs.
- Evaluate current and past pollution reduction strategies and funding programs to determine what is effective, what is not effective and why. Coordinate across federal, tribal, state and local partners. Use results to inform future strategies.
  - › Efforts will focus initially on the Samish and Nooksack watersheds as long-term water quality efforts have not resulted in sufficient and sustained water quality improvements.
- Identify an agreed-upon approach to develop PIC guidance on nonpoint source BMPs that prevent pollution, achieve water quality standards and maximize landowner participation. Washington needs agreed-upon agricultural BMPs that are designed and implemented to achieve compliance with the state water quality standards. Since 2009, state agencies and stakeholders have worked to reach agreement on a set of BMPS that will meet state water quality standards and ensure that NSSP standards are achieved in shellfish growing areas. It is important for those dependent on shellfish resources in this state that the state's natural resource agencies, in coordination with stakeholders, resolve this issue.
- Ecology is starting a process to develop guidance that identifies BMPs and combinations of BMPs that, if implemented by an agricultural producer and operated and maintained correctly, can provide certainty that it is protecting water quality and meeting the state's water quality standards. (ECY)
- Conduct a detailed survey on the coast to identify where agricultural activities are occurring, evaluate resource impacts, assess where nonpoint source pollution programs are working effectively and where not, and then develop and implement outreach. (WSCC)
- Implement the Voluntary Stewardship Program (VSP) in the opt-in counties of Grays Harbor, Mason, Pacific, San Juan, Skagit and Thurston and encourage counties to address nonpoint sources of pollution while addressing critical areas under VSP to assist with shellfish/water quality protection. (WSCC)
- Seek input from Ecology's Agriculture Water Quality Committee on strategies developed under this section.

1.2 Advance efforts to ensure manure land-application practices do not negatively impact water quality. (WSDA, WSCC, ECY, EPA)

a) Develop and advance options to eliminate unplanned and improper application of manure to agricultural lands. (WSDA, WSCC, ECY)

b) Develop more economic opportunities for dairies and other livestock owners to manage manure as a commodity. (WSDA)

c) Issue an updated concentrated animal feeding operation permit in 2016 to meet water quality standards and expedite the permit process. (ECY)

d) Coordinate state agency efforts to enhance the ability of operators and applicators to get real-time weather information. (WSCC, CDs)

e) Develop a targeted, coordinated education and outreach program for small-acreage livestock property owners. (WSCC, ECY, WSDA)

f) Develop an education and certification program for all land applicators of manure (operators and third-party applicators) and provide incentives for operators to become certified and/or to only use certified applicators. (WSDA)

g) Deploy advance technologies that can continuously detect and measure bacteria in flowing surface waters in watersheds where shellfish beds are impacted by water quality. (EPA)

h) Collaborate with local watershed partnerships to monitor water quality and identify manure land application practices that threaten surface water. Follow up with land applicators to provide education and technical assistance and, when necessary, take appropriate enforcement actions. (WSDA)

1.3 Develop a proactive approach to limit preventable pollution sources from vessels and recreational activities. (ECY, Parks)

a) Evaluate the appropriateness and feasibility of establishing a no discharge zone in all parts of Puget Sound to protect water quality and public health. (ECY)

b) Develop a strategy for commercial vessels and install more commercial pump-out facilities. (ECY)

c) Develop an implementation/outreach strategy for the no discharge zone designation. (ECY)

d) Continue clean vessel program focused in shellfish growing areas. (Parks)

e) Assess, prioritize, install and maintain toilet facilities in key areas to protect shellfish resources. (WDFW, Parks, other partners depending on location)

1.4 Support strategies to reduce sewer and stormwater outfalls to waters of the state. (DNR)

DNR, in collaboration with ECY, DOH and PSP, will implement an outfall and effluent reduction strategy to reduce impacts to state-owned aquatic lands and associated resources from sewer and stormwater discharges. The strategy will focus on greater participation in the National Pollutant Discharge Elimination System process by DNR; identification and prioritization of impacts to sediments and natural resources such as aquatic vegetation and shellfish; and alternatives to discharging wastewater and stormwater to improve water quality.

1.5 Coordinate and convene workshop(s) focused on contaminants in shellfish with agencies, researchers, tribal governments and stakeholders. (WDFW)

a) Identify available data and information relating to contaminants in shellfish.

b) Identify data gaps and prioritize needed information, including geographic areas where information is lacking.

c) Identify potential resources, collaborative opportunities and funding sources to support further information and data gathering.

1.6 Ensure that oil spill planning and preparedness protect Puget Sound and coast shellfish resources through better coordination and collaboration among agencies, tribal governments and industry. (ECY, NOAA, PSI, WSG, DOH, WDFW)

a) Improve the identification of shellfish areas in the resources at risk sections of geographic response plans (GRPs) and in other relevant mapping tools such as ERMA®− (Environmental Response Management Application) and the state's coastal atlas by developing standardized language for shellfish for inclusion in GRPs and links to appropriate GIS layers for shellfish growing and harvest areas and for culturally significant areas to the tribal governments. (ECY)

b) Generate and distribute a "how to" guide to increase registration of shellfish growers and tribal fishers/enforcement personnel in the vessels of opportunity program. (ECY)

c) Encourage participation by shellfish growers and tribal governments in northwest area contingency planning processes so area plans address shellfish-specific responses. (ECY)

d) Increase the availability of HAZWOPER (Hazardous Waste Operations and Emergency Response) and incident command system training for shellfish growers and tribal governments to improve knowledge of spill response fundamentals (funding dependent). (PSI, WSG, ECY)

e) Include tribal governments and shellfish growers in oil spill response drills as appropriate. Conduct at least one oil spill response drill within a geographic area including one or more shellfish beds by 2017. (ECY)

f) Establish a plan for baseline monitoring of shellfish in vicinity of a spill, including early notification to area shellfish harvesters by agency staff to collect samples before contaminated by oil. (DOH, WDFW, ECY)

g) Determine training options for local sensory panel experts for post-spill testing hosted by NOAA's Office of International Affairs and Seafood Inspection. (NOAA)

h) Clarify the protocol to request support from sensory experts and share sensory panel results from federal to state agencies in a timely manner. (NOAA)

GOAL 2: EMBRACE STRATEGIES TO ADDRESS OCEAN ACIDIFICATION'S IMPACT ON SHELLFISH.

Strategies to address ocean acidification – Implement key early action recommendations from the Blue Ribbon Panel (ECY)

In 2012, the Washington State Blue Ribbon Panel on Ocean Acidification recommended 42 actions that established a comprehensive strategy for addressing ocean acidification in Washington. The Marine Resources Advisory Council (MRAC) was created to advance these recommended actions, and works in collaboration with the Washington Ocean Acidification Center at the University of Washington and others to support ocean acidification research. MRAC will ensure on-the-ground implementation of the panel's comprehensive strategy by evaluating, coordinating, advocating and communicating about actions being done in Washington. MRAC will work with stakeholders, policymakers and tribal governments, many of whom are already working to address ocean acidification impacts to their communities and way of life. Over the next few years, MRAC will:

2.1 Monitor and investigate ocean acidification impacts in Washington:

a) Continue monitoring of ocean acidification conditions, helping to inform hatchery conditions and management of growing areas (related to Blue Ribbon Panel actions 6.2.1; 7.1.1; 7.2.1; 7.3.2; 7.4.1).

b) Conduct biological experiments to understand the effects of ocean acidification on marine species (related to Blue Ribbon Panel actions 7.1.1; 7.2.1; 7.3.2; 7.4.1).
c) Develop and refine forecast models of ocean acidification (related to Blue Ribbon Panel actions 7.1.1; 7.2.1; 7.3.2; 7.4.1).
d) Continue support for the Washington Ocean Acidification Center at the University of Washington to provide leadership on ocean acidification research (related to Blue Ribbon Panel actions 9.1.1; 9.1.2).
e) Develop a local source attribution model to understand how local sources of nutrients and carbon impact ocean acidification (related to Blue Ribbon Panel action 7.2.1).

2.2 Understand how local, land-based contributions affect ocean acidification by:

a) Providing support to water quality programs that reduce nutrient and organic carbon loading (related to Blue Ribbon Panel actions 5.1.1; 5.1.2).
b) When modeling tools are complete, evaluate programs and activities that can minimize impacts of local contributions to ocean acidification (related to Blue Ribbon Panel actions 5.2.1; 5.2.2).

2.3 Coordinate implementation and evaluation of adaptation and remediation strategies by supporting efforts to:

a) Implement a test seaweed cultivation and collection program (related to Blue Ribbon Panel action 6.1.1).
b) Restore native oyster populations that may improve resilience to ocean acidification (related to Blue Ribbon Panel actions 6.3.3; 6.3.4).
c) Apply multiple remediation strategies in specific locations or test areas to evaluate effectiveness of strategies in addressing ocean acidification impacts (related to Blue Ribbon Panel action 6.3.2).
d) Research the capacity for genetic adaptation to ocean acidification in important marine species (related to Blue Ribbon Panel action 6.3.5).

2.4 Increase the visibility and understanding of ocean acidification across Washington through outreach and education by supporting efforts to:

a) Incorporate ocean acidification science curriculum into the Next Generation Science Standards (related to Blue Ribbon Panel actions 8.2.1; 8.2.2).
b) Organize and support events and conferences focused on ocean acidification and its impacts (related to Blue Ribbon Panel action 8.1.2).
c) Target use of outreach and social marketing to increase understanding of ocean acidification impacts and strengthen Washington's capacity for adapting, reducing harm locally and engaging partners to develop solutions (related to Blue Ribbon Panel actions 8.1.2; 8.1.3; 8.1.4; 8.2.2).

Recommendations from the Olympic Coast National Marine Sanctuary, which formed a joint Intergovernmental Policy Council and Sanctuary Advisory Council Ocean Acidification Working Group in 2013, identified the following key early actions (KEAs) from the Blue Ribbon Panel as coastal tier 1 priorities: Actions 7.1.1; 7.3.2; 7.3.3; 8.1.2 and 9.1.2. This KEA prioritization is accompanied in its report by the following recommendations:

- Advance ocean acidification monitoring for the outer coast.
- Adequate representation of the outer coast on the Washington Ocean Acidification Center scientific advisory team.

- Conduct laboratory and field studies related to ocean acidification impacts on the outer coast.

For the full report, visit: http://olympiccoast.noaa.gov/involved/sac/sac_actions.html.

GOAL 3: ADVANCE VITAL SHELLFISH RESEARCH.

3.1 Washington Sea Grant shellfish research projects (WSG)

Over the next four years, the National and Washington Sea Grant (WSG) programs have committed funding for 10 research grants totaling more than $2.4 million to examine critical issues for shellfish aquaculture such as ocean acidification, warning systems for hypoxia and harmful algal blooms, and geoduck management. Projects will look at precautionary guidelines for culture of native rock scallops, an innovative technology to support the recovery of the Olympia oyster and studies to reduce early mortality.

Target dates:

- *New projects initiated: January 2015 and 2016*
- *Interim reports: April 2016 and 2017*
- *Final reports: April 2018*

3.2 Federal Shellfish Research Program (NOAA)

In collaboration with other federal agencies, NOAA Fisheries will create a federal shellfish biologist position to develop and oversee a future shellfish research program at the Kenneth K. Chew Center for Shellfish Research and Restoration in Manchester, Washington.

Target date: October 2017

3.3 Study the effects of Washington shellfish aquaculture operations. (WSG)

WSG was funded by the Legislature to commission research examining possible negative and positive effects, including cumulative and economic impacts of evolving Washington shellfish aquaculture practices. The research team is using modeling approaches and available data to complete pilot studies for Willapa Bay and central Puget Sound composed of several components: spatial analysis, Puget Sound circulation and ecosystem models, qualitative food web analyses and an economic synthesis.

Target dates

- *Interim report to Legislature: December 2014*
- *Final report: December 2015*

3.4 Create a prioritized list of shellfish research needs. (Pacific Shellfish Institute [PSI])

Target dates:

- *Engage the shellfish cultivation and restoration community, including tribal governments, to update the report West Coast Research and Information Needs and Priorities*
  - *September 2015 and March 2016*
- *Finalize the document: June 2016*

3.5 Assess the potential effects of sea level rise on native and farmed shellfish beds in Willapa Bay and Grays Harbor estuaries. (TNC)

SLR will deepen these estuaries and could impair shellfish farming as well as juvenile fish habitat. The Nature Conservancy (TNC) will conduct a risk assessment based on SLR inundation scenarios using the Sea Level Affecting Marshes Model and analyze shoreline characteristics and uses that would impede or support migration to new spaces. Apply the results to the current round of shoreline master program (SMP) updates in Pacific and Grays Harbor counties so adaptation strategies can be considered.

Target dates:

- *Work with Ecology staff and county planners and consultants to develop the concept and its role in SMPs for Southwest Washington: December 2014*
- *Draft risk assessments with presentation slides and maps go to technical peers for initial review: March 2015*
- *Review initial results with local shellfish farmers and other industry representatives: April 2015*
- *Final assessments available for local applications: June 2015*

3.6 Early warning system for harmful algal blooms (WSG, NOAA)

The Olympic Region Harmful Algal Blooms (ORHAB) Partnership on the coast and SoundToxins in Puget Sound are important programs that help the Department of Health target its toxin monitoring and testing to protect public health for those who harvest shellfish in our marine waters.

SoundToxins is a diverse partnership of businesses, tribal governments and Puget Sound residents that monitor for harmful algae in Puget Sound, managed by NOAA's Northwest Fisheries Science Center and WSG. It provides early warning of harmful algal bloom (HAB) events, thereby minimizing risks to human health and reducing the economic losses to Puget Sound fisheries. The program works with partners and scientists to determine the environmental conditions that promote the onset and flourishing of HABs and unusual bloom events and to document unusual bloom events and species entering the Salish Sea. SoundToxins continues to be supported via short-term research grants from NOAA and state agencies; however, a dedicated source of funding is needed to continue its vital role in Puget Sound.

The ORHAB partnership was founded in 1998 as a scientific collaborative among state, tribal and federal agencies and the University of Washington, with initial support from the NOAA Center for Sponsored Coastal Ocean Research. Its mission is to monitor plankton blooms and the presence of toxins to advance the understanding of these important coastal processes. By bringing together leading research scientists with state and tribal shellfish managers, ORHAB provides a constantly improving scientific basis for making decisions about the risks of shellfish openings. The long-term, coastwide database compiled by the ORHAB partners from sites from Neah Bay to the Long Beach Peninsula has proved extremely useful for studying broader coastal dynamics. The work of ORHAB's state partners has been supported with a surcharge on sales of state recreational shellfish licenses. Support for ORHAB's tribal partners has become more difficult to sustain, and additional funding is needed to continue the very beneficial role they play in the partnership.

Target Dates:

- *Identify potential funding sources for SoundToxins and ORHAB: March 2016*
- *Secure funding: December 2016*

3.7 Review and research shellfish ecosystem services (PSI)

a) Assess the influence of cultivated shellfish on localized water quality and sediment parameters. Build on review of shellfish ecosystem services conducted by the U.S. Geological Services during the first phase of the Washington Shellfish Initiative.

b) Provide recommendations for including shellfish cultivation in water quality trading scenarios when a water body is listed for excess nutrients or low dissolved oxygen under section 303(d) of the Clean Water Act.

Target dates:

- *Begin study: spring/ summer 2015*
- *Study completed: early 2017*
- *Deliver NEP Reducing Nutrients in a Watershed final project report to Ecology: December 2017*

3.8 Assess the economic contribution of shellfish farming and wild harvest in Washington.

a) Convene state agencies and industry to design a system to improve data collection and sharing of information on the economics of shellfish with respect to harvest and production. (state agencies, industry, tribal governments)

b) Convene a task group to enhance our understanding of the upstream and downstream economic value of shellfish to build appreciation of the value-added economic components (jobs, revenue) (WDFW) including, but not limited to:

- retail sales
- tourism
- trade
- tribal commercial
- state commercial and recreational harvest

In addition, tribal governments and their citizens rely on ceremonial and subsistence shellfish harvest. Like tribal commercial harvest, this harvest is protected through treaty rights. The monetary value of ceremonial and subsistence harvest and associated treaty rights cannot be quantified, but should be acknowledged by the task group.

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 SLR, 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. (TNC)
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. (WSU Extension Pacific County with assistance from TNC)
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. (TNC with assistance from WSU Extension Pacific County and other stakeholders)

GOAL 4: IMPROVE THE PERMITTING PROCESS TO MAINTAIN AND GROW SUSTAINABLE AQUACULTURE.

4.1 Programmatic biological assessment for federal permitting of shellfish activities (NOAA)

The U.S. Army Corps of Engineers (Corps), in consultation with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS), will develop a programmatic biological assessment (PBA) for Section 7 ESA consultation for common activities permitted by the Corps associated with shellfish, planting, harvest and restoration. Use of the PBA will increase the Section 7 consultation efficiency for applicants who meet the PBA terms and conditions.

Target dates:

- *Corps initiation of consultation: fall 2015*
- *NMFS and USFWS completion of consultation: spring 2016*
- *Corps implementation: Immediately upon completion of Section 7 consultation*
- *Report of permits issued with PBA: annually 2016–18*

4.2 Shellfish Interagency Permit Team Phase II (NOAA, ECY)

a) Upon completion of federal PBA evaluate federal/state permitting

Target dates:

- *Investigate potential of programmatic permitting: April 2016*
- *Evaluation of 2017 Nationwide Permit 48: April 2016*

b) Report to Governor on Shellfish Interagency Permit Team Phase I activities, including results and recommendations to increase efficiency of the permit process.

Target dates:

- *Draft report: February 2016*
- *Final report: March 2016*
- *Develop steps to implement recommendations: August 2016*

c) Continue quarterly meetings of full Shellfish Interagency Permit Team to maintain broad engagement with tribal, local, state and federal agencies.

- Develop a communication and outreach plan: July 2016

- Evaluation of effectiveness: ongoing
- Permit timelines to evaluate current and potential requirements for permit timelines: December 2016

d) Convene Shellfish Interagency Permit Team working groups to achieve multi-agency review of new farm permit applications.

Target dates:
- *Ad-hoc response to requests for new farm permit assistance: ongoing*
- *Develop a work plan for improved implementation: August 2016*

4.3 Improve guidance for local shoreline master programs for shellfish aquaculture. (ECY)

Develop Permit Writers Handbook. Guidance for local government and Ecology permit writers on applicable laws and rules, limits and conditions, BMPs, cumulative impacts, no net loss, and the latest information and science useful for administering shellfish shoreline permits. SIP would serve as a technical review panel. Ecology (funding dependent)

Target Dates: by fall 2016
- *Complete draft outline and timeline*
- *Complete draft RFP and scope of work for handbook development*
- *Secure funding*

4.4 Increased involvement of Department of Agriculture in shellfish farming and interagency coordination. (WSDA)

a) Continue engagement with industry through policy team shellfish lead.
b) Schedule reoccurring meetings with WSDA, industry, tribal governments and partner agencies to share information, keep lines of communication open and identify opportunities for coordination.
c) Continue agency and industry discussions on aquaculture coordinator role and ombudsman role at WSDA.

GOAL 5: RESTORE NATIVE SHELLFISH – OLYMPIA OYSTERS AND PINTO ABALONE.

5.1 Olympia oysters:

a) Continue collaborative work to reestablish sustainable breeding populations in the state's 19 priority areas located in Puget Sound. *Note: Breeding populations have already been restored in two (Liberty Bay, Fidalgo Bay) of the 19 priority areas. On-the-ground work is underway in many of the remaining 17 areas. (WDFW, tribal governments, Puget Sound Restoration Fund [PSRF])*

b) Collaboratively maintain and operate the Kenneth K. Chew Center for Shellfish Research and Restoration at the Northwest Fisheries Science Center's Manchester Lab and assist with optimization techniques for native Olympia oyster and pinto abalone production in support of state shellfish restoration goals. (NOAA, PSRF)

Target date: ongoing through September 2016

c) Produce 2,500 bags of Olympia oyster seed (seeded cultch) to accelerate Olympia oyster recovery at priority sites. Genetically diverse seed will be produced at the Kenneth K. Chew Shellfish Center using conservation protocols co-developed by PSRF, University of Washington and Washington Department of Fish & Wildlife. (PSRF)

d) Conduct water quality monitoring associated with shellfish production at the Kenneth K. Chew Center. Measurements of dissolved oxygen, salinity, temperature, pH and pCO_2 in hatchery water supply will be available daily to researchers at the center and annual seasonal data summaries available online. (NOAA)

Target dates: annual data summaries: September 2016

e) Complete the Ecology-funded, 10-acre native oyster enhancement project in Port Gamble Bay. (PSRF)

f) Seek funding to initiate an additional 10 acres of enhancement in two or three of the 19 priority locations to help reestablish breeding populations. (PSRF)

g) Advance partnerships to accelerate and expand native shellfish restoration through funds from NRCS' Environmental Quality Incentives Program, which provides payments to farmers for habitat restoration. Identify opportunities and establish processes to provide payments to tribal governments and shellfish growers for restoration of Olympia oyster habitat. (NRCS)

h) Evaluate native oyster restoration opportunities in Willapa Bay and Grays Harbor. (WSU Extension Pacific County)
- Conduct a planning phase to evaluate feasibility of restoration work in coastal estuaries, based on current available science, to determine whether more research and evaluation are needed.
- Complete survey of subtidal environments to conduct a more accurate assessment of current population size.

5.2 Pinto abalone (WDFW, PSRF)

a) Optimize hatchery efforts to more efficiently produce juvenile and larval abalone (with funding from WDFW, DNR and NOAA).

b) Outplant 5,000 juvenile abalone (2,500 in 2015; 2,500 in 2016).

c) Outplant 2 million larval abalone.

d) Complete the DNR-funded project to assess previous larval out plants and refine larval out plant methodologies.

5.3 Other native shellfish

a) Take conservation actions if other native shellfish stocks are determined to be in decline or threatened. Actions may include restoration, stock status research and fishery closures.

GOAL 6: ENHANCE RECREATIONAL SHELLFISH HARVEST.

6.1 Enhance recreational shellfish harvest. (WDFW, DOH) *Note: This section also interconnects with Goal 1 on improving water quality as a key mechanism for increasing access to recreational shellfish harvest.*

a) Maintain levels of seeding on recreational beaches by WDFW. Incremental funding increases will be needed to maintain a base level of seed planting.
- Document increases in harvest trips and state funding resources.
- Identify and pursue other avenues for funding.

b) Identify opportunities for enhancement at key coastal recreational beaches. (WDFW)

c) Increase recreational shellfish harvest at two large and strategically placed public tidelands. (WDFW, DOH)

GOAL 7: EDUCATE THE NEXT GENERATION ABOUT SHELLFISH RESOURCES, ECOSYSTEMS SERVICES AND WATER QUALITY. ENGAGE THE PUBLIC IN SHELLFISH RESOURCES THROUGH EDUCATION AND OUTREACH.

Preserving and understanding local shellfish resources, the role they play in the ecosystem, what they contribute to local economies, the history and culture of shellfish in Washington, the human actions that affect their health, the actions that are needed to protect shellfish resources and, finally, the consequences for both humans and the ecosystem if shellfish populations decline.

7.1 Formal education goals:

a) Develop high-quality tools, curricula and materials that 1) teach K-12 students about shellfish resources in both classroom and field settings; 2) help schools meet Common Core and Next Generation Science Standards (NGSS); and 3) provide district support and train teachers to enable them to independently use the materials. (Pacific Education Institute [PEI])

b) Integrate shellfish education topics (which include ocean acidification) in multiple subject areas as they provide a real-world case study. (PEI)

c) Develop professional learning opportunities that help teachers connect shellfish resources to NGSS. (PEI)

d) Recommend sample shellfish curriculum resources for educators on the OSPI Environmental and Sustainability Education standards website. (OSPI)

e) Partner with tribal governments, state agencies and nonprofit organizations to provide internship opportunities for college students. (WSG)

f) Translate shellfish and ocean acidification scientific research findings into fact sheets and other accessible information to share on a credible website (WSG) for access by K-12 students and educators. (WSG)

7.2 Informal education and outreach goals:

a) Foster broad public understanding of local shellfish resources and the role they play in local ecosystems and economies. Topics include the history and culture of shellfish throughout Washington, human activities that impact shellfish resources and the consequences, for both humans and the ecosystem, if shellfish populations decline. Conduct activities and host events such as Whatcom Water Days, Kitsap Water Festival, Celebrate Oakland Bay, RainFest on the outer coast, State Park Shellfests, Oysterfest, Vashon-Maury Island Low Tide Festival and the Wooden Boat Festival (Olympia). (WSG)

b) Foster citizen engagement and understanding of the role of shellfish in the coastal ecosystem.
   - Provide opportunities for citizen science monitoring, technical assistance programs, workshops and activities, including the State of the Oyster Study, technical assistance to tideland owners, marine biotoxin monitoring, and septic system education classes and socials.
   - Provide education and outreach tailored to coastal communities and visitors, including Willapa Bay Oysters documentary series curricula and outreach activities. (WSG)
   - Continue Shellfest and other educational/interpretive opportunities about shellfish and water quality, in Puget Sound, Georgia Straits, Grays Harbor, Willapa Bay and the outer coast. (WDFW, Parks, WSG)
   - Develop interpretive signage at public access sites with shellfish resources on the coast and at Puget Sound locations. (Parks)

- Promote shellfish safety through Web communication and posting public beaches that are closed to shellfish harvest due to marine biotoxins, pathogens and pollution. (DOH)
- Host the Washington Shellfish Trail. (WSG)
- Develop education materials and outreach to grocery stores, farmers markets and seafood restaurants about safe shellfish handling. (WSG)

c) Host a gathering of informal shellfish educators to share resources and information. (WSG)

Key of state agency abbreviations:

- DNR – Department of Natural Resources
- DOH – Department of Health
- ECY – Department of Ecology
- Parks – State Parks
- WSCC – State Conservation Commission
- WSDA – Department of Agriculture
- WDFW – Department of Fish and Wildlife