County: Jefferson
Grant No: SEANWS-2018-JeCoWS-00008

PROJECT TITLE: Jefferson County MRC Operations and Projects

DELIVERABLES FOR TASK NO: 6. Olympia Oysters

T 6.4 Olympia Oyster Monitoring Report for Discovery Bay

PROGRESS REPORT: [ ] FINAL REPORT [X]

PERIOD COVERED: July 1, 2019 – Sept 30, 2019

DATE SUBMITTED: Oct 15, 2019

This project has been funded wholly or in part by the United States Environmental Protection Agency under Assistance Agreement PC-00J90301. The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

Olympia Oyster Monitoring Report for Discovery Bay

Deliverable 6.4 Monitoring report for Discovery Bay Olympia Oyster Project Areas

Discovery Bay has a small natural Olympia oyster population near the southeast portion of the bay (Maynard Beach area), along with scattered occurrences of Olympia oysters in other areas of the Bay. The MRC's goal is to collaborate with WDFW and Jamestown S'Klallam Tribe (Co-Managers) to enhance and expand the main population by increasing appropriate, available substrate (clean cultch spread on tidelands) in nearby areas to facilitate natural recruitment. We started in 2014 with distribution of clean shell within a half-acre area out in the bay ("Powerline Site"), surrounded by eelgrass. In July 2016 volunteers dispersed an additional 80 bags of clean cultch over the Powerline Site. We have monitored that site in late summer every year. In 2018 we directed our attention to the area adjacent to the extant population ("Lagoon Site") and completed the process of applying for and receiving all the necessary agency permits to add additional cultch there.

Lagoon Site at Discovery Bay Project

In 2018, the MRC received all the permits from state, federal and local agencies to distribute clean Pacific oyster shells (cultch) at the Lagoon Site. The last permit was a WDFW Shell Transfer Permit, which was received in time for the April 2019 deployment of shell.

On April 10th, three MRC volunteers joined 2 WDFW staff, 1 tribal rep and 1 MRC staff to collect baseline data on current conditions for the areas where cultch would be placed. WDFW will input/process this data and share info with MRC. (Data report not received as of September 30, 2019.)

On April 22, five MRC volunteers and one staff, under the supervision of Co-Managers Brady Blake (WDFW) and Neil Harrington (JSKT), spread 112 bags of clean cultch in the Lagoon Site area to provide substrate for oyster larvae to land on. Cultch was delivered by boat on an earlier high tide by Taylor Shellfish staff to minimize impact to the site. The Co-Managers identified and flagged areas for shell placement. Volunteers moved the bags to the flagged areas (inside the pond area and along the inside of the "spit"), opened the bags and distributed the shell into the intertidal by tossing from shore. Neil Harrington collected GPS coordinates for where the shell was placed (not yet sent to the MRC). The MRC Coordinator noted the following distribution of bags of shell in each area:

Distribution

1. Pond Area (south of, in pondwater above drainage channel to the main open lagoon): 49 bags total.
    a. On hwy side, distributed 10 bags in a 3-5' wide band along the water's edge.
    b. On the Bay side, distributed 31 bags, tossed into the water in a band about 10' wide (steeper bank than hwy side)
    c. "Delta" -- 8 bags of cultch placed along outer edges of drainage "delta" on main open lagoon side of the small drainage channel.
2. Lagoon/Spit Area: bags placed on inside of spit, along edge of lagoon, focusing on areas with seepage or less muck. In 3 distinct areas:

a. 31 bags at S end of spit/lagoon (closest to pond area).
b. 21 bags in middle section of spit/lagoon
c. 11 bags at N end of spit/lagoon

Our permits allow us to continue to add more shell over the next 5 years. This is necessary as some of the cultch settles into the mud.

After years of talking about doing this, it was very satisfying for everyone to see it come to fruition. the following are excerpts from thank you email from Neil Harrington (JSKT):

"A huge thank you to the volunteers yesterday- it was a big job and a lot easier with many hands. Thank you too Brady for your keen eye on how to best boost this population of Olympias. We are not done yet and it will be fun watching this enhancement project develop.
Thanks again!" --Neil Harrington, JSK

Powerline Site at Discovery Bay Project

This grant year we began the process of renewing our 5-year agency permits for the Powerline Site location in Discovery Bay. Permit status is described below. Copies of completed permits are attached.

Permit Status Report (Powerline Site):

1. DNR Right of Entry: DNR combined the two sites in Discovery Bay into one ROE permit, amending the 2018 Lagoon site permit to include the Powerline site, so we don't need to renew the DNR ROE for the Powerline Site this year. Other permitting agencies are still treating them separately.
2. WDFW HPA permit submitted and approved.
3. Jefferson County Shoreline Exemption application submitted and approved.
4. US Army Corps of Engineers requested an updated eelgrass boundary survey for the Powerline site. On July 2, 2019, the MRC Coordinator and two volunteers (one of whom was a new MRC volunteer) conducted an eelgrass boundary survey (GPS & photo info). JSKT's GIS staff offered to complete the map for us, however a series of logistical delays followed. The GIS map of the eelgrass boundary was completed in September, and the eelgrass boundary report submitted to the COE soon after. Once we receive COE approval, we plan to distribute additional clean cultch on the Powerline Site in spring 2020.

Monitoring (Powerline Site)

The MRC also conducted its annual monitoring of Olympia oysters at the Powerline Site. The two tables below summarize our findings. Data is compiled in an Excel spreadsheet; Pivot Tables were used to create the Tables included here. The project data is stored and backed up at the Jefferson MRC office.

On August 2, Jefferson MRC conducted annual monitoring of the Discovery Bay Powerline habitat enhancement site with seven volunteers. WDFW and Jamestown S'Klallam biologists assisted with the monitoring. Below is a 3-year comparison for various attributes. (2015-16 monitoring used different methods, so comparisons are not equivalent.) We do not measure changes in the "total Olympia oyster enhancement area" because currents and tides move some cultch with Olympia oysters growing on

them into areas outside the project boundaries defined by our permits or into adjacent eelgrass beds where disturbance should be avoided. For simplicity's sake, we call all the Olympia oysters we measure "spat" even though most have now matured and not "spat" (larvae recently settled onto substrate).

TABLE 1: Summary of Discovery Bay Powerline Site Data from 2017-2019

Data Collected	**2017**	**2018**	**2019**
# of ¼m^2 quadrats monitored	48	77	69
Q Area Monitored (m^2)	12	19.25	17.25
Average # spat/ m^2	49	38	23.07
Average size of spat (mm)	38.9	34.0	41.3
Average % cultch cover/quadrat	11.67%	17.16%	8.20%
Total # spat counted	592	732	398

The comparisons in Table 1 supports our observations that the percent cultch cover per quadrat on the substrate surface is now lower than previous years, which in turn affects the number of Olympia oysters we might find (less substrate available for them to settle on). This is likely due to shell being moved outside the project area by currents and some settling of shell deeper into the substrate over the last 3 years. (Pacific oyster shell was last placed in the project area in July 2016). In 2020 we should have all the permits in hand to add new cultch. This should increase substrate availability and, we hope, Olympia oyster density (number of spat/m^2).

TABLE 2 SPAT_LENGTH

	2017			2018			2019		
Transect	Average of Value	Min of Value	Max of Value	Average of Value	Min of Value	Max of Value	Average of Value	Min of Value	Max of Value
T01	41.6	20.0	56.0	31.5	3.0	62.0	40.1	16.0	63.0
T02	39.5	8.0	112.0	31.2	15.0	45.0	39.9	15.0	67.0
T03	33.9	6.0	60.0	33.0	5.0	64.0	46.1	22.0	72.0
T04	34.8	8.0	60.0	35.3	5.0	55.0	42.0	18.0	64.0
T05	17.4	4.0	32.0	39.6	5.0	60.0	43.2	18.0	55.0
T06	19.2	5.0	40.0	36.1	10.0	60.0	38.2	20.0	57.0
T07				35.2	5.0	53.0	32.3	20.0	39.0
T08				37.1	23.0	60.0	38.9	27.0	52.0
T09				20.2	10.0	40.0	34.3	20.0	53.0
T10				29.9	11.0	66.0	48.0	48.0	48.0
T11				25.0	7.0	53.0			
T12				50.0	50.0	50.0			
T01A	41.8	9.0	75.0	36.9	10.0	60.0			
Grand Total	**38.9**	**4.0**	**112.0**	**34.0**	**3.0**	**66.0**	**41.3**	**15.0**	**72.0**

In Table 2, we compared average spat size from year to year and the range of spat sizes found. An increase in average spat size indicates that the Olympia oysters still present are continuing to grow. The range of spat sizes observed in 2018 (3 to 66 mm) and 2017 (4 to 75 mm [with one outlier shell measured at 112 mm] were similar. The wide range of multi-age classes supports our assumption that natural recruitment is continuing to occur over sequential years. In 2019 spat sizes ranged from 15 mm to 72 mm. This larger minimum size may be the result of environmental conditions such as favorable spring 2019 weather or something else.

Shell Stacks

Shell stacks were deployed on 6/17/2019 and collected on 8/30/2019 from the Discovery Bay Powerline site for PSRF. The volunteer analyzing the shell stacks has not yet finished her work.

Mussel Watch Report for Discovery Bay

The 2018 Mussel Watch lab data reports were received from WDFW in time for the 2018 grant reporting deadline, but WDFW analysis for a final report (comparing all the Mussel Watch sites) has now been delayed until March 2020, so we are unable to provide this deliverable.

Outreach

We submitted information about Discovery Bay and Quilcene Bay Olympia oyster projects to the Olympia Oyster Restoration Network database to create an interactive Story Map maintained by the Elkhorn Slough National Estuarine Research Reserve on their website and used as the living archive of Olympia oyster restoration projects on the West Coast. See the Olympia Oyster Restoration Story Map.

OUTCOME:

We continued data collection at Discovery Bay and new cultch substrate was placed adjacent to an extant population near the Maynard Beach lagoon area of Discovery Bay. We engaged 13 volunteers, five of whom are new MRC volunteers and worked closely with our partners on this habitat enhancement project.

Photos:

Next Page.

Spreading new cultch at Lagoon Site. Photo by Cheryl Lowe.

Bags placed & ready to be opened and spread (Lagoon Site). Photo by Cheryl Lowe.

Cultch spread on spit and ready to receive Olympia oyster spat (Lagoon Site). Photo by Cheryl Lowe.

Powerline Site Monitoring Team. Photo by Cheryl Lowe.

County: Jefferson
Grant No: SEANWS-2018-JeCoWS-00008

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DELIVERABLES FOR TASK NO: 6. Olympia Oysters

T 6.4 Olympia Oyster Summary Report for Quilcene Bay

PROGRESS REPORT: [ ] FINAL REPORT [X]

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T 6.5 Olympia Oyster Summary Report for Quilcene Bay

Project Overview:

On August 1, 2019, Jefferson MRC conducted annual monitoring of the Quilcene Bay test plots with 7 volunteers. WDFW and Jamestown S'Klallam biologists assisted with the monitoring. This year brought confirmation that the particular location of our Quilcene Bay test plots is not suitable for Olympia oyster efforts. Probable factors included presence of oyster drills from adjacent shellfish farming areas and warmer water temperatures at the head of the bay. This year, we also found some of the test plots buried under a 6" mat of a fine red macro-algae (*Ahnfeltia plicata* or *A. fastigiata*, Landlady's Wig), probably brought by recent southerly winds.

Shell stacks were deployed on June 5th and pulled after the August 1st monitoring. Shell stacks are still being processed by a volunteer for the PSRF.

See below for photos, a more detailed field report, monitoring protocols used and data sheets. The only "media article" was a post on the MRC website.

OUTCOME: Goals for the MRC's Olympia oyster Task were to a) continue data collection at Discovery Bay and b) determine if future restoration in Quilcene Bay is a possibility. First goal is on target. Latter is a definite "No".

Photo: Brady Blake showing volunteers a shell with several oyster drills on it. Photo by Cheryl Lowe

Photo: Macroalgae covering the area where the 2018 test plots are located. Photo by Cheryl Lowe.

Quilcene Bay 2019

Field Report and Protocols Aug 1, 2019
Olympia Oyster Monitoring Test Plots

Jefferson County Marine Resources Committee

This report includes both the Aug 1, 2019 Field Report and the Monitoring Protocols we used, which were similar to 2018. We made decisions in the field in consultation with the two shellfish biologists, Brady Blake (WDFW) and Neil Harrington (Jamestown S'Klallam), who were with us.

Aug 1, 2019 Field Report:

Winds from the south. The low tide might not be as low as predicted (Predicted low tide was -3.3 at 11:39 am). Sunny. See photos.

Volunteers met at 10 am in parking lot and were on-site by 10:30 am. We started by locating Plot 3, 4 and 5 from the 2016/17 cultch placement.
We set up transects in Plot 3 following the protocols described below but found only one 20 mm live Olympia oyster in the first 8 quadrats on the 80 substrate/cultch shells of various sizes in those 8 quadrats. See raw data sheets. Then we looked in another 10 quadrats in Plot 3 for Olympia oysters (noted at top of raw data sheet) and didn't find any Olympia oysters. At that time, we decided not to continue with data collection, so we stopped collecting measurements or counts in the remainder of Plot 3 or any of the remaining four 2016/17 test plots, since the remaining test plots looked the same as Plot 3.

Then we moved to the newer 2018 test plot area. We were able to find test plot #2018-2 in clear area, surrounded by a thick layer of finely dissected red seaweed. See photos. We looked for and were unable to find any live Olympia oysters, so we did not bother to set up transects. There was still about 3 inches of water over the plot at 11:30 am (low tide).

Nam Siu later identified the algae sample we collected at the Quilcene test plots as *Ahnfeltia plicata or A. fastigiata* (Landlady's Wig).

In follow-up conversations with WDFW advisor Brady Blake, he noted that he had never seen this much of this particular macroalgae here. We have no idea if this is the first time this has happened here or not. Winds were from the south, so winds could have blown it in just that week or it could have been there longer. In a later conversation with Bridget Gregg, she noted that Tim Nelson, a scientist she had worked for previously, had been studying how *Ulva spp* accumulations impacted survival of oyster larvae.
https://www.researchgate.net/publication/259526587_Determination_of_EC50_for_normal_oyster_larval_development_in_extracts_from_bloom-forming_green_seaweeds (toxins and anoxic conditions produced during decomposition of algae affect oyster larvae...)

The MRC, WDFW and Tribal Co-Managers agreed that Olympia oysters will not succeed in this location and the Jefferson MRC should discontinue these test plots here.

2019 Volunteers & Staff: Jackie Gardner, Frank Handler, Brady Blake, Cheryl Lowe, Neil Harrington, Wade Crouch, Ken Anderson

Shell Stacks:

On **June 5, 2019** Sarah Fisken put out the shell stacks at Quilcene Bay, approximately the same location as in previous years, based on photos of where she put them. Her phone gave her the following GPS:

lat=47.807670 long=-122.862907 Her phone recorded altitude = +1.16267, although based on the photos and tide tables, it was probably between 0.0 and -1.0 MLLW, as per Brian Allen's interpretation of the photo.

On **Aug 2, 2019** we pulled the shell stacks. One of the stacks was marked as 'Compromised' because most of the shell fell off the stick as we picked it up. We put them back on the stick, but probably not in exactly the same order as they sat originally.

We again collected GPS data on Aug 2nd. MRC's Etrex 10 unit at the center shell stack provided the following: 47.800764, W 122.86285. Jackie Gardner's Theodolite reading of same general spot was: 47.807659, W122.862899. That Theodolite reading of elevation for 2 adjacent spots ranged from +1.0 to -1.0' even though they were within 10 feet of each other—in other words it was not very accurate)

Monitoring Protocols (pre-field) Instructions

Goal:
Monitor oyster spat survival of seeded cultch placed in 8 plots (3 new test plots in 2018 + 5 older test plots from 2016 (w/more cultch added to latter in 2017) in Quilcene Bay. For more details about initial work, see Jefferson MRC's Olympia oyster project reports and maps from 2017and 2018.

Equipment:

- GPS *(Cheryl bringing in 2019)*
- notebook for writing notes
- 100' tape measure
- COMPASS
- camera for general activity and a few quadrat pix
- data sheets (on waterproof paper)—updated in 2019
- pencils & clipboards
- Stakes with painted tip or colored duct tape to mark plot centers
- 40-50 wire flags to mark transects ends and quadrat locations
- numbered tags for each quadrat on waterproof paper
- soil pins to keep quadrat frames from floating away
- ~~materials for temp buoy for boat delivery~~ ~~*2018 cultch placed in July 2018*~~
- NWSF Volunteer sign-in form
- Be sure to do safety talk and safe access route to project area
- (Shell stacks (1 set) –already placed in June 2019)
- Discover Pass
- Buckets & gloves
- Snacks

GPS--- for 5 Test Plots (2016)

Test Plot #1: N47.80806, W122.86204

Test Plot #2: N47.80796, W122.86237

Test Plot #3: N47.80784, W122.86278

Test Plot #4: N47.80767, W122.86319

Test Plot #5: N47.80779, W122.86340

GPS --- for 3 NEW Test Plots (2018)

Test Plot #2018-1: ***47.807552, 122.860508***

Test Plot #2018-2: ***47.807379, 122.860827***
NOTE: This plot might be slightly higher elevation than the other 2.

Test Plot #2018-3: ***47.807362, 122.860825***

Random number to determine transect: Use compass. From 0° N, turn east [random # of degrees (°) to establish first transect per plot. www.Randomnumbergenerator.com): **16, 25, 56, 18, 52, 51, 1, 68, 51, 58, 12, 35**

Protocols:

Overview:
We are measuring (a) number of cultch shells/quadrat and (b) number & size of Olympia oysters. Test plots are circles. We use random numbers (above) to generate a compass direction when standing at the center of the circular plot (clockwise from magnetic north) to locate the first transect in each plot. Mark other 3 transects at 90° clockwise from that. Each transect is 20 ft long.

Along each radius transect, **(5) ½ m. quadrats (with tag number)** are placed along the 20 ft transect length and data collected from each quadrat.

DETAILS:

1. Install a new stake at the center of each test plot. Confirm GPS coordinates and/or record new GPS coordinates on the data sheet.

2. From the center point of the **first plot**, face **16° NE** and place a wire flag at 20' from center. Lay measuring tape along transect. The first flag placement is determined by a random number between 0 and 3 (volunteer will call out the first number that comes to their head); place the first flag/quadrat # at that point.

3. Place the remaining 4 flags/quadrat #'s **four ft apart** along the transect. (Example: If 2 is the random number, quadrats/flags were placed at 2', 6', 10', 14' and 18' along the transect.) Quadrat frame is placed with the **center of frame at the flag.** Use a soil pin if needed to keep it from floating away.

4. Repeat at 90 degrees rotation from that first transect for other 3 transects to finish the plot.

5. **Second Plot:** Face **25° NE** and repeat the process above.

6. **Third Plot:** Face **56° NE** and repeat the process above. *This was the plot we monitored.*

7. **Fourth Plot**: Face **18° NE** and repeat the process above.

8. **Fifth Plot:** Face **52° NE** and repeat the process above.

DATA SHEETS

- *2 people place flags & record quadrat # on map. Also record GPS points.*
- *2 teams of 3 volunteers collect measurements in each plot.*
- *Need to do a training before going out, to make sure it is clear how to fill out data sheets.*

Overview: For each quadrat, you will

a. Record the flag/quadrat # from the flag.
b. Count the number of shells in the quadrat (put tick marks in box below Flag #.
c. Measure and record the size of each Olympia oyster

Specific Data Sheet Instructions

1. Record the date and team member names. Someone else will record GPS lat/long for each plot and where the flag numbers were assigned (map). Write down each Flag/Quadrat # at top of column.

2. Pick up each shell piece and inspect it for Olympia oysters. Tell recorder "new shell" so they record a tick mark for each shell you pick up. Measure and record size of all Olympias found on each shell (give measurement to recorder). Once you have done this, place it on the ground outside the frame so you don't count it twice.

3. Recorder: Start a new column for each Flag/Quadrat#. Run a squiggle down the column to clearly mark you are done with that Flag/Quadrat #.

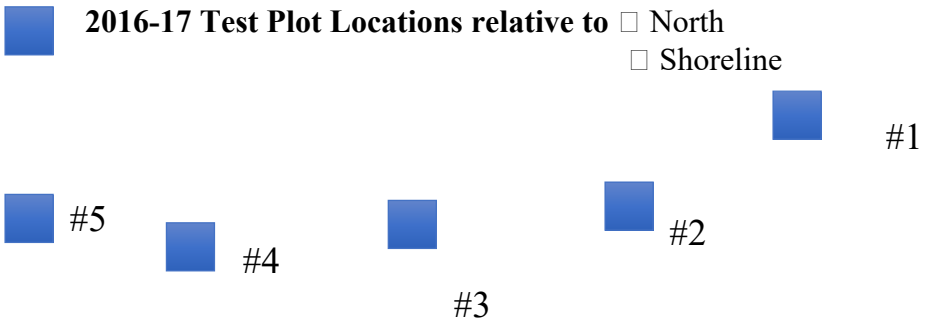
4. Which shells to be counted? On 2 sides of the square, include any shells that are touching or under the quadrat frame. Don't count any shells under the other 2 sides of the frame.

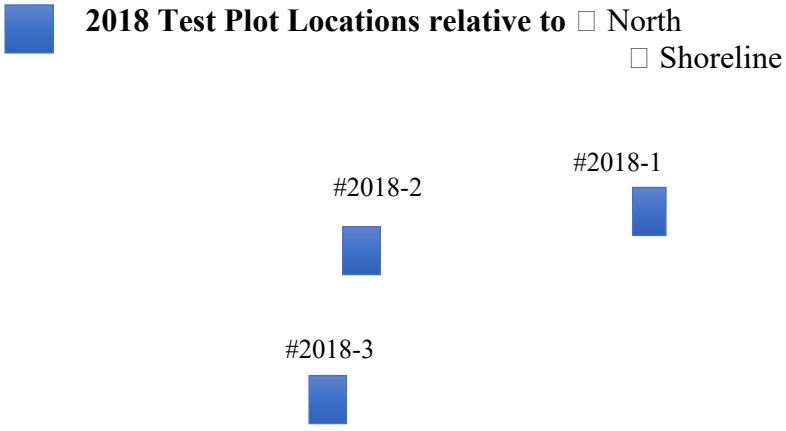
5. If there are no shells with Olys in that flag/quadrat, Recorder writes zero on data sheet, draw a line and start with the next Flag #.

6. Repeat for each quadrat in each plot.

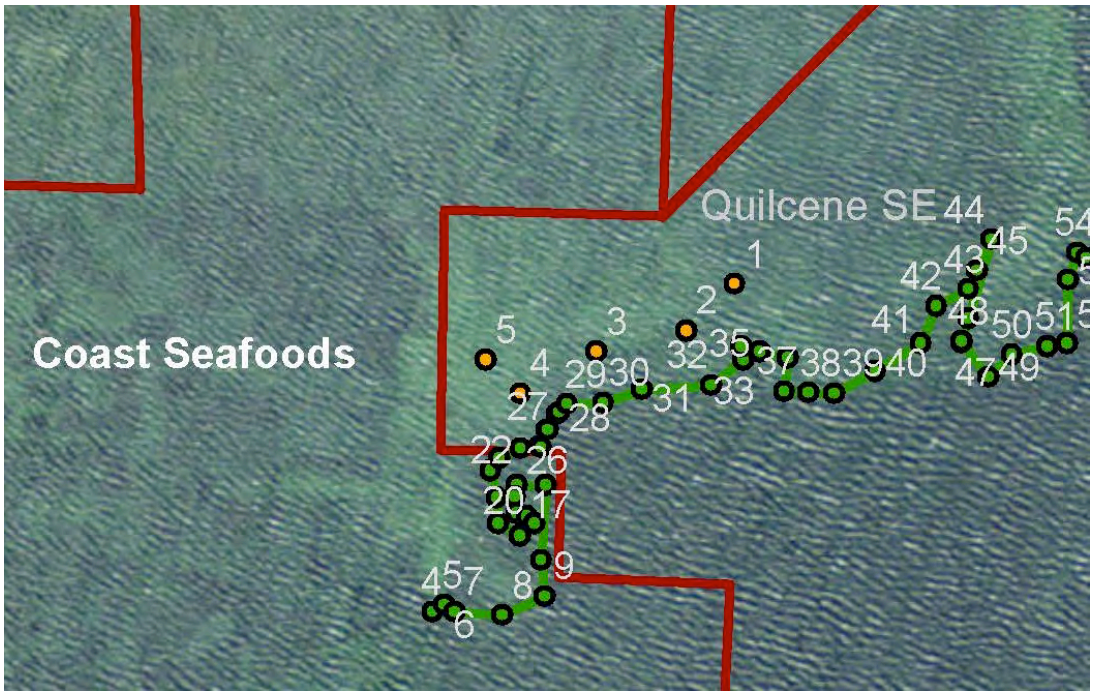
7. Go to next test plot and repeat.

Shell stack locations: There are 3 shell stacks--r*ecord GPS and notes for their location on cover sheet or in notebook. Placed approximately 15 ft apart. Shellstacks have QB on label.*

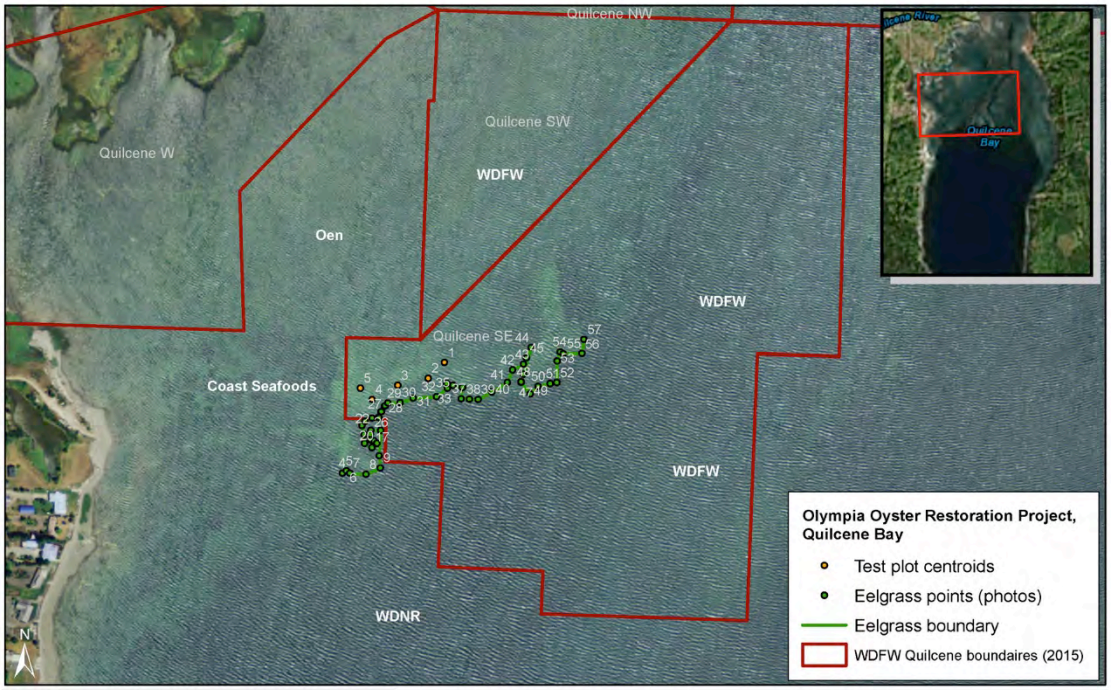




Location for 2016-17 test plots.



Vicinity map



Corps Reference # NWS- Applicant: Jefferson County Marine Resources Committee Site address: n/a; tidelands in Quilcene, WA 0 205 410 820 1,230 Feet Map creation: C. Eardley, Skokomish Tribe; 01/15/16	Parcel owner/ID: Washington Department of Fish and Wildlife WDNR Aq. Pr. # 1937029/BIDN 270940 ("Quilcene Southeast") Adjacent property owners: WDFW (N, S, E); Oen (NW); Coast Seafoods (W); WDNR (S) See JARPA for full listing.	**Proposed Project:** **Olympia oyster Habitat enhancement** Survey data: 07/31/15 Tidal datum: Feet MLLW, Scale: 1: 5000 Coordinate datum: NAD 1983 Aerials: ESRI/DeLorme

2019 Jefferson MRC Olympia Oyster Population Survey Data Form

QUILCENE BAY SURVEY COVER SHEET

(10am meeting time)

Survey Date: 8/1/2019 **Start Time** 10:30am @ site

Low Tide & Time: -3.3' @ 11:39am (predicted) **End Time** 12 noon

	Plot #1	Plot 2	Plot 3
Random # for compass change	16°	25°	56°
LAT (center)			
LONG (center)			
Flag #'s			101, 102, ~~103~~, 105, 106, 107, 108, 109, 110, 111, 113, 112, 114, 115, 116, 120, 117
	Plot 4	**Plot 5**	
Random # for compass change	18°	52°	
LAT (center)			
LAT (center)			
Flag #'s			
	NEW Plot 1	**NEW Plot 2**	**NEW Plot 3**
Random # for compass change	51°	1°	68°
LAT (start)			
LONG (start)			
Flag #'s			

SITE MAP & NOTES

~~To assign~~ Random # for compass direction inserted/assigned before we went out in the field.

Plot #3 - did not measure - 104, 101, 102, 103, 105, 106, 107, 108, 109, 110

2019 Jefferson MRC Olympia Oyster Population Survey Data Form

Location	QUILCENE BAY										
Survey Date	8/1/19										
Names of Monitors	Sarah, Ken, Jackie, Frank, Neil										
	Flag #	Flag #	Flag #	Flag #	Flag #	Flag #	Flag #	Flag #	Flag #	Flag #	Flag #
Quadrat/Flag #	117	120	116	115	111	113	112	114			
# of shells/quadrat	11	1	111	𝍸 𝍸	𝍸 𝍸	𝍸 𝍸 1111	11	111	= 80 shells total looked at		
Oly length (mm)	Oly (mm)										
1	4	✓	20	✓	✓	✓	✓	✓			
2	4										
3	5										
4											
5											
6											
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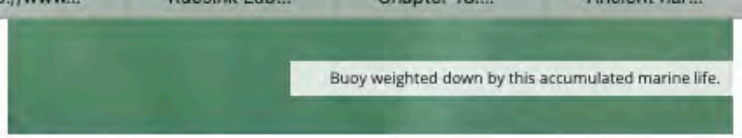
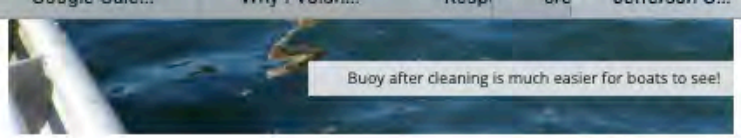


Buoy weighted down by this accumulated marine life.



Buoy after cleaning is much easier for boats to see!

MRC Member Frank Handler At The Quilcene Bay Monitoring Site.

Olympia Oyster Monitoring

On the early August low tides, 10 volunteers joined the Jefferson MRC and WDFW to monitor the MRC's Olympia oyster project sites in Quilcene Bay and Discovery Bay. We're still processing the data, but have two preliminary general conclusions:

- Our native oyster is doing well in Discovery Bay and we should continue enhancement efforts there.
- This year brought confirmation that the particular location of our Quilcene Bay test plots is not suitable for more Olympia oyster efforts and we'll start looking for other options in that Bay.

Many thanks to dedicated Beach Naturalist volunteers who helped MRC members with this monitoring!

Catch More Crab--Reduce Derelict Gear!

We kicked off the crabbing season with two free crabber education programs in late June. Almost 60 people attended these programs, learning from experts like DFW expert Rich Childers and MRC member Troy McKelvey about crab life history, regulations and about how to rig their crab pots so they won't be lost. Missed the class? Learn more and enter a raffle to win prizes at the **Northwest Straits Foundation Derelict Gear webpage.**

MRC members are now making plans to be at a few the boat ramps and stocking info rack cards at retail outlets and in new crab pots. Thanks so much to Jackie Gardner for coordinating this effort!