County: Whatcom
Grant No: SEANWS-2015-WhCoPW-00006

PROJECT TITLE: Northwest Straits Project: Marine Resources Committee Administration and Operations

TASK NO: 5 DELIVERABLE NO: 1 (Mussel Watch Summary Report)

PROGRESS REPORT: [ ] PROJECT FINAL REPORT: [ ]

PERIOD COVERED: October 1, 2015 – September 30, 2016

DATE SUBMITTED: September 30, 2016


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# Mussel Watch 2015/16 Summary Report

Prepared by Whatcom County Public Works Staff

For the Whatcom Marine Resources Committee

In April 2015, the MRC was notified that the Washington Department of Fish and Wildlife would be conducting another round of mussel monitoring in the greater Puget Sound in the winter of 2015/16. Candidate mussel monitoring sites chosen are part of a new Washington State Regional Stormwater Monitoring Program (RSMP). The RSMP is a collaborative monitoring program linked to understanding how stormwater affects contamination in the urban growth areas of the Puget Sound. The RSMP is supported by funds from western Washington municipal stormwater permittees, the Washington State DOT, and some additional state agencies. The 2015/16 mussel monitoring falls under their "Status and Trends in Receiving Waters" component of the RSMP. This Status and Trends component is concerned with measuring the health of streams and the nearshore areas of the Puget Sound with the aim of eventually determining whether things are getting better or worse and identify patterns in healthy and impaired Puget Lowland streams and Puget Sound urban shoreline areas.

This year was the first (inaugural and pilot) round of RSMP mussel monitoring. Sites chosen were not the same as the 2012/13 mussel monitoring study. The active biomonitoring protocol (transplanting mussels) from the 2012/13 Mussel Watch Pilot Expansion project was picked up by the RSMP as a good model for the nearshore monitoring. So WDFW was asked to manage the mussel monitoring for the RSMP. The protocol of getting the mussels from Penn Cove Shellfish and transplanting them in predator-exclusion cages to the monitoring sites was the same. However, the process of selecting the sites was different from the pilot study; the RSMP used an EPA model to randomly select sites within urban growth areas of the Puget Sound for monitoring. From this random selection of shoreline sites there was enough funding in 2015/16 to cover 40 sites. Those 40 sites were funded by the RSMP. However, they were also soliciting sponsorship of EXTRA sites from any group that is interested in piggy-backing on the RSMP mussel monitoring. Those sites will be wherever the sponsors want them to be.

The MRC was targeted as a local group with access to community volunteers familiar with and committed to citizen science projects, and were familiar with the 2012/13 project. The MRC chose one candidate site in Chuckanut Bay, in addition to sponsoring a site up in Drayton Harbor.

Volunteers were asked to commit to the following tasks:

1. go to candidate mussel monitoring site(s) during a daylight low tide in the spring/summer 2015 to;
    a. get permission from the land-owner to access the beach and,
    b. evaluate whether a mussel cage can safely and efficiently be placed there.

2. deploy the mussel cage during a range of specified night-time low tides in October 2015, and
3. retrieve the mussel cage during a range of specified low tides in February 2016.

WDFW provided detailed information about the candidate mussel monitoring sites and instructions on how to evaluate them. Once a site was confirmed as usable, WDFW provided the managing volunteers with the mussels, cage, anchors for deployment, and the datasheet to be filled out during deployment. Volunteer training packets were provided. The MRC gathered several volunteers for the project to help with sites being taken over by other groups throughout the County. Cages were deployed on October 27, 2015 and retrieved on February 8, 2016.

WDFW will acknowledge all citizen science volunteer groups in the RSMP Mussel Final Report (summer 2017) and provide hard copies and links. In addition, WDFW will present the results of the RSMP mussel monitoring in a series of talks around the Puget Sound, to which all our volunteers will be invited.

Attached in this report:

- photos of volunteers
- list of volunteers
- Bellingham Herald newspaper article

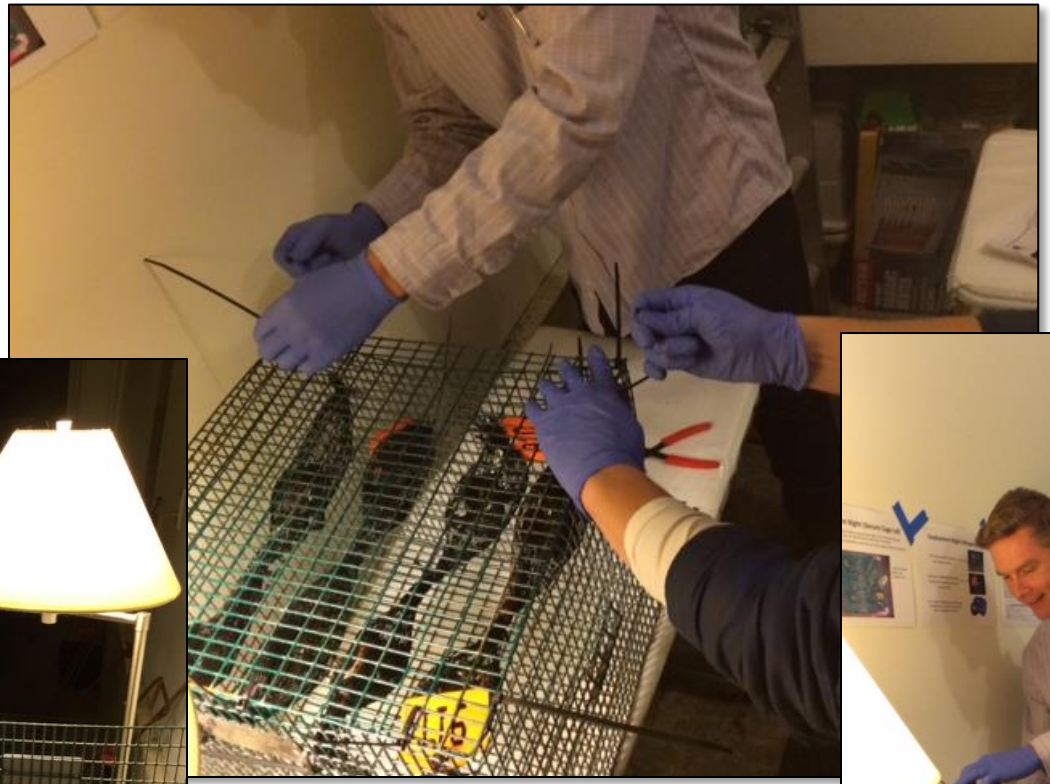
# Photos from Mussel Watch 2015

Whatcom MRC survey sites:

Clarks Point at Chuckanut Bay

California Creek at Drayton Harbor

# Prepping the Cages
# Volunteers: Scarlett Graham and Matt Luxon




Cages were prepped in MRC member April Markiewicz's garage before deployment so volunteers were not doing tedious work in the dark.

# Cage Deployment at Clarks Point
# October 27, 2015

# Cage Retrieval Clarks Point
# February 8, 2016

# Cage Retrieval – Drayton Harbor
# February 8, 2016

# 2015-16 Whatcom County Caged Mussel Study

| | Zero Tide | | | | | |
|---|---|---|---|---|---|---|
| **Location** | **27-Oct** | **28-Oct** | **Site Lead** | **Volunteers** | **Email** | **Phone** |
| Clark's Point / Chuckanut Bay<br>48.690813, -122.504389 | 10:00 PM | 10:25 PM | **Austin Rose** | | Arose@co.whatcom.wa.us | 360-778-6286 |
| | | | | Matt Luxon | MattL@windwardenv.com | 360-543-7882 or 360-296-6712 |
| | | | | Scarlett Graham | grahams7@students.wwu.edu | 724-880-2314 |
| | | | | Ginny Broadhurst | broadhurst@nwstraits.org | 360-428-1085 |
| | | | | Chris Brown | bufo1948@comcast.net | 360-778-1956 |
| Little Squalicum Creek | 10:25 PM | 10:50 PM | **Sara Brooke Benjamin** | | sbbenjamin@cob.org | 360-778-7969, cell: 805-895-1241 |
| | | | | Lyle Skaar | llskaar@cob.org | 360-739-5734 |
| | | | | Michael Parelskin | miparelskin@cob.org | 360-739-5736 |
| South Bay Trail /<br>Bellingham Bay<br>48.72568, -122.50606 | 10:20 PM | 10:45 PM | **Ruth Sofield** | | Ruth.Sofield@wwu.edu | 360-650-2181 |
| | | | | Class? | | |
| Birch Bay<br>48.89548, -122.78201 | 10:30 PM | 10:55 PM | **April Markiewicz** | | April.Markiewicz@wwu.edu | 360-510-5481 (c), 360-650-6137 (w) |
| | | | | Kim Carlton | kcarlton@farallonconsulting.com | 360-305-2041 (c), 360-527-0241 (w) |
| | | | | Paul Grabau | pgrabau@farallonconsulting.com | 360-319-9257 |
| | | | | Tracey Mulhern | tmulhern@farallonconsulting.com | |
| | | | | Lyndsey Needham | lneedham@farallonconsulting.c | 360-296-2737 |
| Cherry Point North<br>48.85833, -122.74083 | 10:45PM | 11:15 PM | **Michael Kyte** | | m.kyte@comcast.net | 206-910-4617 (c), 206-365-4707 (h) |
| | | | | Meagan Harris | meaganjharris@gmail.com | 307-699-2224 |
| | | | | MacKenna Newmarch | m.newmarch@yahoo.com | |
| | | | | Ben Gibson | ben@2020engineering.com | 360-671-2020 x 108 |
| | | | | Kyla Gibson | ben@2020engineering.com | 360-671-2020 x 108 |
| Cherry Point South<br>48.821, -122.710 | 10:40PM | 11:05 PM | **Michael Kyte** | | m.kyte@comcast.net | 206-910-4617 (c), 206-365-4707 (h) |
| | | | | Meagan Harris | meaganjharris@gmail.com | 307-699-2224 |
| | | | | MacKenna Newmarch | m.newmarch@yahoo.com | |
| | | | | Ben Gibson | ben@2020engineering.com | 360-671-2020 x 108 |
| | | | | Kyla Gibson | ben@2020engineering.com | 360-671-2020 x 108 |
| Drayton Harbor<br>48.962333, -122.732778 | 10:35 PM | 11:05 PM | **April Markiewicz** | | April.Markiewicz@wwu.edu | 360-510-5481 (c), 360-650-6137 (w) |
| | | | | Eli Mackiewicz | emackiewicz@cob.org | 360-778-7742 |
| | | | | Barbara Francis | baefrancis@msn.com | |

Volunteers to include in call for retrieval

| | | |
|---|---|---|
| Jeff and Linda Johnston | 360-656-5953 | wajlnw@gmail.com |
| Katharine Sell | | dolphincrazy.asl@gmail.com |
| Erica Bleke | | erica.l.bleke@gmail.com |

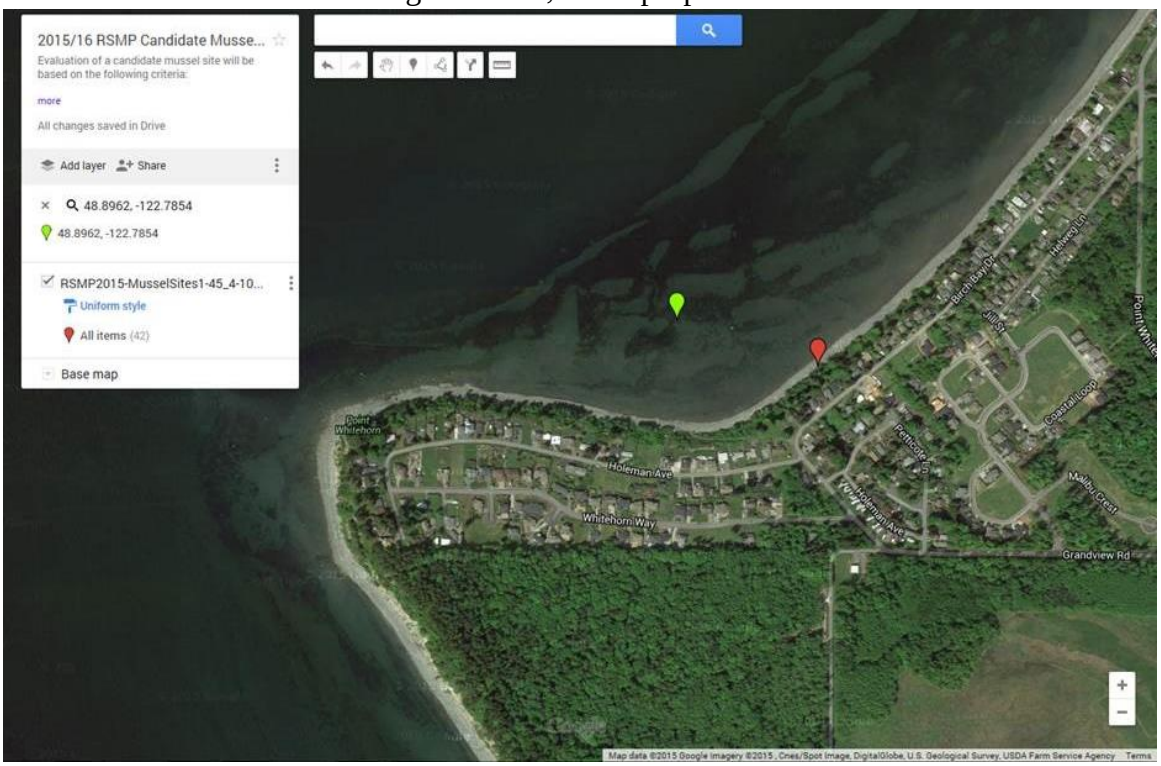
# 2015-16 Cage Mussel Sites – Whatcom County

**Whatcom County MRC Sites – April Markiewicz, Project Champion, Austin Rose, Whatcom County MRC Coordinator**

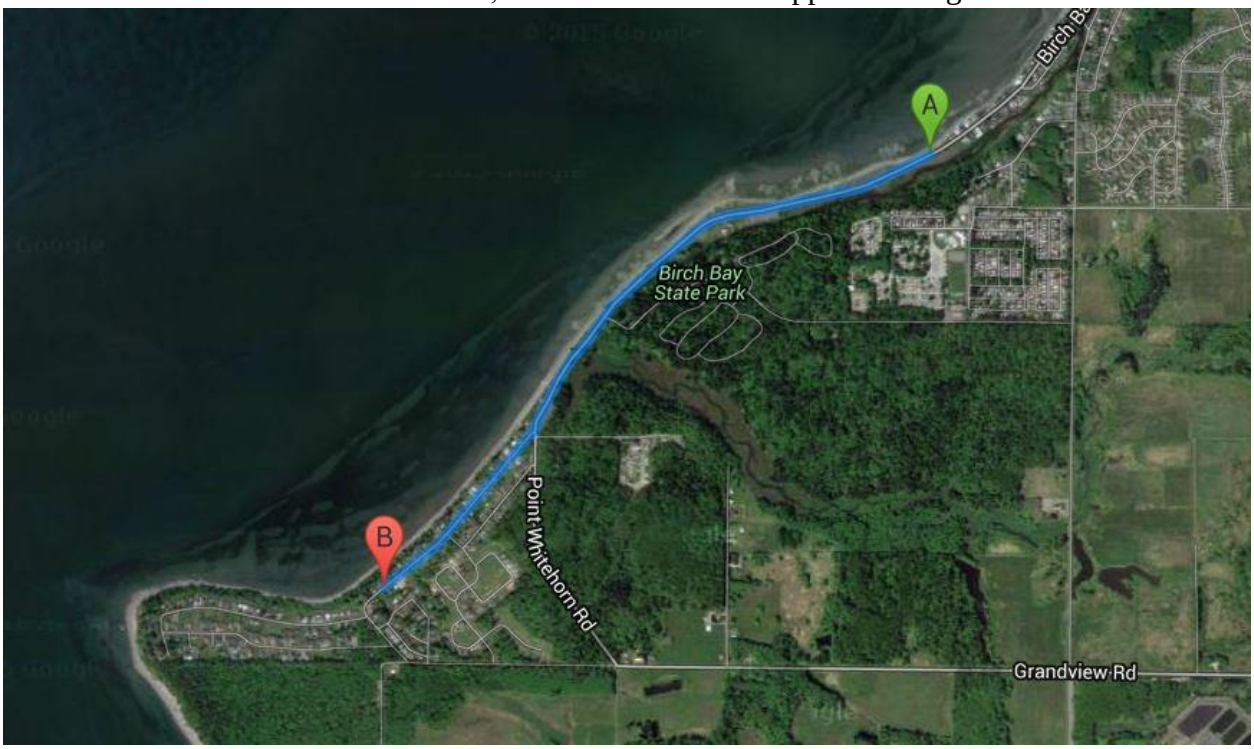
1. **Birch Bay Site  Site 47 – 6961 Birch Bay Dr.**

| | |
|---|---|
| SITE_ID | PSS13175-000047 |
| REGION | Strait of Georgia |
| COUNTY_NM | Whatcom |
| CITY_NM | Birch Bay |
| LAT_DD | 48.89548 |
| LON_DD | -122.7820529 |
| BCNAME | Mud flat |
| DETH_TXT | Estuarine, intertidal, mixed fine, partly enclosed |
| NRDA_TXT | open sandy beaches (estuarine) |
| EXPCLASS | Semi-protected |
| SEDSOUR | Alongshore |
| SEDABUN | Abundant |
| CHNGTYPE | Stable |

Green is the 2012-13 mussel cage location, red is proposed 2015-16 location.



**Green "A" is location checked on 09/24/2015. Red "B" is proposed 2015-16 cage location.**
Distance from "B" to "A" is 1.6 miles, outside of 400 meter approved range.



**2. Clark's Point Site 27 Revised (inside jetty)**

| | |
|---|---|
| SITE_ID | PSS13175-000027 |
| REGION | Strait of Georgia |
| COUNTY_NM | Whatcom |
| CITY_NM | Bellingham |
| UGA_NM2 | Bellingham - Incorporated UGA |
| LAT_DD | 48.6690667 (revised) |
| LON_DD | -122.504139 (revised) |
| BCNAME | Rock cliff |
| DETH_TXT | Estuarine, intertidal, bedrock, partly enclosed |
| NRDA_TXT | open rocky shores (estuarine) |
| EXPCLASS | Protected |
| SEDSOUR | Could not deter |
| SEDABUN | Scarce |
| CHNGTYPE | Stable |

## 3. Drayton Harbor (MRC Site Added)

| | |
|---|---|
| SITE_ID | |
| REGION | Strait of Georgia |
| COUNTY_NM | Whatcom |
| UGA_NM2 | |
| LAT_DD | 48.962333 (Outfall) |
| LON_DD | -122.732389 (Outfall) |
| LAT_DD | 48.962167 (Piling) |
| LON_DD | -122.732778 (Piling) |
| BCNAME | Sand, silt, mud flat or fan |
| DETH_TXT | Estuarine, intertidal, mixed coarse, partly enclosed |
| NRDA_TXT | |
| EXPCLASS | Semi-protected |
| SEDSOUR | Fluvial |
| SEDABUN | |
| CHNGTYPE | |

**Outfall located just west of 4598 Drayton Harbor Rd. Cage location under north section of bridge.**

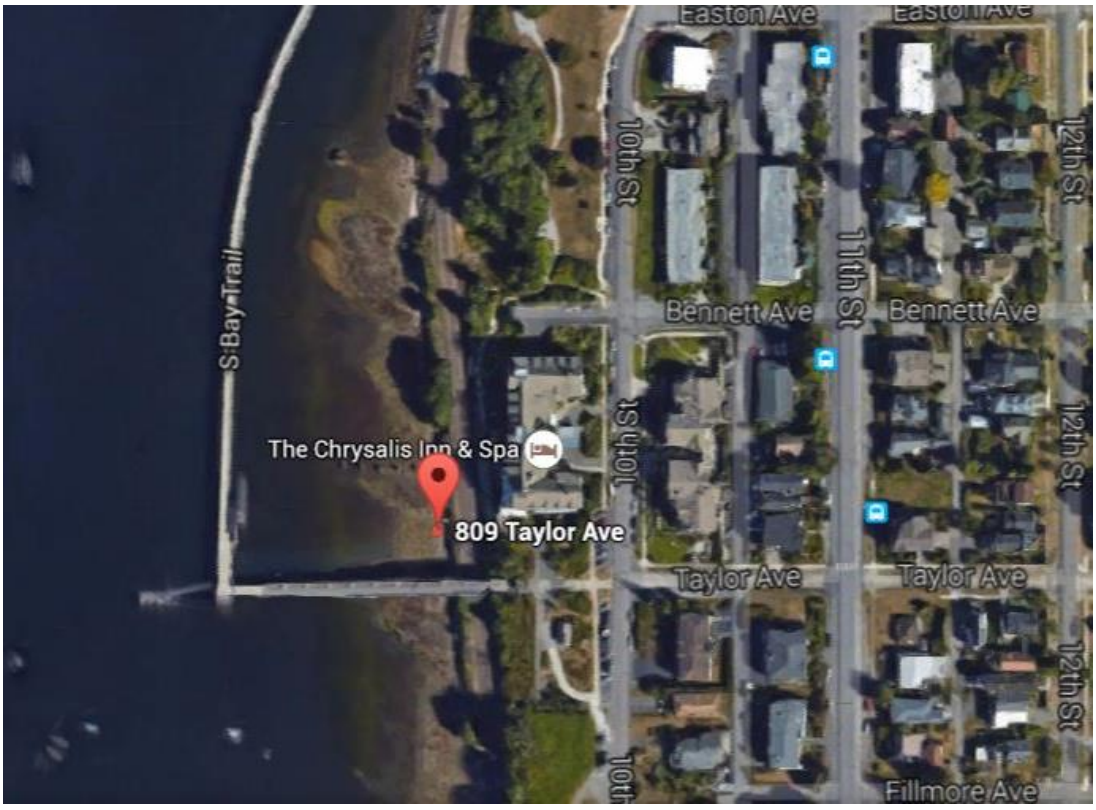
## Other Whatcom County Cage Mussel Sites

1. **Cherry Point Site 4 Michael Kyte, April Markiewicz, WCC**

| | |
|---|---|
| SITE_ID | PSS13175-000004 |
| REGION | Strait of Georgia |
| COUNTY_NM | Whatcom |
| UGA_NM2 | Cherry Point - Unincorporated UGA |
| LAT_DD | 48.85833 (revised) |
| LON_DD | -122.74083 (revised) |
| BCNAME | Sand and gravel flat or fan |
| DETH_TXT | Estuarine, intertidal, mixed coarse, partly enclosed |
| NRDA_TXT | open mixed coarse beaches (estuarine) |
| EXPCLASS | Semi-protected |
| SEDSOUR | Fluvial |
| SEDABUN | Moderate |
| CHNGTYPE | Stable |

**2. Bellingham Bay 11 – Ruth Sofield**

| | |
|---|---|
| SITE_ID | PSS13175-000011 |
| REGION | Strait of Georgia |
| COUNTY_NM | Whatcom |
| CITY_NM | Bellingham |
| UGA_NM2 | Bellingham - Incorporated UGA |
| LAT_DD | 48.72568 |
| LON_DD | -122.50606 |
| BCNAME | Ramp with gravel and sand beach |
| DETH_TXT | Estuarine, intertidal, mixed coarse, partly enclosed |
| NRDA_TXT | open mixed coarse beaches (estuarine) |
| EXPCLASS | Protected |
| SEDSOUR | Alongshore |
| SEDABUN | Scarce |
| CHNGTYPE | Stable |



LOCAL OCTOBER 17, 2015

HIGHLIGHTS

- Bivalves will show contaminants from stormwater runoff
- Eight places in Whatcom County among study sites
- Volunteers will put mussels into water near shore

BY KIE RELYEA
*The Bellingham Herald*

Late at night when the tide is low enough, an army of volunteers will fan out along Puget Sound and help anchor cages of native Penn Cove mussels near the shore.

Starting Oct. 26, the cages will go into 73 spots around Puget Sound. Eight of those will be in Whatcom County, with California Creek where it flows into Drayton Harbor as the farthest point to the north and Clark's Point in Chuckanut Bay the southernmost spot.

The cages will be put in over seven days, and the mussels will stay there until February 2016. Their job is to help scientists find out what contaminants are washing from land into the sound during fall and winter, when Western Washington is wet.

The bivalves also will show how well efforts to protect Puget Sound against stormwater pollution are working over time.

"They give you a pretty good picture of what's out there," said Jennifer Lanksbury, a biologist with the Washington Department of Fish and Wildlife who is overseeing the project.

Stormwater is rain and melted snow that runs off hard surfaces — rooftops, paved streets, highways, parking lots — and into local waterways instead of soaking into the ground. It carries pollutants like oil, fertilizers, chemicals and pet waste into the water, which is why officials say stormwater is the leading contributor of pollution in urban waterways in the state.

A new study found that stormwater that runs off urban roads is deadly to salmon.

> **JUST BELOW THE SURFACE THERE'S A LOT GOING ON IN PUGET SOUND. WE NEED TO BE COGNIZANT OF EFFORTS THAT WE'RE MAKING TO CLEAN UP STORMWATER.**
>
> Brandi Lubliner, head of the Regional Stormwater Monitoring Program.

Fish and Wildlife is leading the mussels monitoring project for the state's Regional Stormwater Monitoring Program, which gets funding from those paying for municipal stormwater permits. The program is part of the state Department of Ecology.

"Puget Sound looks really nice. We enjoy looking at the water," said Brandi Lubliner, head of the Stormwater Monitoring Program. "Just below the surface there's a lot going on in Puget Sound. We need to be cognizant of efforts that we're making to clean up stormwater. This is going to be a study that helps us track over time how well we're doing."

The large-scale effort follows a pilot project in the winter of 2012-13. Like that one, it will be a collaboration with tribes, counties, cities, nonprofits and their volunteers.

"Once again we have an army of citizen-science volunteers who will deploy and retrieve the cages for us," Lanksbury said.

The Stormwater Monitoring Program is funding about 40 sites, which were randomly selected shorelines in urban growth areas, for this monitoring project. The remainder are being paid for by other organizations that wanted to monitor areas of interest to them.

**MUSSELS ARE BEING USED FOR THE MONITORING PROJECT BECAUSE THEY LIVE IN NEAR-SHORE HABITATS AND DO NOT METABOLIZE CONTAMINANTS IN THE WATER.**

The mussels are being donated by Penn Cove Shellfish on Whidbey Island.

“Being a shellfish farmer, we can’t farm shellfish in dirty water,” said Ian Jefferds, co-owner and general manager of Penn Cove Shellfish. “Knowing which waters are clean and which ones are dirty and what’s affecting the waters is important to us.”

Mussels are being used for the monitoring project because they live in near-shore habitats, the space between the land and the waters of Puget Sound.

“They’re in the right location,” Lanksbury said.

Theirs is a primitive system, so contaminants in the water stay in their tissue.

“They’re like active water samplers and they don’t metabolize those contaminants,” Lanksbury said, adding that they reflect the contaminants that are in an area for two to four months.

Penn Cove mussels, also known as the bay mussel or the foolish mussel, will be put into bags and suspended inside cages. The cages are closed to keep out mussel-eating predators. Each cage will hold 64 mussels, each about the same size and roughly 11 months old.

“It’s all about having a uniform starting population,” Lanksbury said.

When the mussels are retrieved in February, their tissue will be analyzed in a lab and the results tracked as part of ongoing monitoring.

“If you don’t monitor, you don’t know if it’s getting better or not,” said Ecology spokeswoman Sandy Howard.

*Reach Kie Relyea at 360-715-2234 or kie.relyea@bellinghamherald.com.*

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