



# Forage Fish Spawning Survey 2017-2018: Island County Marine Resources Committee

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## Goal

Forage fish are a vital part of the Puget Sound ecosystem, and the monitoring of their status is an important component to the recovery of Puget Sound and the Salish Sea. This project of the Island County Marine Resources Committee (MRC) focuses on forage fish spawning at restoration sites and index sites. Index sites are locations identified by Washington Department of Fish and Wildlife (WDFW) which have public access and have previous documentation of forage fish spawning.

The goals of the intertidal forage fish spawning surveys in Island County are to:

- Monitor forage fish spawning at selected sites in conjunction with completed, planned, and proposed shoreline restoration work.
- Expand regional knowledge of location of forage fish spawning through index site surveys.

This survey is designed to establish continuity with existing WDFW and Washington State Department of Natural Resources (WDNR) data in an effort to define trends and develop an understanding of the conditions and processes affecting the study areas over time. To achieve this, all surveys use established standards and sampling methodologies developed and made available by WDFW. As the planned monitoring program is implemented over succeeding years, it will generate data that can be used to establish baseline conditions, define trends, document changes, track restoration projects, and identify potential new restoration opportunities.

## Project Leads and Volunteers

Volunteer	Role	Survey Locations
Ruth Richards	Project Lead	North Whidbey
Dan Matlock	Survey Lead	South Whidbey
Dean Nelson	Survey Lead	Camano
Jay Adams	Volunteer	North Whidbey
Jamie Hartley	Volunteer	North Whidbey
Elizabeth McCullough	Volunteer	South Whidbey
Idonna Nelson	Volunteer	Camano

## Site Selection

Island County MRC conducts several intertidal and subtidal surveys, including forage fish, eelgrass and kelp. In addition, the MRC participates in shoreline restoration projects in the County. In an effort to create a deeper knowledge base of the health of our shoreline, we chose monitoring sites at which survey or restoration projects are being conducted. Restoration projects at our sites are in feasibility, in-progress, or post-project phases.

In addition, in collaboration with WDFW, we conducted surveys at five index sites. Sites are shown on the following map. Green stars indicate restoration sites. Blue stars indicate index sites.

### Restoration sites:

#### **1. Cornet Bay**

**Project information:** Bulkhead removal, fill removal, beach regrading occurred in 2012. Removal of fill and beach regrading in section southwest of original restoration completed in Fall 2015. Forage fish spawn monitoring in conjunction with the restoration project has occurred here since 2009.

**Location:** North Whidbey Island.

**Sites:** 3: N 48.4019 W 122.6216, N 48.3997 W 122.6243, N 48.3986 W 122.6259

**# Samples/month:** 3 (3 sites, 1 time/month)

**Lead:** Ruth Richards

#### **2. Ala Spit**

**Project information:** Concrete bulkhead removed, beach nourishment to neck of the spit in 2015.

**Location:** Northeast Whidbey Island.

**Sites:** 3: N 48.3924 W 122.5862, N 48.3933 W 122.5863, N 48.3980 W 122.5864

**# Samples/month:** 1 (1 site, 1 time/month)

**Lead:** Ruth Richards

#### **3. Camano Island State Park**

**Project information:** Proposed feasibility study to evaluate the potential for tidal inundation to allow for fish access.

**Location:** Southwest Camano Island.

**Sites:** 3. N 48.1249 W 122.4952, N 48.1236 W 122.4948, N48.1224 W 122.4940



**# Samples/month:** 1 (1 site, 1 time/month)

**Lead:** Ruth Richards/Dean Nelson

*Note:* Camano Island State Park was sampled March-September 2018.

**Index sites:**

**4. Windjammer**

**Location:** Northeast Whidbey Island (Oak Harbor).

**Site:** 1: N 48.2840 W 122.6554

**# Samples/month:** 1 (1 site, 1 time/month)

**Lead:** Ruth Richards

**5. Maple Grove**

**Location:** Northwest Camano Island.

**Site:** 1: N 48.2527 W122.5180

**# Samples/month:** 1 (1 site, 1 time/month)

**Lead:** Ruth Richards/Dean Nelson

*Note:* Maple Grove was sampled March-September 2018.

**6. Long Point**

**Location:** Eastern Whidbey Island (Penn Cove).

**Site:** 1: N 48.2267 W 122.6490

**# Samples/month:** 1 (1 site, 1 time/month)

**Lead:** Ruth Richards

**7. Freeland Park**

**Location:** Southeast Whidbey Island (Holmes Harbor).

**Site:** 1: N 48.016008 W 122.532738

**# Samples/month:** 1 (1 site, 1 time/month)

**Lead:** Dan Matlock

**8. Glendale**

**Location:** Southeast Whidbey Island.

**Site:** 1: N 47.93822 W 122.35850

**# Samples/month:** 1 (1 site, 1 time/month)

**Lead:** Dan Matlock

**Protocol**

The sampling design follows the WDFW Intertidal Forage Fish Spawning Habitat Survey Protocols, Procedures for Obtaining Bulk Beach Substrate Samples (Philip Dionne WDFW) based on earlier protocols developed by Dan Penttila (Penttila, 2011). See Appendix A.

**Training**

All project leads have attended multiple survey trainings conducted by WDFW. Several survey volunteers have attended WDFW training, and receive on-site training from leads.

## Survey Work

Between October 2017 and September 2018, project leads and volunteers have contributed over 204 hours of invaluable service to the survey. We have collected 110 samples from 3 restoration sites and 5 index sites.

## Data and Results

Survey samples, beach survey sheets and photographs were shared regularly with WDFW, who conducted the data analysis and reporting of results. Due to limited resources within WDFW, results were often not reported until several months later. As such, the data summary table below is incomplete for the full project period. This table will be updated as results are provided. Survey sheets are included in Appendix B. The tracking sheet provided by WDFW is included in Appendix C. The summary maps of results provided by WDFW are included in Appendix D.

## Data Summary

The table below summarizes when and where spawn presence was recorded at our restoration and index sites.

Site Type	Site	Station	Oct 2017	Nov 2017	Dec 2017	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	Jun 2018	Jul 2018	Aug 2018	Sep 2018
Restoration	Ala Spit	1												
	Camano Island SP	1												
	Camano Island SP	2												
	Camano Island SP	3												
	Cornet Bay	1												
	Cornet Bay	4												
	Cornet Bay	6												
Index	Freeland Park	1												
	Freeland Park	2												
	Glendale	1												
	Long Point	1												
	Maple Grove	1												
	Windjammer	1												

Legend
Surf smelt
Sand lance
Rock sole
Not sampled
No presence
Pending analysis

## Lessons Learned

- One major change in project procedure this year was to utilize WDFW to conduct sample analysis and reporting, rather than hire an independent contractor. While this did provide a slight monetary savings, and ensure that the MRC's data were incorporated into WDFW's regional reporting maps, it did result in reporting delays. WDFW has limited time and resources available to dedicate to forage fish sample analysis and reporting. As such, samples may not be analyzed for several months. This can be frustrating for volunteers who are eager to learn the results of their time and effort on the beach. The delayed feedback could also result in the missed opportunities for follow-up sampling in certain areas or media publicity regarding a particularly interesting finding.
- The sample sites on Camano were dropped at the end of last year due to limited volunteer capacity and the extensive travel required for the existing project lead. A project lead who resides on Camano was identified in early spring, and received training. Sampling has now resumed at the two Camano sites. This highlights the importance of finding local project leads, especially when there are several sample sites spread over a broad geographic region.
- Volunteer recruitment is an important and often time-consuming element of the project. It is essential to ensure volunteers not only receive the necessary training, but also understand the importance of scientific rigor in their work.