COUNTY: Island

Grant Number: SEANWS-2021-IsCoPH-00001

PROJECT TITLE: Island County Marine Resources Committee Operations and Projects

TASK NUMBER: 2.3 Forage Fish

PERIOD COVERED: Oct 2021 - Sep 2022

DATE SUBMITTED: 10/08/2022

This project has been funded wholly or in part by the United States Environmental Protection Agency. The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency under Assistance Agreement [CE-01J65401]. 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.

Forage Fish Spawning Survey 2021-2022:
Island County Marine Resources Committee

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 nearshore 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.

These surveys are 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. All surveys are required to be led by an individual who has undergone the forage fish monitoring certification training provided by WDFW. As the planned monitoring program is implemented over succeeding years, it has and will continue to generate data that can be used to establish baseline conditions, define trends, document changes, track restoration projects, and identify potential new restoration opportunities.

Site Selection
The MRC conducts several intertidal and subtidal surveys, to better understand marine habitats and species, such as forage fish, juvenile salmon, eelgrass, and kelp. In addition, the MRC participates in shoreline restoration projects in Island County. In an effort to create a deeper knowledge base of the health of Island County's shoreline, the MRC chose monitoring sites at which survey and/or restoration projects are being conducted. Restoration projects at the selected forage fish monitoring sites are in feasibility, in-progress, or post-project phases. In addition, in collaboration with WDFW, volunteers conducted surveys at two index sites.

Sites sampled in 2022 are shown on the map (Image 1) and described below.

Image 1. Map showing location of the 2022 sampling locations (please note that Seahorse is only sampled November - February).

Restoration sites

1. Cornet Bay

Project information: Bulkhead removal, fill removal, beach regraded in 2012. Removal of fill and beach regrading in section southwest of original restoration completed in Fall 2015. Forage fish surveys in conjunction with this restoration project have occurred here since 2009.

Location: North Whidbey Island

Stations: 3: N 48.4019 W 122.6216, N 48.3997 W 122.6243, N 48.3986 W 122.6259
 # Samples/month: 3 (3 stations, 1 time/month)
Lead: Karen Scharer

2. Hoypus Point
Location: North Whidbey Island
Project Information: A dilapidated 350 linear foot bulkhead lines the shoreline as of September 2021. The bulkhead is comprised of large rock and concrete debris and is backfilled with what appears to be native beach sediments. The bulkhead and fill are proposed for removal to restore the shoreline to more natural conditions and gradients.
Stations: 2: N 48.41114 W 122.6075, N 48.4107 W 122.6056
 # Samples/month: 2 (2 stations, 1 time/month)
Lead: Karen Scharer

3. Hidden Beach
Location: Central Whidbey Island
Project information: Proposed restoration project to remove shoreline armor and debris over 750 linear feet of shoreline to improve intertidal and backshore beach habitat.
Stations: 3. 2 samples/station: N 48.1276 W 122.5622, N 48.1276 W 122.5621; N 48.1273 W 122.5626, N 48.1273 W 122.5625; N 48.1281 W 122.5636, N 48.1283 W 122.5634
 # Samples/month: 6 (3 stations, 2 samples/station, 1 time/month)
Lead: Paul Belanger

4. Seahorse Siesta
Project information: Removal of barge and bulkhead fall 2020-winter 2021.
Location: Southeast Whidbey Island
Stations: 2. 2 samples/station: N 48.0436 W 122.4226, N 48.0436 W 122.4226; N 48.0435 W 122.4239, N 48.0435 W 122.4239
 # Samples/month: Please note that this site is only sampled from November-February.
Lead: Rachel Nostrom, Kristin Galbreaith

4. Sunlight Shores
Project information: Removal of shoreline armor to improve 350 linear feet of shoreline and 0.25 acres of nearshore habitat in 2019.
Location: Southwest Whidbey Island
Stations: 2: N 47.9857 W 122.4680, N 47.9854 W 122.4678
 # Samples/month: 2 (2 stations, 1 time/month)
Lead: Leigh Bloom

Index sites

5. Glendale
Site Information: This site is at the mouth of Glendale Creek, which is a salmon-bearing stream.
Location: South Whidbey Island
Station: 1: N 47.93822 W 122.35850

 # Samples/month: 1 (1 station, 1 time/month)
Lead: Kurt Herzog

6. Maple Grove
Site Information: This site is a popular public fishing site for surf smelt. Surf smelt eggs have been observed from May through October for multiple years.
Location: Northwest Camano Island
Station: 1: N 48.2527 W 122.5180
 # Samples/month: 1 (1 station, 1 time/month)
Lead: Paul Williams

Project Leads and Volunteers

The 2021-2022 season (Oct 2021-Sep 2022) WDFW hosted volunteer training in February and July of 2022. Eight volunteers attended this training and became certified to conduct surveys. This work would not be possible without the hard work and dedication of many volunteers (Table 1). The MRC would like to extend its thanks to the volunteers who help make this program possible. Collectively, volunteers reported 314.45 hours of invaluable service into this project during the 2021-2022 season.

Volunteer/Staff	Role	Survey Locations
Ken Collins	Project Lead	Hidden Beach, Seahorse Siesta (backup)
Paul Belanger	Survey Lead	Hidden Beach
Britt McKensie	Volunteer	Hidden Beach
Vanessa Meriwether Irvine	Volunteer	Hidden Beach
Kathy Kundert	Volunteer	Hidden Beach
Kristin Galbreaith	Survey Co-Lead	Seahorse Siesta
Rachel Nostrom	Survey Co-Lead	Seahorse Siesta
Allison Hiltner	Volunteer	Seahorse Siesta
Trish Coffey	Volunteer	Seahorse Siesta
Kurt Herzog	Survey Lead – Glendale	Glendale, Sunlight Shores
Leigh Bloom	Survey Lead – Sunlight Shores	Sunlight Shores, Hidden Beach
Michele Sakaguchi	Volunteer	Sunlight Shores, Hidden Beach
Lance Porter	Volunteer	Sunlight Shores
Karen Scharer	Survey Lead	Hoypus Point and Cornet Bay
Micke Hucke	Volunteer	Hoypus Point and Cornet Bay
Paul Williams	Survey Co-Lead	Maple Grove
Kelly Zupich	MRC Coordinator (Staff)	

Table 1. 2021-2022 Forage Fish Monitoring volunteers and staff.

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

WDFW hosted volunteer training in February and July of 2022. Eight volunteers attended this training and became certified to conduct surveys. Staff member, Kelly Zupich, attended the earlier training. This allowed her to provide increased capacity and assistance to survey teams during the year.

Data and Results

The digital iForms with included beach photos and data was shared regularly with WDFW – the lead agency on data analysis. Due to a high volume of samples some of our site's samples have not been processed as of yet. As such, the data summary table below is incomplete. To check for updated results, please contact Kelly Zupich.

Survey sheets are included in Appendix B. Please note that this was the second year of the implementation of the iForms app, and not all teams submitted survey sheets when also submitting electronic data. For surveys that only had data submitted electronically, their iForms submittal information will be included instead. The tracking sheet provided by WDFW is included in Appendix C.

Survey Summary

Seven sites were sampled at least once in the project year. Table 2 shows monthly surveys and results in terms of egg presence. Some samples, from March forward, are in queue with WDFW for analysis.

year	2021										2022															
month	8		9		10		11		12		1		2		3		4		5		6		7		8		9	
Species	SL	SS	SL	SS	SL	SS	SL	SS	SL	SS	SL	SS	SL	SS	SL	SS	SL	SS	SL	SS	SL	SS	SL	SS	SL	SS	SL	SS
Hoypus Point	-	##	-	11	-	15	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Cornet Bay	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Ala Spit																												
Hidden Beach	-	-			-	-	-	-	3	-	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Glendale							-	-					-	-	-	-	-	-			-	-						
Sunlight Shores	-	-	-	-	-	-	-	-			-	-	-	-														
Maple Grove	-	##	-	85	-	62	-	21	-	33	-	13	-	13	-	3	-	6										

Key:		
		sampled in month
	-	no eggs present in sample
	3	number of eggs for site by species
	SL	Sand Lance
	SS	Surf Smelt
		samples in queue for analysis

Table 2. 2022 Island County forage fish sampling summary as of 9/22/2022

A primary goal of monthly sampling is to support long term trend analysis. Table 3 shows the cumulative sampling effort over time.

				Sample year (October prior year to September)						
Site	Index	Rest.	Location	2016	2017	2018	2019	2020	2021	2022
Hoypus Point		X	N Whidbey						12	12
Cornet Bay		X	N Whidbey				7	8	12	12
Ala Spit		X	N Whidbey			1	5	8		
Windjammer		X	C Whidbey	3	12	12	5			
Long Point			C Whidbey	8	12	12	5			
Hidden Beach		X	SE Whidbey				5	8	10	12
Freeland County Park			SE Whidbey	1	10	12	3			
Seahorse Siesta		X	SE Whidbey					6		
Sandy Point South			SE Whidbey	3						
Glendale	X		SE Whidbey		9	12	3	5	6	5
Sunlight Shores		X	S Whidbey						5	11
Maple Grove	X		NW Camano	7	9	7	8	2	5	12
Camano State Park			SW Camano			7	3	1		

5	Sampled in year and number of times

Table 3. Summary of sampling for all sites since program inception.

Lessons Learned

- All our teams have migrated over to iForms. There have been a few minor issues, but volunteers and staff are getting used to the system.
- We continue to look for ways to optimize efficiency of sampling and use of volunteer time. We plan to review the number of stations per site and adjust as needed in Fall 2022.
- WDFW has new staff and has been able to process samples in a timelier manner which has been good for volunteers and staff to see results more regularly.
- Some teams have added additional volunteers which can serve as back up if the main volunteers are unavailable.
- The Hidden Beach team has done well with the change in the volunteers participating. They seem to have a rhythm down that is working well for them.
- The volunteer at Maple Grove wanted an opportunity to shadow another team. He was set up with the Skagit Forage Fish Team to shadow and found that opportunity fruitful. We hope to offer more opportunities for volunteers to shadow with other teams and to visit beaches which have visible forage fish eggs.