COUNTY: Island

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Forage Fish Spawning Survey 2022-2023:
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 2023 are shown on the map (Image 1) and described below.

Image 1. Map showing location of the 2023 sampling locations (please note that Seahorse is only sampled November - February).

	Cornet Bay	Hoypus Point	Hidden Beach	Seahorse Siesta	Sunlight Shores	Glendale	Maple Grove
Type	Restoration	Restoration	Restoration	Restoration	Restoration	Index	Index
Lead(s)	Karen Scharer	Karen Scharer	Paul Belanger	Rachel Nostrom, Kristin Galbreaith	Leigh Bloom	Kurt Herzog	Paul Williams
Samples per Month	3 (3 stns/mo)	2 (2 stns/mo)	6 (3 stns, 2 smpls/mo)	4 Nov-Feb (2 stns)	2 (2 stns/mo)	1 (1 stn/mo)	1 (1 stn/mo)
Location	North Whidbey	North Whidbey	Central Whidbey	Southeast Whidbey	Southwest Whidbey	South Whidbey	Northwest Camano
Station Locations	N 48.4019 W122.6216 N 48.3997 W122.6243 N48.3986 W122.6259	N 48.41114 W 122.6075 N 48.4107 W 122.6056	N 48.1276 W 122.5622 N 48.1276 W 22.5621 N 48.1273 W 122.5626 N 48.1273 W 22.5625 N 48.1281 W 122.5636 N 48.1283 W 122.5634	N 48.0436 W 122.4226 N 48.0436 W 122.4226 N 48.0435 W 122.4239 N 48.0435 W 122.4239	N 47.9857 W 122.4680 N 47.9854 W 122.4678	N 47.93822 W 122.35850	N 48.2527 W 122.5180
Description	Bulkhead removal, fill removal, beach regraded in 2012. Removal of fill and beach regrading in section southwest of original restoration completed in Fall 2015.	A dilapidated 350 linear foot bulkhead lined the shoreline. Removal took place in 2022 to restore the shoreline to more natural conditions and gradients.	Proposed restoration project to remove shoreline armor and debris over 750 linear feet of shoreline to improve intertidal and backshore beach habitat.	Removal of barge and bulkhead fall 2020-winter 2021.	Removal of shoreline armor to improve 350 linear feet of shoreline and 0.25 acres of nearshore habitat in 2019.	This site is at the mouth of Glendale Creek, which is a salmon-bearing stream.	This site is a popular public fishing site for surf smelt. Surf smelt eggs have been observed from May through October for multiple years.

Table 1. Overview of 2022-2023 Forage Fish Monitoring sites.

Project Leads and Volunteers

The 2022-2023 season (Oct 2022-Sep 2023) WDFW hosted volunteer training in August of 2023. Three 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 276.38 hours of invaluable service into this project during the 2022-2023 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
Scott 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)	Backup

Table 2. 2022-2023 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 August of 2023. Three volunteers attended this training and became certified to conduct surveys. Kelly Zupich, MRC staff, attended the "How to Conduct a Forage Fish Survey" hosted by the Coastal Watershed Institute. This has

allowed Kelly to be more of a resource to answer questions and serve as a backup volunteer.

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.

iForms data sheets are available upon request.

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 January forward, are in queue with WDFW for analysis.

year	2022								2023															
month	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
Hoypus Point	-	193			-	-	-	-	-	-	-	-	-	-												
Cornet Bay	-	-	-	-	-	-	-	-	-	-	-	-	-	-												
Hidden Beach	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-										
Glendale			-	-	-	-	-	-	-	-	-	-	-	-	-	-										
Sunlight Shores			-	-	-	-	-	-																		
Maple Grove	-	459	-	108	-	7	-	-	-	-																
Seahorse Siesta					17	-	102	-	2	-	-	-														

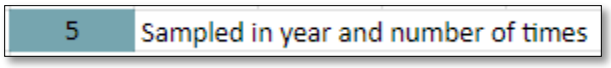
Table 3. 2023 Island County forage fish sampling summary as of 9/26/2023

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

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	2023
Hoypus Point		X	N Whidbey						12	12	11
Cornet Bay		X	N Whidbey				7	8	12	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	12
Freeland County Park			SE Whidbey	1	10	12	3				
Seahorse Siesta		X	SE Whidbey					6	1	3	4
Sandy Point South			SE Whidbey	3							
Glendale	X		SE Whidbey		9	12	3	5	6	5	12
Sunlight Shores		X	S Whidbey						5	11	12
Maple Grove	X		NW Camano	7	9	7	8	2	5	12	12
Camano State Park			SW Camano			7	3	1			

Table 4. Summary of sampling for all sites since program inception.



Lessons Learned

- We continue to look for ways to optimize efficiency of sampling and use of volunteer time.
- All our teams have migrated over to iForms. There have been a few minor issues, but volunteers and staff are continuing to get used to the system.
- Since the Hidden Beach restoration will not likely take place for another year, we are planning to temporarily switch to another restoration site that is found on the west side of Whidbey at the Whidbey Camano Land Trust property known as Keystone Farm.
- Volunteers still find the turn around time for samples to be a bit of a disconnect. Our team is working on ideas to help them feel more engaged in the work.

Photos

by Kelly Zupich

Hidden Beach Survey

Measuring the Beach

Processing Samples

Measuring the Beach