

COUNTY: Island

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# Forage Fish Spawning Survey 2023-2024:

## 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 nearshore restoration sites and index sites. Index sites are locations identified by the Washington Department of Fish and Wildlife (WDFW) which have both public access and 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.
- Determine presence of spawning for beach protection.

These surveys are designed to establish continuity with existing WDFW and Washington State Department of Natural Resources (WDNR) data 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 generated, 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. We reevaluated some of our sites this year and decided to discontinue Sunlight Shores and moved from Hidden Beach to Keystone Farm in October 2023.

Sites sampled in 2023-2024 are shown on the map (Image 1) and described below.

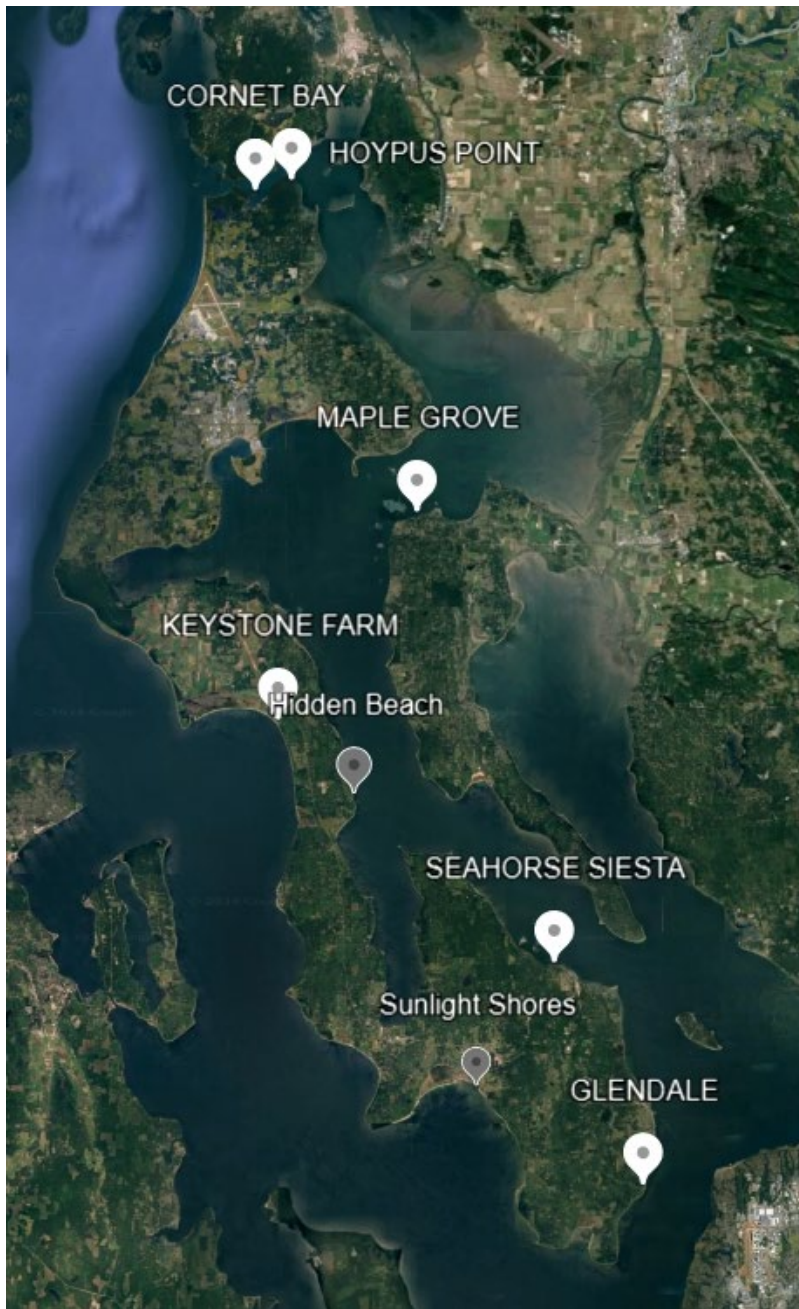


Image 1. Map showing location of the 2023-2024 sampling locations (please note that Seahorse Siesta is only sampled November - February). The white markers indicate currently sampled sites, and the grey markers are sites that were discontinued this year.

	Cornet Bay	Hoypus Point	Keystone Farm	Seahorse Siesta	Glendale	Maple Grove
Type	Restoration	Restoration	Restoration	Restoration	Index	Index
Lead(s)	Karen Scharer	Karen Scharer	Kirk Larsen	Rachel Nostrom, Kristin Galbreath	Kurt Herzog	Paul Williams
Samples per Month	3 (3 stations/mo)	2 (2 stns/mo)	6 (3 stns/mo)	4 Nov-Feb (2 stns)	1 (1 stn/mo)	1 (1 stn/mo)
Location	North Whidbey	North Whidbey	Central Whidbey	Southeast Whidbey	South Whidbey	Northwest Camano
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.	This property included a beach house and short bulkhead that was be removed in 2024 as part of the habitat restoration of the site.	Removal of barge and bulkhead fall 2020-winter 2021.	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 2023-2024 Current Forage Fish Monitoring sites.

## Project Leads and Volunteers

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 2023-2024 season.

Volunteer/Staff	Role	Survey Locations
Kirk Larsen	Project Lead	Keystone Farm
Paul Belanger	Survey Lead	Keystone Farm
Britt Pia	Volunteer	Keystone Farm
Beverly Yoshida	Volunteer	Keystone Farm
Kathy Kundert	Volunteer	Keystone Farm
Kristin Galbreath	Survey Co-Lead	Seahorse Siesta
Scott Galbreath	Survey Co-Lead	Seahorse Siesta
Rachel Nostrom	Survey Co-Lead	Seahorse Siesta
Allison Hiltner	Volunteer	Seahorse Siesta
Kurt Herzog	Survey Lead – Glendale	Glendale, Sunlight Shores
Karen Scharer	Survey Lead	Hoypus Point and Cornet Bay
Micke Huckle	Volunteer	Hoypus Point and Cornet Bay
Tracy Braun	Volunteer	Hoypus Point and Cornet Bay
Paul Williams	Survey Lead	Maple Grove
Tim Cuchna	Volunteer	Maple Grove
Kelly Zupich	MRC Coordinator (Staff)	Backup

Table 2. 2023-2024 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).

## Data and Results

The digital iForms with included beach photos and data were 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 the date of this report. 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

Six sites were sampled at least once throughout 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	2023								2024																	
Month	9		10		11		12		1		2		3		4		5		6		7		8		9	
Species	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	286	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-									
Cornet Bay	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-									
Hidden Beach	-	-	-	-	-																					
Glendale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-									
Sunlight Shores	-	-	-	-	-																					
Maple Grove	193	-	49	-	93	-	26	-	3	-	2	-	-	-	-											
Seahorse Siesta						8	-	146	-	-	-															
Keystone Preserve		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-									

Table 3. 2023-2024 Island County forage fish sampling summary as of 9/16/2024

Key:		Sampled in month							
	-	No eggs present in sample							
	X	Number of eggs for site by species							
	SL	Sand Lance							
	SS	Surf Smelt							
		Samples in queue for analysis							
		(t.b.d. - work in progress / forthcoming)							

A primary goal of monthly sampling is to support long term trend analysis. Table 4 shows the cumulative sampling effort over time.

				Sample year (October prior year to September)									
Site	Index	Restoration	Location	2016	2017	2018	2019	2020	2021	2022	2023	2024	
Hoypus Point		X	N Whidbey						12	12	12	8+	
Cornet Bay		X	N Whidbey				7	8	12	12	12	8+	
Ala Spit		X	N Whidbey			1	5	8					
Windjammer		X	C Whidbey	3	12	12	5						
Long Point			C Whidbey	8	12	12	5						
Keystone Preserve		X	C Whidbey								3	8+	
Hidden Beach		X	SE Whidbey				5	8	10	12	7		
Freeland County Park			SE Whidbey	1	10	12	3						
Seahorse Siesta		X	SE Whidbey					3	1	4	3	2+	
Sandy Point South			SE Whidbey	3									
Glendale	X		S Whidbey		9	12	3	5	6	5	12	9+	
Sunlight Shores		X	SW Whidbey						5	11	11		
Maple Grove	X		NW Camano	7	9	7	8	2	5	12	12	8+	
Camano State Park			SW Camano			7	3	1					

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

X	Sampled in year and number of times
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## Lessons Learned

- Volunteers still find the turnaround 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.
- Some volunteers have expressed an interest in participating in egg counting and further analysis of samples.
- There is interest in contributing to further research which may include expansion or changes to protocols.

## Photos

by Kelly Zupich

