

ISLAND COUNTY MARINE RESOURCES COMMITTEE

WWW.ISLANDCOUNTYMRC.ORG



Minutes

Prepared by Kelly Zupich

January 9, 2024

HYBRID MEETING

PRESENT: Barbara Bennett, Chair, Jill Lipoti, Vice Chair, Scott Chase, Paul Ben McElwain, Andi Kopit, Kirk Larsen, Patrick Havel, Kelly Webb, Kes Tautvydas, Kelly Zupich, MRC staff

ABSENT: Note if notified or un-notified – Ken Collins, notified, Melanie Bacon, notified, Greg Easton, notified,

VISITORS: Clea Barenburg, SRTCC, Jen Schmitz, Natural Resource Manager, Carlie Miller, Surface Water Quality, James Watson, WICD, Jason Morgan, NWSF, Haley Sherman, NWSF, Allie Feidt, NASWI, Lauren Burch, Planning, Linda Rhodes, Public

CALL TO ORDER: Barbara called the meeting to order at 3:00pm. **INTRODUCTIONS:** Introductions were made. **QUORUM:** A quorum was declared. **AGENDA:** The agenda was approved. **MINUTES:** December 5, 2023, minutes approved

TRIBAL ACKNOWLEDGEMENT:

We acknowledge the lands we're on today are the ancestral and current homelands of Indigenous Nations who have stewarded them since time immemorial. We respect their sovereignty, support their Treaty rights, their right to self-determination, and we honor their sacred spiritual connection with the land and water. These Indigenous Nations include the Jamestown S'Klallam, Lower Elwha Klallam, Lummi, Makah, Nooksack, Port Gamble S'Klallam, Samish, Stillaguamish, Swinomish, and Tulalip Tribes.

CITIZEN SCIENCE MONITORING: Haley Sherman (see presentation at end of minutes)

- To date the Northwest Foundation's (NWSF) nearshore restoration program has restored over one mile of shoreline.
- The NWSF is working with regional partners on a long-term study of the impacts of shoreline armoring has on the Puget Sound ecosystem, and how restoration actions may return our shorelines to their natural functioning state.
- 2023 marked 10 years of seining at Cornet Bay.
- From 2009 to 2023 883 seining sets were deployed.
- Temperature and salinity did not appear to be impacted by the restoration.
- Dissolved oxygen values increased following the first phase of restoration which we hypothesized could be due to hydrological changes due to armor removal and increased nutrient uptake from backshore vegetation.
- Juvenile salmon accounted for 93% of the catch during seining.

ISLAND COUNTY MARINE RESOURCES COMMITTEE

WWW.ISLANDCOUNTYMRC.ORG

- Juvenile Chinook numbers were positively affected by restoration while other salmon species were more affected by hatchery releases.
- Juvenile salmonids predominantly utilized control sites, suggesting a preference for natural, unarmored shorelines.
- Other nearshore fish showed increased use of restored sites following restoration.

WHITE PAPER/SMP UPDATES:

- Barbara Bennett and Patrick Havel presented the White Paper to the County Commissioners on December 20th. The presentation and discussion after went well. The Commissioners showed support of the paper and wanted the paper shared with the Contractor that will be working on the Comprehensive Plan.
- The MRC would like to continue discussions around predictive models.
- SMP Letter to the Commissioners. We will take another round of edits and will finalize the document to be sent as public comment before the SMP Hearing.

ELECTIONS:

- Chair Role: Kirk moved to approve Jill Lipoti as Chair. Andi seconded. Motion approved.
- Vice Chair Role: Scott moved to approve Kelly Webb as Vice Chair. Kes seconded. Motion approved.
- NWSC Representative Role: Kes moved to approve Ken Collins as the NWSC Representative. Kelly seconded. Motion approved.

COORDINATOR'S REPORT

- Armoring Survey: [Technical Memorandum: Island County 2023 Shoreline Armor Survey – Approach and Phase 1 Results \(islandcountymrc.org\)](#)

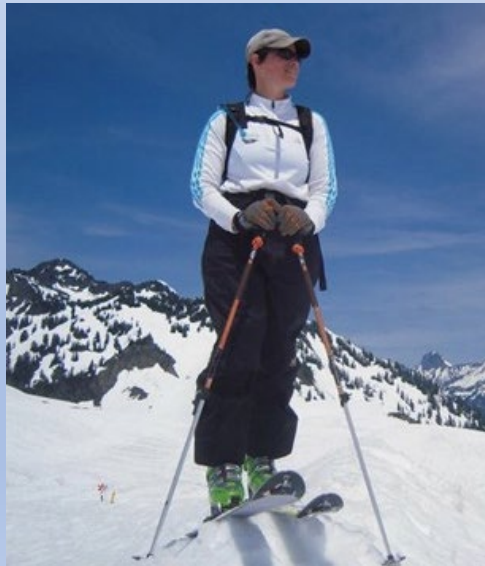
Meeting Adjourned 5:04 pm

Northwest Straits Foundation 2023 Restoration Monitoring Island County, WA



Island County MRC
January 9, 2024

Haley Sherman
Project Coordinator



**Northwest
Straits**
FOUNDATION

partners in marine conservation

**Core
Programs**



Nearshore Restoration



Derelict Gear Removal



Shore Friendly
Landowner Outreach



Citizen Science
Monitoring

NWSF Nearshore Restoration

To date, Northwest Straits Foundation's nearshore restoration program has restored over one mile of shoreline.



HEALTHY SHORELINES

SUPPORT

FORAGE FISH

SUPPORT

SALMON

SUPPORT

ORCAS



The "Why"

Ecosystem Connectivity

How do we measure change?

RESTORATION MONITORING

Forage Fish: what beaches are providing habitat for surf smelt and Pacific sand lance to lay and hatch their eggs?



FORAGE FISH EGGS

Beach Seine: do migrating juvenile salmon and other nearshore fish species prefer natural shorelines over modified shorelines?



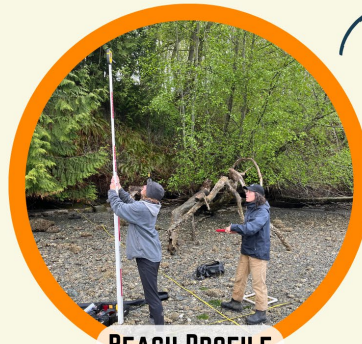
BEACH SEINE



LOGS

Logs: do restored beaches provide more woody debris than armored beaches, bringing natural stability to shorelines while providing shelter for invertebrates and foraging habitat for shorebirds?

The Northwest Straits Foundation is working with regional partners on a long-term study of the impacts shoreline armoring has on the Puget Sound ecosystem, and how restoration actions may return our shorelines to their natural functioning state. We are surveying 28 restoration sites to learn:



BEACH PROFILE

Beach profile: do restored beaches maintain similar physical structures to natural beaches over armored beaches? The slope of a beach can effect algae and invertebrates presence, and sediment composition needed for successful forage fish spawning.

Insects: how are restoration actions effecting the availability of insects falling onto the water's surface from riparian vegetation, an important component of diet for migrating juvenile salmon?



INSECTS

Citizen Science: We are working with community volunteers to collect scientific data and serve as stewards for our restoration sites. Our volunteers have provided over 9,000 hours of service since 2014!



WRACK

Wrack: is beach wrack more abundant on restored and natural shorelines providing food and shelter for invertebrates and foraging habitat for shorebirds?

Island County Survey Sites



2023 - 10 years of seining at Cornet Bay!

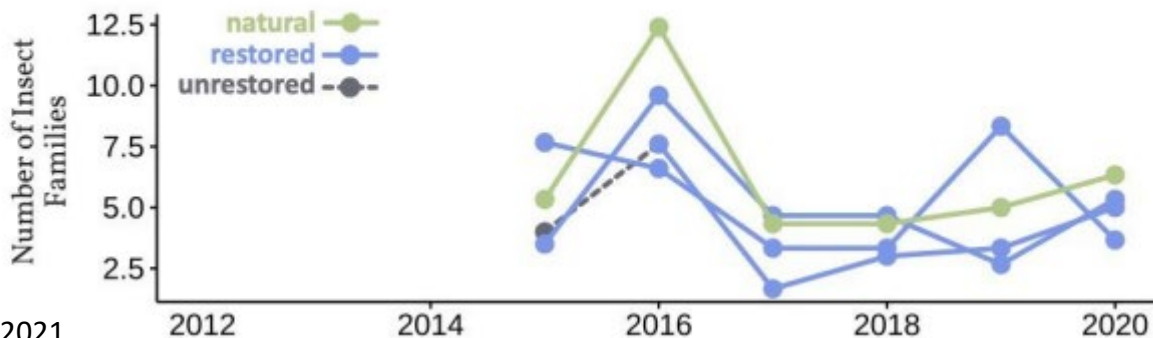
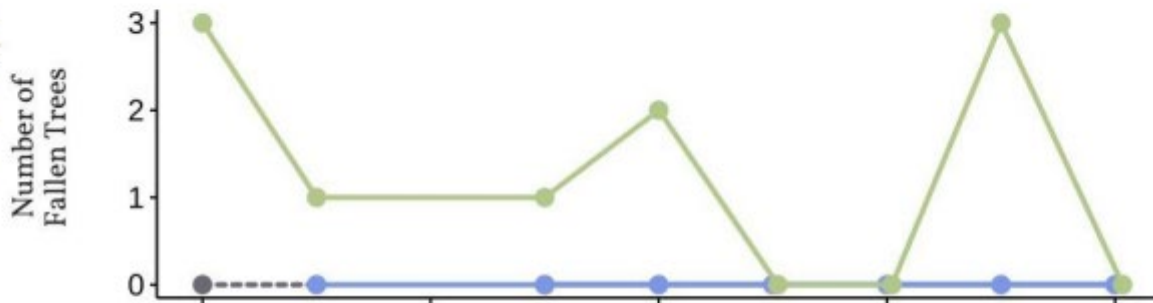
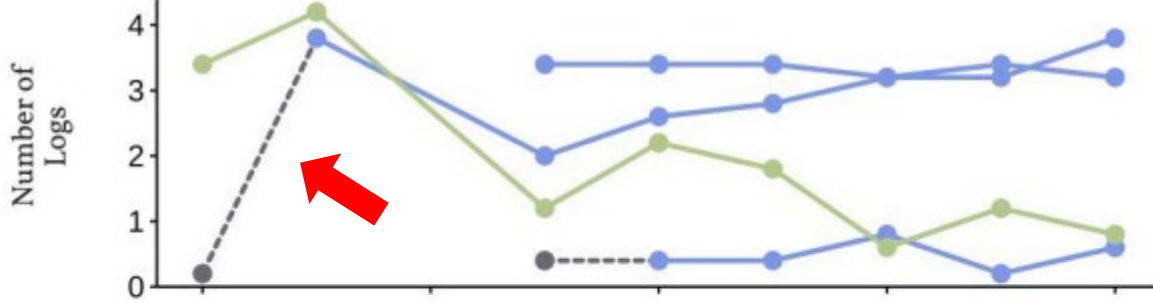
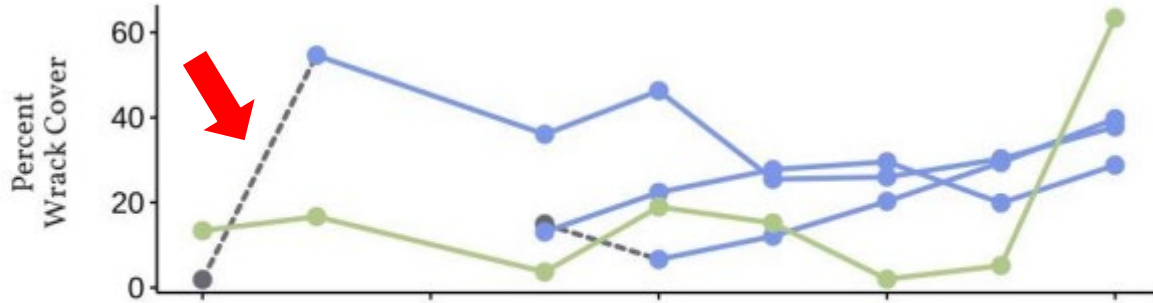




Restoration actions

- Removal of 65 tons of creosote wood from a 750-foot-long bulkhead
- Removal of over 79 tons of contaminated fill
- Placement of over 1,200 tons of beach spawning gravel
- Native vegetation planting
- Expansion of a small salt marsh area





Long-term monitoring is crucial to understanding effectiveness of restoration on different physical and biological variables

Methods

- 883 total sets deployed from 2009-2023.
- Reference/Control Sites: #1-3, #8, and #10 (site 10 not sampled in 2009)
- Restored/Treatment Sites #4-7, and #9
- Seining occurred once in January and twice monthly between the months of February – June.



Cornet Bay Sampling





Questions we sought to answer

Did restoration have an effect on local water quality parameters and how has this varied by year?

What fish species are present within Cornet Bay? Was there an increase in fish catch?

Did restoration have an effect on annual juvenile salmonid abundance?

How does juvenile salmonid abundance at Cornet Bay compare to Skagit River outmigration trap abundances?

Did juvenile salmonid abundance increase at restored sites following restoration?

Was species composition at Cornet Bay affected by nearshore restoration?

Question 1: Did restoration have an effect on local water quality parameters and how has this varied by year?

Temperature and salinity did not appear to be impacted by restoration.

Dissolved oxygen values increased following the first phase of restoration which we hypothesize could be due to hydrological changes due to armor removal and increased nutrient uptake from backshore vegetation.

Results

Water Quality

Water quality parameters measured at Cornet Bay from 2009-2023.

	Temperature (°C)	Salinity (ppt)	Dissolved Oxygen (mg/L)
*Number of Cases	838	838	827
Minimum	6.0	20.5	5.01
Maximum	13.0	32.2	10.88
Range	7.0	11.8	5.87
Median	9.2	28.0	7.95
Mean	9.1	27.6	8.03
Standard Error	0.05	0.07	0.03
Standard Deviation	1.33	1.96	0.93

Question 2: What fish species are present in Cornet Bay and was there an increase in fish catch post-restoration?

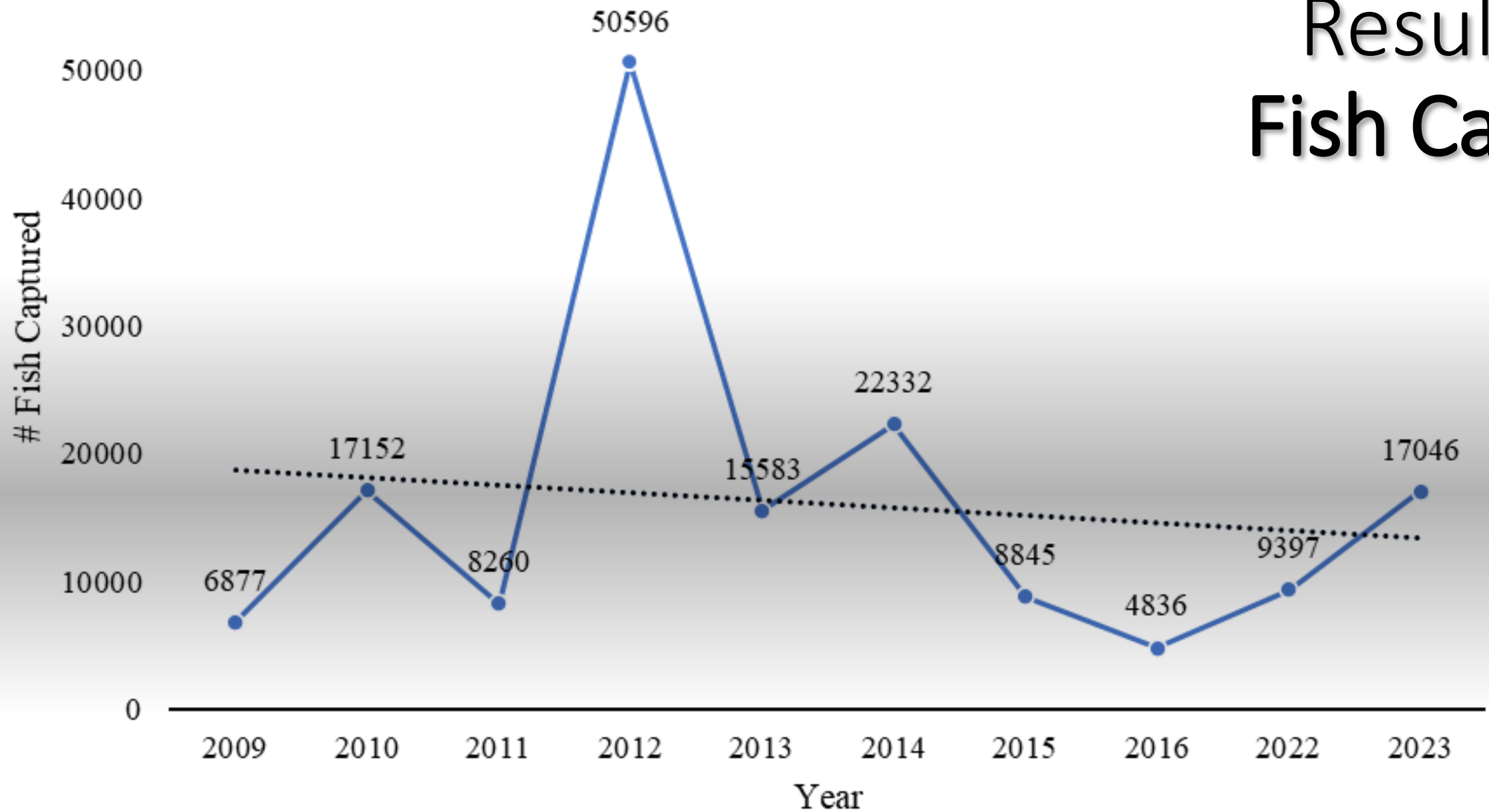
Lots of juvenile salmon!

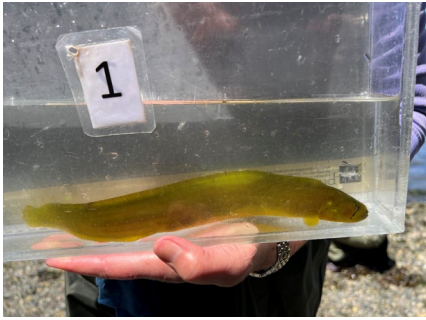
Majority captured were juvenile pink and chum salmon, second largest contributor were sculpins

Juvenile salmonid abundance had greatest impact on annual fish catch

Fish catch showed an overall decrease of 596 fish per year, no discernable impact from restoration was observed

Results Fish Catch





Juvenile Salmonids

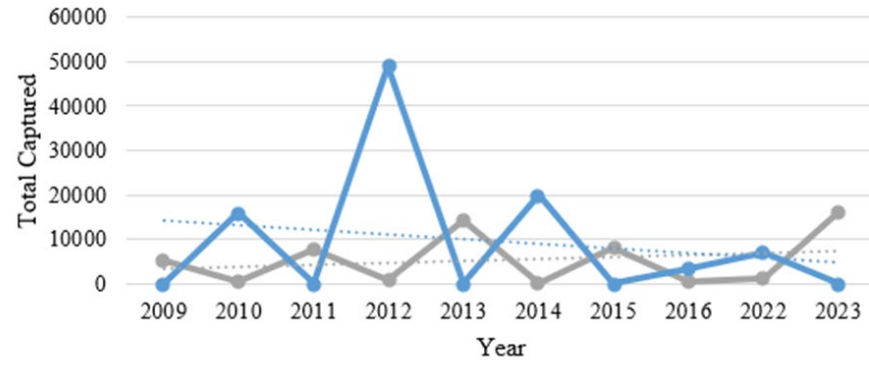


Question 3: Did restoration have an effect on annual juvenile salmonid abundance?

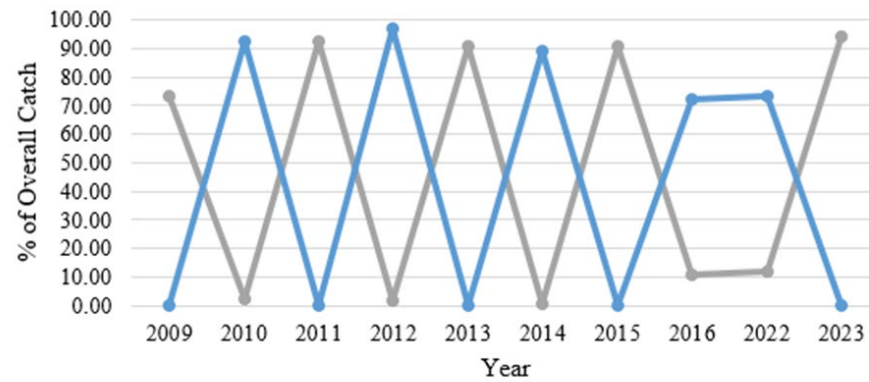
Juvenile chum and pink salmon abundance at Cornet Bay were more influenced by hatchery efforts and Skagit outmigration patterns than restoration

Juvenile Chinook salmonid abundance increased following restoration and was less impacted by Skagit outmigration patterns

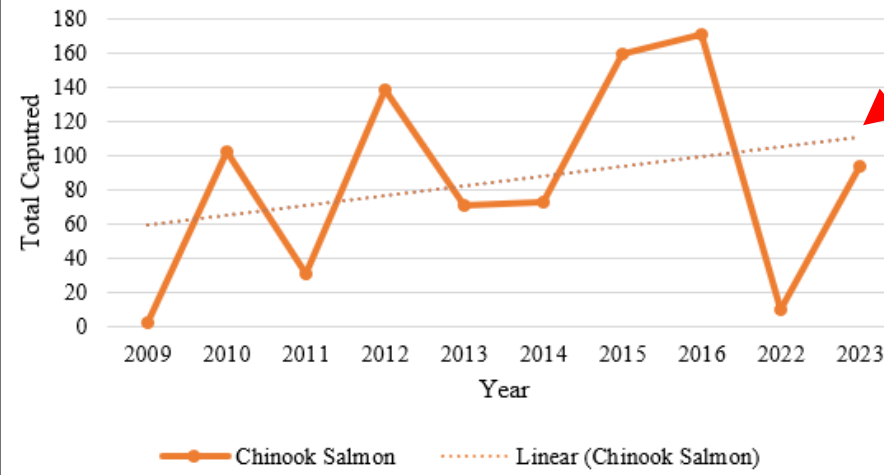
Juvenile Chum and Pink Salmon Abundance



Chum & Pink Salmon % of Catch per Year

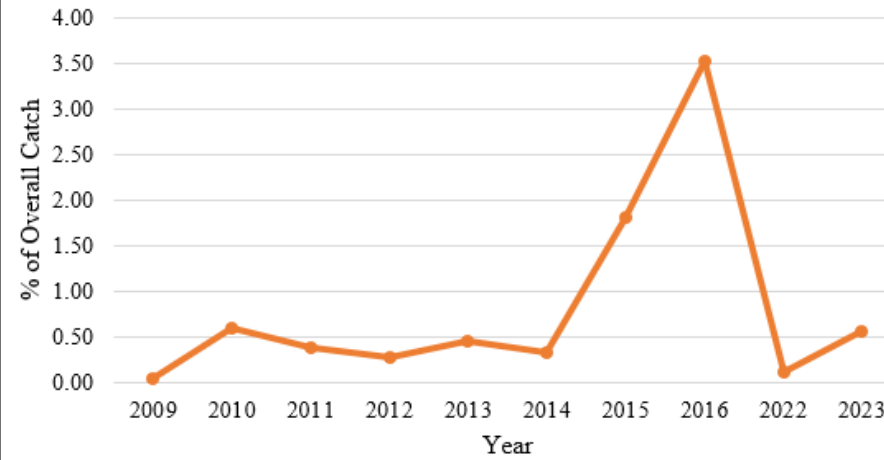


Juvenile Chinook Salmon Abundance



**Linear increase
in abundance**

Chinook Salmon % of Catch per Year



Question 4: How does juvenile salmonid abundance at Cornet Bay compare to Skagit River outmigration trap abundances?

Juvenile chum and pink salmon abundance at Cornet Bay appeared to be directly related to outmigration abundance recorded at Skagit River Mt Vernon Trap

Juvenile Chinook salmonid abundance at Cornet Bay was less impacted by Skagit outmigration patterns

SKAGIT RIVER



BRITISH COLUMBIA, CANADA

WASHINGTON, UNITED STATES

 **BELLINGHAM**

BAKER

ROSS LAKE

Cornet Bay

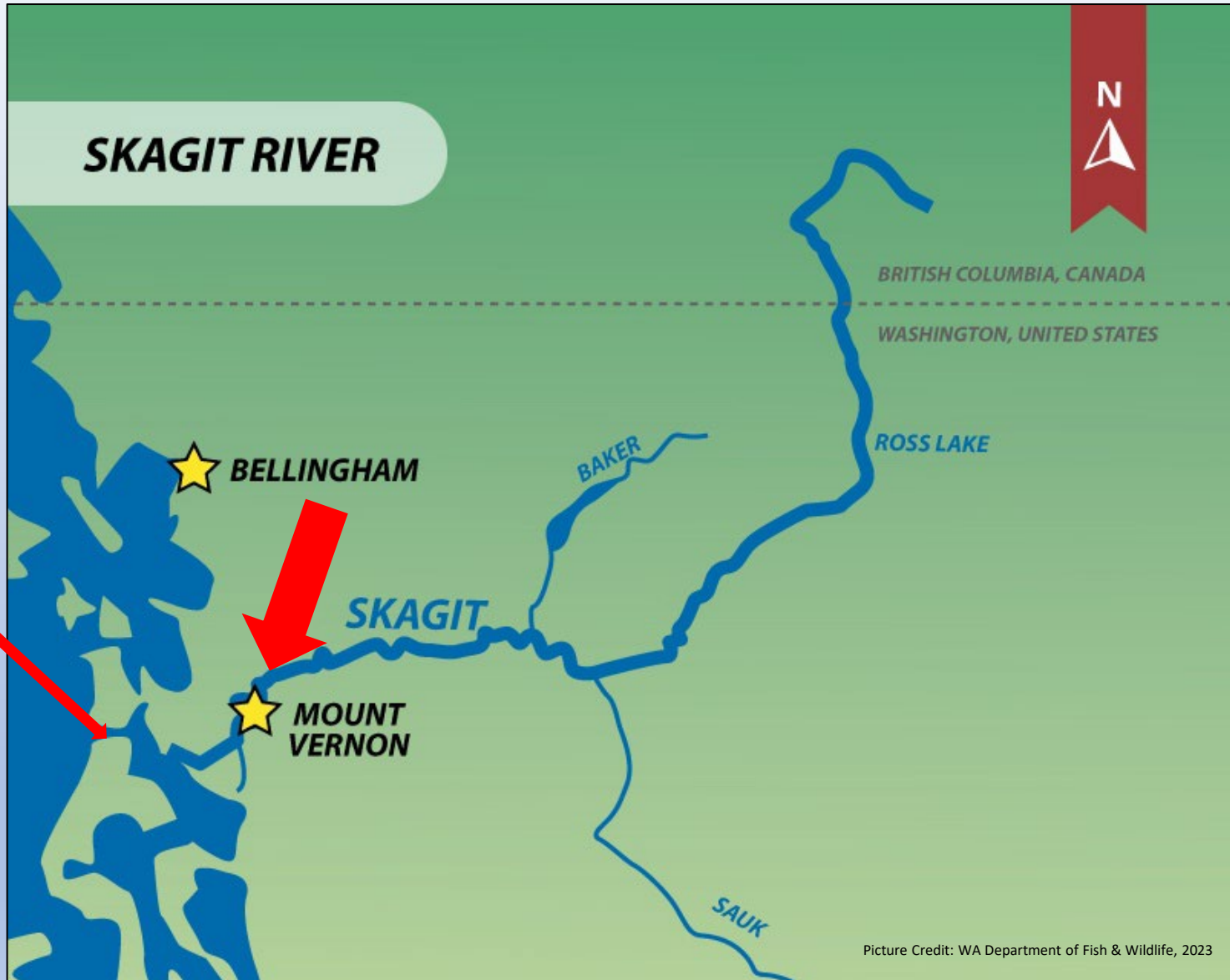
SKAGIT



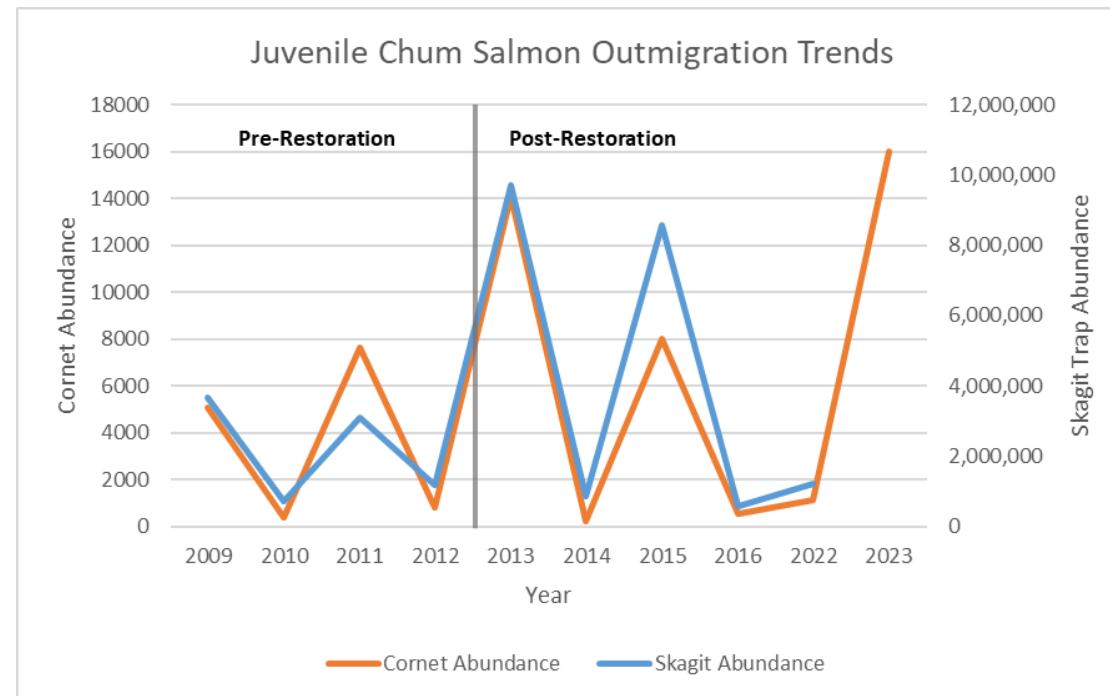
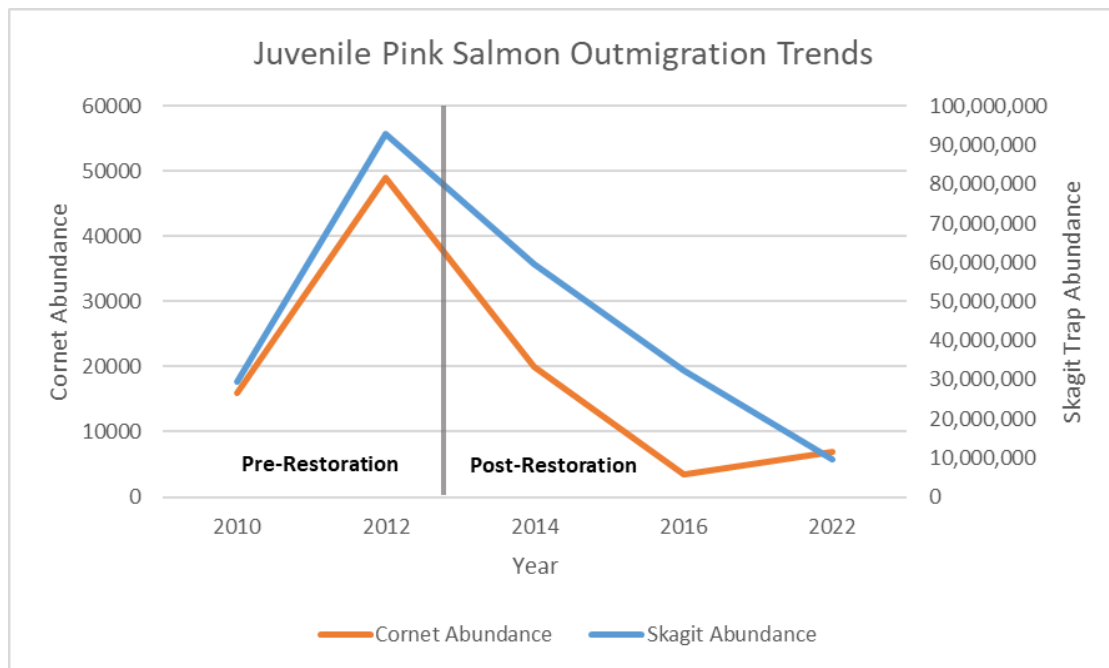
 **MOUNT VERNON**

SAUK

Picture Credit: WA Department of Fish & Wildlife, 2023

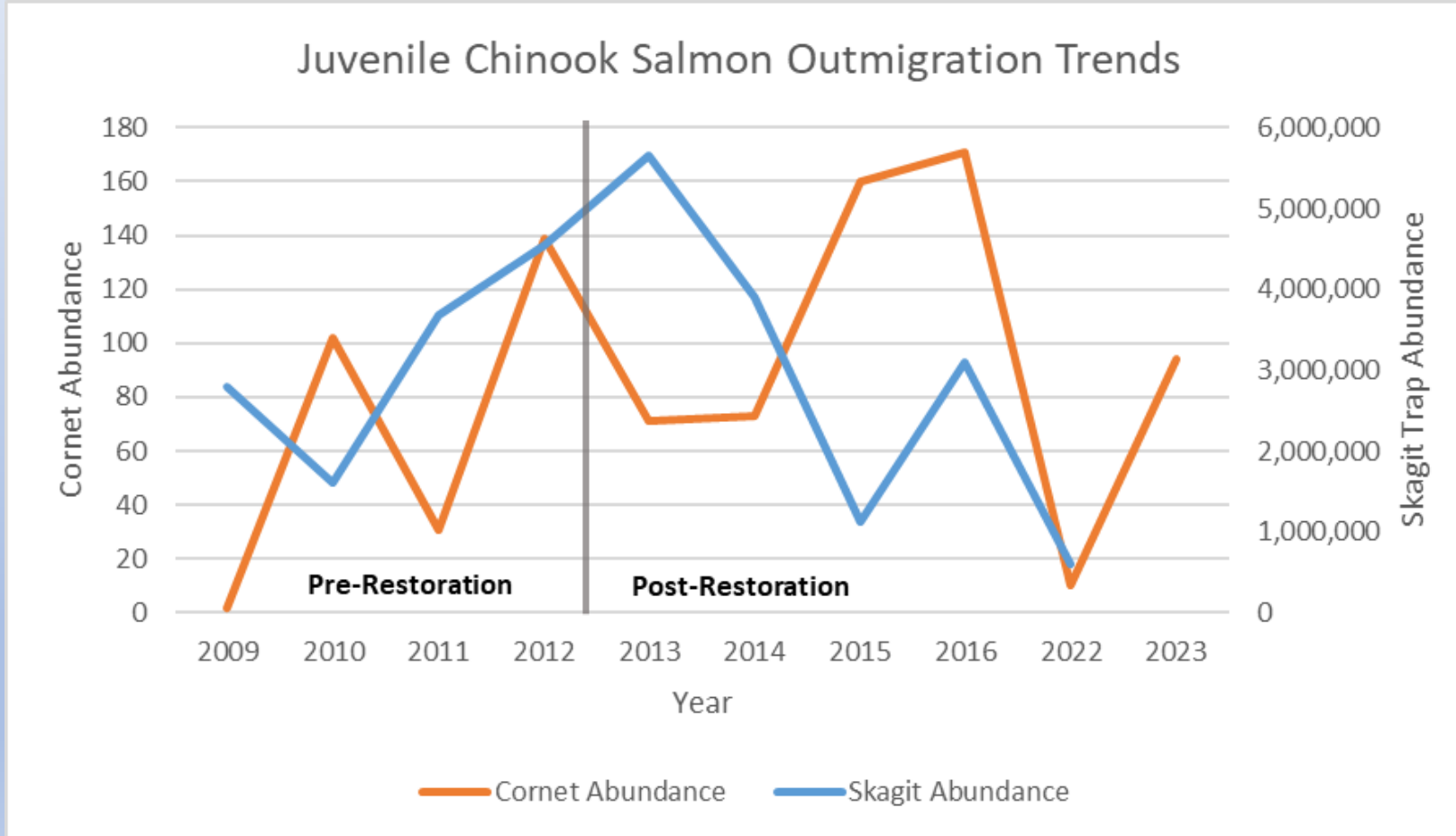


Results - Outmigration Trends



Results

Outmigration Trends



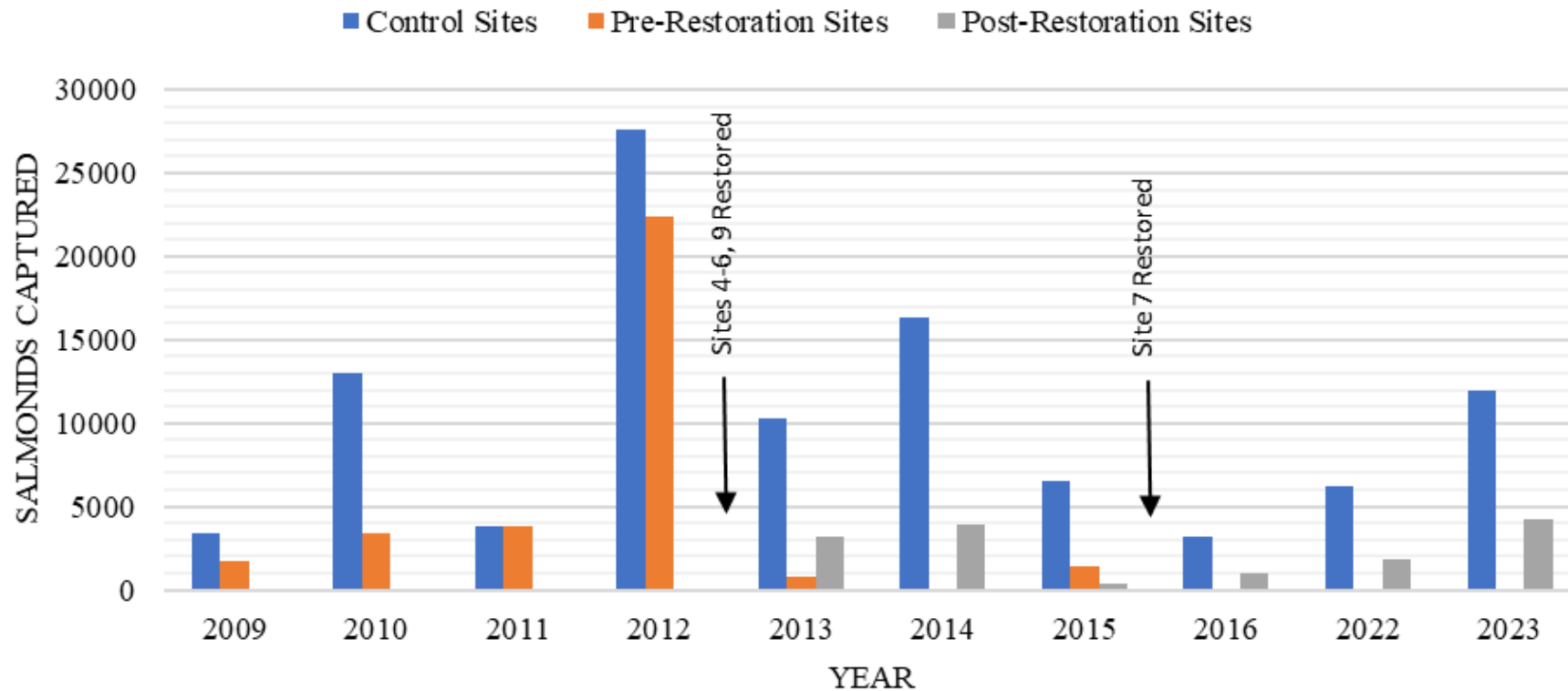
Question 5: Did juvenile salmonid abundance increase at restored sites following restoration?

Abundance at control/reference sites remained highest for juvenile salmonids (particularly chum and pink) throughout the study and did not appear to be impacted by restoration

Juvenile Chinook salmonid abundance at restored/treatment sites increased following restoration

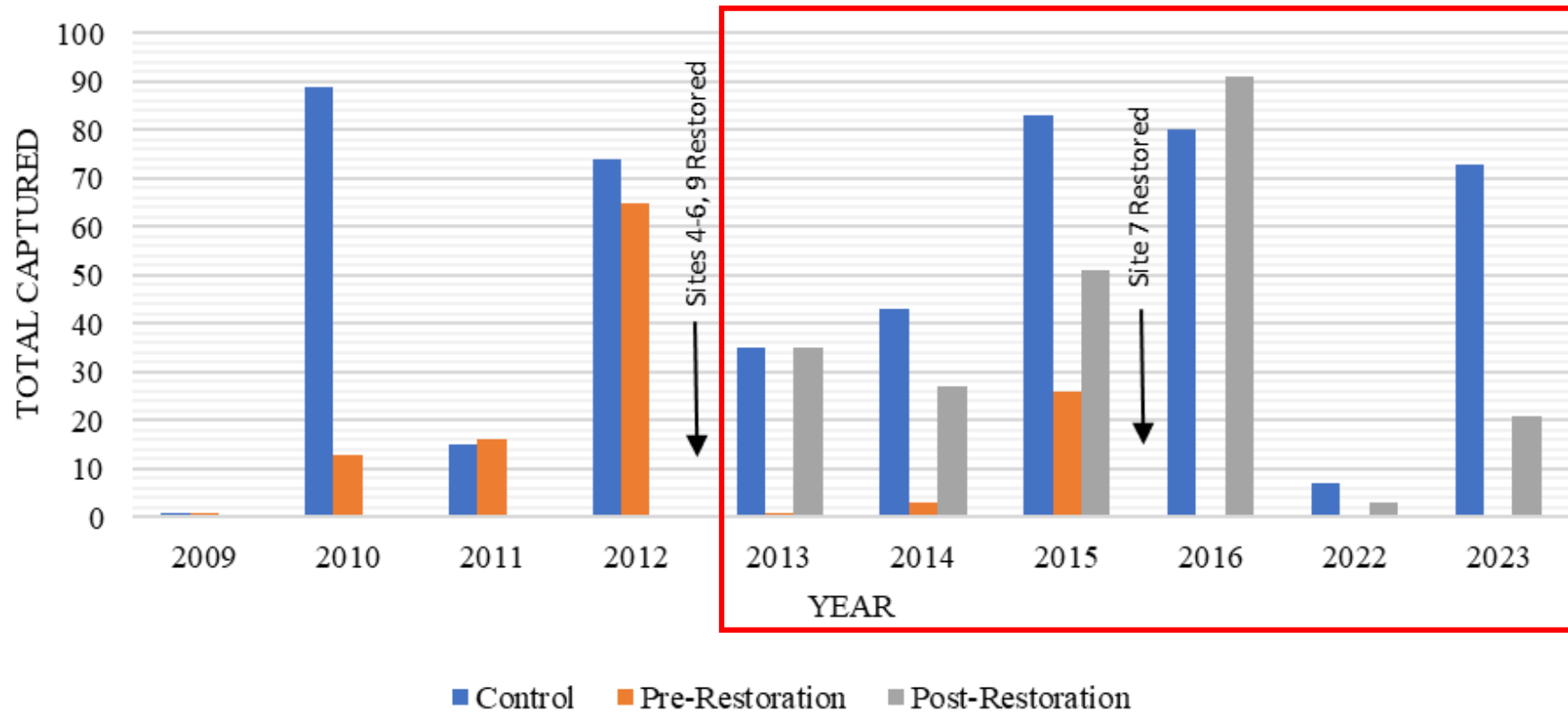
Results - Site Utilization

Salmonid Abundance at Control & Treatment Sites 2009-2023



Results - Site Utilization

Juvenile Chinook Salmon Abundance at Control & Treatment Sites 2009-2023



Question 6: Was species composition at Cornet Bay affected by nearshore restoration?

Prior to restoration, in 2009, percent composition of juvenile salmonids captured was 74% but remained above 85% for all the years following, peaking at 95% in 2023

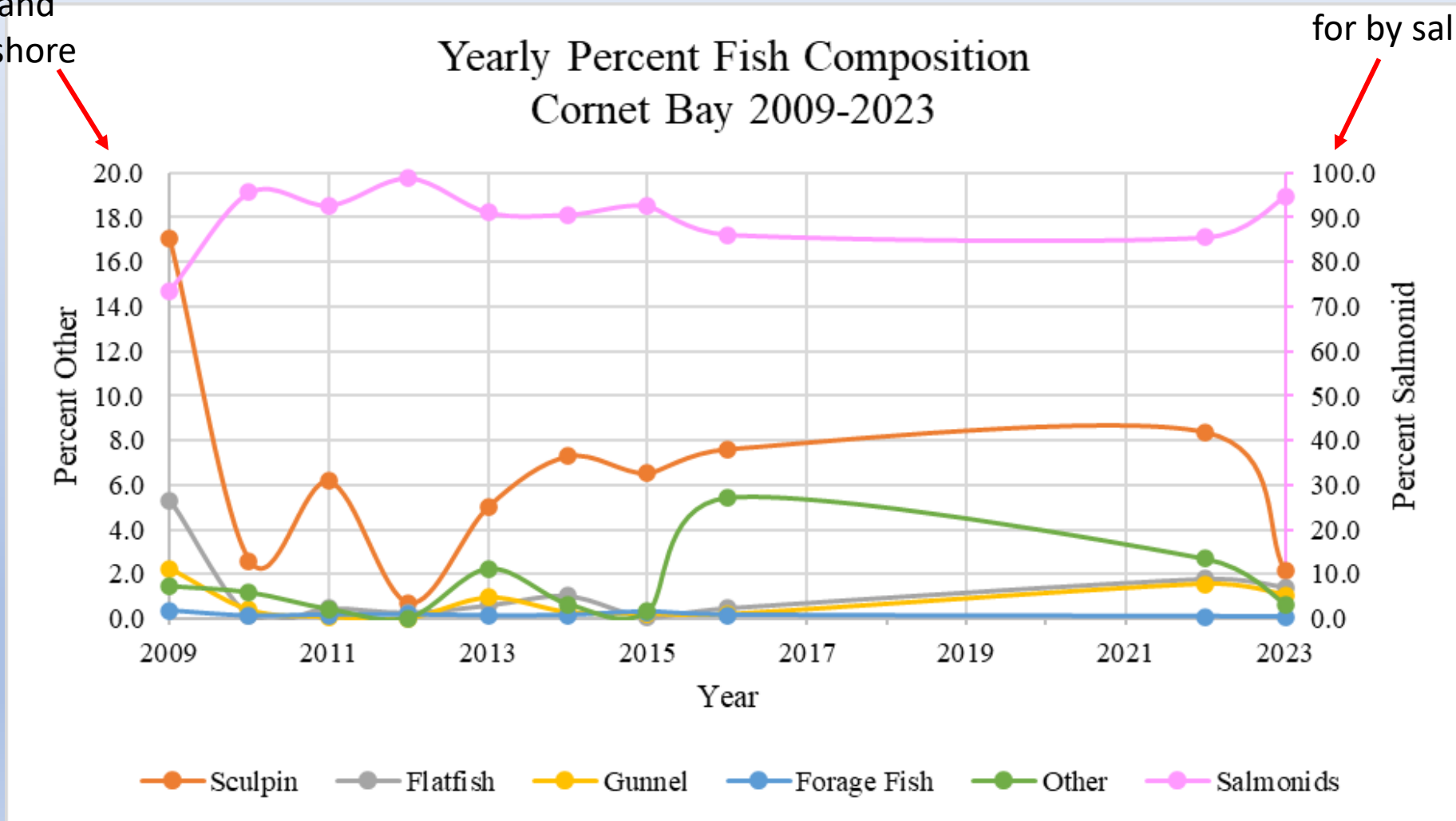
The percentage of juvenile salmonids captured remained highest at control sites each year. Their composition of catch was lowest at treatment site 6, averaging 60% and highest at control site 3, averaging 95%.

There was an increase of percent catch of non-salmonids at site six following the first phase of restoration in 2012, with percentage peaking at 97% of total catch in 2022.

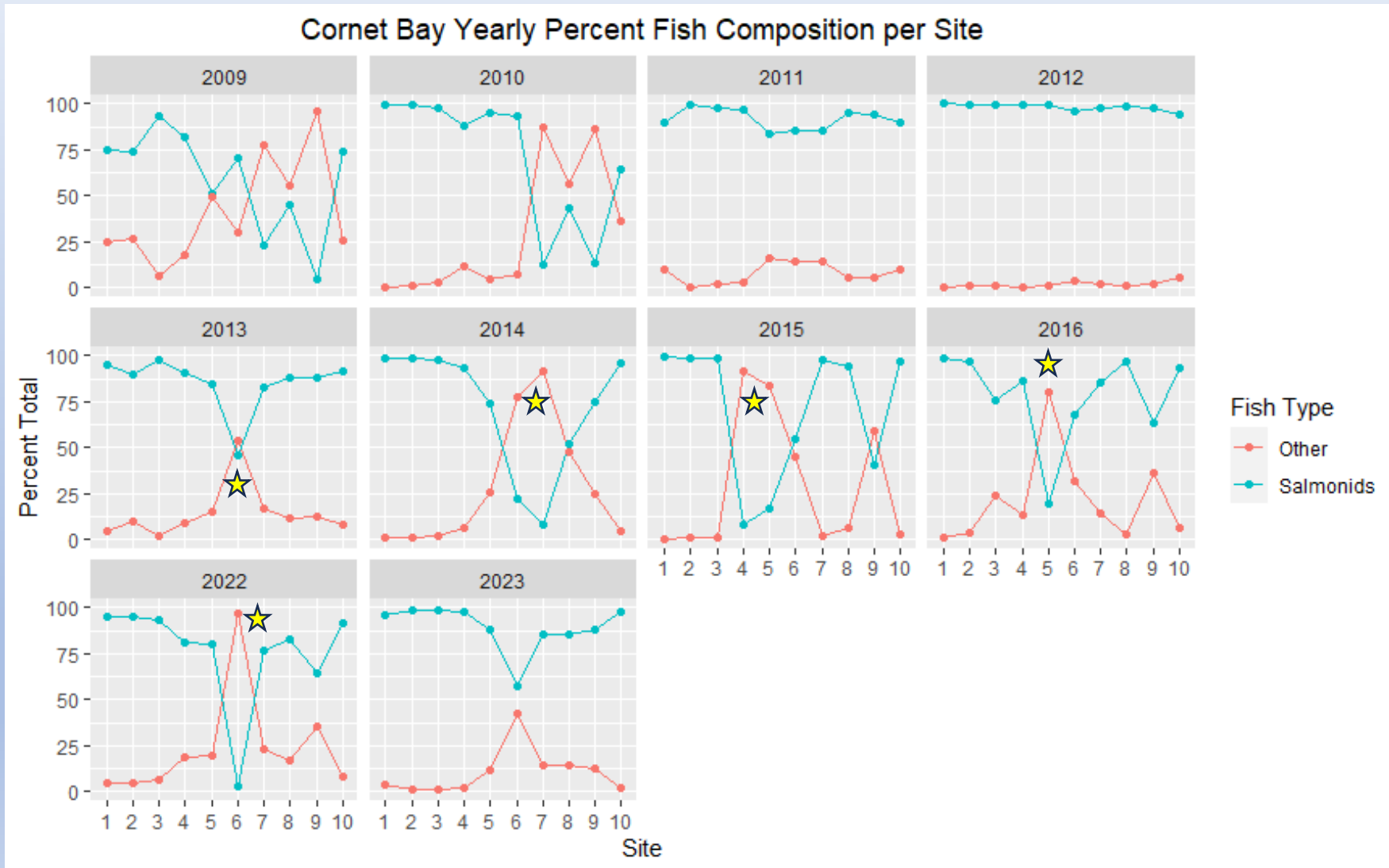
Look here for % of catch accounted for by sculpin, flatfish, gunnel, forage fish and other nearshore fish

Results – Fish Composition

Look here for % of catch accounted for by salmonids



Results – Fish Composition



CONCLUSIONS



Juvenile salmonids predominantly utilized control sites, suggesting a preference for natural, unarmored shorelines



Other nearshore fish species showed increased use of restored sites following restoration



The overall annual abundance of juvenile salmonids appeared more influenced by Skagit River outmigration than restoration



Once more..

Long-term monitoring is crucial to understanding effectiveness of restoration on different physical and biological variables

THANK YOU TO OUR VOLUNTEERS



10 YEARS, 2,598
HOURS, AND
COUNTLESS
DONUTS LATER...

References

- Anderson, I. 2023. WDFW Skagit Juvenile Abundance Estimates_2023. Personal Communication. *Juvenile Salmon Skagit River Outmigration Trap Abundances
- Beamer, EM, A McBride, R Henderson, J Griffith, K Fresh, T Zackey, R Barsh, T Wyllie-Echeverria and K Wolf. 2006. Habitat and fish use of pocket estuaries in the Whidbey Basin and north Skagit County bays, 2004 and 2005. Skagit River System Cooperative, LaConner, WA. Available at www.skagitcoop.org/.
- Beamer, EM, A McBride, R Henderson, and K Wolf. 2003. The importance of non-natal pocket estuaries in Skagit Bay to wild Chinook salmon: an emerging priority for restoration. Skagit River System Cooperative, LaConner, WA. Available at www.skagitcoop.org.
- Clancy, M., I. Logan, J. Lowe, J. Johannessen, A. MacLennan, F.B. Van Cleve, J. Dillon, B. Lyons, R. Carman, P. Cereghino, B. Barnard, C. Tanner, D. Myers, R. Clark, J. White, C. A. Simenstad, M. Gilmer, and N. Chin. 2009. Management Measures for Protecting the Puget Sound Nearshore. Puget Sound Nearshore Ecosystem Restoration Project Report No. 2009-01. Published by Washington Department of Fish and Wildlife, Olympia, Washington.
- Island County Marine Resources Committee (MRC). 2022. Cornet Bay Restoration. Cornet Bay Restoration | Island County Marine Resource Committee. Retrieved November 7, 2023, from <https://www.islandcountymrc.org/projects/cornet-bay-restoration/>
- LaPeyre, M., Geaghan, J., Decossas, G., La Peyre, J. Analysis of environmental factors influencing salinity patterns, oyster growth, and mortality in lower Breton Sound Estuary, Louisiana using 20 years of data. Journal of Coastal Research, 32(3):519-530 (2016). <https://doi.org/10.2112/JCOASTRES-D-15-00146.1>
- Pucci, D.S., Selleck, J., Boyer, B., Kagley, A. 2017. Juvenile salmon and nearshore fish use in Cornet Bay, Deception Pass State Park in response to beach restoration, 2009-2016. Island County Marine Resources Committee. [cornet_2009-2016_final.pdf](#) (islandcountymrc.org)
- Richter, A., & Kolmes, S. A. (2005). Maximum temperature limits for Chinook, coho, and chum salmon, and steelhead trout in the Pacific Northwest. Reviews in Fisheries Science, 13(1), 23–49. <https://doi.org/10.1080/10641260590885861>
- WA Department of Fish & Wildlife, May 30, 2023. Upper Skagit River to open for hatchery spring Chinook. https://www.washingtonfishreports.com/fish_reports/199974/upper-skagit-river-to-open-for-hatchery-spring-chinook.php



Questions?