

Assessment of Threatened and Endangered Marine and Anadromous Fish Presence and Their Critical Habitat Occurrence Adjacent to Navy Facilities in Puget Sound

2013-16 Survey Results

Prepared for:

Naval Facilities Engineering Command Northwest (NAVFAC NW)

Submitted by:

WDFW Marine Fish Science Unit

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Philip Campbell



ESA-listed Fish in Puget Sound

Distinct Population Segment



2010 Endangered Species Act (ESA)

- Yelloweye
- Bocaccio (Endangered)
- Eulachon (Threatened)



2007

- Steelhead (Threatened)



1999

- Chinook Salmon (Threatened)
- Hood Canal Summer-run Chum Salmon (Threatened)
- Bull Trout (Threatened - USFWS)



Rockfish Critical Habitat Designation

644.7 mi.² of nearshore habitat (<30 meters)

438.5 mi.² of deep-water habitat (>30 meters)

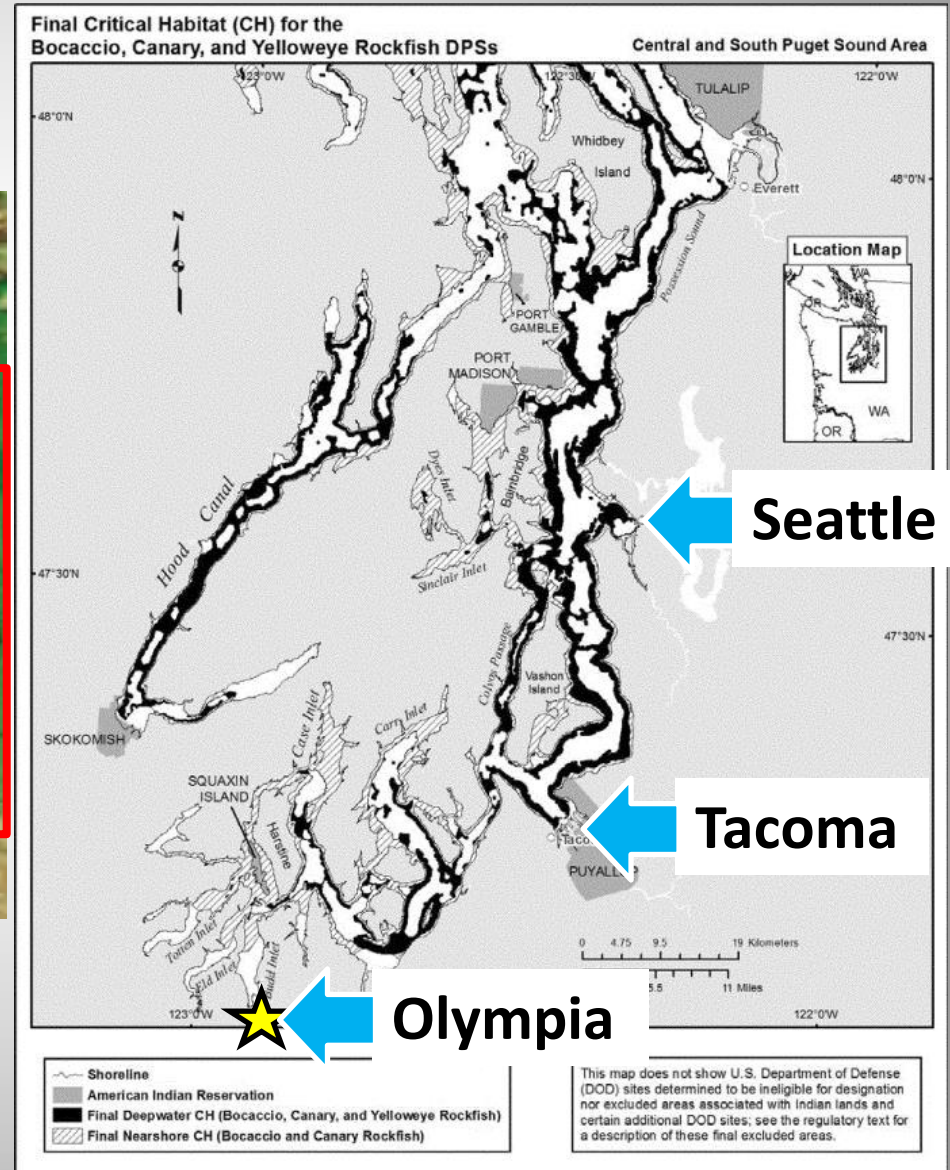
ESA defines critical habitat as:

“The specific areas within the geographical area occupied by the species, at the time it is listed..., on which are found those **physical or biological features essential to the conservation of the species...**”

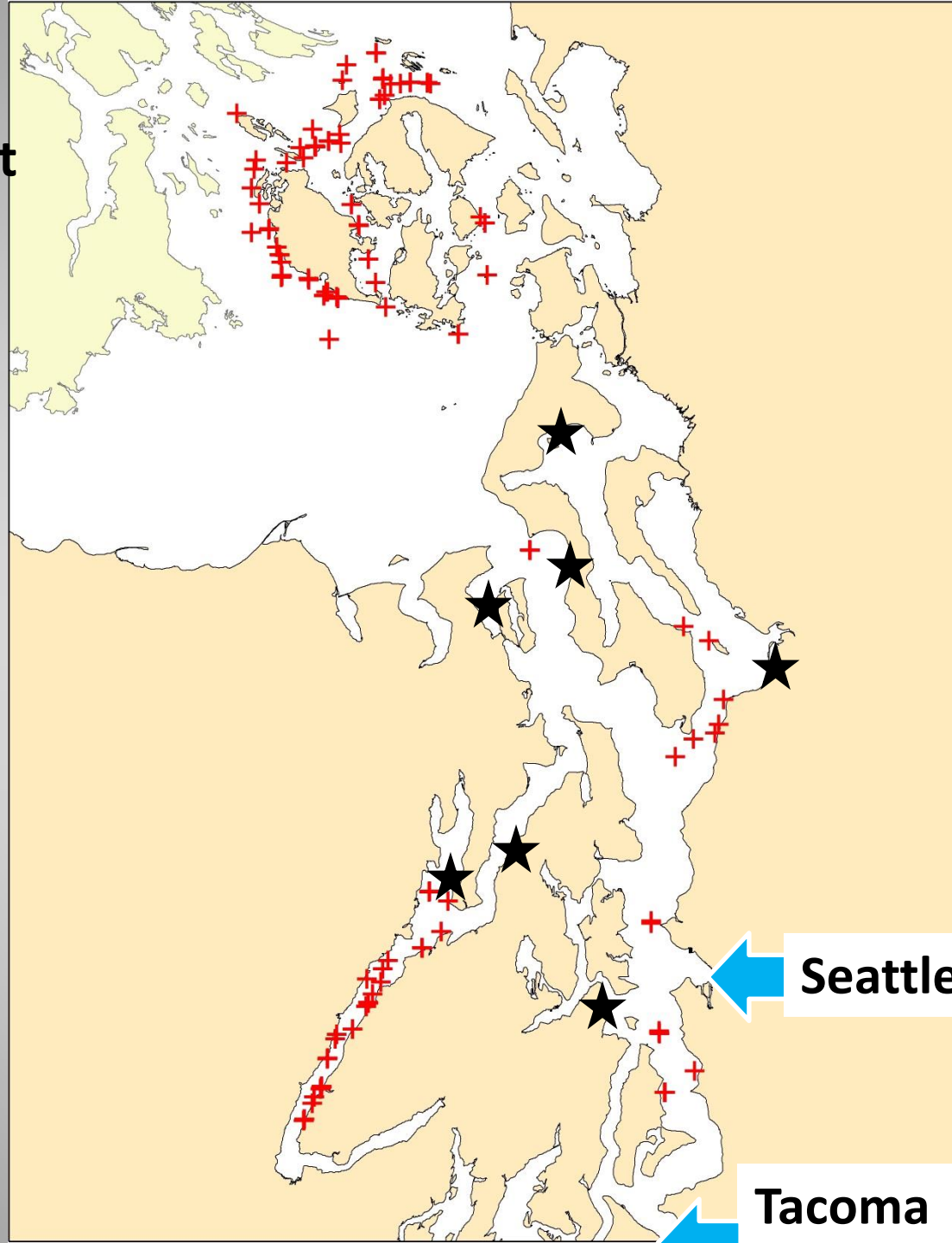
Section 4(a) of the ESA precludes military land from designation **where that land is covered by an INRMP** that the Secretary has found in writing will benefit the listed species.



Rockfish Critical Habitat Designation



Critical Habitat Survey 2015-16

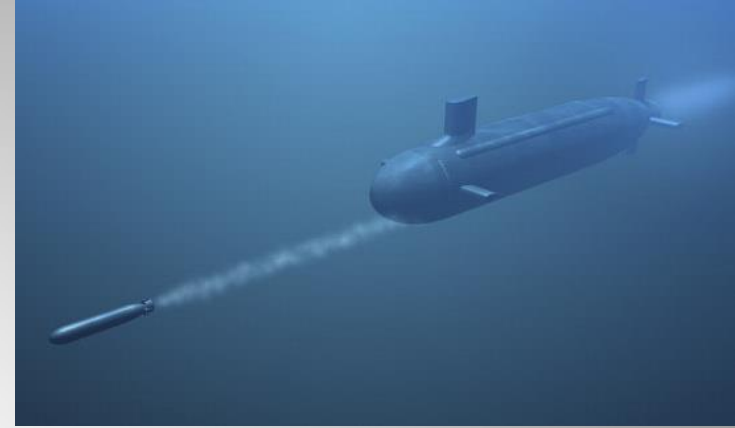


- ✚ Yelloweye RF
- ★ Navy

Seattle

Tacoma

Survey Purpose & Goals



- Evaluate presence and timing of ESA-listed fish species at 9 Navy facilities
- Assess habitat suitability for ESA-listed rockfish species (i.e., is it critical habitat?)
- Produce reports summarizing results and identifying potential for localized impacts
- Fulfill Integrated Natural Resource Monitoring Plan (INRMP) obligations

History of Navy Fish Surveys

- 1977 - 1982
 - Bangor & Indian Island : seine, trawl, scuba
- 1991 – 1993
 - Manchester : seine, scuba, eelgrass
- 2005 – 2008
 - Bangor : seine, eelgrass
- 2011 – 2015
 - Crescent Harbor : seine
- 2013 – 2017
 - ALL Locations : ROV, scuba, acoustics, traps, seine

Rockfish & Habitat Survey Tools

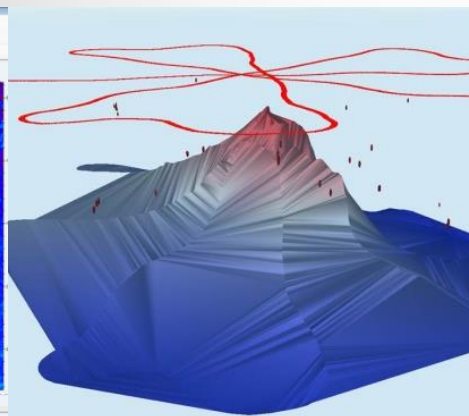
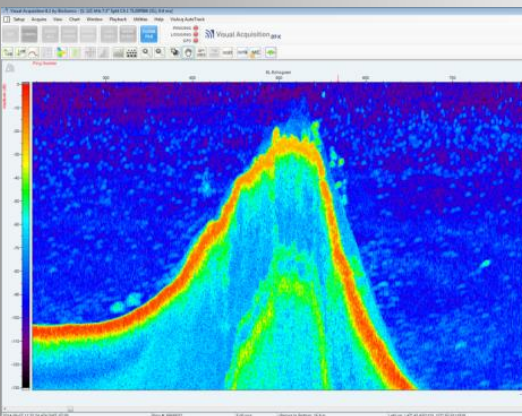
Remotely Operated Vehicle (ROV)



Scuba Diving



Hydroacoustics

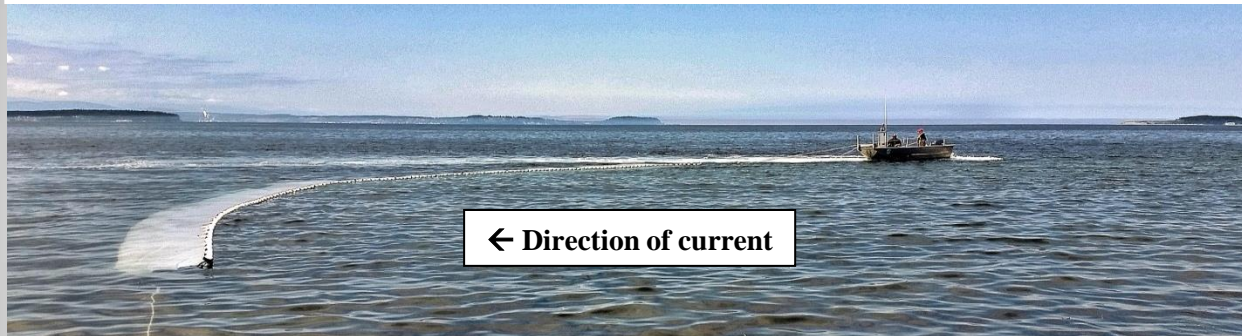
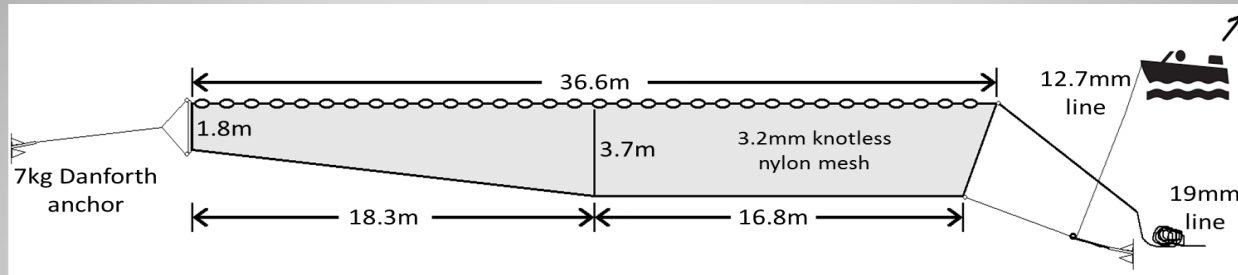


Lighted Fish Traps



Beach Seining

Forage Fish & Salmonids

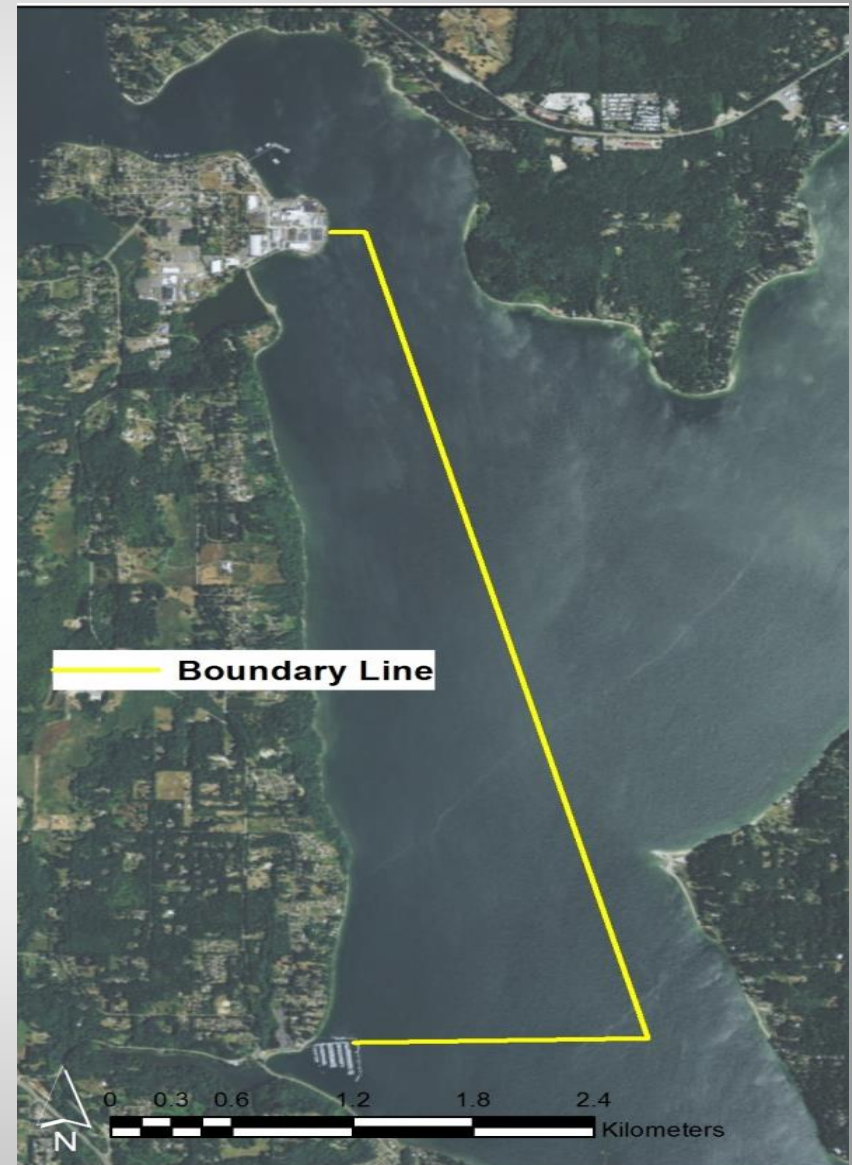
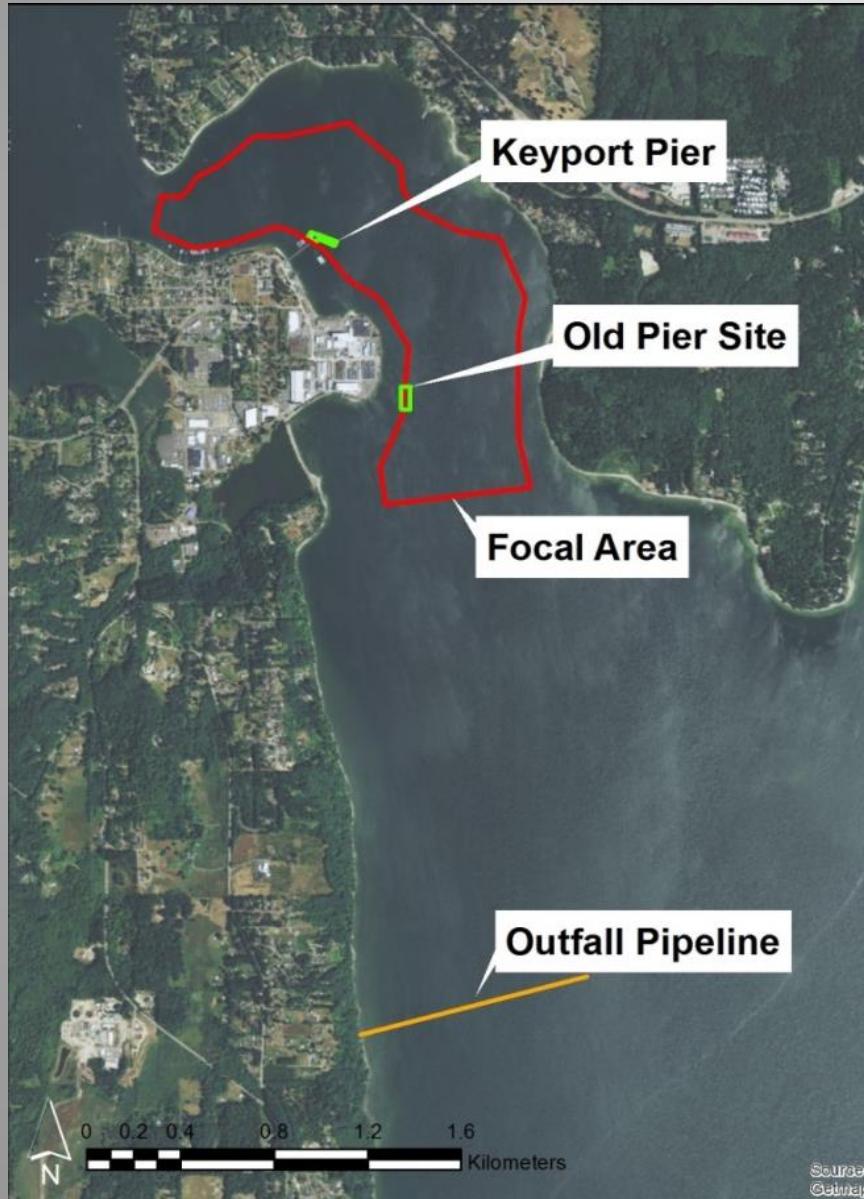


Study Areas

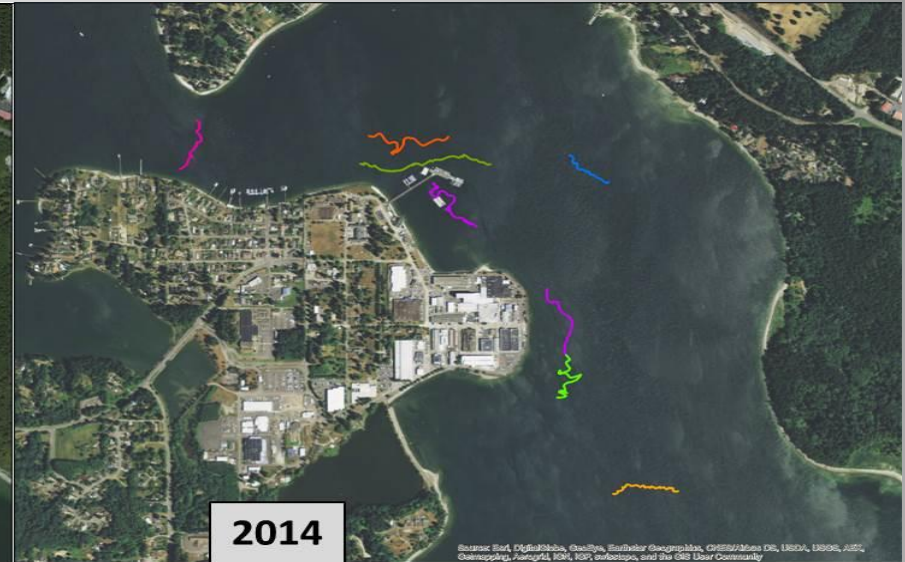
- NAVBASE Kitsap
 - Keyport, Bremerton, Bangor
 - Zelatched Point
- NAS Whidbey Island
 - Crescent Harbor, Lake Hancock
- NAVMAG Indian Island
- NAVSTA Everett
- Manchester Fuel Department



Keyport



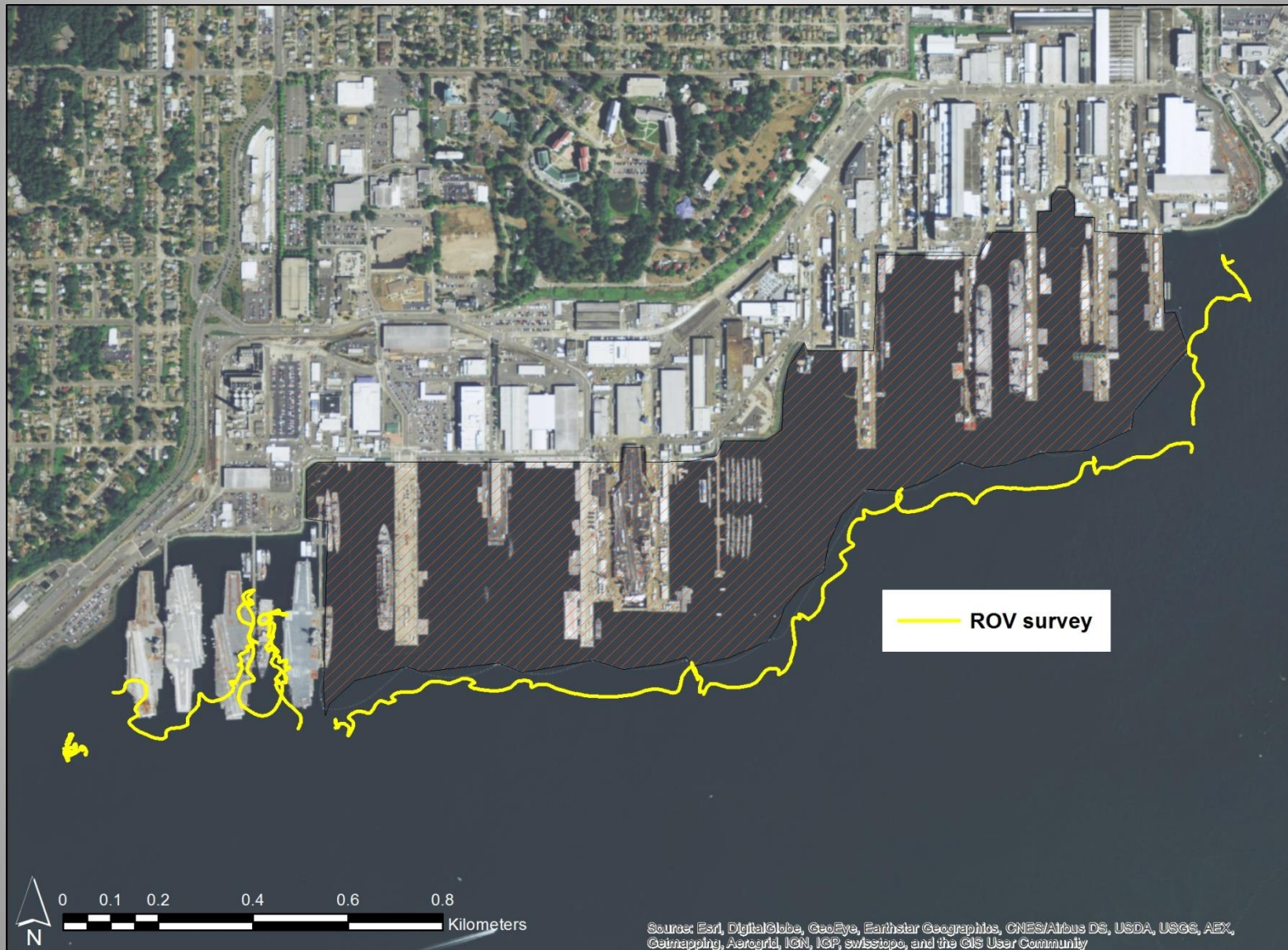
Keyport



Keyport : Various structures



Bremerton



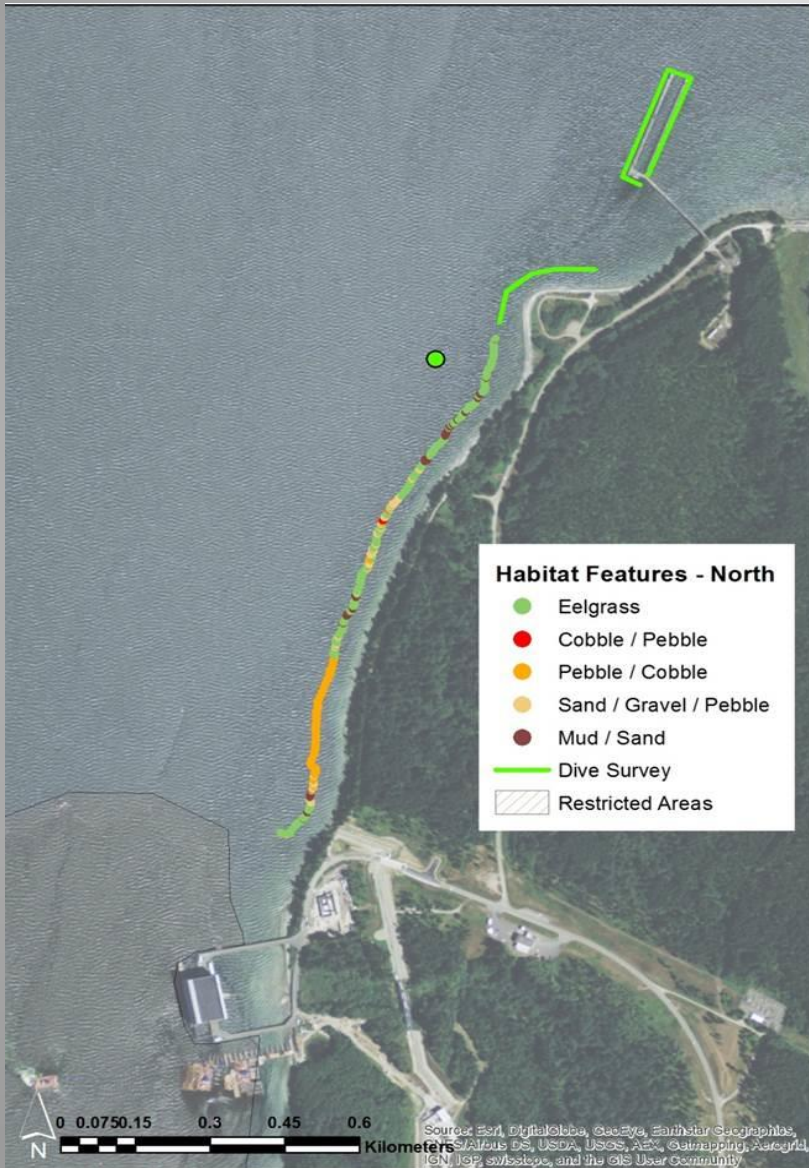
Bremerton : Various Structures



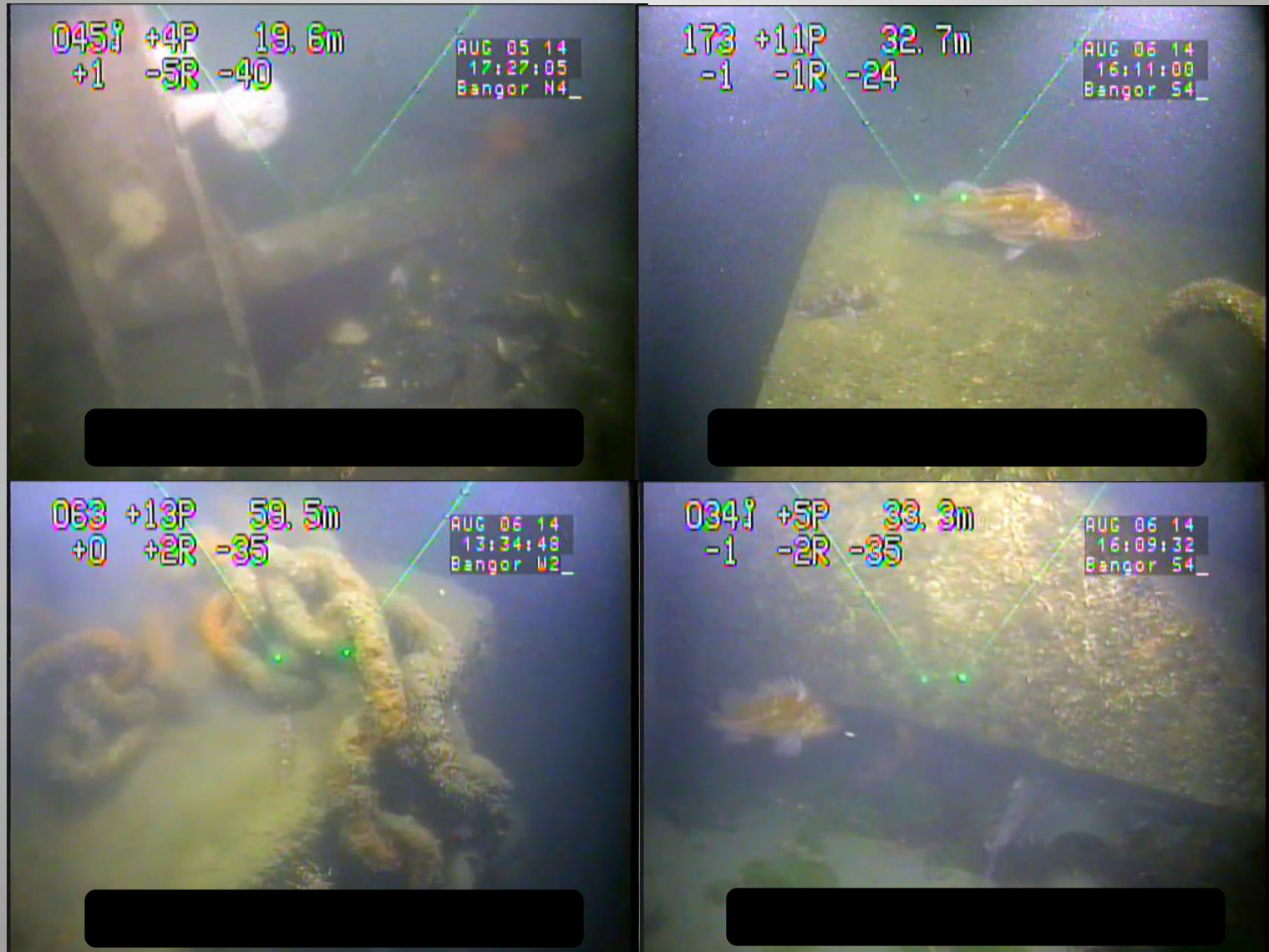
Bremerton : Anchor Blocks



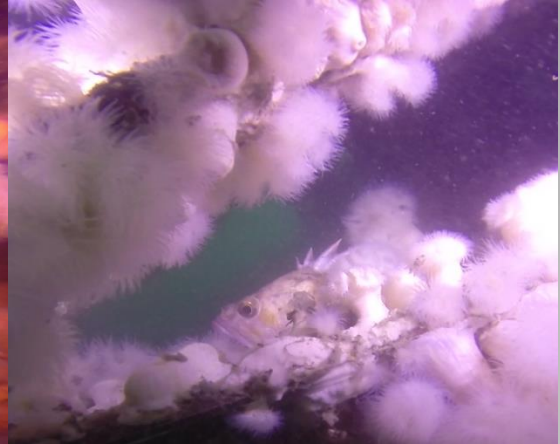
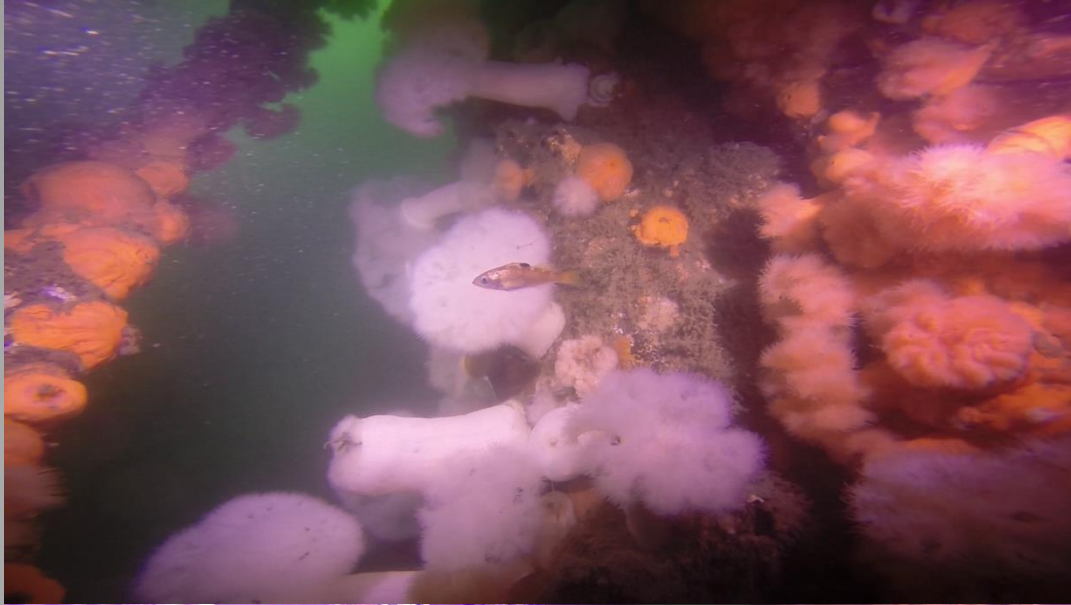
Bangor



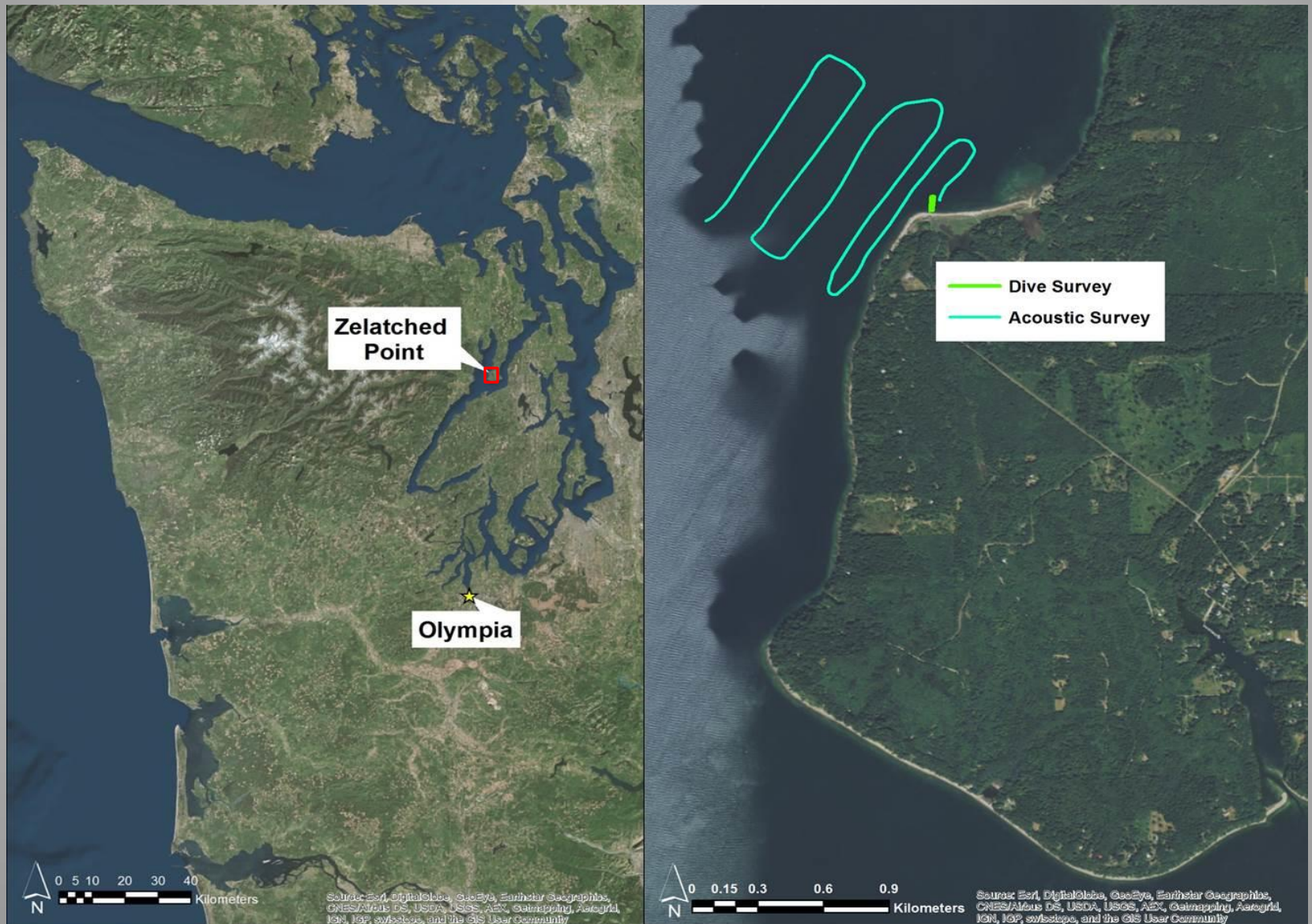
Bangor : Anchor Blocks



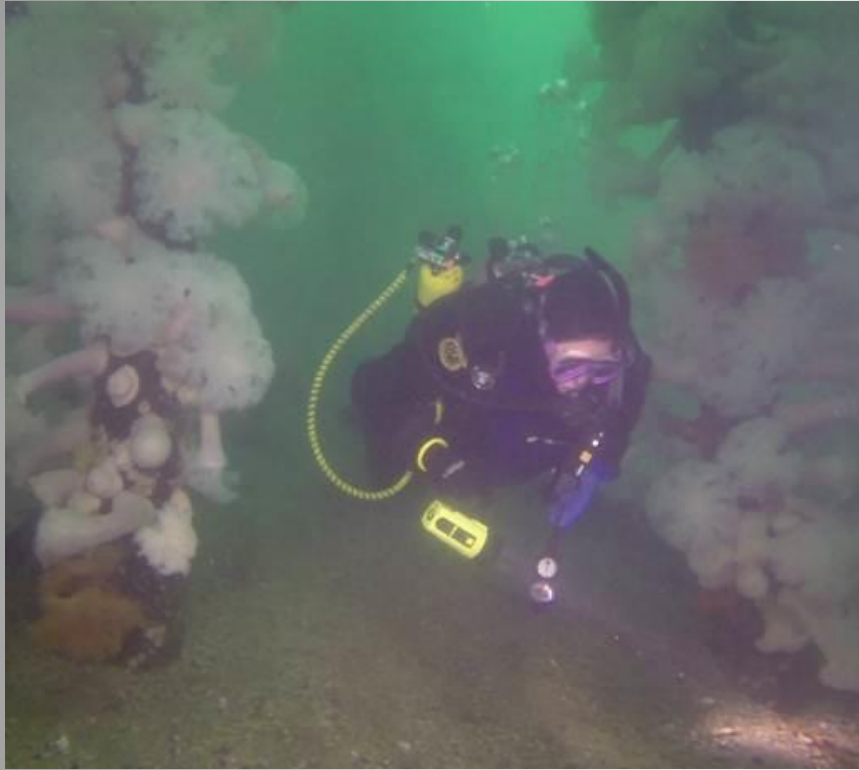
Bangor : MSF Dock



Zelatched Point



Zelatched Point



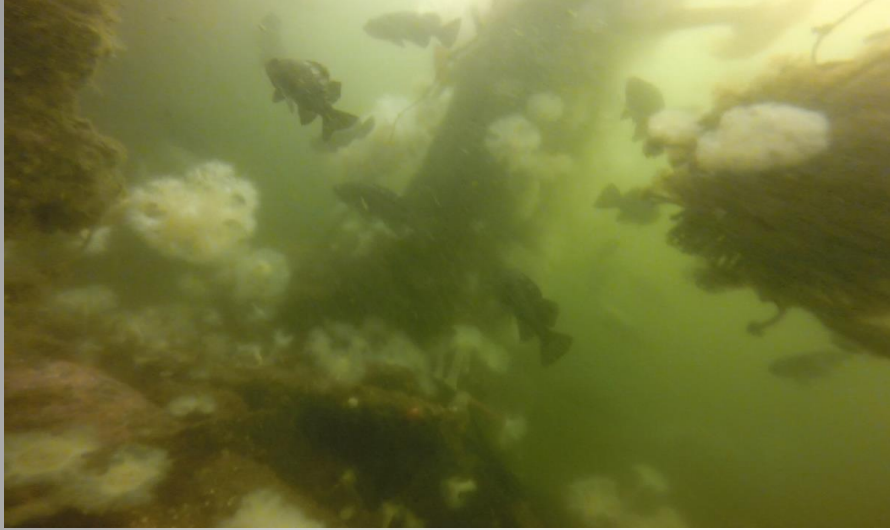
Indian Island



Indian Island : Anchor Blocks



Indian Island : Shipwreck



Indian Island : Shipwreck



Crescent Harbor



Crescent Harbor: Various Structures



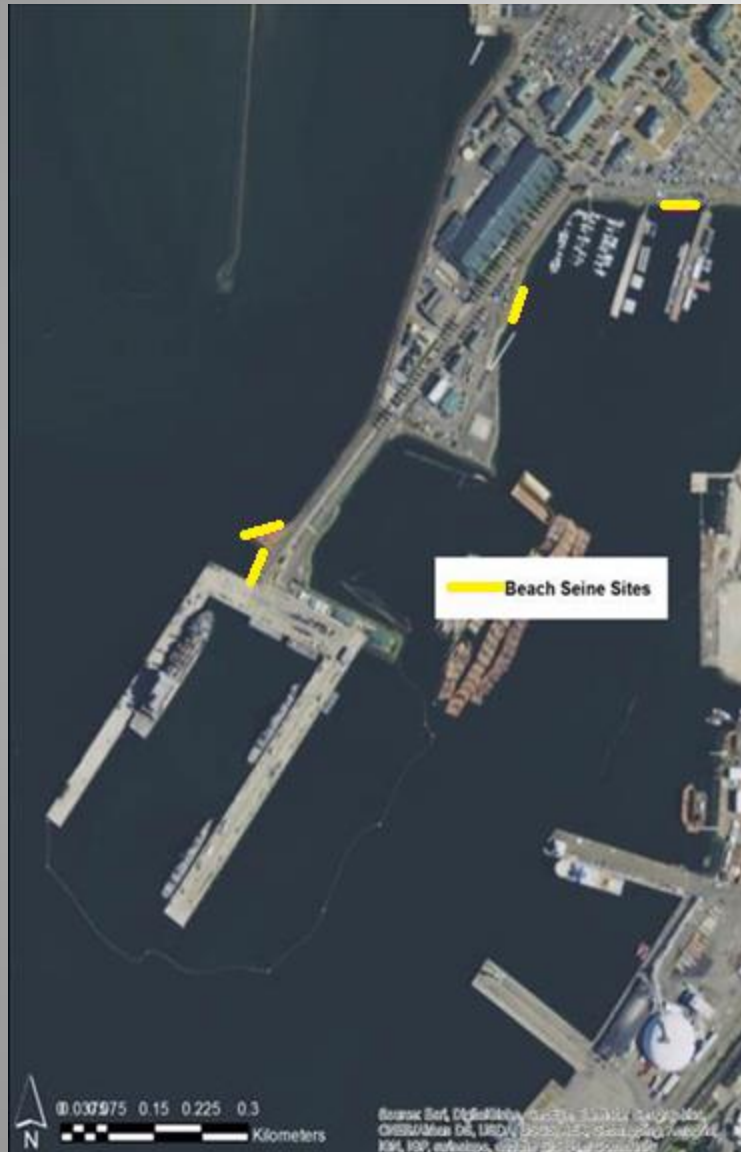
Crescent Harbor: Rocky Habitat



Lake Hancock



Everett



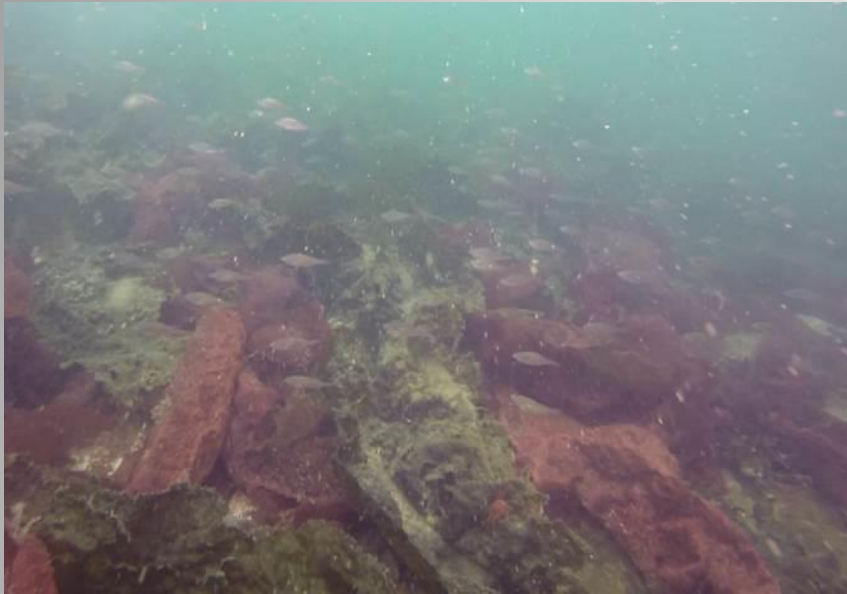
Everett: Various Structures



Manchester Fuel Department



Manchester Fuel Department



Manchester Fuel Department



2013-15 Rockfish Summary

- **NO observations of ESA-listed rockfish were recorded at any of the Navy installations**
- Very little rocky habitat was recorded
- Rockfish were 100% associated with structures
- Not all structures observed had rockfish
- Structures within restricted areas not surveyed
 - Bremerton, Bangor, Everett

2013-15 Rockfish Conclusions

- Bangor, Indian Island, Crescent Harbor, and Manchester all have nearshore habitat features for juvenile ESA-listed rockfish
- Bremerton, Keyport, Everett do NOT have nearshore habitat features for juvenile ESA-listed rockfish
- NO deep-water habitat features for adult ESA-listed rockfish were observed in the study areas

2017 Rockfish Surveys and Beyond

- Discontinue deep-water rockfish surveys
 - Yelloweye RF within Dabob Bay Range Complex?
 - Restricted area at entrance to Admiralty Inlet?
- Juvenile rockfish surveys at Bangor & Indian Island
 - Scuba transects + fish traps
 - Bi-weekly from January through December



Traps



Rat_trap.MP4



Corm_trap.mp4



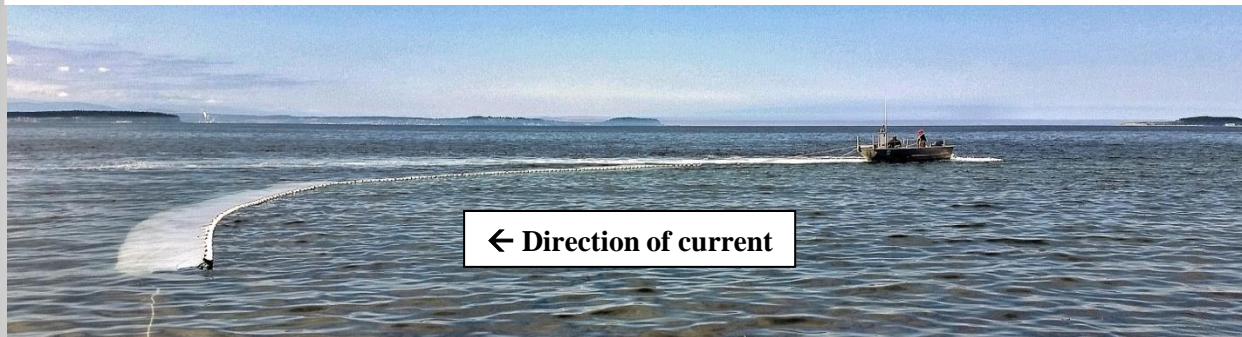
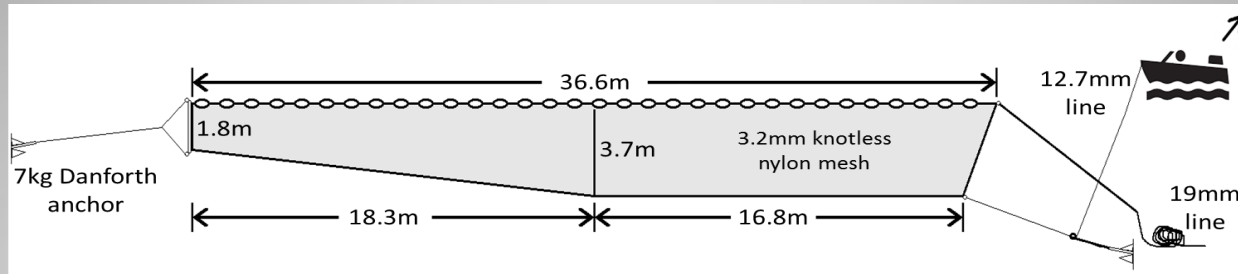
Juv_RF_trap.mp4

Beach Seining 2015-16

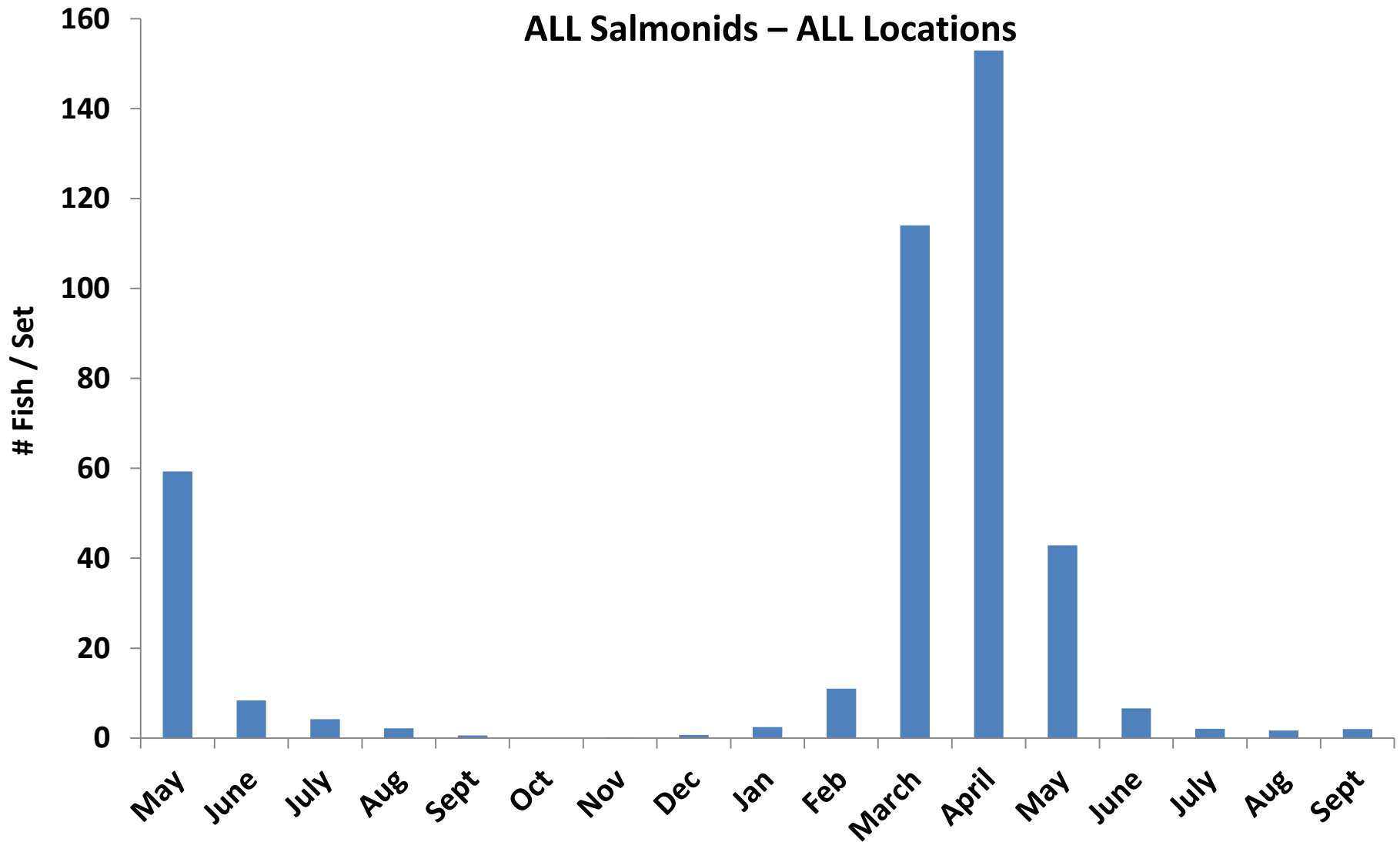
- Assess timing, distribution, abundance for forage fish and juvenile salmonids
 - Prioritizing ESA-listed species
- Summer-run vs Fall-run Chum Salmon
 - Genetic analysis
- Cutthroat Trout hybridization with Steelhead
 - Genetic analysis
- Everett fish passage
 - CWTs

Beach Seining

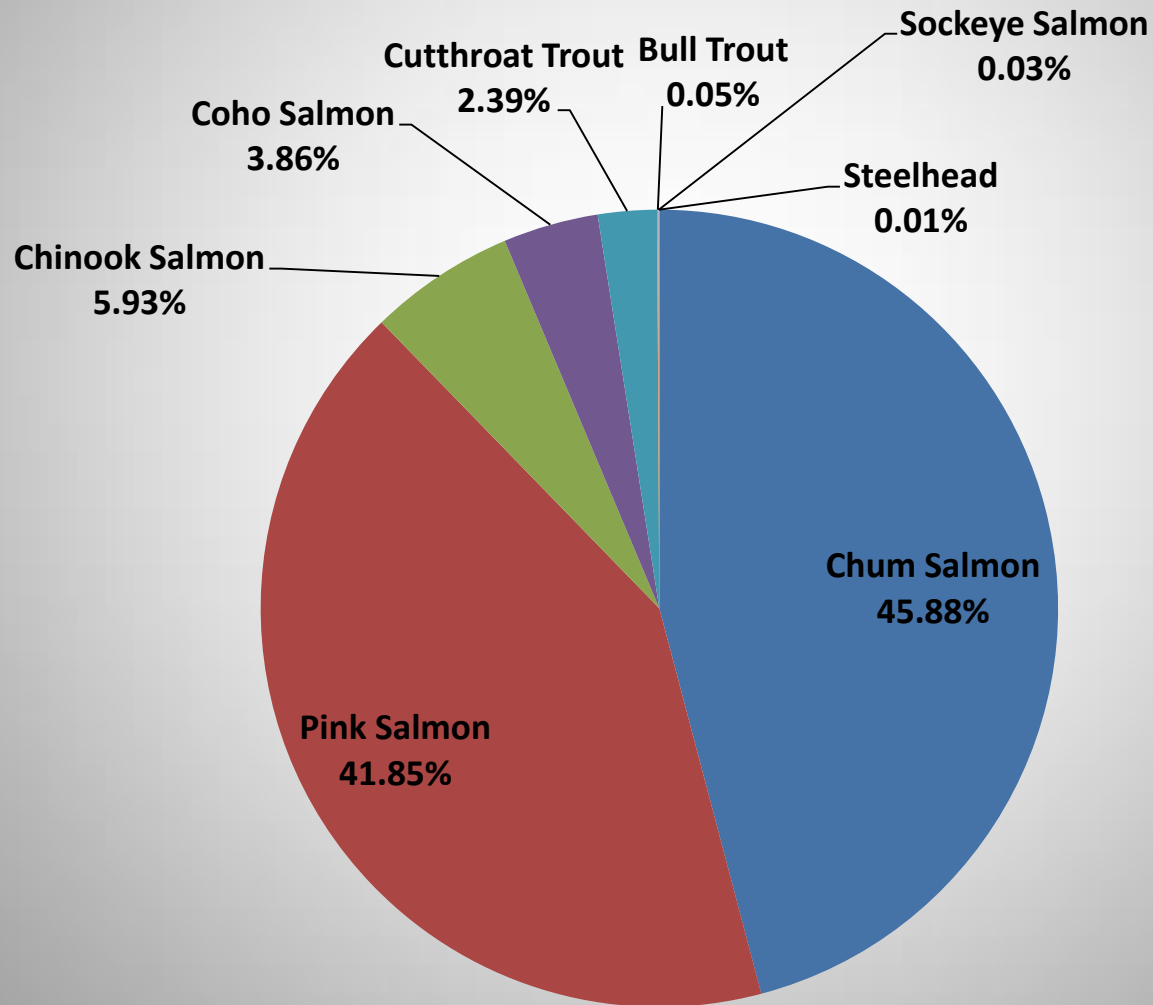
Forage Fish & Salmonids



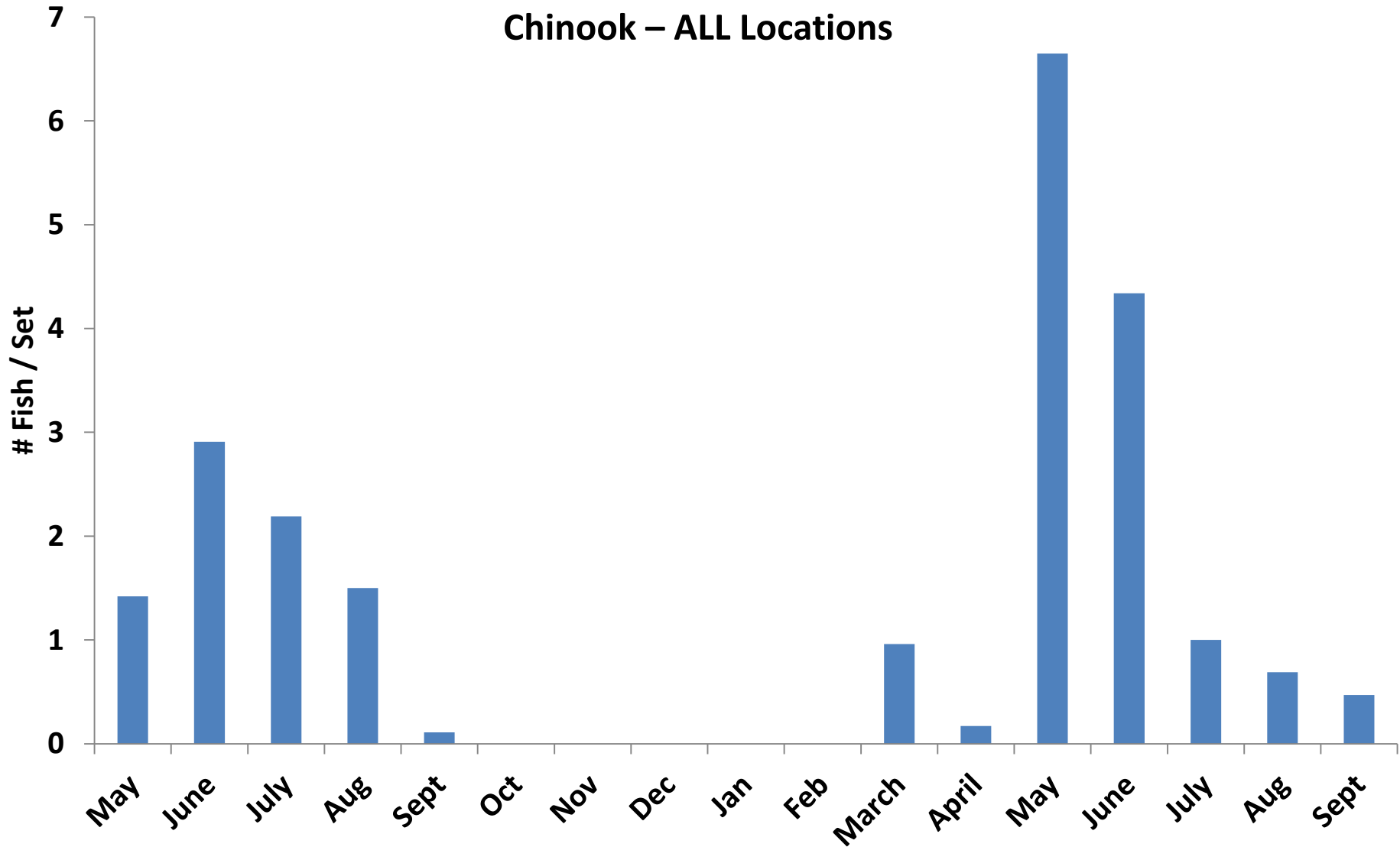
Beach Seining Results



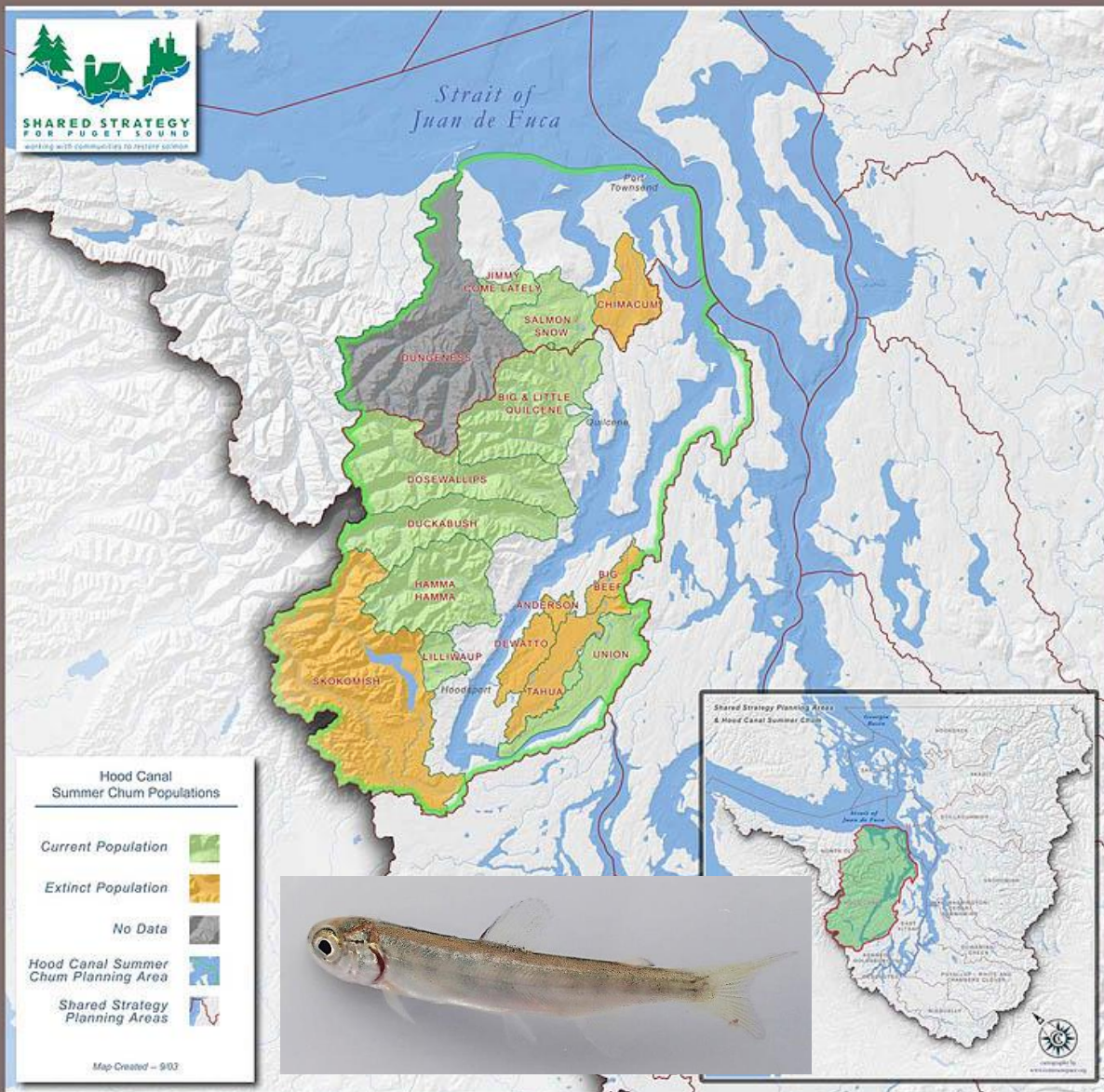
Beach Seining Results



Beach Seining Results

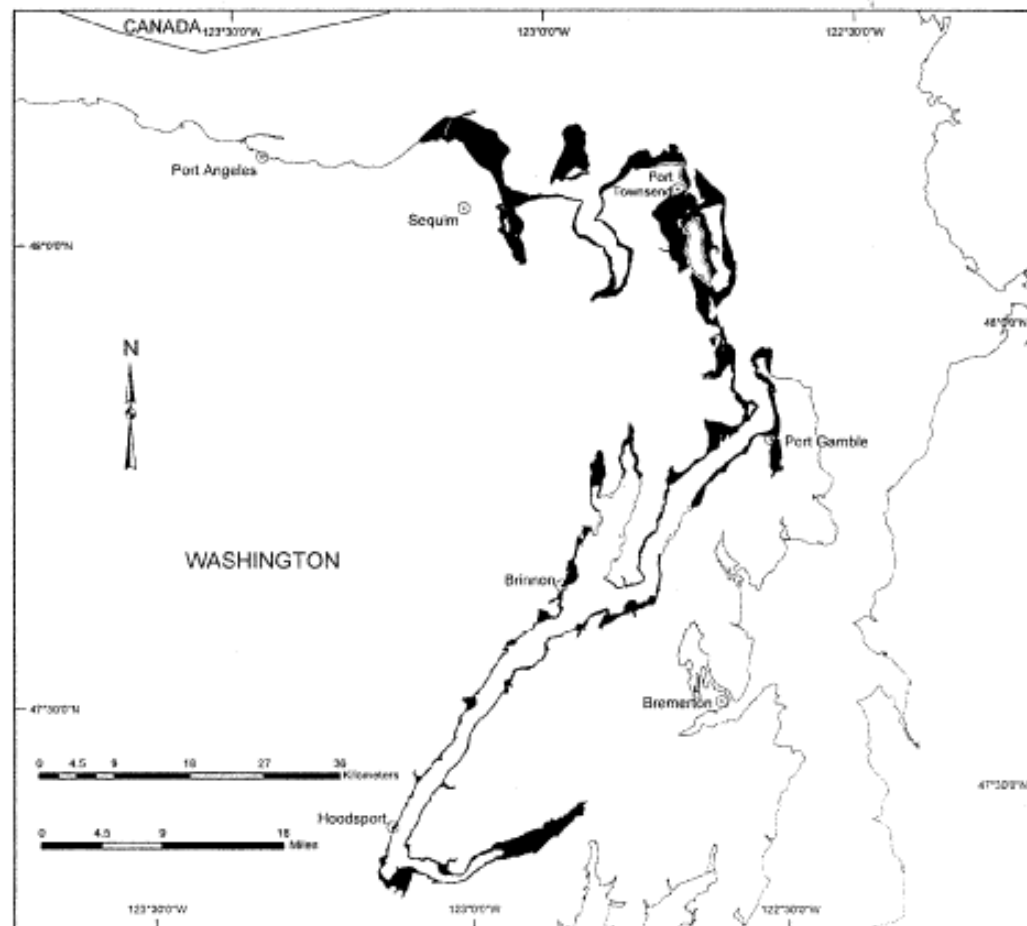


Hood Canal Summer Chum Populations



Final Critical Habitat for the Hood Canal Summer-run Chum Salmon ESU

Nearshore Marine Areas



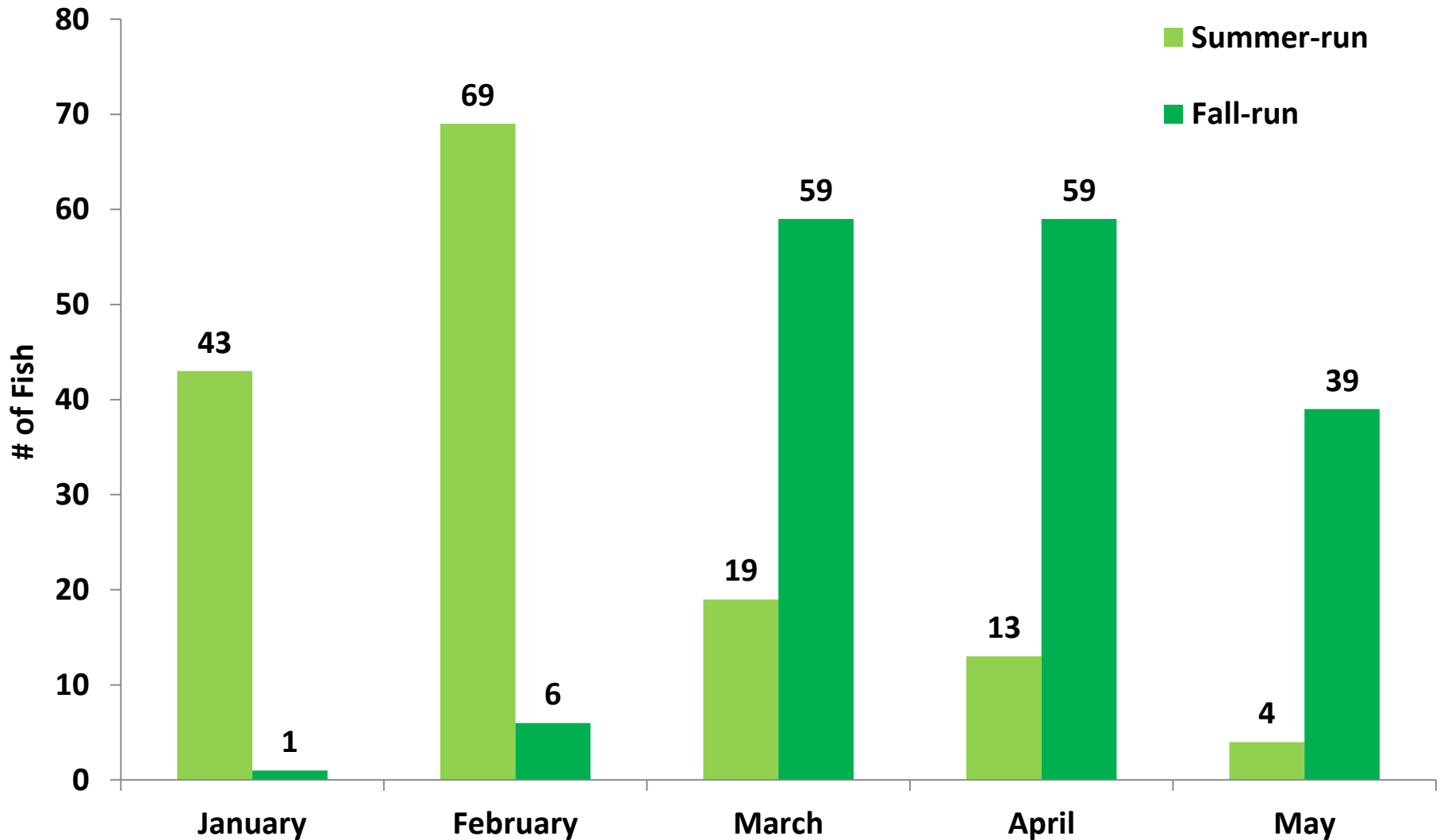
Legend

- Cities / Towns
- State Boundary
- ~ Shoreline
- Nearshore Marine Areas

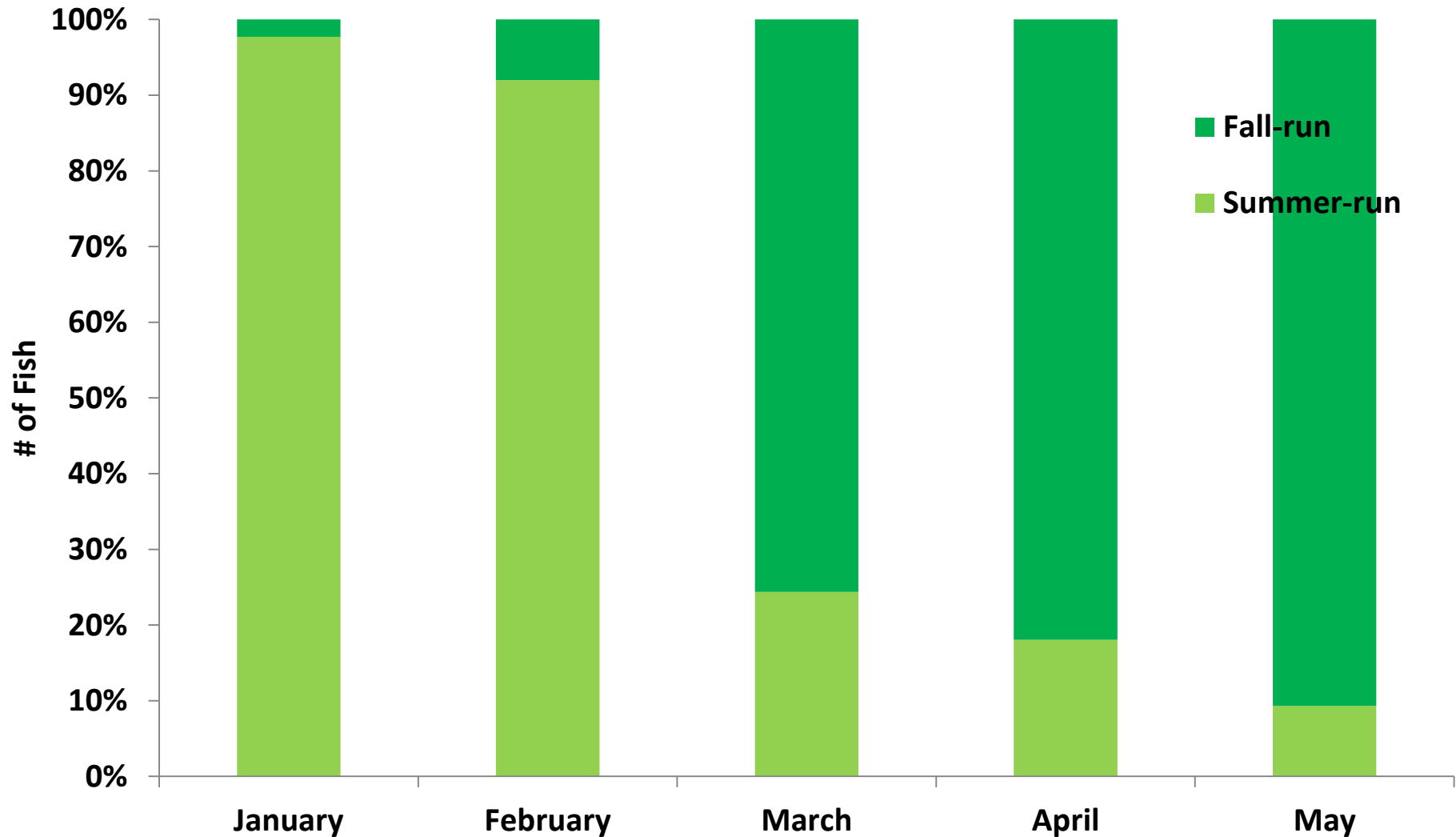
Area of Detail

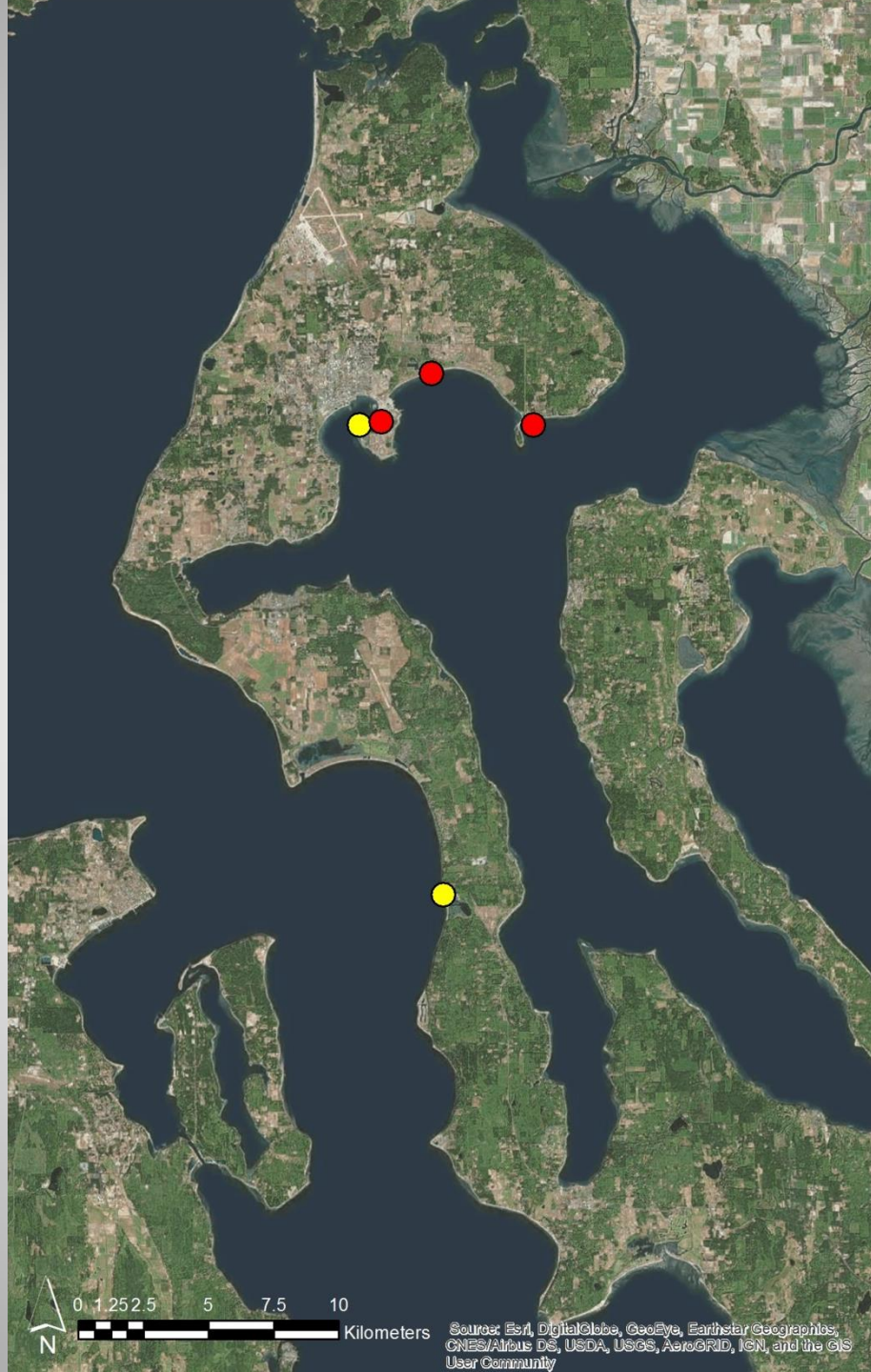


Beach Seining Results



Beach Seining Results





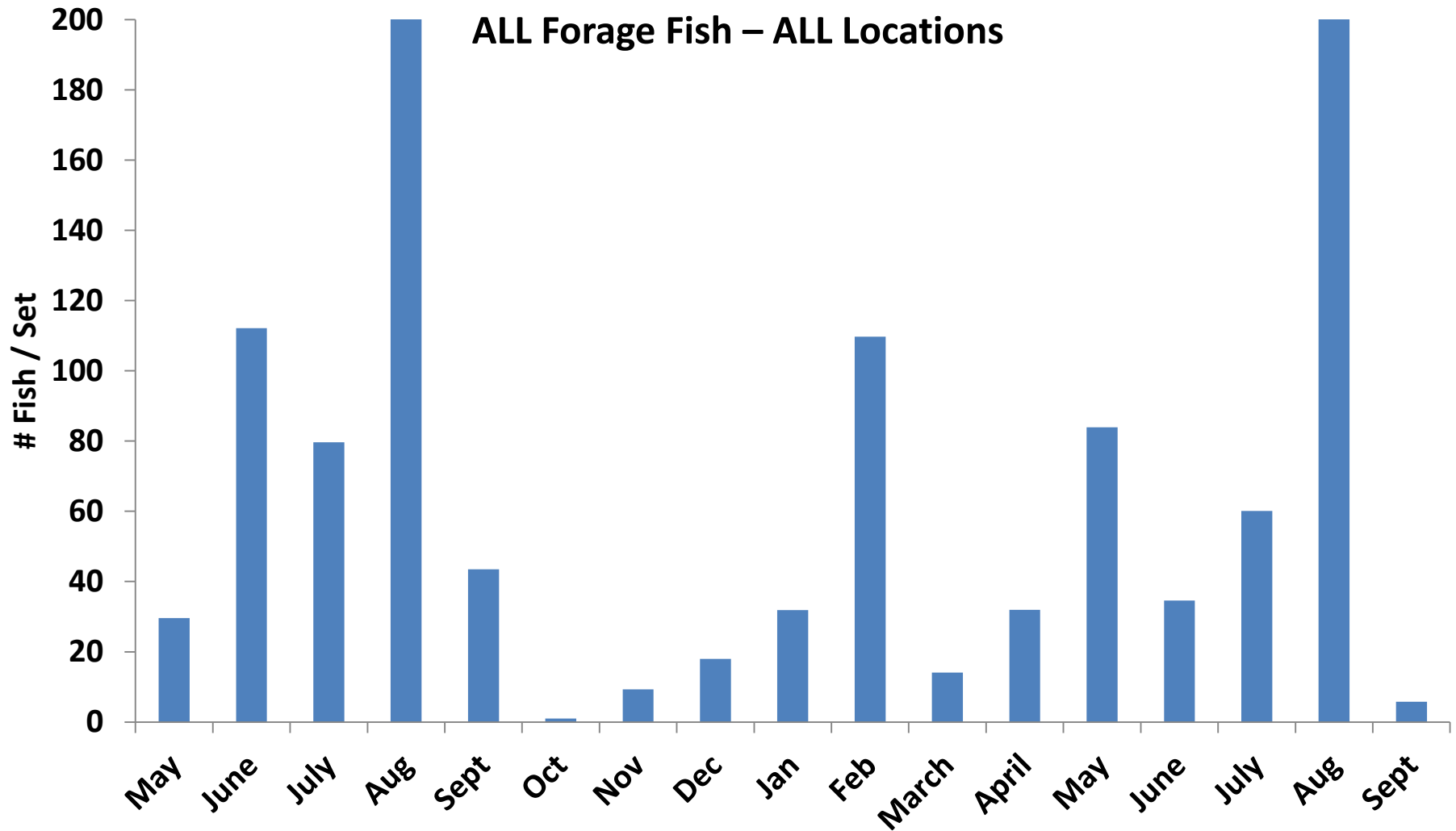
 **Bull Trout**

 **Steelhead**

Beach Seining Results



Beach Seining Results



2015-16 Beach Seine Summary

- Chinook Salmon juveniles were captured at every sampling location
 - Peak catch rates in May, June, and July
- Hood Canal summer-run Chum Salmon confirmed
 - Primarily in January and February
- Steelhead captured at Lake Hancock & Oak Harbor
- Bull Trout adults captured at Oak & Crescent Harbor
- NO ESA-listed forage fish were captured

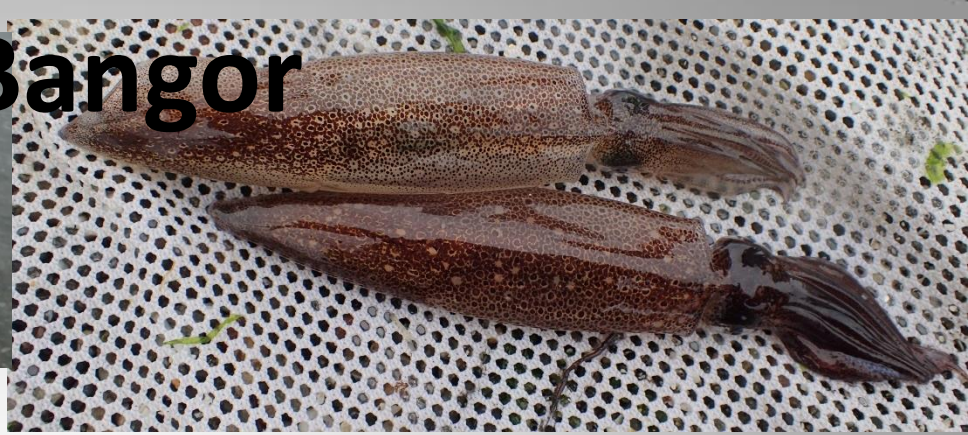
2015-16 Beach Seine Conclusions

- The HPA work window remains effective to reduce impact on out-migrating juvenile salmonids
 - Work window OPEN: July/August to Jan/Feb
 - Work window CLOSED : Jan/Feb to July/August

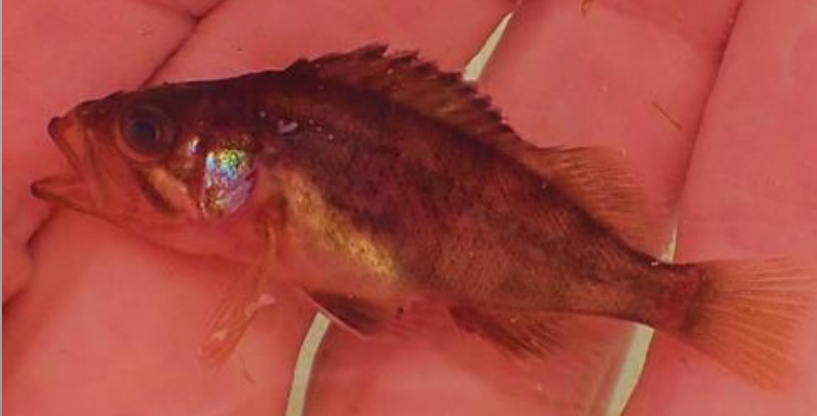
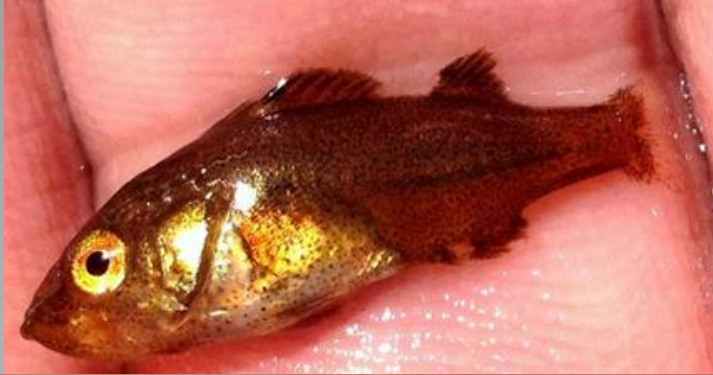
Future Beach Seine Sampling?

- The 2015-16 survey were successful
- Everett fish passage still questionable
 - Using CWTs and/or other sampling
- Cutthroat Trout studies
 - Hybrids, population of origin, data gaps
- Forage fish spawning habitat
 - Overwater structures and shoreline armoring

NBK-Bangor



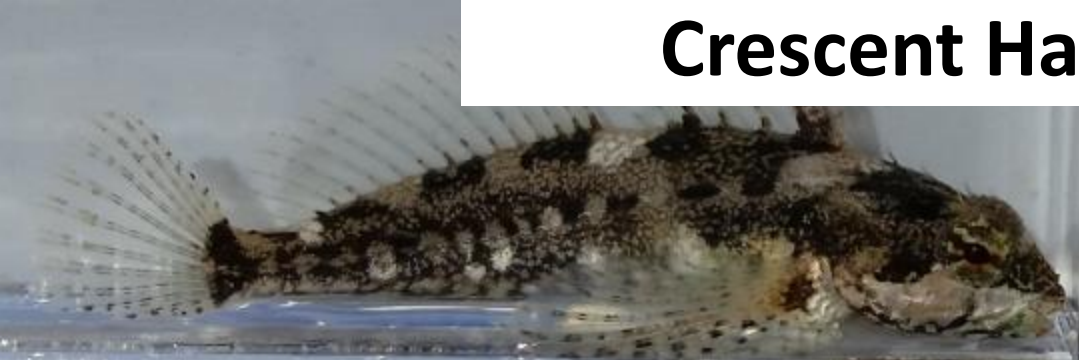
NBK-Bangor



Everett



Crescent Harbor



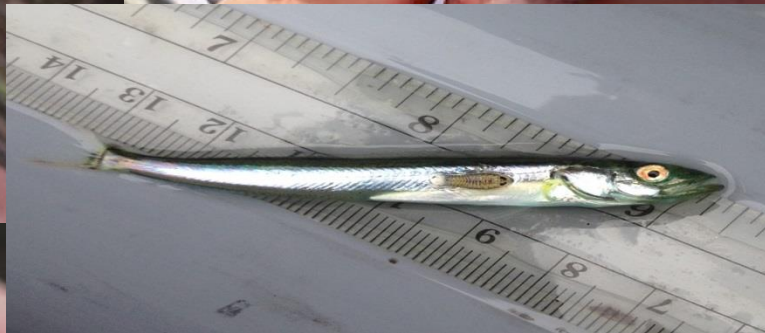
Lake Hancock



Manchester



Indian Island



Acknowledging Cooperation & Support

A BIG THANK YOU to:



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**Bangor, Bremerton, Indian Island Port Ops
Bangor & Everett waterfront security personnel**