

Hood Canal Summer Run Chum Nearshore Fish Use Assessment

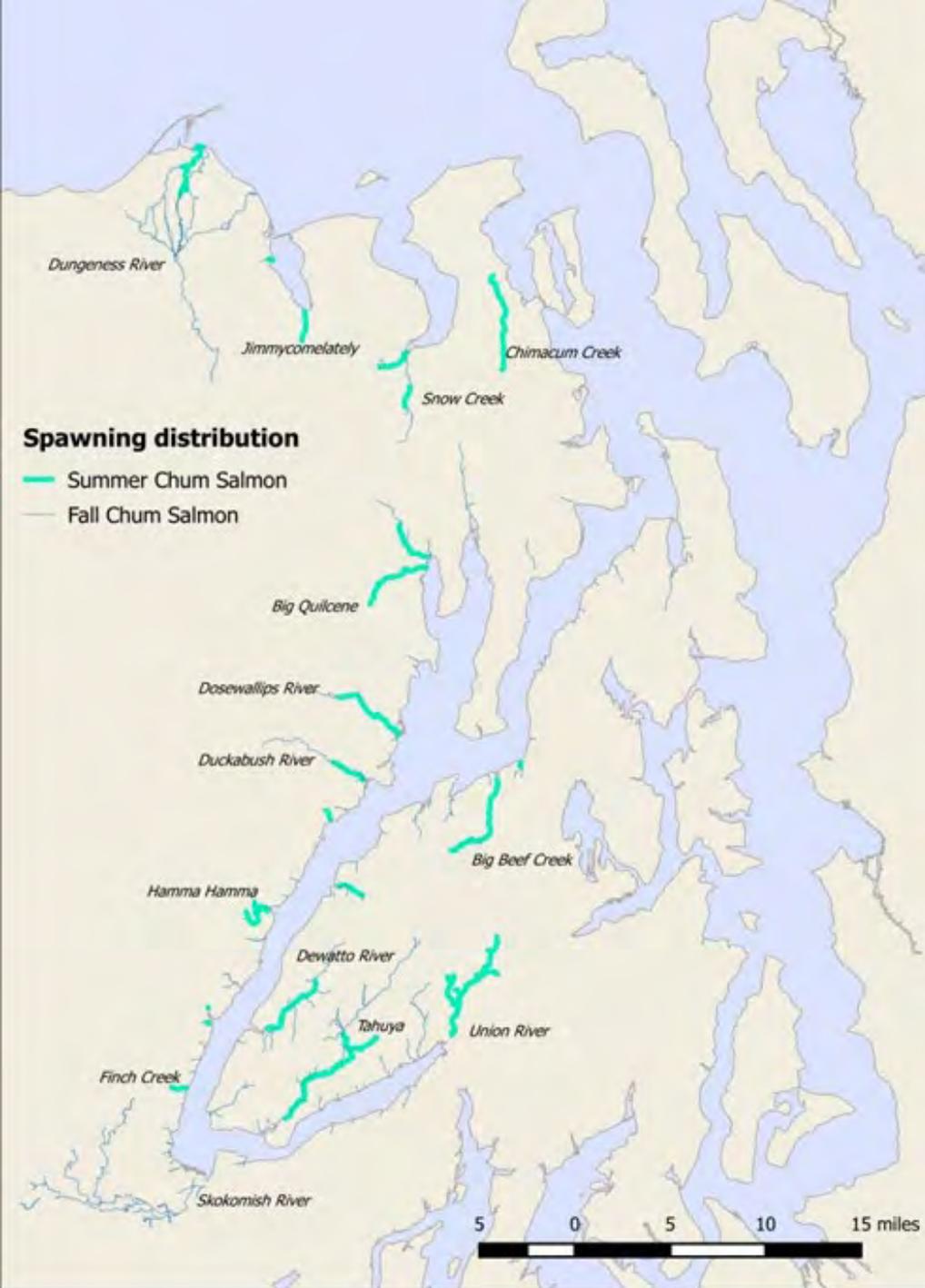
James Fletcher, Nick Gayeski, Aaron Jorgenson,
Adrian Tuohy and Micah Wait
Wild Fish Conservancy

4-9-19



Hood Canal Summer Run Chum

- Distinct Life History
- ESA Listed (1999)
- Early Marine Entry

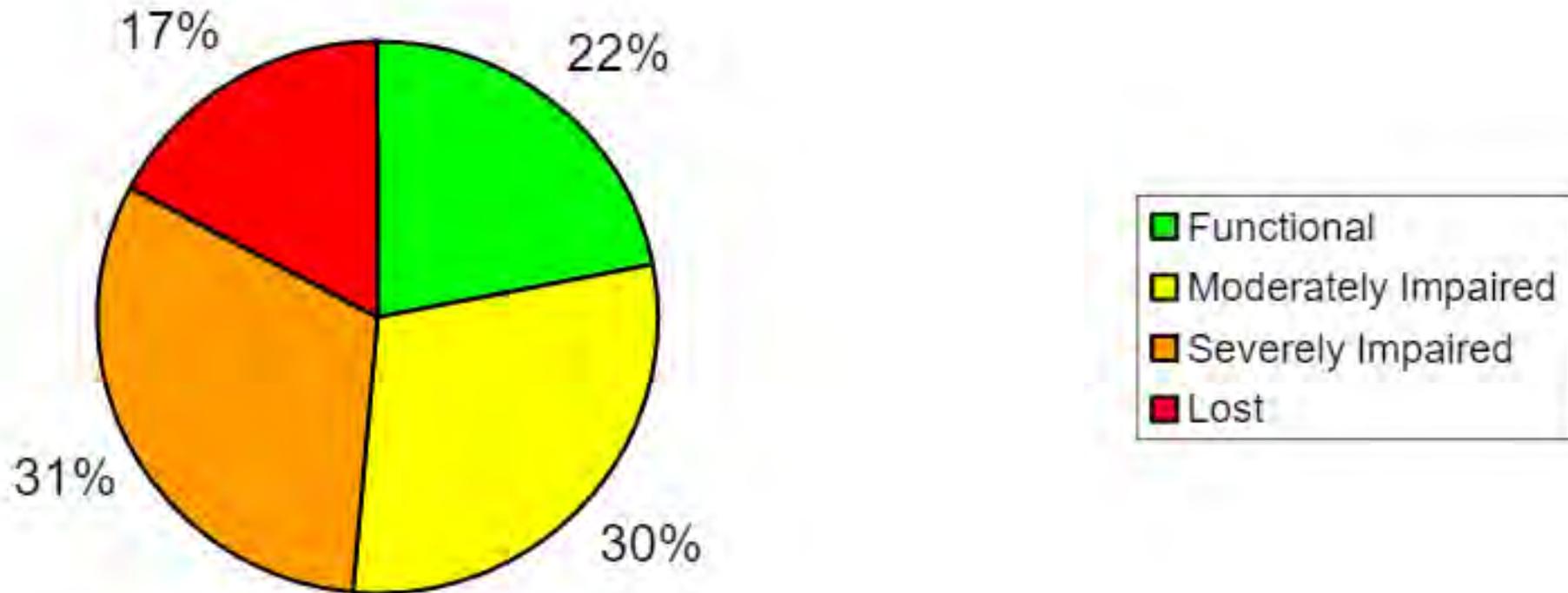


Role of Estuarine Habitats

- 1) Growth
- 2) Salinity regulation
- 3) Shelter from predators

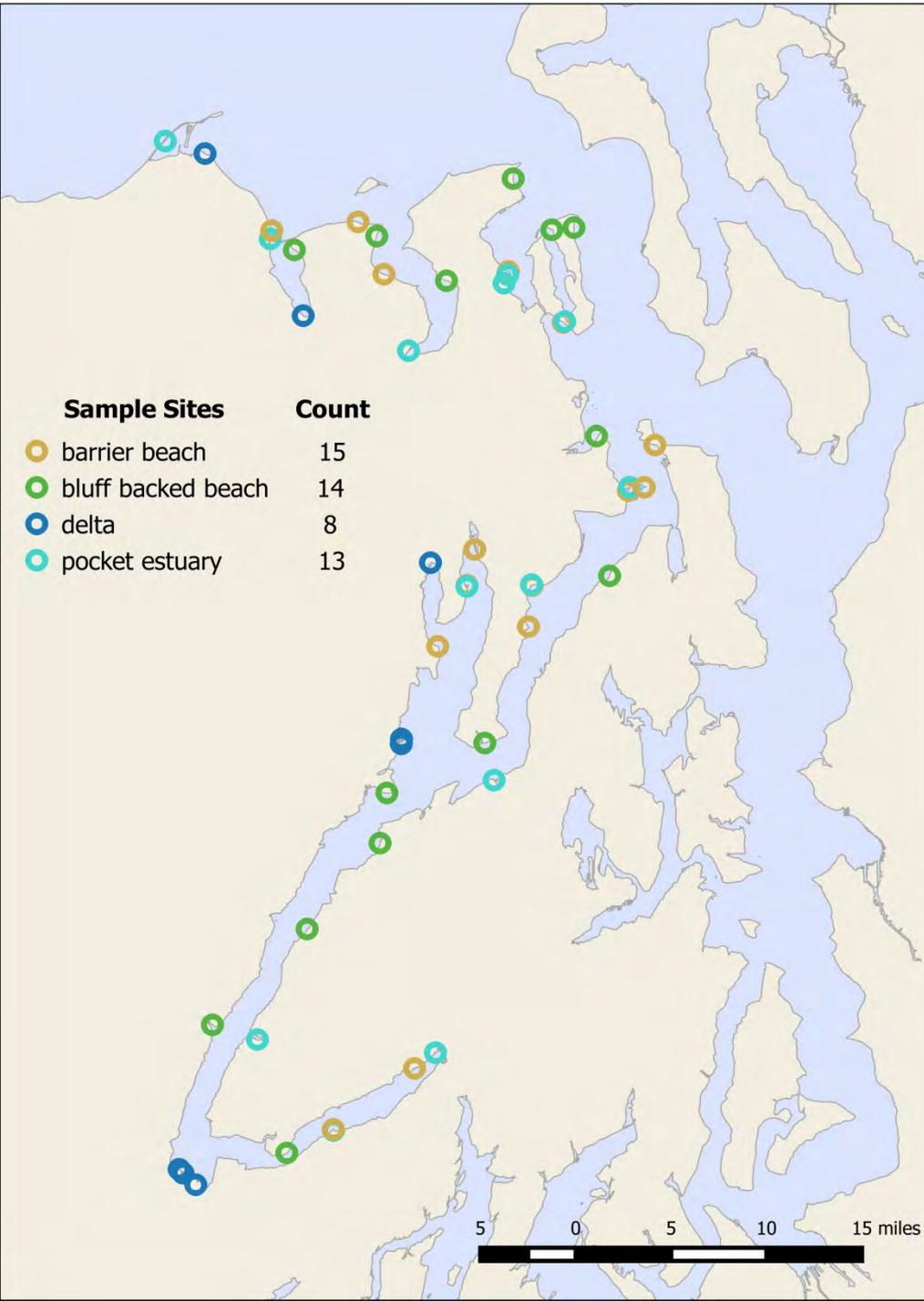


Tidal Wetland Habitat Loss



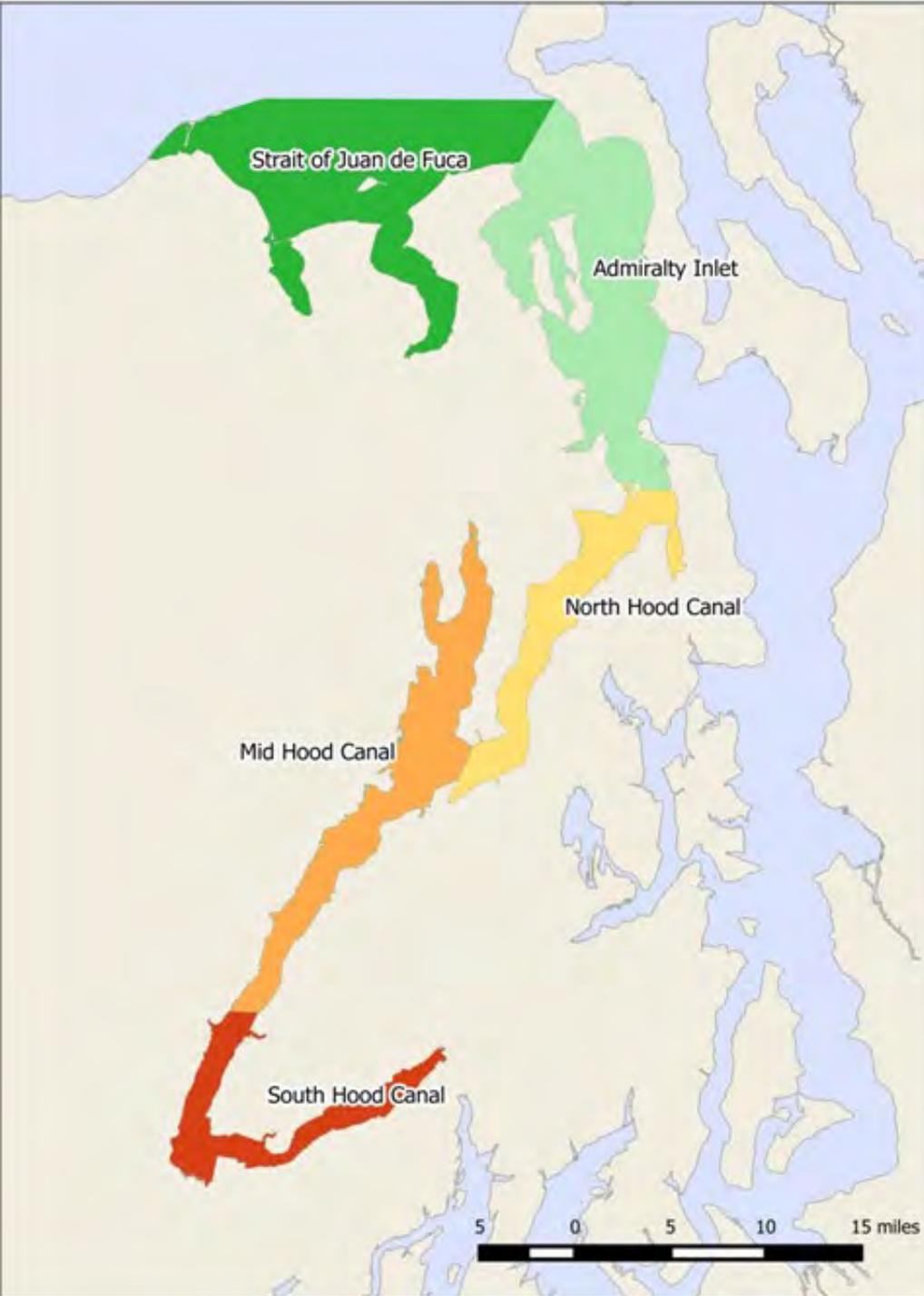
(Todd et al. 2006)

Study Area 2016-17

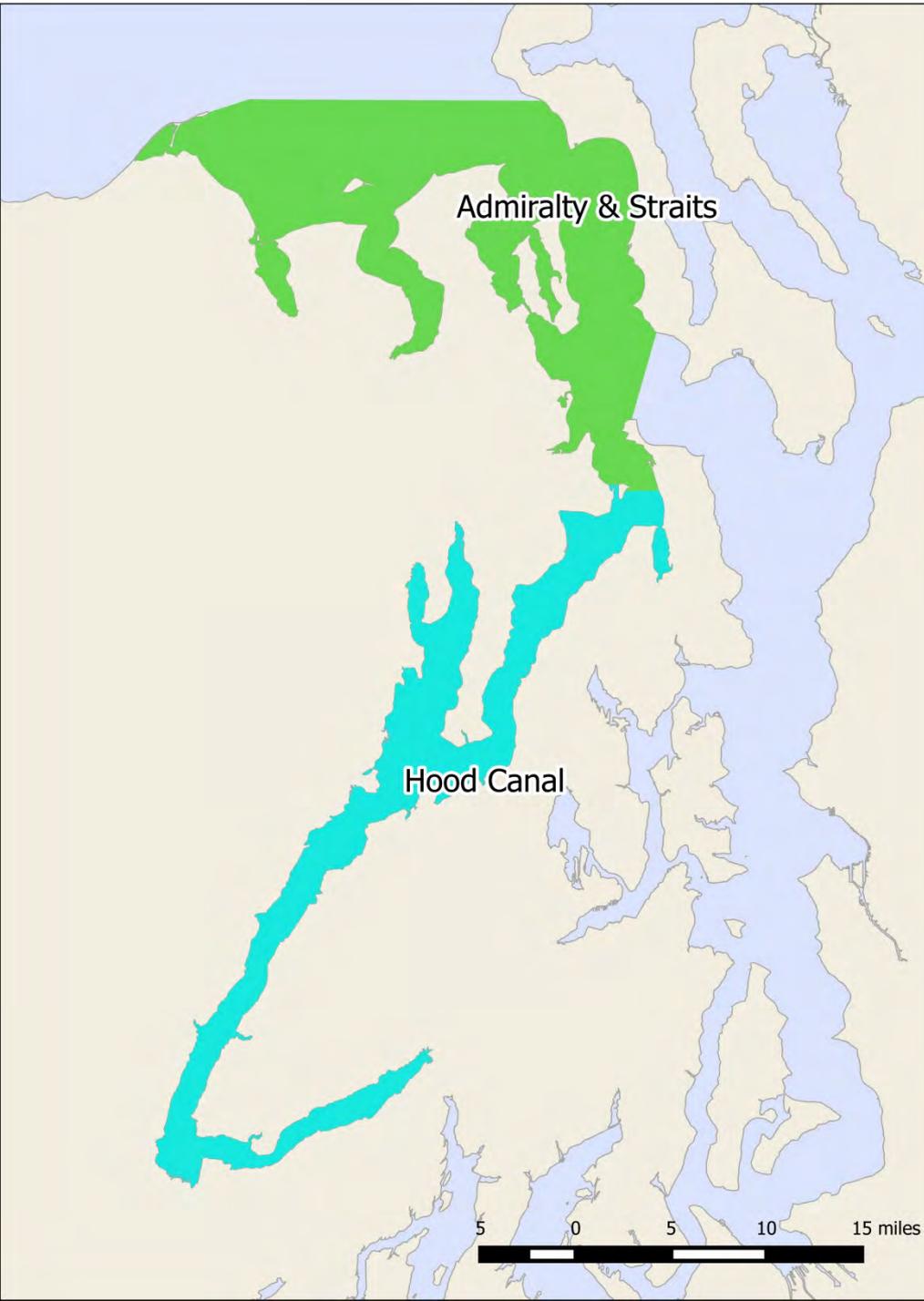


- 50 sampling sites
- Sampled weekly
- Sampled from late December-May

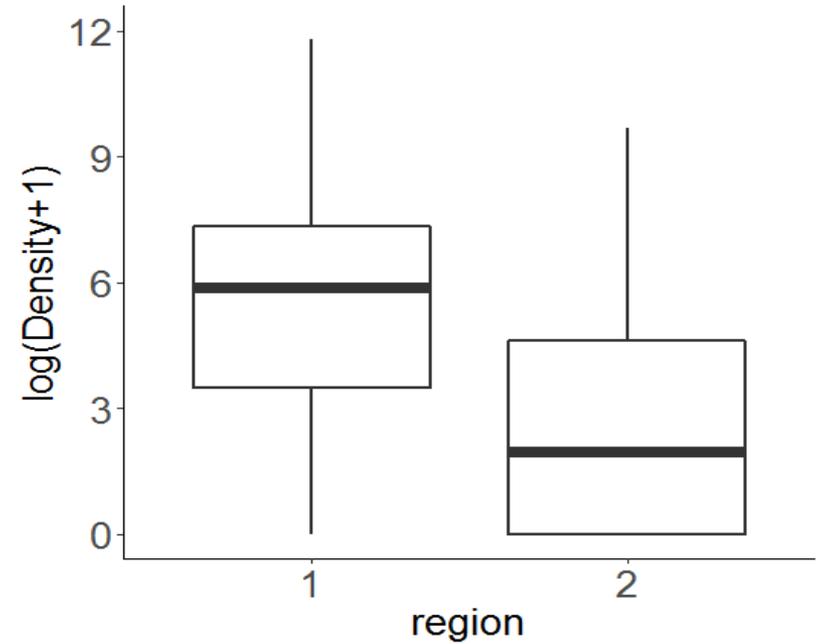
Habitat Zones



- Landscape scale
- Roughly equal distribution of sampled habitat types within regions

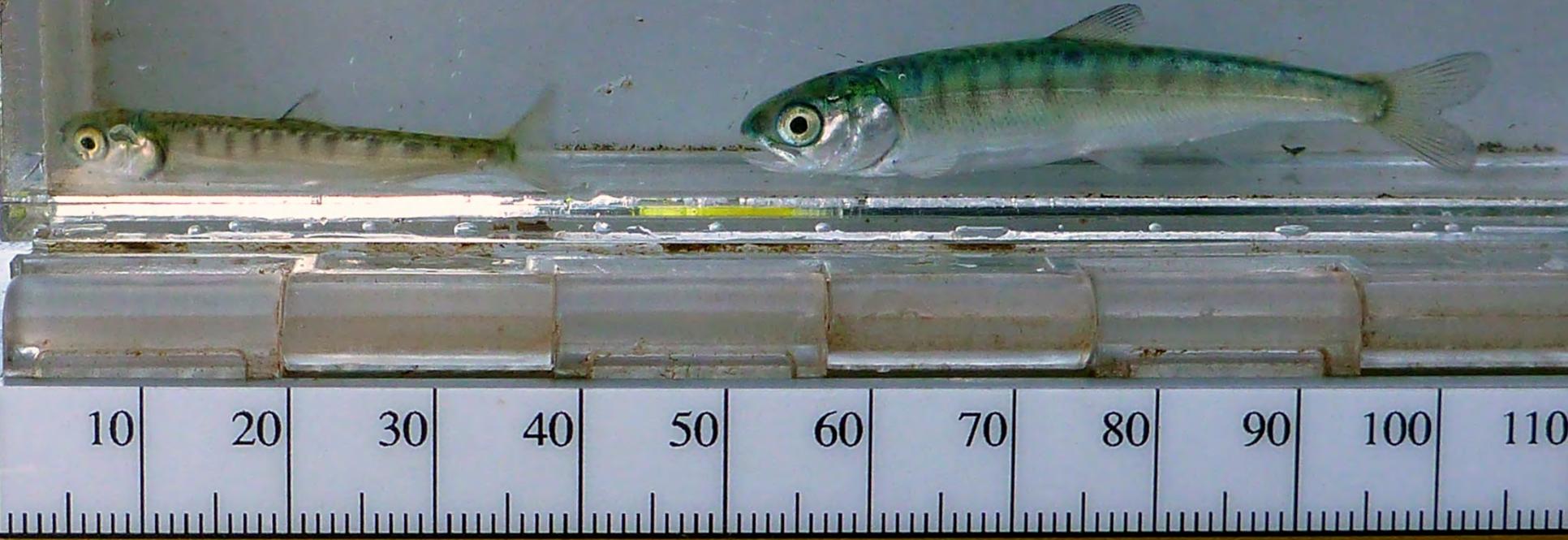


Catch by Region



Fish per hectare for all chum salmon
In 2016 and 2017

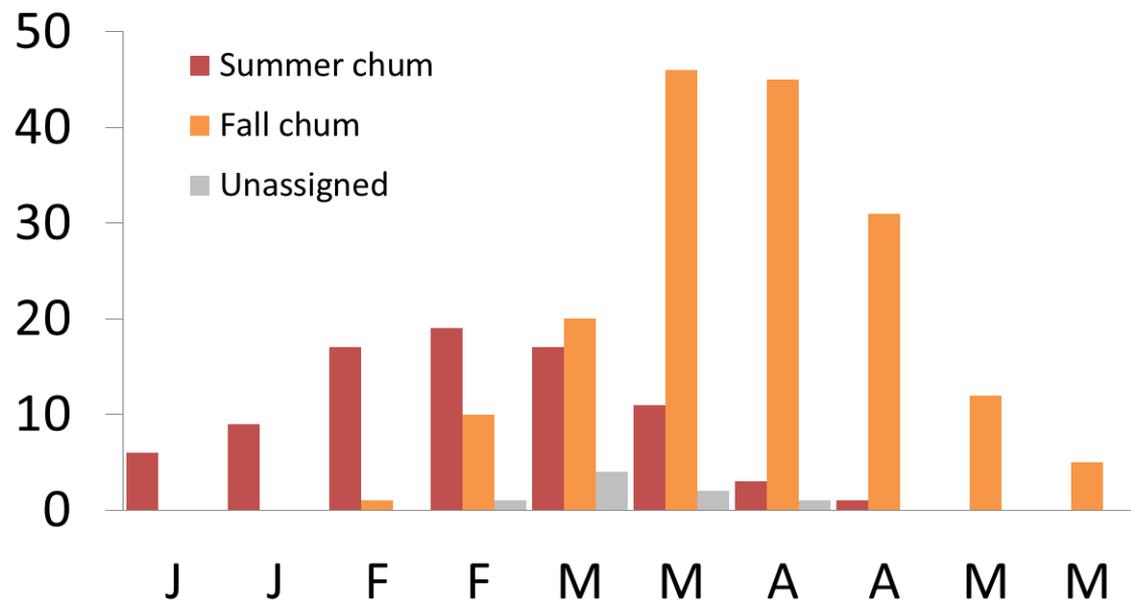
The Problem



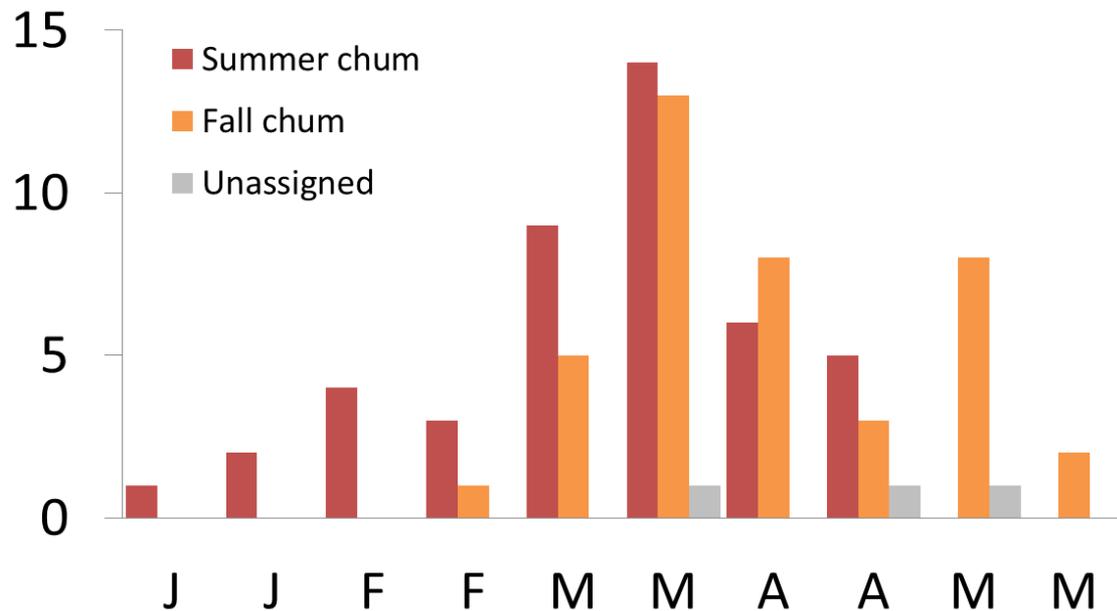
There is no field method for distinguishing juvenile summer chum from juvenile fall chum.

Genetic Assignment 2016

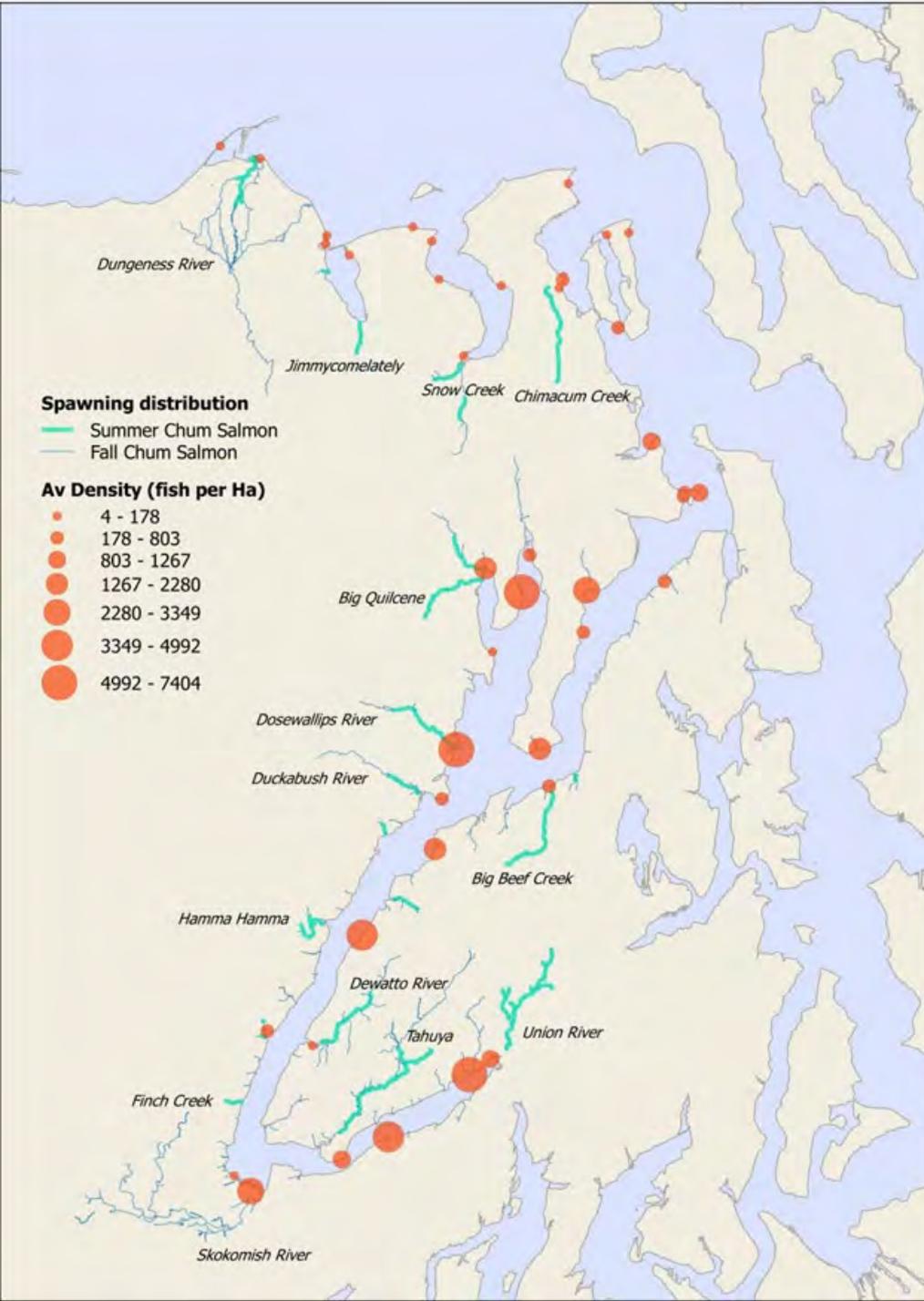
Hood Canal region 1



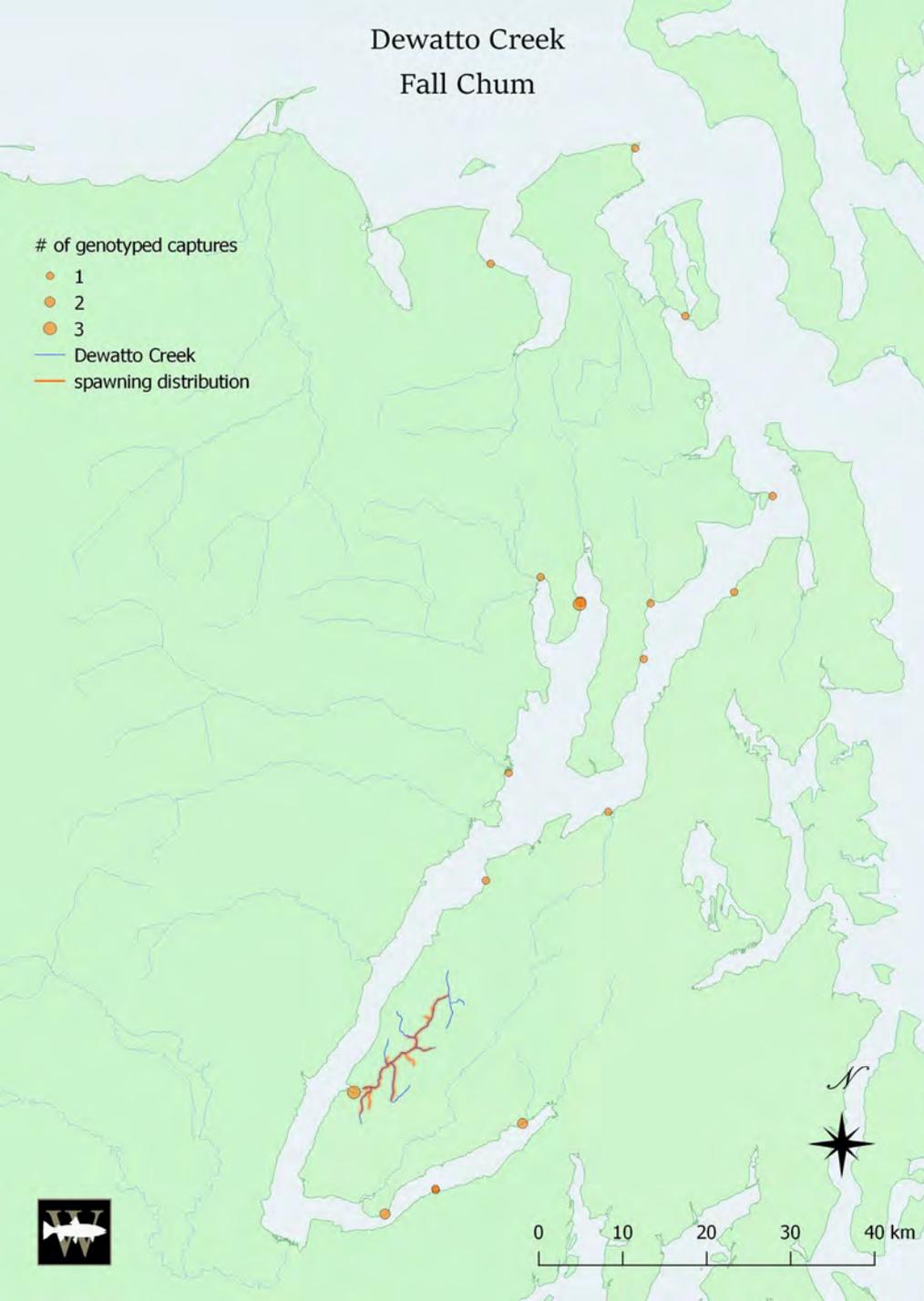
Admiralty & Straits region 2



All Chum Abundance

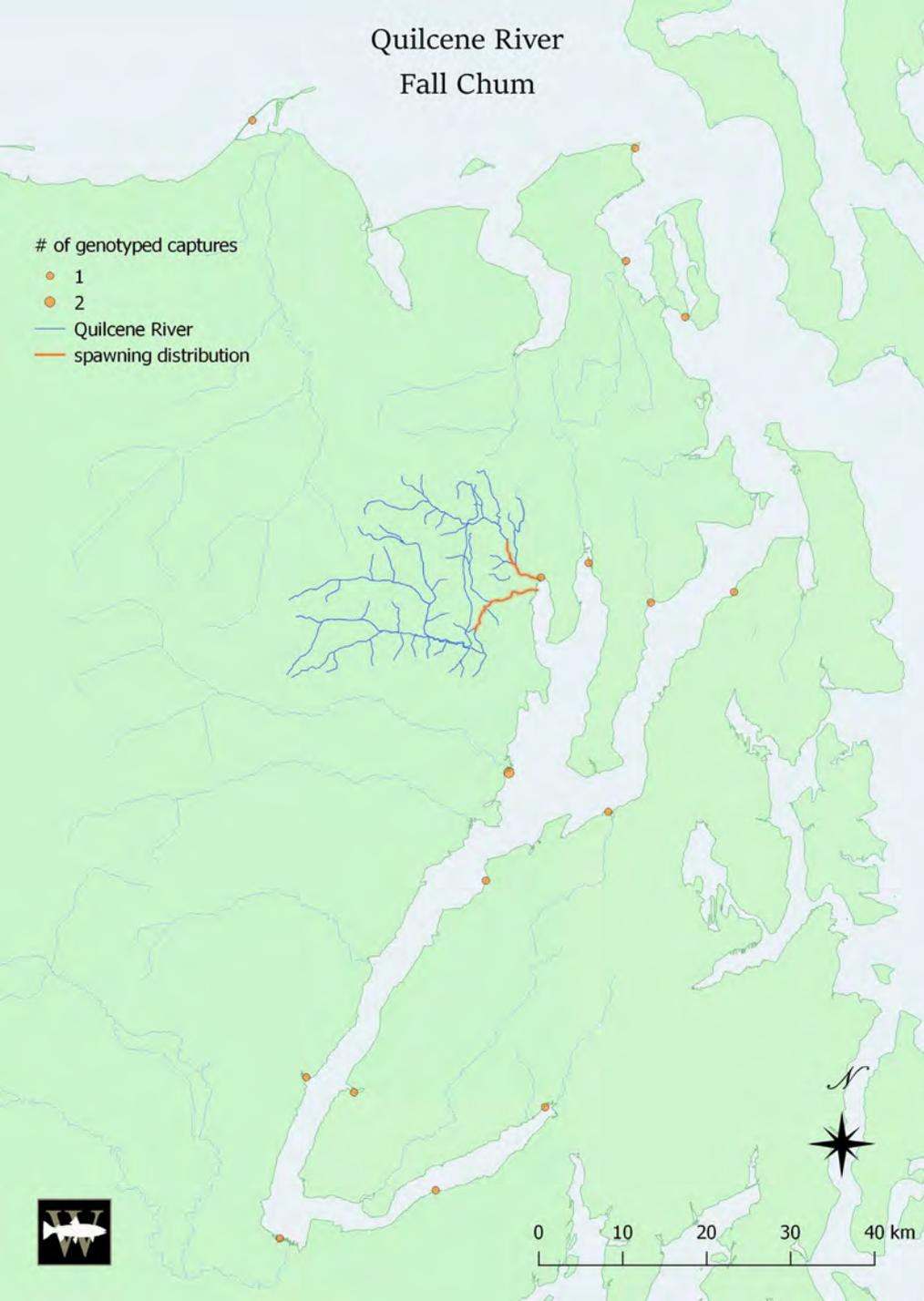


- Catch per unit effort
- High densities observed at both delta sites and sites distant from natal rivers



Catch Locations for Genotyped Summer Chum from Dewatto Ck

- Widely distributed, from Discovery Bay to Union
- More recoveries at distal sites
- Recoveries at sites away from the ocean



Catch Locations for Genotyped Summer Chum from the Quilcene River

- Widely distributed, from Dungeness Spit to Union
- More recoveries at distal sites
- Recoveries at sites away from the ocean

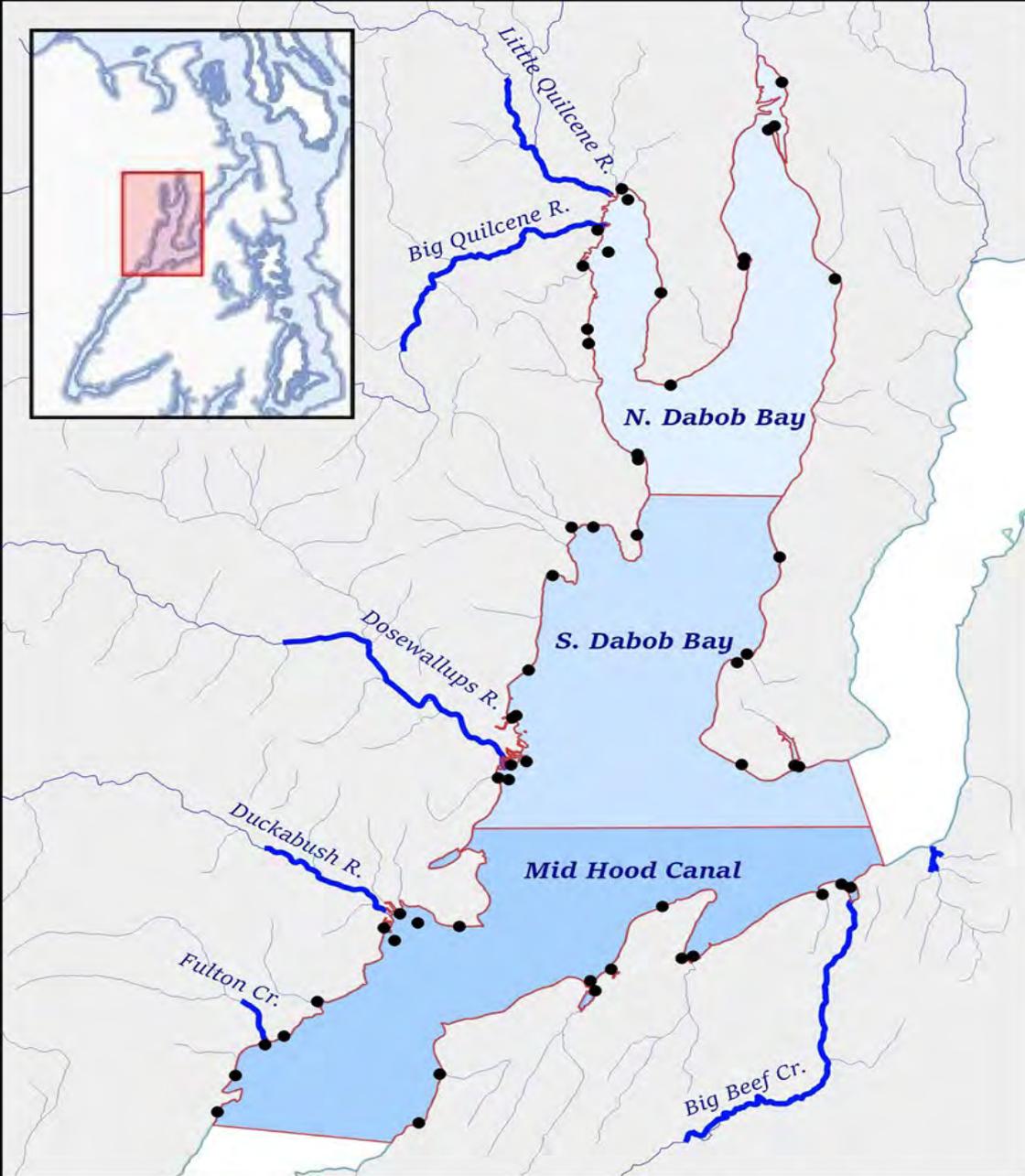
2018 Sampling

- 40 sites weekly w/in mid-Hood Canal
- Higher abundances, fewer empty sets
- Focus on delta and pocket estuary



2018 Study Area

- High density of summer chum
- ~2000 beach seine sets
- ~255 sets per habitat type



Wild Fish Conservancy 2018 Summer Chum Study



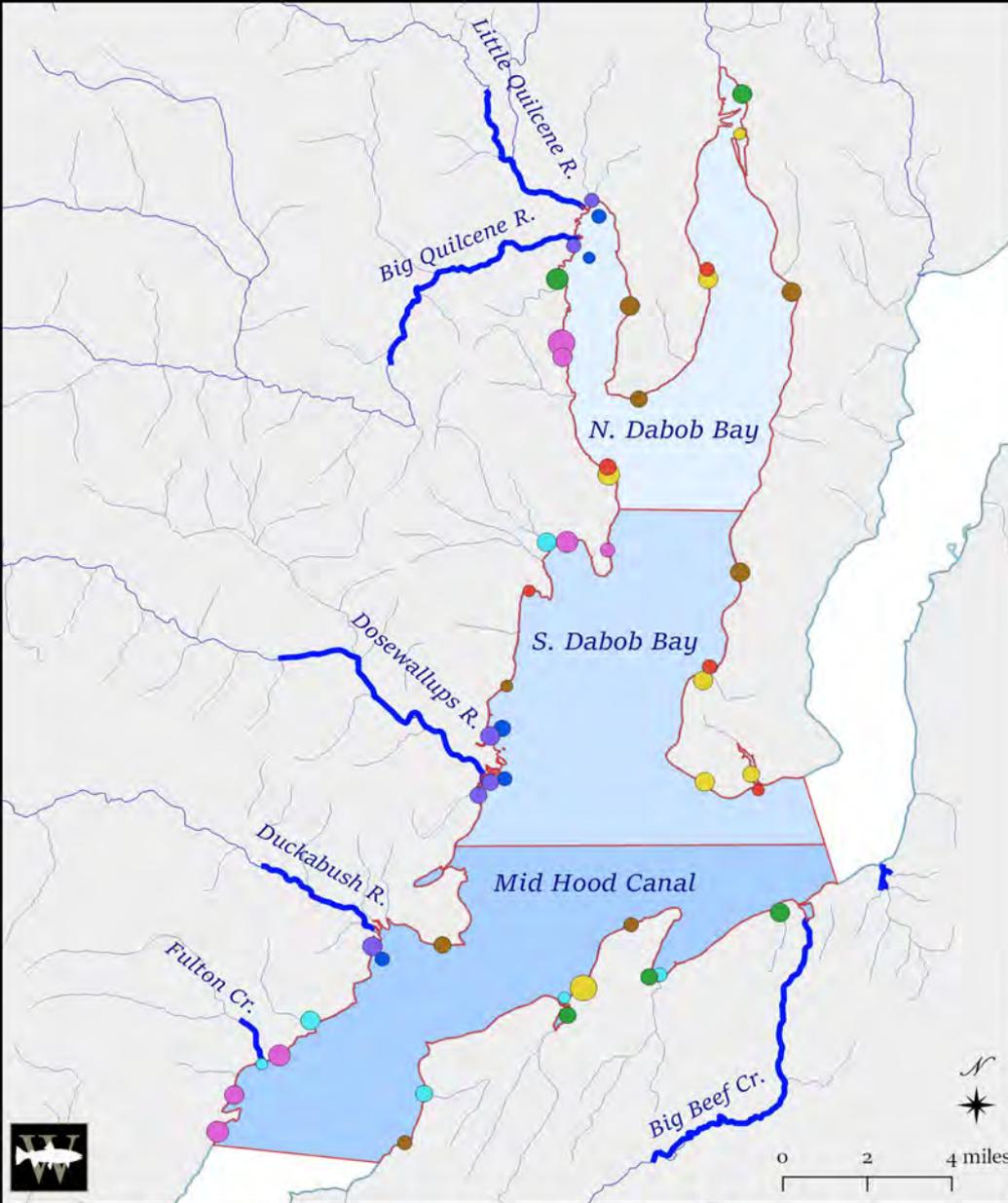
— Summer Chum Salmon
● 2018 Sample Sites

0 2 4 6 miles



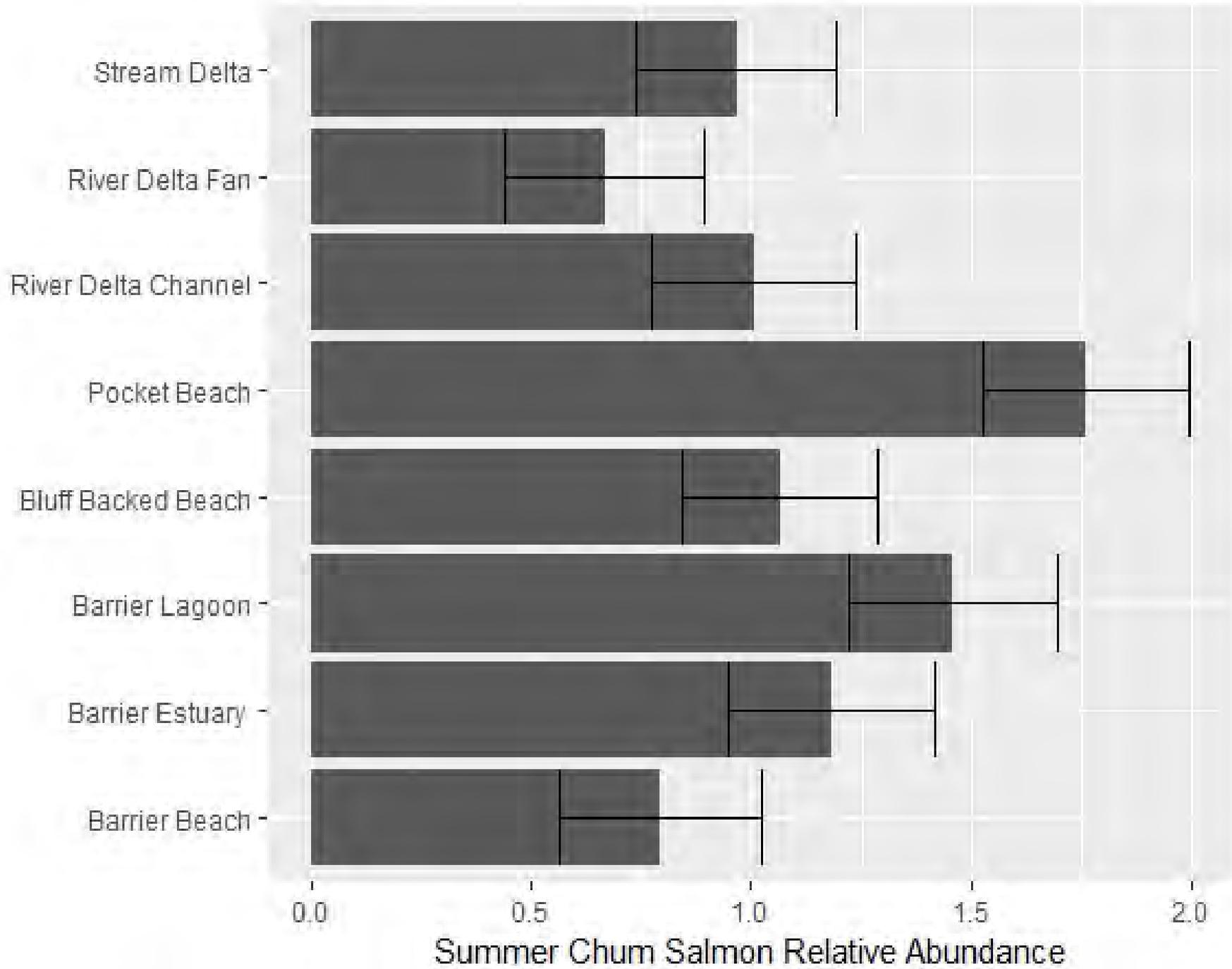
2018 Relative Abundance

- Connectivity metric insignificant
- River deltas showed no significant impact on abundance



Summer Chum Salmon Relative Abundance

- | | | |
|-------------------|-----------------------|----------------|
| ● Barrier Beach | ● Bluff Backed Beach | ● Stream Delta |
| ● Barrier Estuary | ● River Delta Channel | ● Pocket Beach |
| ● Barrier Lagoon | ● River Delta Fan | — Summer Chum |



Independent Variable	<i>P</i>-value	<i>t</i>-value	Coefficient	<i>SE</i>
Week	0.000	10.124	1.366	0.042
Shoreline Type (Pocket Beach)	0.000	8.647	9.498	2.472
Temperature	0.000	5.578	1.408	0.086
Shoreline Type (Barrier Lagoon)	0.000	4.914	4.316	1.284
Sub-Region (Mid-Hood Canal)	0.000	-3.851	0.575	0.082
Shoreline Type (Barrier Estuary)	0.000	3.698	3.285	1.056
Shoreline Type (Bluff Backed Beach)	0.000	3.658	2.844	0.812
Tidal Stage (Slack)	0.002	3.151	1.702	0.287
Substrate (Silt/Sand)	0.002	2.994	1.924	0.420
Shoreline Type (Midsize Delta)	0.008	2.663	2.260	0.692
Sub-Region (Dabob South)	0.010	-2.609	0.687	0.098
Intercept Term	0.010	-2.600	0.189	0.121
Salinity	0.010	-2.554	0.968	0.012
Tidal Stage (Flood)	0.024	-2.265	0.757	0.092
Shoreline Type (Delta Channel)	0.110	1.644	1.758	0.603
Substrate (Cobble)	0.112	-1.579	0.364	0.232
Substrate (Gravel/Cobble)	0.182	-1.335	0.703	0.185
Substrate (Sand/Gravel)	0.184	-1.330	0.764	0.154
Substrate (Gravel)	0.384	0.873	1.228	0.289
Substrate (Sand)	0.438	-0.775	0.808	0.221
Shoreline Type (Delta Fan)	0.988	-0.014	0.995	0.353

In Memoriam

James Fletcher



Questions?

