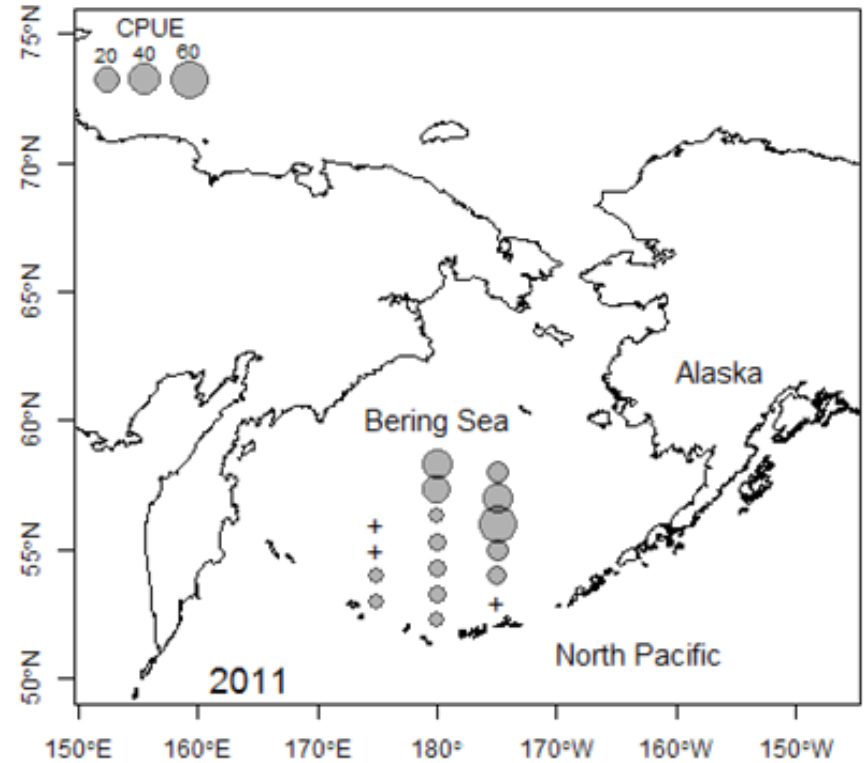
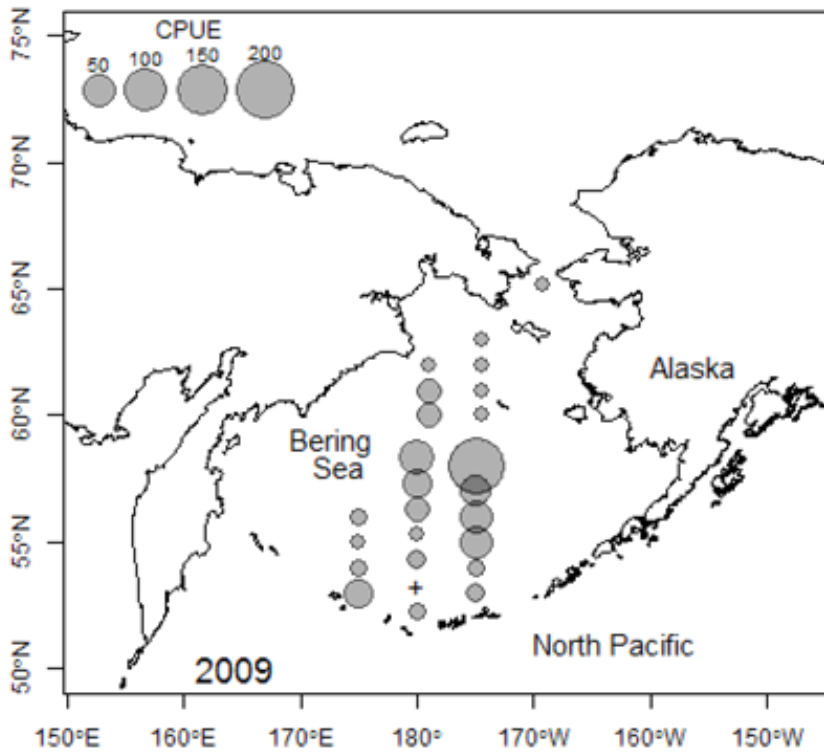


Microsatellite identification of Sockeye Salmon rearing in the Bering Sea during 2009-2014

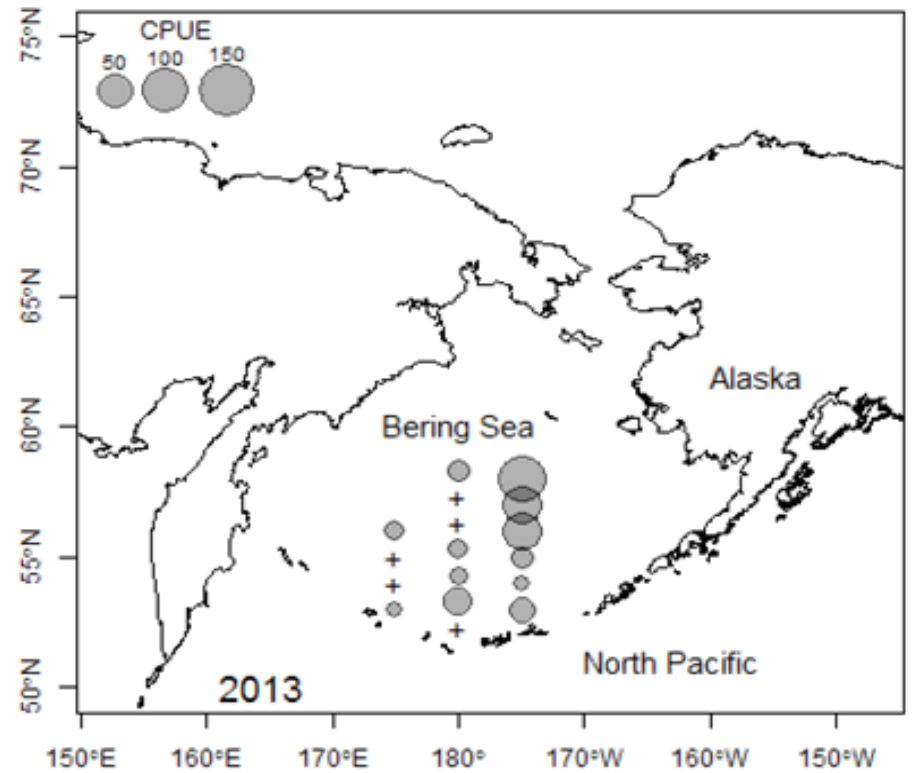
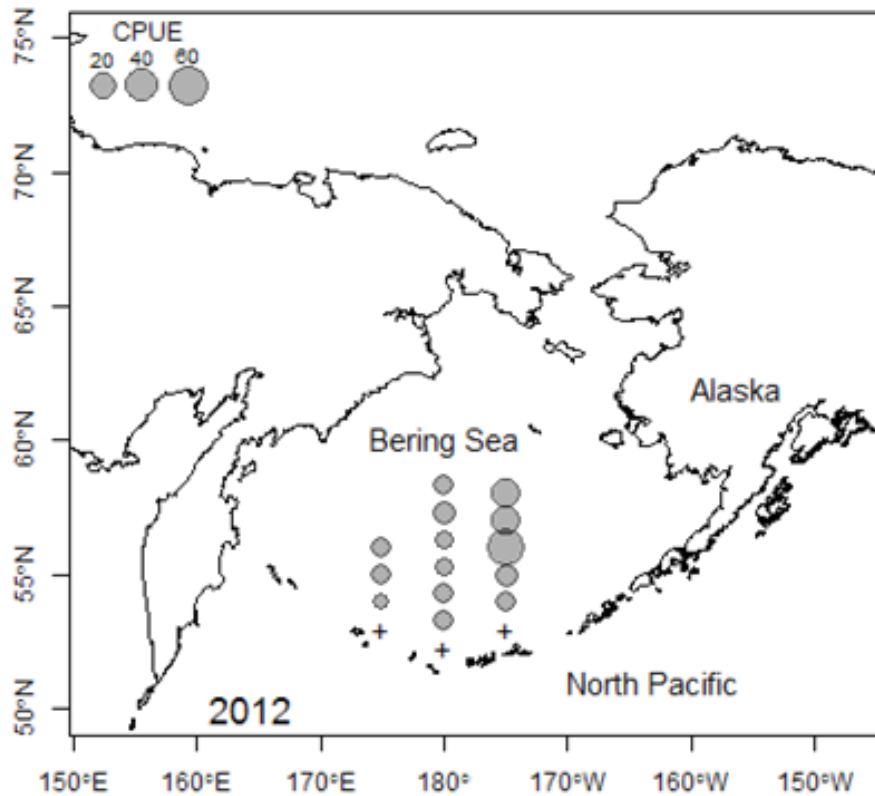
Terry D. Beacham, John R. Candy,
Fisheries and Oceans Canada,

Shunpei Sato and Shigehiko Urawa
Hokkaido National Fisheries Research Institute,

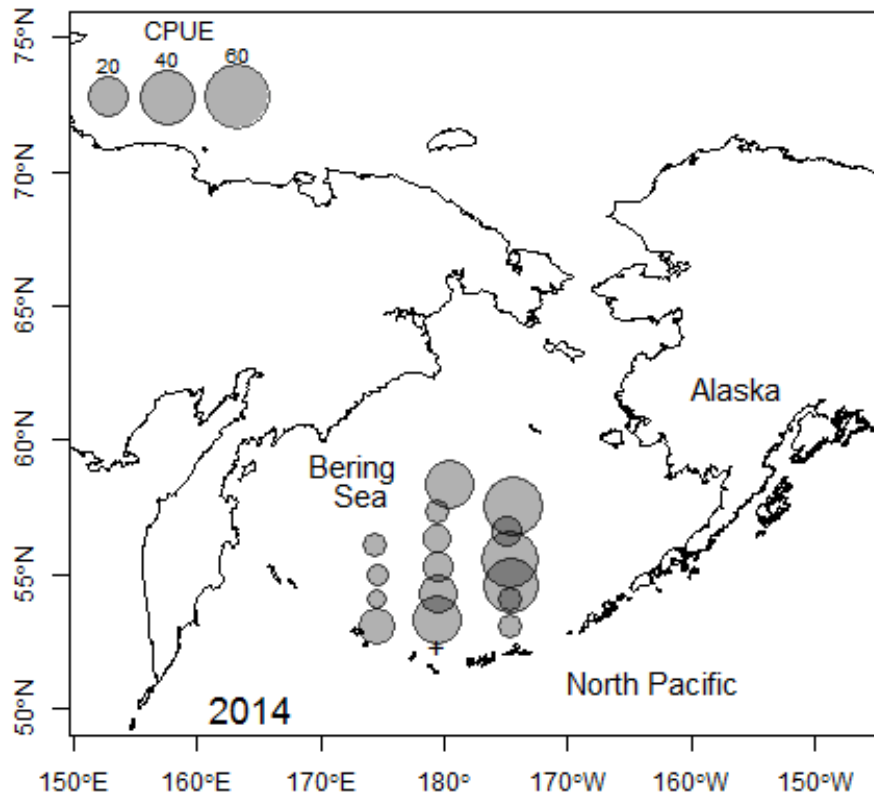
CPUE 2009, 2011



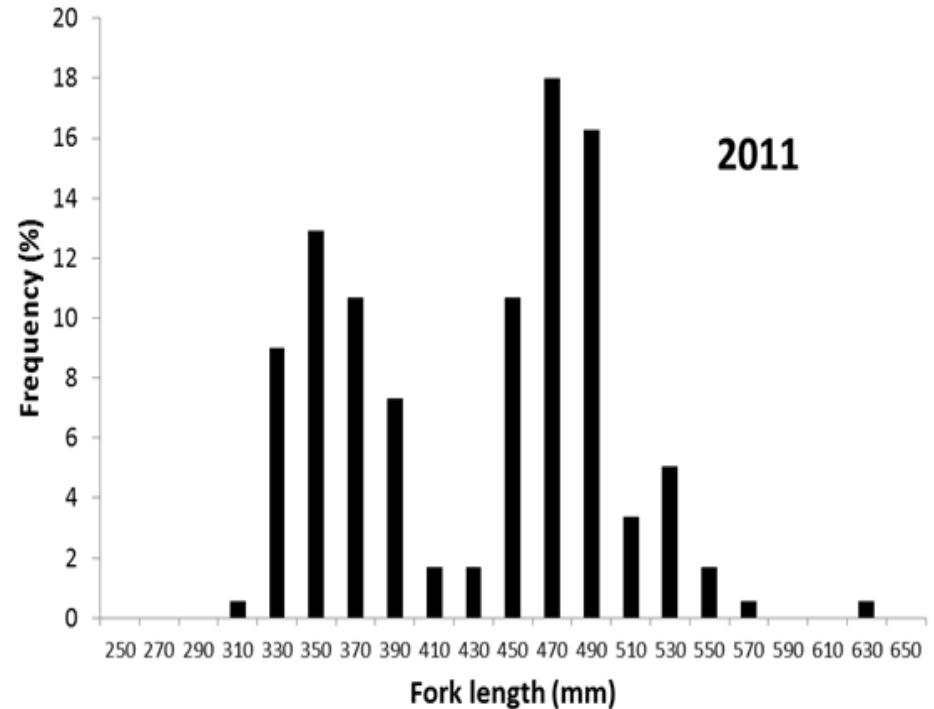
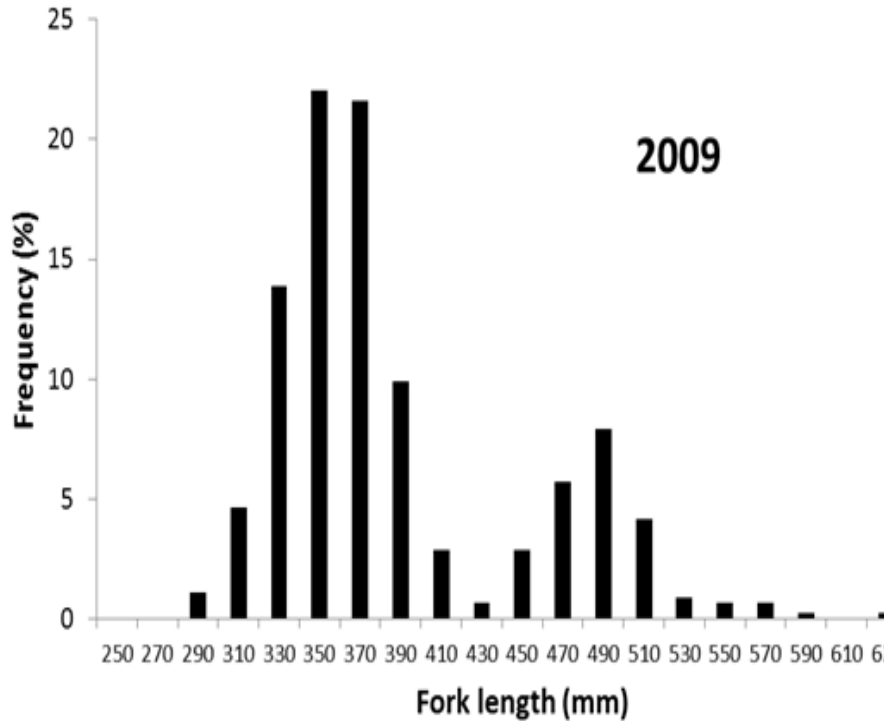
CPUE 2012, 2013



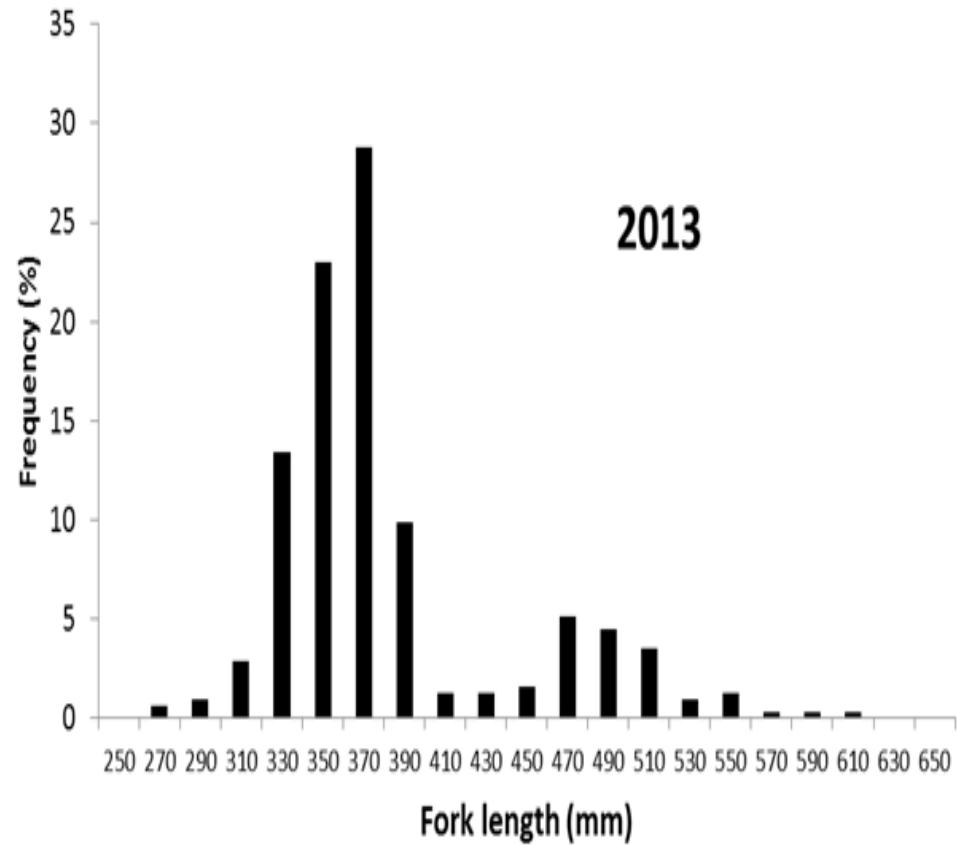
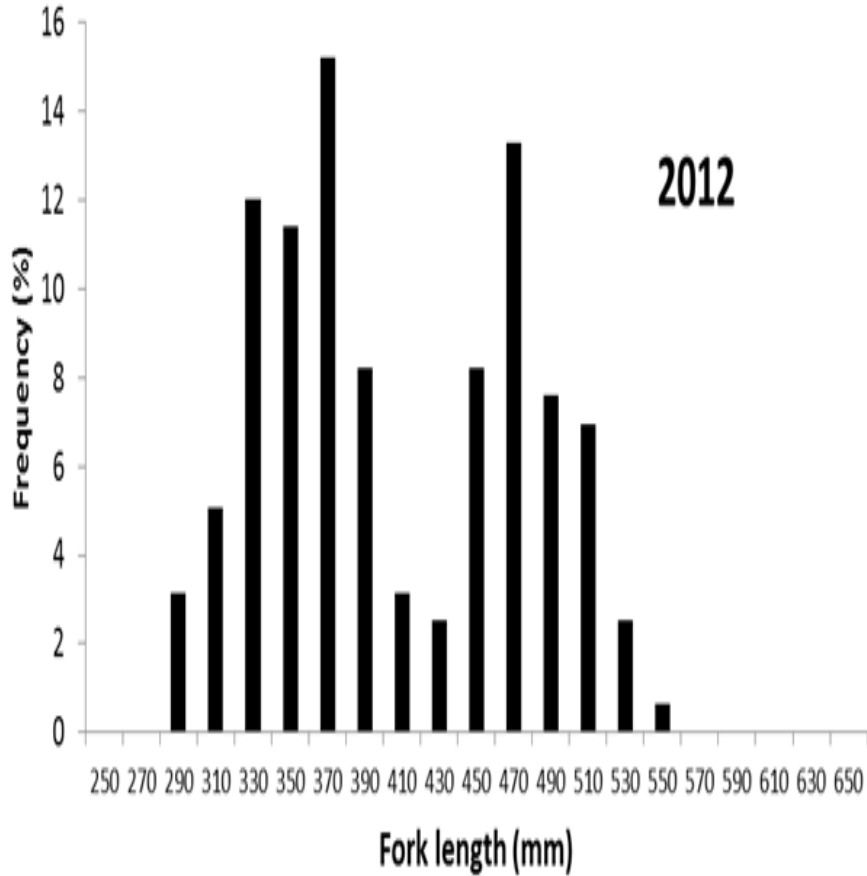
CPUE 2014



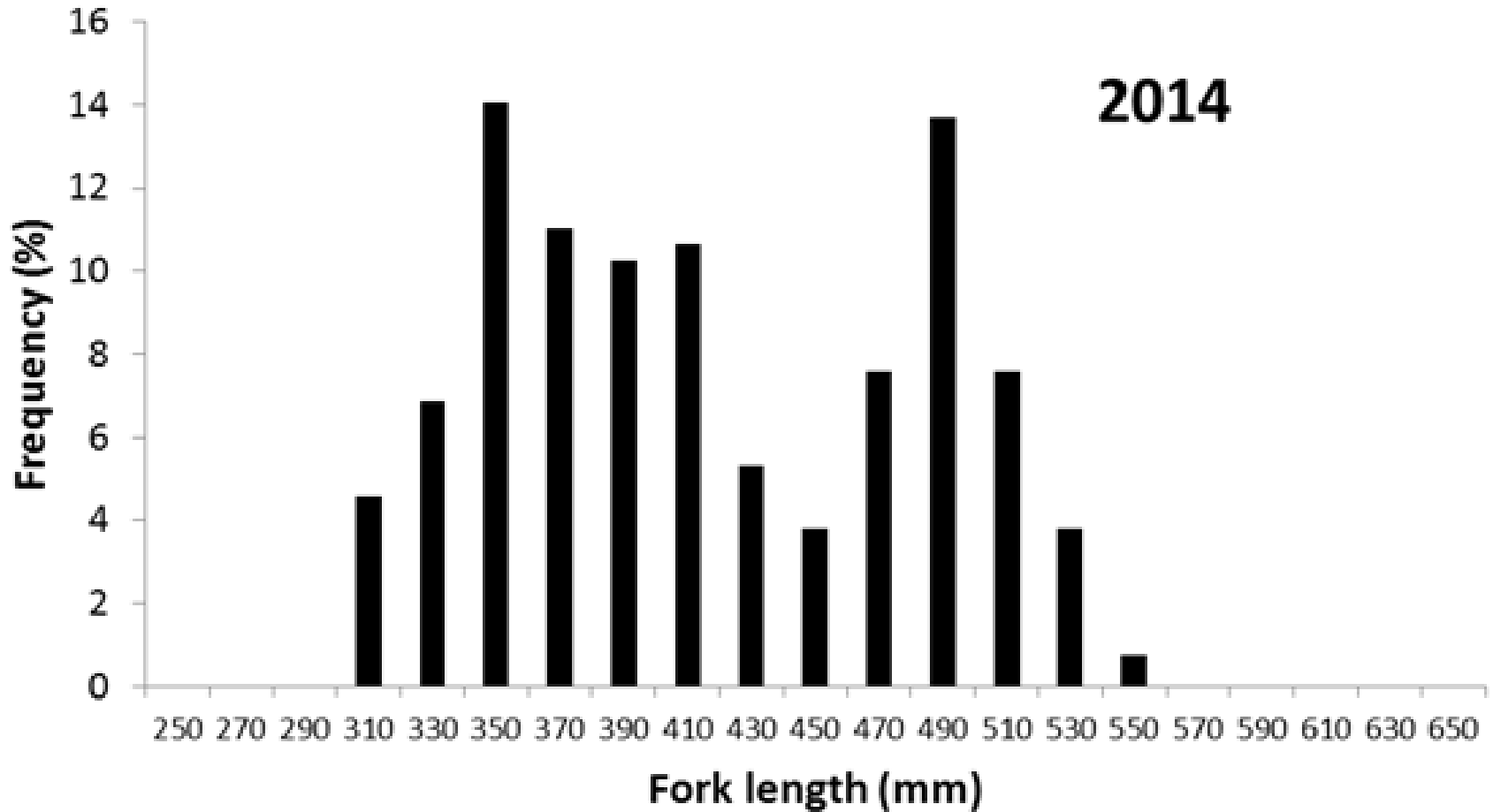
Length frequency distribution, 2009, 2011



Length frequency distributions, 2012, 2013

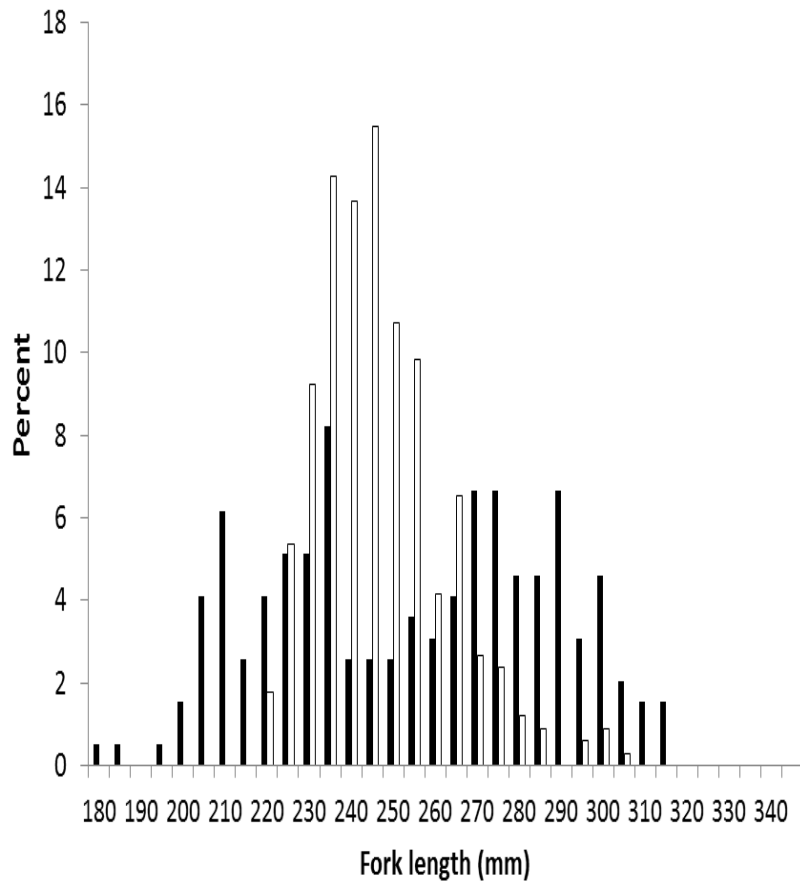


Length frequency distribution 2014

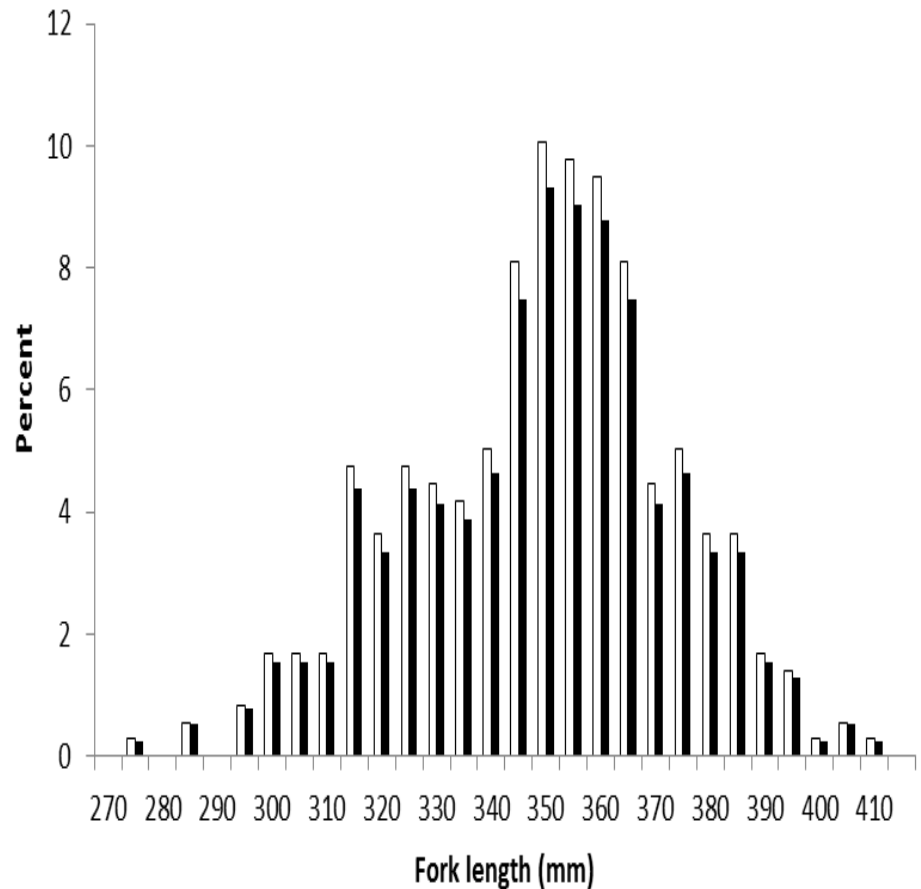


Observed ocean age 1 and projected ocean age 1 juvenile Sockeye Salmon size distributions from fall ocean age 0 for winter ocean age 1 (Farley) or summer ocean age 1 (Beacham) for 2009

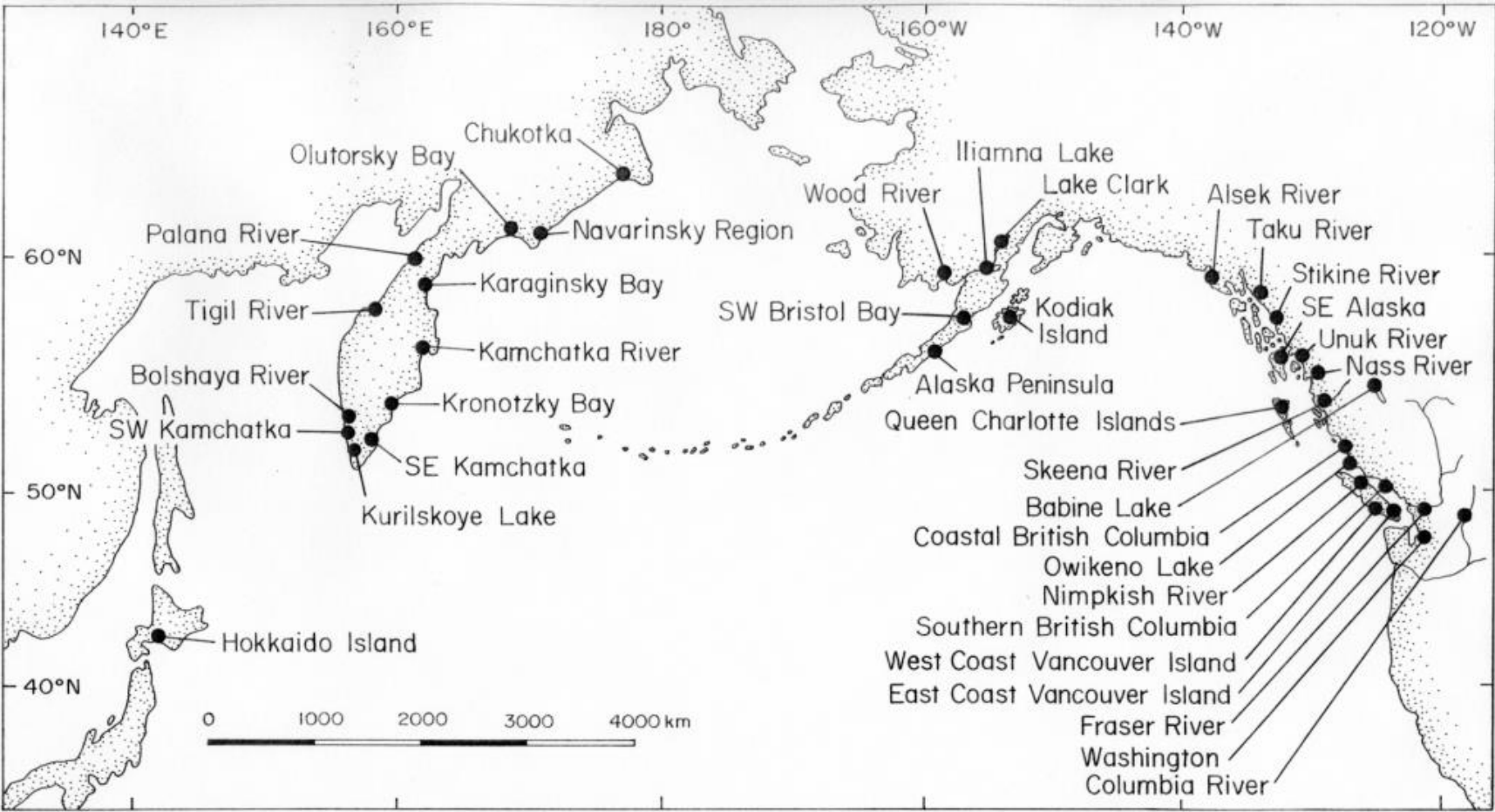
- Farley et al.



- Beacham et al.



Sockeye salmon baseline distribution (microsatellites)



Estimation of stock composition

- Baseline of approximately 73,000 sockeye salmon from 415 populations spanning Japan, Russia, Alaska, British Columbia, and Washington.
- Individuals surveyed at 14 microsatellites.
- Baseline populations were organized into 50 reporting groups.
- Accuracy of estimation was outlined by Beacham et al. 2014. Stock-specific size of juvenile sockeye salmon in British Columbia waters and in the Gulf of Alaska. Transactions of the American Fisheries Society 143: 876-888.

Canada % stock composition

Year	Estimate				
	2009	2011	2012	2013	2014
CPUE	27.9	10.5	9.4	18.0	15.6
N	446	177	159	313	255
Stock					
Fraser River	1.9	0.5		0.3	0.7
Skeena River	0.2	0.8	0.6	2.9	0.9
Alsek River	1.3	1.7	2.3	1.0	1.0
Canada (total)	4.4	4.2	3.5	7.5	3.4

Bristol Bay % stock composition

Year	Estimate				
	2009	2011	2012	2013	2014
Kvichak River	30.0	12.5	18.4	22.9	17.4
Egegik River	10.2	4.3	16.8	19.1	23.9
Naknek River	10.4	24.4	17.7	13.5	9.2
Wood River	14.7	6.0	11.6	7.5	9.0
Nushagak River	4.8	7.7	8.9	3.0	7.5
Ugashik River	5.8	6.1	2.2	0.3	1.9
Bristol Bay (total)	83.5	70.6	77.2	74.4	81.5

Other Alaska % stock composition

Year	Estimate				
	2009	2011	2012	2013	2014
Chignik River	2.5	2.7		5.7	1.8
Kuskokwim	0.8	1.2		1.0	
Norton Sound		1.2	0.7	0.3	0.6
SE Alaska		1.7		0.3	0.4
Cook Inlet	1.0	3.4	0.7	3.4	1.7
Kodiak Island	0.5	3.8	1.6	3.1	0.5
Alaska-other (total)	4.8	14.0	3.0	13.8	5.0

Alaska total % stock composition

Year	2009	2011	2012	Estimate	
				2013	2014
Bristol Bay (total)	83.5	70.6	77.2	74.4	81.5
Alaska-other (total)	4.8	14.0	3.0	13.8	5.0
Alaska-total	88.3	84.6	80.2	88.2	86.5

Russia, % stock composition, 175°E (30.2%), further east (6.9%)

Year	Estimate				
	2009	2011	2012	2013	2014
Karaginsky Bay	2.2	1.2	7.5	0.5	5.9
Kamchatka	1.8	1.7	2.2	0.6	1.6
River					
Kuril Lake	0.5	4.4	3.5	2.1	0.4
Bolshaya River	1.0	3.3	1.8		0.5
Russia (total)	7.3	11.2	16.3	4.3	9.4

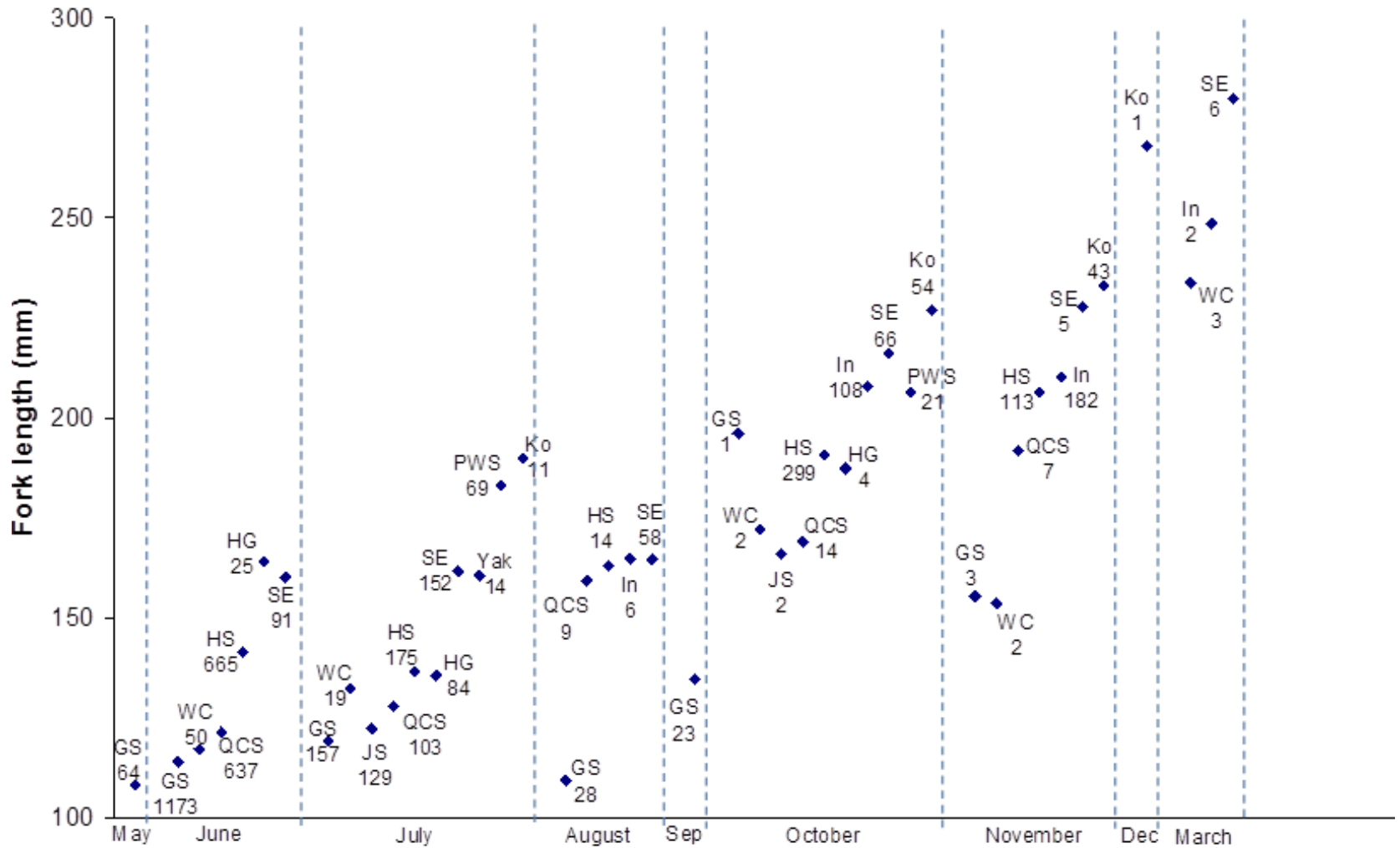
Regional % stock composition

Year	Estimate				
	2009	2011	2012	2013	2014
N	446	177	159	313	255
Washington					0.8
Canada	4.4	4.2	3.5	7.5	3.4
Alaska	88.3	84.6	80.2	88.2	86.5
Russia	7.3	11.2	16.3	4.3	9.4

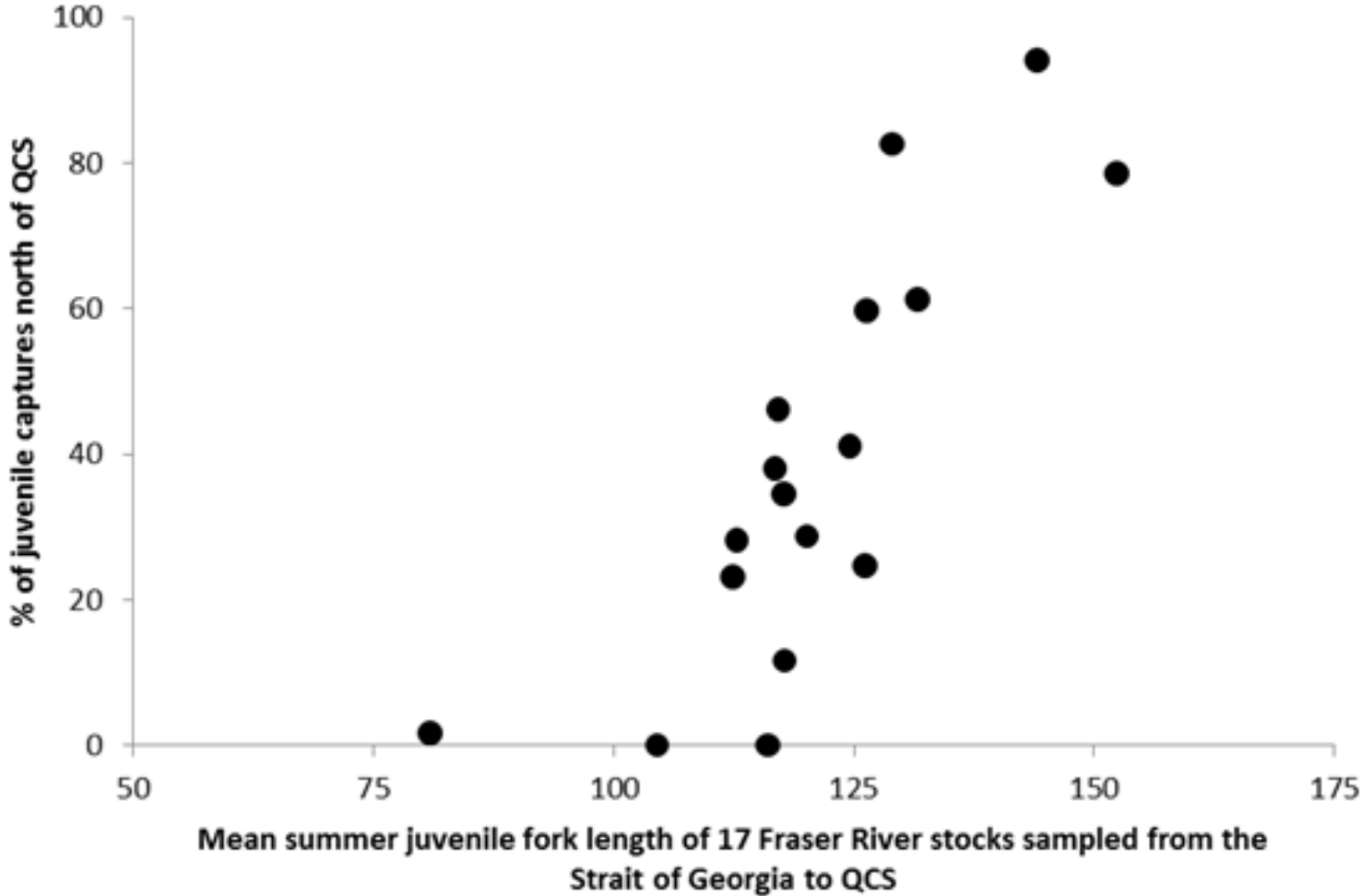
Regional stock specific size (mm)

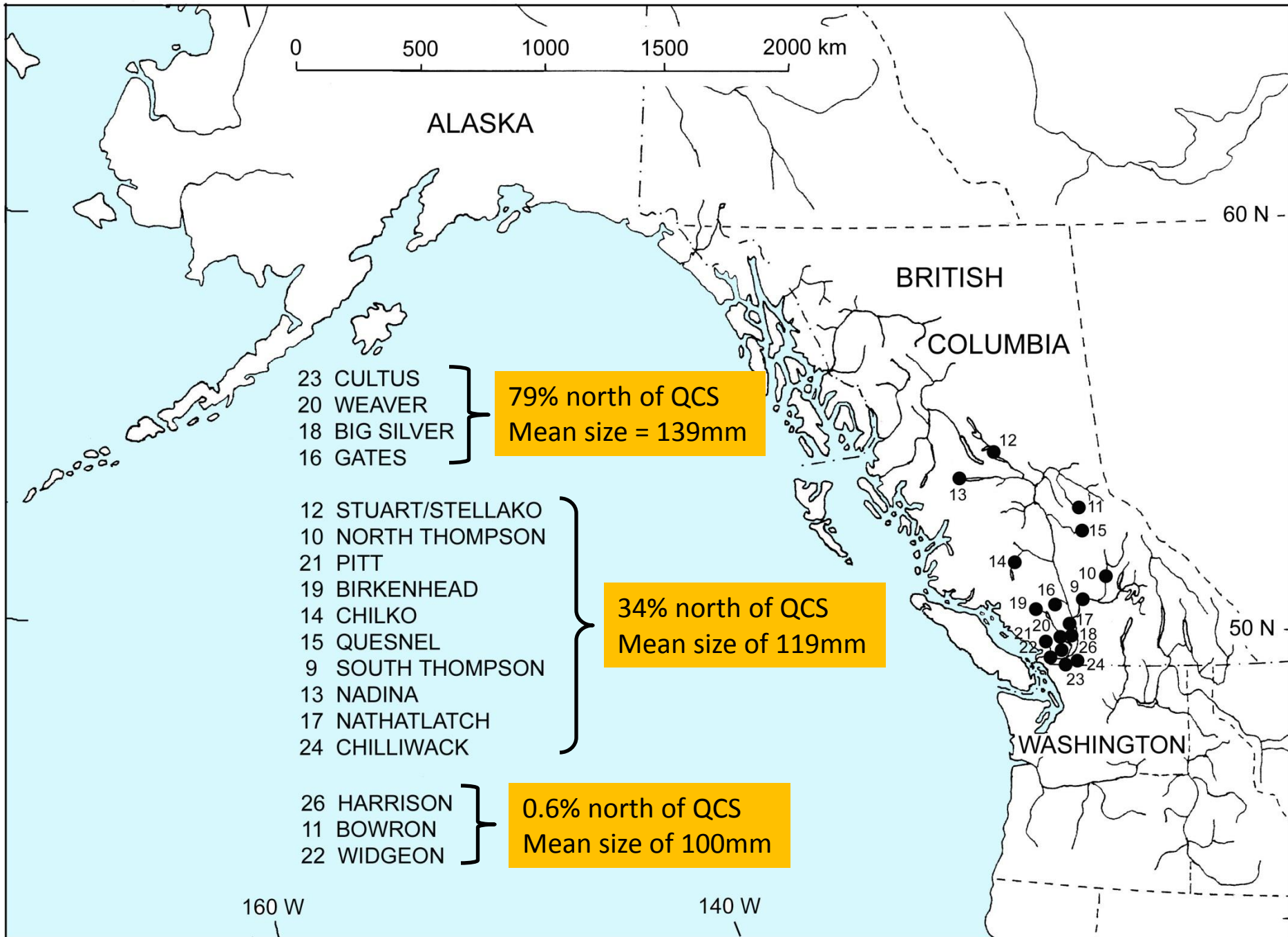
Stock	Age x.1		Age x.2	
	N	FL	N	FL
Fraser/Washington	12	359.8	3	496.7
Rest of BC	29	344.9	11	468.8
Bristol Bay	700	352.5	320	472.1
Russia	50	342.3	52	468.5

Fraser River Juvenile Sockeye Salmon fork length during first ocean year



Relationship between juvenile fork length and capture location for Fraser River Sockeye Salmon





Sockeye Salmon migration routes

