

# **Summary of Fish Catch Results for Bowman Beach, Bowman Lagoon and Lottie Bay**

Skagit River System Cooperative Research Program

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Bowman Beach, Bowman Lagoon and Lottie Bay are located on the northwest side of Deception Pass along Rosario Strait (Figure 1). Large and small net beach seines were used at these sites after methods described in Skagit System Cooperative (2003). Bowman Beach and Bowman Lagoon were originally sampled on April 7, 2004 as part of SRSC's study of fish use in pocket estuaries throughout the Whidbey Basin and north Skagit County bays (Beamer et al. 2006). Three small net sets were made at two locations on Bowman Beach near the lagoon (a total of six sets) and three separate sites within Bowman Lagoon were sampled by small net with one set at each location. Two additional (random) sites in Bowman Bay were sampled using a large net beach seine on August 2, 2006 and August 20, 2007. Lottie Bay was sampled over a seven year period from April 2007 through October 2013. Sixteen large net beach seine sets were made at seven different locations within the bay as part of SRSC's long term monitoring of juvenile Chinook salmon (Greene and Beamer 2011), part of implementing the Skagit Chinook Recovery Plan (SRSC and WDFW 2005).

## **Bowman Beach**

The beach seine sites at Bowman Beach consisted of sand to mixed coarse and boulder substrate. Vegetative cover consisted of green algae 12.5 % of the time; there was no vegetative cover on 87.5 % of the sets. Average maximum water depth was 1.2 meters with an average surface salinity of 28.22 parts per thousand (ppt) and an average bottom salinity of 28.25 ppt within the area seined. The water temperature varied by date ranging from a low of 9.3°C in April 2004 to a high of 12.4°C in August 2006.

At Bowman Beach we caught a total of 612 fish from 12 different species or species groupings, including two species of juvenile salmon and one species of forage fish (Table 1). The most abundant fish species was snake pricklyback with a total catch of 260 fish, present in 12.5% of the beach seine sets. We kept count of Dungeness crab (17) and red rock crab (1) caught by seines, as these species are of commercial and recreational interest.

## **Bowman Lagoon**

The beach seine sites at Bowman Lagoon consisted of mud substrate with saltmarsh vegetation 100 % of the time. Average maximum water depth was 0.5 meters with an average surface salinity of 0.4 ppt and an average bottom salinity of 5.1 ppt within the area seined. The water temperature averaged 9.6°C on the one sampling date in April 2004.

There were no fish caught at the sites within Bowman Lagoon on the one day of sampling.

## **Lottie Bay**

The beach seine sites at Lottie Bay consisted of gravel to mixed coarse substrate. Vegetative cover consisted of detritus, green algae or eelgrass 81.2 % of the time; there was no vegetative cover on 18.8 % of the sets. Average maximum water depth was 1.9 meters with an average surface salinity of 27.7 ppt and an average bottom salinity of 28.4 ppt within the area seined. Water temperature varied by date ranging from a low of 8.3°C in February 2010 to a high of 14.4°C in August 2008.

At Lottie Bay we caught a total of 3,661 fish from 29 different species or species groupings, including five species of juvenile salmon and four species of forage fish (Table 2). The most abundant fish species was Pacific herring with a total catch of 2,103 fish, present in 43.75% of the beach seine sets. Eighty-eight percent of the herring were caught on July 15, 2013 with a catch of 1,856 herring in one set. We kept count of Dungeness crab (129) and red rock crab (1) caught by seines, as these species are of commercial and recreational interest.

## **References**

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Greene, CM, and EM Beamer. 2011. Monitoring Population Responses to Estuary Restoration by Skagit River Chinook Salmon: Intensively Monitored Watershed Project Annual Report, 2011. NOAA Northwest Fisheries Science Center, Seattle, WA. Available at [www.skagitcoop.org/documents/Greene%20&%20Beamer%20Skagit%20IMW%202011.pdf](http://www.skagitcoop.org/documents/Greene%20&%20Beamer%20Skagit%20IMW%202011.pdf)

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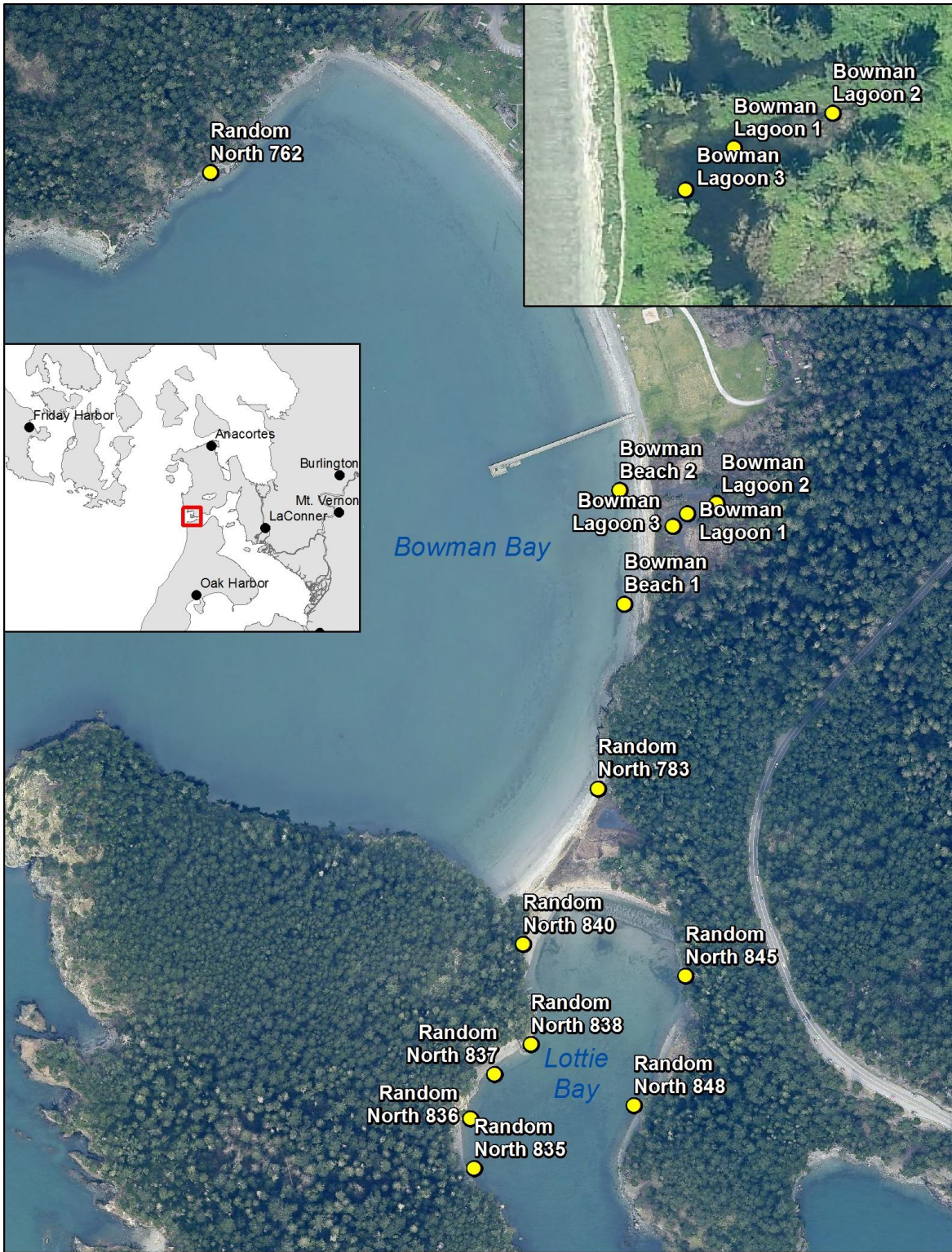


Figure 1. Location of Bowman Beach, Bowman Lagoon and Lottie Bay beach seine sites.

Table 1. Fish catch summary for Bowman Beach beach seining.

Assemblage Groupings	Taxonomic group	Genus species, age & mark	Common name	Species abbreviation	Total catch	Catch per set	Frequency in catch
Crabs and shrimp	Cancridae	Cancer magister <6.5"	Dungeness crab, sublegal size	DUNGI small	17	2.13	12.50%
		Cancer productus	Red rock crab	RED ROCK CRAB	1	0.13	12.50%
Flatfish	Pleuronectiformes	Platichthys stellatus	Starry flounder	STARRY	8	1.00	37.50%
		Parophrys vetulus	English sole	ENG SOLE	236	29.50	25.00%
Forage fishes	Osmeridae	Hypomesus pretiosus adult body form	Surf smelt, adult body form	SMELT a	3	0.38	12.50%
Gunnels and Pricklebacks	Stichaeidae	Lumpenus sagitta	Snake prickleback	SNAKE	260	32.50	12.50%
Pacific salmon	Salmonidae	Oncorhynchus tshawytscha age 0+ no external mark	Chinook salmon, wild subyearling	CK 0+ nem	2	0.25	12.50%
		Oncorhynchus gorbuscha age 0+	Pink salmon, subyearling	PK 0+	1	0.13	12.50%
Sculpins	Cottidae	Clinocottus acuticeps	Sharpnose sculpin	SHARPNOSE	1	0.13	12.50%
		Leptocottus armatus	Pacific staghorn sculpin	STAG	33	4.13	62.50%
Sea perches	Embiotocidae	Rhacochilus vacca	Pile perch	PILE PERCH	1	0.13	12.50%
		Embiotoca lateralis	Striped seaperch	STRIPED	1	0.13	12.50%
		Cymatogaster aggregata	Shiner perch	SHINER	62	7.75	37.50%
Sticklebacks	Gasterosteidae	Gasterosteus aculeatus	Three spined stickleback	STICKL	4	0.50	37.50%

Table 2. Fish catch summary for Lottie Bay beach seining.

Assemblage Groupings	Taxonomic group	Genus species, age & mark	Common name	Species abbreviation	Total catch	Catch per set	Frequency in catch
Crabs and shrimp	Cancridae	Cancer magister >6.5"	Dungeness crab, legal size	DUNGI legal	11	0.69	25.00%
		Cancer magister <6.5"	Dungeness crab, sublegal size	DUNGI small	118	7.38	62.50%
		Cancer productus	Red rock crab	RED ROCK CRAB	1	0.06	6.25%
	Varunidae	Hemigrapsus nudus	Shore crab	SHORE CRAB	3	0.19	12.50%
Flatfish	Pleuronectiformes	Parophrys vetulus	English sole	ENG SOLE	23	1.44	25.00%
		Platichthys stellatus	Starry flounder	STARRY	18	1.13	37.50%
Forage fishes	Ammodytidae	Ammodytes hexapterus adult body form	Pacific sand lance, adult body form	LANCE a	3	0.19	12.50%
	Clupeidae	Clupea harengus adult body form	Pacific herring, adult body form	HERR a	2103	131.44	43.75%
		Engraulis mordax adult body form	Northern anchovy, adult body form	NANCHOV a	1	0.06	6.25%
	Osmeridae	Hypomesus pretiosus adult body form	Surf smelt, adult body form	SMELT a	312	19.50	50.00%
Greenlings/lingcod	Hexagrammidae	Hexagrammos decagrammus	Kelp greenling	KELP GRNLNG	2	0.13	12.50%
		Hexagrammos spp	Unidentified greenling species	O/U GREENLING	3	0.19	6.25%
		Hexagrammos stelleri	Whitespot greenling	WHITESPOT GR	58	3.63	56.25%
Gunnels and Pricklebacks	Pholidae	Pholis laeta	Crescent gunnel	CRES GUNL	21	1.31	37.50%
		Apodichthys flavidus	Penpoint gunnel	PENPT GUNL	52	3.25	62.50%
		Pholis ornata	Saddleback gunnel	SADLBCK GUNL	41	2.56	50.00%
	Stichaeidae	Anoplarchus purpurescens	High cockscomb	HIGH COCKSCOMB	2	0.13	12.50%
		Lumpenus sagitta	Snake prickleback	SNAKE	137	8.56	43.75%
Other - marine	Agonidae	Agonopsis emmelane	Spearnose poacher	SPEARNOSE POACHER	1	0.06	6.25%



Assemblage Groupings	Taxonomic group	Genus species, age & mark	Common name	Species abbreviation	Total catch	Catch per set	Frequency in catch
Pacific salmon	Salmonidae	Oncorhynchus keta age 0+	Chum salmon, subyearling	CH 0+	328	20.50	25.00%
		Oncorhynchus tshawytscha age 0+ external mark	Chinook salmon, hatchery marked subyearling	CK 0+ em	4	0.25	6.25%
		Oncorhynchus tshawytscha age 0+ no external mark	Chinook salmon, wild subyearling	CK 0+ nem	12	0.75	25.00%
		Oncorhynchus kisutch age 1+ no external mark	Coho salmon, wild yearling	CO 1+ nem	6	0.38	12.50%
		Oncorhynchus clarki age 1+>	Cutthroat trout, yearling or older	CT 1+>	1	0.06	6.25%
		Salvelinus sp. (malma or confluentus) all ages	Native char, all ages	DV/BT	3	0.19	6.25%
Sculpins	Cottidae	Enophrys bison	Buffalo sculpin	BUFF	9	0.56	37.50%
		Myoxocephalus polyacanthocephalus	Great sculpin	GRT SCULP	49	3.06	37.50%
		Arteidius fenestralis	Padded sculpin	PADD SCULP	43	2.69	56.25%
		Clinocottus acuticeps	Sharpnose sculpin	SHARPNOSE	135	8.44	87.50%
		Leptocottus armatus	Pacific staghorn sculpin	STAG	57	3.56	56.25%
Sea perches	Embiotocidae	Cymatogaster aggregata	Shiner perch	SHINER	230	14.38	62.50%
Sticklebacks	Gasterosteidae	Gasterosteus aculeatus	Three spined stickleback	STICKL	3	0.19	18.75%
True cods	Gadidae	Gadus macrocephalus	Pacific cod	PACIFIC COD	1	0.06	6.25%