

# Summary of Fish Catch Results for Cayou Lagoon E and Cayou Lagoon W, 2008 and 2009

Skagit River System Cooperative Research Program

December 2012

Beach seine sampling for fish was conducted at Cayou Lagoon E and Cayou Lagoon W as part of Washington State's Salmon Recovery Funding Board Project # 07-1863 N: *WRIA2 Habitat Based Assessment of Juvenile Salmon*, also locally known as the *Big Picture Project*.

Cayou Lagoon is located within Deer Harbor on the southwest side of Orcas Island within the San Juan Islands (Figure 1). Sets were made at both sides of the lagoon (East and West) using small net beach seines after methods described in Skagit System Cooperative Research Department (2003). We made 25 beach seine sets over the two-year study period. Beach seining occurred monthly at Cayou Lagoon E from April through September in 2008 and 2009. Sets were made at Cayou Lagoon W from March through August 2008 and from April through September 2009, with the exception that sets were not made during July of either year.

The beach seine site at both locations consisted of mixed fines to mud substrate, usually without vegetative cover (such as eelgrass, kelp or other macro algae). Average maximum water depth was 0.95 and 0.80 meters deep (E and W respectively) and average salinity was just over 30.0 parts per thousand within the area seined at both sites. Water temperatures varied by month and site. Water temperature at Cayou Lagoon E ranged from a low of 7.3 °C in March 2008 to a high of 20.2 °C in June 2009. At Cayou Lagoon W it varied from 7.5 °C in March 2008 to 16.3 °C in May 2009. Water temperature readings were not taken at Cayou Lagoon W during the sampling in June or August 2009, which is usually when the warmer temperatures occur.

At Cayou Lagoon E we caught a total of 1,286 fish from 15 different species or species groupings over the two-year study period, including two species of juvenile salmon. Forage fish were not caught at Cayou Lagoon E (Table 1). The most abundant fish species was Pacific staghorn sculpin with a total catch of 839 fish, present in 93.3% of beach seine sets. We kept count of Dungeness crab (11) caught by seines, as this species is of commercial and recreational interest.

At Cayou Lagoon W we caught a total of 341 fish from 15 different species or species groupings over the two-year study period, including two species of juvenile salmon and one species of forage fish (Table 2). The most abundant fish species was Pacific staghorn sculpin with a total catch of 268 fish, present in 90.0% of the beach seine sets. We kept count of Dungeness crab (1) caught by seines, as this species is of commercial and recreational interest.

Please refer to Beamer and Fresh (2012) for more information regarding timing, abundance, and habitat selection of focal fish species for the Big Picture Project. The focal species are: Chinook

salmon, chum salmon, pink salmon, Pacific herring, surf smelt, Pacific sand lance, and hexagrammids (greenlings and lingcod).

## **References**

Beamer, EM and KL Fresh. 2012. Juvenile Salmon and Forage Fish Presence and Abundance in Shoreline Habitats of the San Juan Islands, 2008-2009: Map Applications for selected fish species. Report to San Juan County Department of Community Development and Planning and San Juan County Marine Resources Committee. Friday Harbor, WA.

Skagit System Cooperative Research Department. 2003. Estuarine fish sampling methods. Skagit River System Cooperative. LaConner, WA. Available: <http://www.skagitcoop.org/documents>

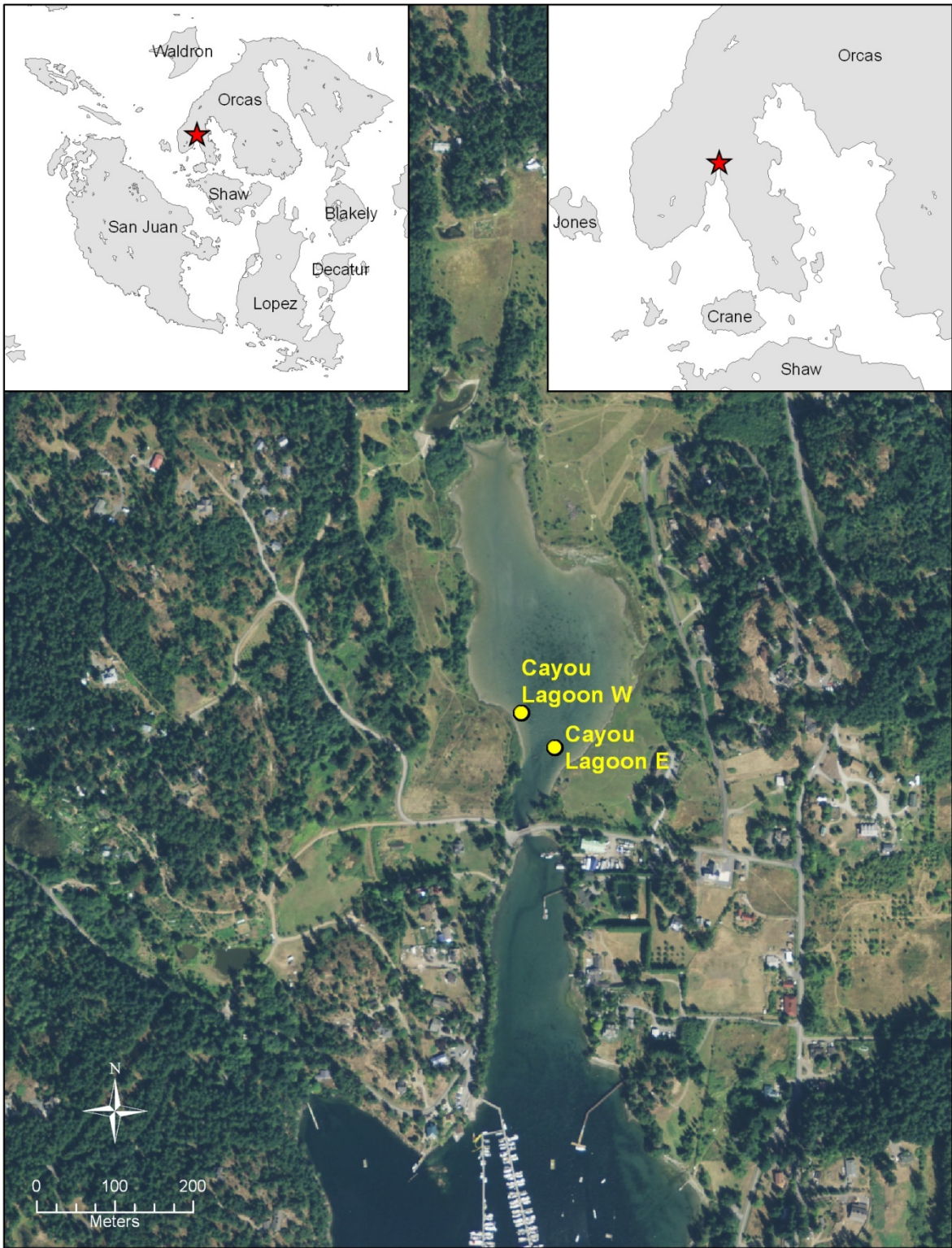


Figure 1. Location of Cayou Lagoon E and Cayou Lagoon W beach seine sites.

Table 1. Fish catch summary for Cayou Lagoon E beach seining, 2008 and 2009.

Assemblage Groupings	Taxonomic group	Genus species, age & mark	Common name	Species abbreviation	Total catch	Catch per set	Frequency in catch
Crabs and shrimp	Cancriidae	Cancer magister <6.5"	Dungeness crab, sublegal size	DUNGI small	11	0.73	13.3%
Flatfish	Pleuronectiformes	Parophrys vetulus	English sole	ENG SOLE	1	0.07	6.7%
		Platichthys stellatus	Starry flounder	STARRY	3	0.20	20.0%
Greenlings/lingcod	Hexagrammidae	Hexagrammos spp	Unidentified greenling species	O/U GREENLING	2	0.13	13.3%
Gunnels and Pricklebacks	Pholidae	Unidentified Gunnel Species	Unidentified gunnel species	GUNNEL	1	0.07	6.7%
		Pholis ornata	Saddleback gunnel	SADLBCK GUNL	2	0.13	6.7%
		Pholis laeta	Crescent gunnel	CRES GUNL	7	0.47	6.7%
	Stichaeidae	Lumpenus sagitta	Snake prickleback	SNAKE	8	0.53	20.0%
Pacific salmon	Salmonidae	Oncorhynchus keta age 0+	Chum salmon, subyearling	CH 0+	8	0.53	6.7%
		Oncorhynchus gorbuscha age 0+	Pink salmon, subyearling	PK 0+	49	3.27	6.7%
Rockfish	Scorpaenidae	Other or unknown Scorpaenids	Unidentified rockfish species	O/U ROCKFISH	1	0.07	6.7%
Sculpins	Cottidae	Other or unknown Cottid	Unidentified sculpin species	O/U SCULP	33	2.20	20.0%
		Clinocottus acuticeps	Sharpnose sculpin	SHARPNOSE	284	18.93	53.3%
		Leptocottus armatus	Pacific staghorn sculpin	STAG	839	55.93	93.3%
Sea perches	Embiotocidae	Cymatogaster aggregata	Shiner perch	SHINER	44	2.93	40.0%
Sticklebacks	Gasterosteidae	Gasterosteus aculeatus	Three spined stickleback	STICKL	4	0.27	13.3%

Table 2. Fish catch summary for Cayou Lagoon W beach seining, 2008 and 2009.

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	1	0.10	10.0%
Forage fishes	Osmeridae	Hypomesus pretiosus adult body form	Surf smelt, adult body form	SMELT a	7	0.70	10.0%
Gunnels and Pricklebacks	Pholidae	Pholis ornata	Saddleback gunnel	SADLBCK GUNL	1	0.10	10.0%
	Stichaeidae	Xiphister atropurpureus	Black prickleback	BLK PRICKLE	1	0.10	10.0%
	Stichaeidae	Lumpenus sagitta	Snake prickleback	SNAKE	1	0.10	10.0%
Other - marine	Gobiidae	Clevelandia ios	Arrow goby	ARROW GOBI	3	0.30	10.0%
	Syngnathidae	Syngnathus griseolineatus	Bay pipefish	PIPEFISH	6	0.60	20.0%
Pacific salmon	Salmonidae	Oncorhynchus gorbuscha age 0+	Pink salmon, subyearling	PK 0+	1	0.10	10.0%
	Salmonidae	Oncorhynchus keta age 0+	Chum salmon, subyearling	CH 0+	3	0.30	10.0%
Sculpins	Cottidae	Other or unknown Cottid	Unidentified sculpin species	O/U SCULP	1	0.10	10.0%
	Cottidae	Blepsias cirrhosus	Silverspotted sculpin	SILVER SPOT SC	1	0.10	10.0%
	Cottidae	Clinocottus acuticeps	Sharpnose sculpin	SHARPNOSE	10	1.00	20.0%
	Cottidae	Leptocottus armatus	Pacific staghorn sculpin	STAG	268	26.80	90.0%
	Hemirhamphidae	Nautichthys oculofasciatus	Sailfin sculpin	SAILFIN	1	0.10	10.0%
Sea perches	Embiotocidae	Cymatogaster aggregata	Shiner perch	SHINER	33	3.30	30.0%
Sticklebacks	Gasterosteidae	Gasterosteus aculeatus	Three spined stickleback	STICKL	4	0.40	20.0%