2010 Fish Use Assessment for False Bay Creek Preserve and False Bay Biological Preserve

Wild Fish Conservancy
NORTHWEST
SCIENCE EDUCATION ADVOCACY

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Introduction and Methods

False Bay Creek (also known as San Juan Valley Creek) is one of the few perennial streams in San Juan County and as such, has more potential than most local watercourses to support salmonid fish spawning and rearing. This report identifies some of the fish species utilizing the creek at two sites: the University of Washington's False Bay Biological Preserve and the San Juan County Land Bank's False Bay Creek Preserve (Figure 1).

Purchased in 1974, the University of Washington's False Bay Biological Preserve consists of nearly 300 acres of tidelands and a 23.3 acre terrestrial property that borders the north end of False Bay and includes the mouth of the creek that enters False Bay at that point. The terrestrial property is partly open grassland and partly forested in the riparian areas. The creek is currently dammed by logs, well-embedded in sediment at the high tide line and does not flow freely out into the bay. Land access is from False Bay Drive, which borders both the marine and terrestrial properties owned by University of Washington.

The San Juan County Land Bank's False Bay Creek Preserve is a 40 acre parcel acquired by the Land Bank in 2008 for the main purpose of protecting and restoring the riparian and salmonid habitat on False Bay Creek. The property is mostly pasture and is currently used for cattle grazing - the riparian zone is protected by cattle exclusion fencing along both sides of the creek. The land is further protected by a perpetual conservation easement held by the San Juan Preservation Trust, with conservation restrictions including a prohibition on buildings and other structures.

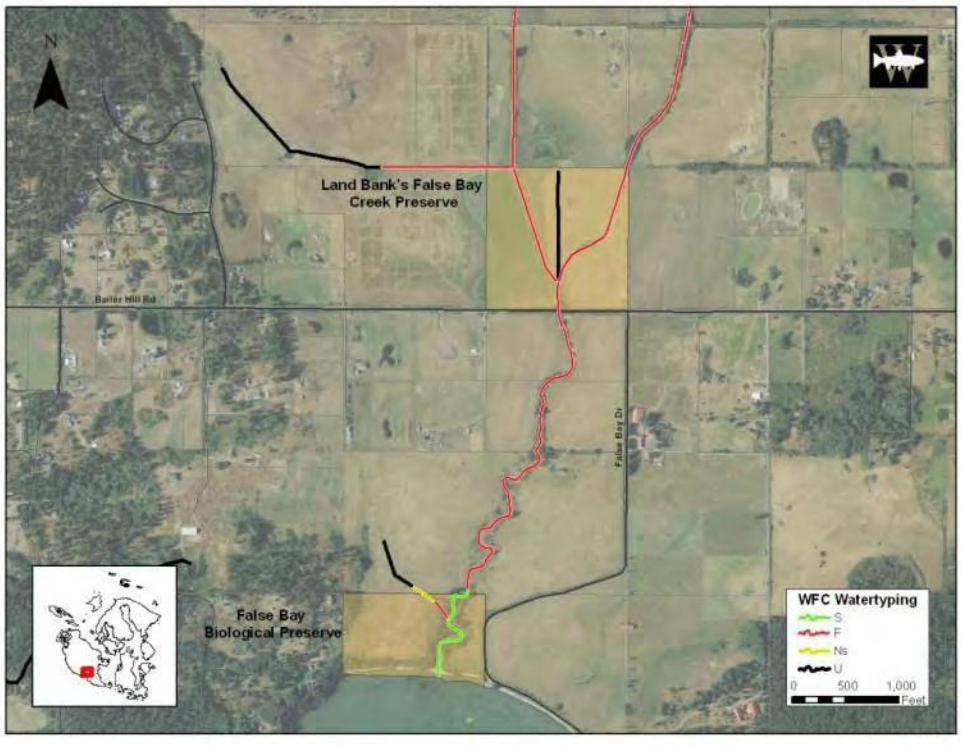

Figure 1. Location of San Juan County Land Bank's False Bay Creek Preserve and the University of Washington's False Bay Biological Preserve. False Bay Creek is mapped according Washington State's water type classification system: S = Shorelines of the State; F = Moderate to high fish, wildlife, or human use; NS = Seasonal non fish habitat; U = No data (Wild Fish Conservancy, 2010).

This fish use assessment provides a synthesis of the author's original fieldwork, unpublished reports, and anecdotal sources. It covers the site's basic riparian and physical characteristics as they relate to fish habitat; and an inventory of fish species that are known or suspected to utilize the creek. All original fieldwork was conducted by the author between the period of March 2010 and June 2010.

The sampling period between March and June 2010 was chosen as the most likely period to encounter the two species of juvenile salmon - chum and coho - suspected to utilize the creek. After June, the lack of stream flow, high water temperature and low dissolved oxygen at these two sites preclude the presence of salmonids. One sampling effort was made July 26, 2011, but the upper site had too little water and was too chocked with reed canarygrass (*Phalaris arundinacea*) to sample.

Several different trapping techniques, including fyke nets, hand seines and to a smaller extent electro-fishing, were used to capture fish species at multiple locations within the two sites. Locations were chosen either for their suitability to a particular trapping technique or for specific fish habitat qualities. For example, one sampling location at False Bay Creek Preserve was chosen for the presence of potential spawning gravel (Figure 2).

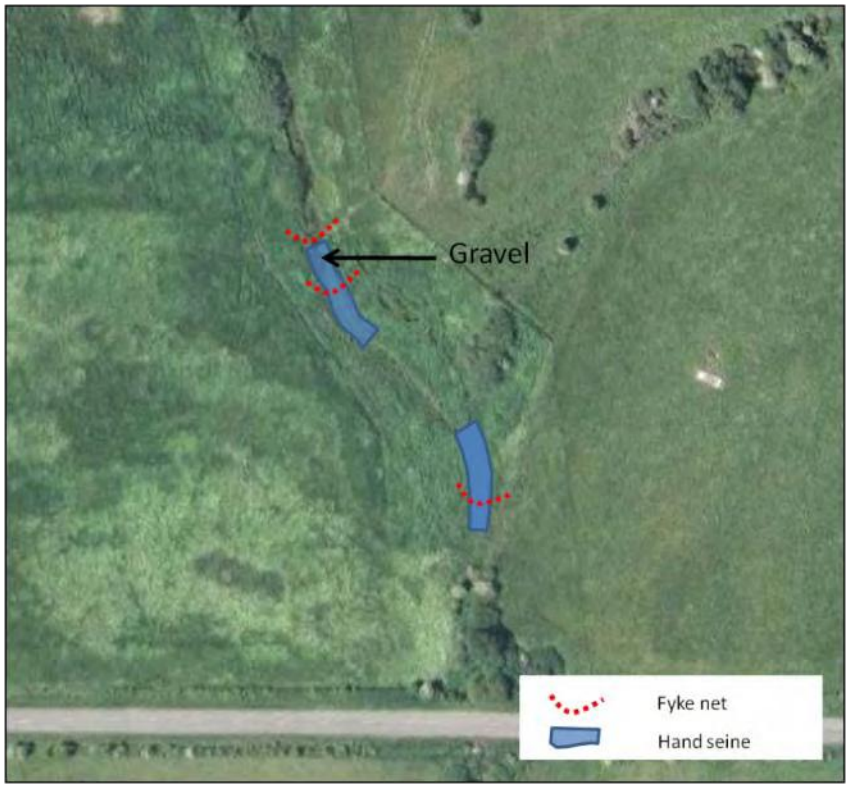

Figure 2. Fish sampling locations at San Juan County Land Bank's False Bay Creek Preserve.

Stream and Riparian Characteristics

University of Washington's False Bay Biological Preserve – The riparian areas are well forested and help moderate the typically high summer stream temperature through shading and evapotranspiration. This is especially important for salmonids in systems with low summer flows and high stream temperatures like False Bay Creek. Other benefits to fish include: high inputs of terrestrial insect prey created by the abundance of overhanging vegetation; and more submerged structure which provides mainly cover/hiding places at this site. The creek is currently dammed by storm deposited logs, well-embedded in sediment at the estuary mouth, and does not flow freely out into the bay (Figure 7). This, combined with low stream flow, has created a backwater estuary with large deposits of fine sediment on the streambed. Spawning habitat for salmonids is limited at best: gravel and larger substrate do exist, but owing to the lack of scour they are mostly buried in sediments.

Figure 7. Large log jam at False Bay Biological Preserve

San Juan County Land Bank's False Bay Creek Preserve – Since fall 2006, the fencing which now defines the riparian zone has excluded cattle from the creek. While this has had a positive effect on bank stability and water quality, it has also allowed dense stands of non-native reed canarygrass (*Phalaris arundinacea*) to spread aggressively (Habeggar 2009). Woody riparian vegetation is sparse along much of the reach except for the southern end of the property, where woody vegetation on both banks provides shading. The installation of gravel spawning pads in 2007 has presumably increased the quantity of suitable spawning substrate.

Salmonid Fish

Chum salmon (*Oncorhynchus keta*) – Four juvenile chum salmon were captured at two locations on the False Bay Biological preserve: two on April 21 – just upstream of the creek's mouth; and two on May 4 – approximately 600 feet upstream (Figure. 3). The chum salmon fry ranged in length from 45 to 60 mm. Adult chum salmon have been seen in recent years in the vicinity of the log jam by Washington Department of Fish and Wildlife staff. These two pieces of evidence suggest that chum salmon could be spawning successfully, presumably in the estuarine portion of the creek where they are more likely to spawn than upstream. However, only four fish were captured and salmonid spawning/rearing conditions are questionable at best. It is the opinion of the author that recruitment is currently too small to support a viable population in this system and spawning adults in False Bay Creek should be regarded as strays.

Figure 3. Fish sampling locations and chum salmon capture locations at the University of Washington's False Bay Biological Preserve.

Figure 4. Juvenile chum salmon (*Oncorhynchus keta*) *captured at the University of Washington's False Bay Biological Preserve.*

Coho salmon (*Oncorhynchus kisutch*) – No coho salmon were observed during the course of this fieldwork. Juvenile coho have been seen by Washington State Department of Fish and Wildlife staff in 2004, 2006 and 2008 at the creek crossing at Bailer Hill Road, south end of the False Bay Creek Preserve. Based on the numbers of fish and location, coho salmon are almost certainly spawning sporadically within the creek system (Habeggar 2009). However, the summer stream conditions in this lower reach are poor (low flow, high temperatures and low dissolved oxygen) and it seems unlikely that juvenile coho successfully rear to smolts except in years of exceptional stream flow. The evidence indicates that False Bay Creek does not support a viable population of coho, the observed juveniles are the progeny of strays, and that fry to smolt survival is probably very low.

Non Salmonid Fish

Three-Spined Stickleback (*Gasterosteus aculeatus*) – Many hundreds of stickleback were captured at both sites; however, temporal variation in abundance and fish morphology was notably different between the sites. During the course of the fieldwork several hundred adult stickleback (Figure 5) were captured at the Land Bank's False Bay Creek Preserve - 0.75 miles upstream of the mouth. Excluding fry recruitment the numbers of adults appeared to remain constant from one site visit to the next. By contrast, the UW's False Bay Biological Preserve produced just one stickleback from the first two site visits – April 21 and May 4. By May 24 the estuarine portion of the creek was inundated by an anadromous form of the species numbering in the thousands and possibly tens of thousands: a single fyke set produced an estimated catch of over 400 adult individuals including many gravid females (Figure 6). In addition to this many hundreds of newly emerged stickleback fry were observed and by the final visit on June 21, they were the dominant cohort.

Figure 5. Resident freshwater form of the three-spined stickleback (Gasterosteus aculeatus) captured at the Land Bank's False Bay Creek Preserve.

Figure 6. Anadromous form of the three-spined stickleback (Gasterosteus aculeatus) captured at the University of Washington's False Bay Biological Preserve.

Staghorn sculpin (*Leptocottus armatus*) – An abundance of young staghorn sculpins were captured in the estuary at the False Bay Biological Preserve. The brackish waters of the Preserve provide rearing habitat for this species.

Pumpkinseed sunfish (*Lepomis gibbosus*) – Several individuals were captured at the lower site (False Bay Biological Preserve) in midsummer - July 26, 2011. The presence of sunfish is indicative of the poor aquatic conditions (low summer flow, high temperature and low dissolved oxygen) that prevent salmonids from utilizing the habitat at this time of year.

References

Barsh, Russel. December 2007. Preliminary Assessment of the Doran Property, San Juan Island, as Present and Potential Salmonid Habitat. Report prepared by Kwiaht and the Wild Fish Conservancy, Lopez, WA

Habeggar, Eliza. August 2009. Ecological Assessment for the False Bay Creek Preserve/Doran Property. Report prepared by the San Juan County Land Bank, Lopez, WA

Wild Fish Conservancy. Water Typing Data available online at: http://wildfishconservancy.org/maps?center=-122.97,48.6. Accessed October 2010.

Appendix. Fish captures by site and date

Site	Date	Method	Species	Number
Land Bank	3/17/2010	Fyke	three-spined stickleback	6
Land Bank	4/21/2010	Fyke	three-spined stickleback	139
UW estuary	4/21/2010	Fyke	three-spined stickleback	1
		Seine	staghorn sculpin	12
		Seine	chum salmon	2
UW estuary	5/4/2010	Seine	staghorn sculpin	11
		Seine	chum salmon	2
Land Bank	5/4/2010	Seine	three-spined stickleback	200+
UW estuary	5/24/2010	Fyke	three-spined stickleback	400+
		Fyke	staghorn sculpin	25
		Seine	staghorn sculpin	49
		Seine	three-spined stickleback	300+
		Seine	shiner perch	1
Land Bank	5/24/2010	Fyke	three-spined stickleback	100+
UW estuary	6/21/2010	Fyke	three-spined stickleback	100+
		Fyke	staghorn sculpin	1
Land Bank	6/21/2010	Dip net	three-spined stickleback	
UW estuary	7/26/2011	Seine	three-spined stickleback	250+
		Seine	staghorn sculpin	37
		Seine	pumpkinseed	11