

Strait of Juan de Fuca Complex IMW – Accomplishment Report

Straits Intensively Monitored Watershed Complex-Overview

Focal Species: Coho salmon, Steelhead trout, also Chum salmon, Cutthroat trout, Pacific Lamprey

Limiting factors: Lack of LWD; altered sediment processes; riparian degradation

Restoration strategy: LWD to restore habitat complexity and reconnect off-channel habitat.

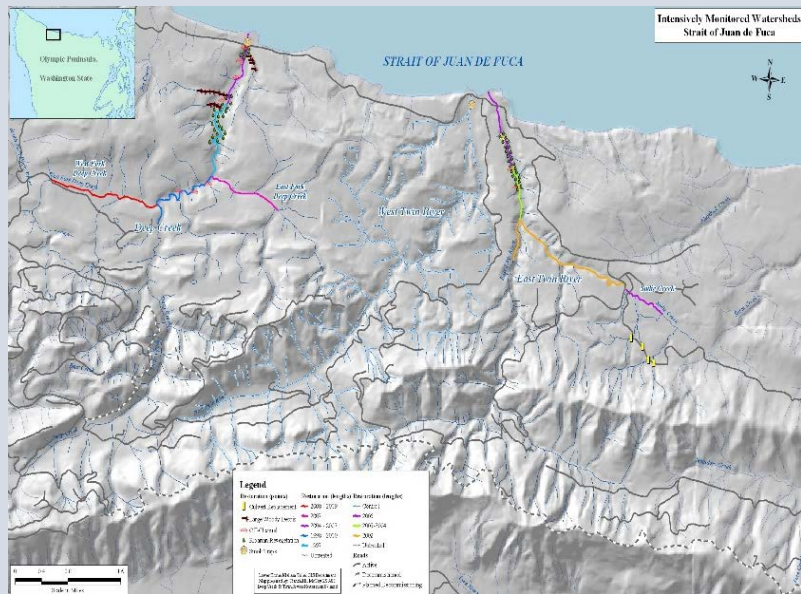
Experimental Design

Before-After-Control-Impact (BACI) design.

Reference stream: **West Twin River**

Treatment streams: **East Twin River**
Deep Creek

Habitat monitoring dating to 1992. Smolt monitoring since late 1990's. Permanent PIT tag readers since 2006. Restoration treatments largely implemented since 2005.



Monitoring Approach

Salmon:

Redd surveys covering known spawning distribution biweekly in all watersheds. Permanent PIT tag readers are installed on each stream to track survival to outmigration and marine survival of the 3,000-9,000 parr that are tagged each summer. Spring smolt migration enumerated using fence traps.

Habitat:

Timber-Fish-Wildlife protocols used in periodic sampling before/after major restoration actions. EMAP habitat data are collected annually at 20 locations within each watershed including thalweg depth, width:depth ratio, percent spawning gravel, instream LWD, and pool frequency.

Restoration Approach

- Based on 2002 Watershed Analysis that indicated low LWD, loss of flood plain and overwinter habitat, and high levels of mass wasting.
- Projects have included fish passage, road decommissioning, and riparian plantings but have mainly been LWD jams throughout the anadromous portion of Deep Creek and East Twin River to collect and retain naturally-recruited logs.

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Restoration Accomplishments

Deep Creek: 1996-1998 ground based restoration treatments to river mile 3.5.
2005-10 Logjams installed in mainstem (1.1 river miles)
2007-10 Helicopter placement of 365 logs in mainstem, East Fork and West Fork (> 2.5 river miles)
2009-2011 USFS road decommissioning (site of multiple road failures in the past).
2012 Helicopter placement of 120 pieces (0.4 river miles)
2013 Helicopter placement of 120 pieces (0.4 river miles)
2014 Helicopter placement of 120 pieces (0.4 river miles)
2017 Additional helicopter based wood placement projects planned.

East Twin: 2002—06 Helicopter and ground-based placement of 217 pieces (1.5 rivermiles)
2007 Fish passage fixes to four tributaries
2009-2011 USFS road decommissioning.
2011 Helicopter placement of 165 pieces (0.9 river miles)

Fish Population Response



- Observed multiple life history strategies in both Coho and Steelhead.
- Consistent pattern of coho migrating out of all streams in the fall. Although survival is low for fall migrants, they comprised 30% of PIT tagged spawners (Roni et al. 2012)
- Steelhead life histories are complicated and survival-to-adult varies widely among them (Hall et al. 2016).

Habitat Response

- To date, no consistent, directional change in habitat measured at the watershed scale.
- Relatively large annual variation in common habitat metrics (e.g. LWD, % pools, substrate).



Future Direction

- Continue PIT tag studies, spawner surveys, and spring smolt monitoring.
- Reassess the current habitat monitoring scheme.
- Assess summer and winter use of off-channel habitat.