

Watershed Profile:

San Juan

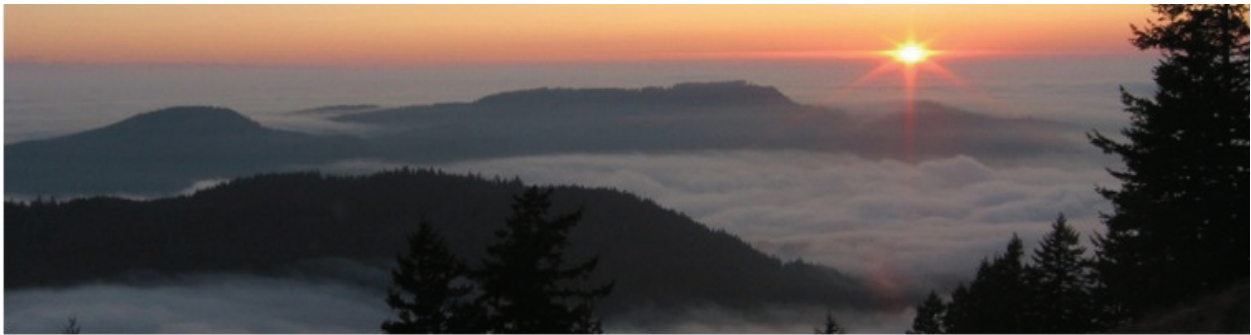


Photo by Levy Sheckler, courtesy the Washington State Department of Community, Trade & Economic Development.

The Place and the People

Located in northern Puget Sound, San Juan County is an archipelago consisting of four major islands — San Juan, Orcas, Lopez and Shaw — and more than 170 smaller islands. The islands are located in the banana belt of the Northwest, so they see the sun 247 days of the year, and average only about 18-28 inches of rain annually. San Juan is the smallest county in Puget Sound but boasts over 408 miles of shoreline, the most of any county in the United States. Despite 80 percent population growth in the last 20 years, the population in the San Juan Islands remains relatively small at just over 14,000. The Islands' rural charm and character attracts tourists from around the world seeking rest and relaxation in the moderate climate and stunning vistas offered throughout the year.

The San Juan Islands are located at the water cross-roads of the Strait of Juan de Fuca, the Strait of Georgia and Puget Sound. Because of their position at the junction of three major water bodies, the waters are rich in nutrients and food for marine organisms. The waters of the San Juan Islands are home to an abundant sea life population. Dall's porpoise, seals, Steller's sea lions, river otters, and a variety of fish including salmon, lingcod and rockfish live in its waters. The most famous residents of these waters are the southern community of Orca Whales and salmon are one of their favorite foods.

For many decades the islands were a rural hideaway for people interested in farming and fishing. But in the last two decades they have been discovered by people interested in investing in vacation homes near the sea. The number of people who live on the islands is small but the San Juans draw thousands of people annually to their shoreline and are the major destination for boaters from Seattle, Victoria and Vancouver. Much of the

human activity, living and recreation, is concentrated on the narrow band of land and water at the sea's edge. These same places draw birds and sea life, including salmon on their way out to the ocean and back to their natal streams in Puget Sound.

The people of the San Juan Islands care deeply for their land and water. For several decades there have been active groups promoting conservation of the islands through private, local and state government efforts. In 1999, 73 percent of county voters renewed the San Juan Land Bank for an additional 12 years to continue its mission of preserving the Islands' natural heritage for present and future generations. Created in 1990, The Land Bank is funded by a one percent real estate tax on property purchases in the county.

The Salmon Recovery Plan for the San Juan Islands was developed initially by the Lead Entity Citizen's Committee facilitated by the San Juan Conservation District. The Lead Entity is part of the state-wide voluntary salmon protection and restoration process created by the 1999 Salmon Act (HB2496). Part way through plan development, the Lead Entity responsibility changed to San Juan County and the Marine Resources Committee (MRC). They were responsible for the final changes to the document. Both committees are a mixture of scientists, citizens and stakeholders. The San Juan County Board of Commissioners supports the development of the plan.

The Salmon

All twenty-two populations of Puget Sound Chinook salmon use this area for feeding on their way out to sea and on their return. This makes the San Juan waters and shoreline areas an essential part of the larger picture for salmon recovery in Puget Sound. Multiple species of salmon from other watersheds use the islands during different stages of their life cycle, although there are no known natural Chinook spawning areas in the islands. Salmon arrive at the archipelago as juveniles after first spending time in the estuary of their natal river and nearby marine shorelines. At this stage in their life cycle, they are larger in size and therefore feeding on larger prey and ranging to

greater depths. Maintaining the food web around the islands is critical to the salmon.

Goals

The goal in the San Juan Islands is to sustain the environmental conditions that ensure the continued existence of wild salmon. This goal will be achieved by protecting existing freshwater and saltwater habitats and processes and restoring nearshore habitats to meet the needs of fish.

The County, MRC and others believe that an ecosystem approach is the best way to ensure the ultimate recovery of salmon populations in the Puget Sound and their goal and strategies reflect this approach.

Objectives supporting the goal

- Protect and restore the ecosystem processes that support marine biological diversity;
- Prevent further reductions in marine populations in the islands and promote recovery of depleted populations;
- Promote scientific research toward improving the understanding of ecological systems and processes necessary to sustain marine biological diversity;
- Promote increased education and awareness of the relationships between human uses and marine resource quality; and
- Restore spawning habitat in the islands.

What is the current status of the threatened salmon populations?

Natural-origin Puget Sound Chinook are at approximately 10% of their historic abundance.

What are the key factors contributing to the current status of the populations?

The major contribution San Juan County offers Puget Sound salmon recovery efforts is

San Juan Islands

Salmon Recovery Planning Area



Land Ownership	Land Cover - Land Use	Infrastructure
Federal Conservation Lands	Commercial & Residential Uses	Interstate Highways
Other Federal Lands	Agricultural Uses	State & US Highways
State Conservation Lands	Disturbed Lands	Secondary Roads
State Trust Forest Lands	Freshwater Wetlands	County Boundaries
County & Municipal Conservation Lands	Undeveloped Uplands	Rivers, Lakes, Streams and Estuaries
Private Conservation Lands		
Native American Tribal Lands		

Land ownership data has been overlaid on land cover / land use data to provide a useful context to communicate relative protection. Land cover / land use classification was derived from the USGS National Land Cover Database (1991). Land ownership was derived from the Washington Protected Lands Database (2003).

high-quality habitat critical to salmon and their prey such as eelgrass meadows, kelp beds and tidal marshes. Nearshore habitats around the San Juan Islands are generally considered healthy and are assumed to perform the functions needed to support fish populations. Some losses have occurred, however, as nearshore areas have been affected by human uses of the shorelines and the lands above them; these losses warrant consideration for restoration. Most land and shoreline development occurs through incremental single-family residential development and the magnitude of impacts may become evident only cumulatively.

The San Juan Islands have one of the highest projected growth rates in Puget Sound at 35% over the next twenty years and most of the undeveloped parcels of land in the Islands are along their shorelines. Therefore, acting now to protect nearshore-marine habitat is important, as is educating property owners about salmon-friendly alternatives for shoreline development or modification.

Of 90 freshwater streams on the Islands, fewer than a dozen of them offer access to salmon. Nevertheless, the Islands' healthy shoreline habitat is used for refuge, rest and feeding by threatened Chinook and other salmon species from throughout Puget Sound, the Columbia River and British Columbia.

The islands' beaches are believed to be at historic levels and still provide eelgrass meadows, kelp beds and tidal marshes. Many of these beaches provide critical spawning habitat for forage fish such as sand lance and surf smelt. Forage fishes are a major food source for salmon. Overall only 5% (19 miles) of San Juan County's soft shore beaches have been modified by bulkheads. Most of the shoreline in San Juan County is already naturally hardened. Thus, the impact of bulkheads on the few miles of beaches and bays has the potential to be significant.

Even though the San Juan Islands likely provide a high degree of functioning habitats and processes there are still opportunities for improvement.

These are noted below.

Tidal marshes

27 pocket estuaries have been identified with 11 noted as being at-risk from degradation due to development that alters freshwater inputs. Additionally, linear amounts of existing mixed and low marsh habitats have been identified. They are further defined as either continuous or patchy to assist in developing protection and restoration strategies.

Inter-and sub-tidal flats

Streams provide the sediment that sustains inter- and sub-tidal habitat areas. Marine currents and waves work in concert with stream flow dynamics to distribute and rework sediments, exerting primary control over the biological community on the flats. Salmon use these areas based on a seasonal shift in prey species abundance. Protection concerns are linked to road construction and residential development impacts that potentially lead to degradation in water quality and/or shifts in the sediment regime or wave and current action.

Eelgrass meadows

Recent assessments have been conducted to document existing eelgrass meadows. Eelgrass exists along approximately 20% of San Juan County shorelines in addition to significant meadows located in the bays. Historic conditions are unknown, but it is believed that historic coverage may have extended to most areas with shallow water and suitable substrates. Disturbances such as over-water structures, bulkheads, moorages, prop scour and dredging and filling are factors believed to contribute to eelgrass loss. Significant losses have occurred in Westcott Bay. Studies are currently being conducted in this area to understand what factors are causing the loss. Documentation of where these areas exist has been provided to state and local agencies for consideration during permitting. Losses have also been noted at 11 other shallow bays in San Juan



Photo courtesy the Washington State Salmon Recovery Funding Board

County, and research and additional mapping efforts are underway.

Kelp

Kelp beds are an important part of the overall marine ecosystem. Throughout the county, kelp beds near the shoreline have been mapped through the Washington State ShoreZone Inventory process. The Washington Department of Natural Resources mapped offshore kelp beds in the eastern half of San Juan County in the summer of 2004; Friends of the San Juan Islands in support of the Marine Resources Committee are seeking funding to complete mapping in the western half of the County this year. It is assumed identified kelp beds are now protected through existing regulations.

Forage Fish spawning: 80 miles of potential forage fish spawning beaches have been identified though less than 20% of suitable beach habitat actually supports spawning. Currently there are 63 documented surf smelt and sand lance spawning sites scattered throughout the Islands. Roads (14 miles) along the backshore and bulkheads (85) exist which potentially impact the ability of these areas to function for spawning. There are four high priority spawning habitat areas for forage fish. These are Westcott Bay on San Juan Island, the West Sound and Blind Bay regions on Orcas and Shaw Islands, the Mud/Hunter Bay region on Lopez Island and the Mackaye Harbor region also on Lopez.

The San Juan Islands have had and continue to have high quality clean water. Increased development and pressures from recreation however, pose a future threat to maintaining this asset. The most significant current threats to water quality are from stormwater run-off, small cities, septic systems, increased sediment and nutrients. The strategy is to incorporate salmon specific information into existing protection programs in order to improve the effectiveness of the programs to protect the fish.

Five percent of the county's shorelines are fully protected and 26 percent partially protected. Several of the islands are state parks and large tracts on many of the islands have been permanently protected. The San Juan Preservation Trust and the San Juan County Land Bank have purchased conservation easements or bought outright key shoreline habitat areas. These purchases will help protect or restore natural ecological processes that in turn will benefit salmon. Over 12 miles of forage fish spawning habitat are protected under state code. San Juan County's shorelines support eelgrass meadows, a critical habitat, also protected under state 'no net loss' regulations.

Overall Approach to Recovery

The San Juan Islands' Plan is based on an ecological process-based approach that links upland, shoreline and marine areas. The plan recommends protection and restoration strategies based upon initial hypotheses about potential fish use. Strategies are clustered by geographic area (island and adjacent marine water clusters) to aid in implementation. Details for specific actions will be completed in 2006. These strategies aim to protect factors they have identified as important and ultimately develop restoration priorities. Habitats and habitat-forming processes important to protect include: sediment transport processes and features (banks and bluffs), freshwater inputs, eelgrass meadows, tidal marshes and sand spits, beaches and backshore areas, water quality, forage fish spawning beaches, and kelp beds. The plan also recognizes

the threat of catastrophic events and loss of near-shore functions and features due to cumulative impacts of development and land-use. It is assumed harvest and hatchery management are addressed regionally through existing management structures.

Key Strategies and Actions Supporting the Overall Approach to Recovery

The main habitat strategy is to improve protection of habitat functions and processes through better mapping and monitoring existing features such as sediment, water quality, eelgrass, tidal marshes, riparian areas and kelp beds. Various state and local agencies, such as the Department of Fish and Wildlife and San Juan County, will be able to use this information when permits are issued or future land-use decisions are made. Government agencies and non-governmental organizations can apply this information when they decide which areas to focus their protection and restoration efforts. This strategy has been advanced by recent efforts to bring together land use managers, regulatory agencies, conservation groups and scientists to share their knowledge of the environmental conditions and coordinate protection efforts. The County also plans to use the latest scientific information as it evaluates and updates its Growth Management programs and Shoreline regulations.



Photo courtesy the Washington State Salmon Recovery Funding Board

Another main approach is to provide information to citizens tailored to the type of land that they own. The information will describe what they can do on their land to support functioning nearshore conditions. The County is also considering a tax incentives program for property owners.

There continue to be significant data gaps about how salmon use the habitat around the San Juan Islands. Where protection and restoration strategies are limited by a lack of knowledge, research, further analysis and development of strategies and actions will fill the gaps. This includes the current known need to improve and refine protection and restoration strategies.

The San Juan County Board of Commissioners is pursuing ways to meet the needs identified in the salmon recovery plan. The first step has been to assume the Lead Entity responsibility from the San Juan Conservation District. The County also created a position dedicated to ensuring that human population growth in the County occurs in a manner that protects existing habitats and functions and contributes to recovery of the Chinook Evolutionarily Significant Unit.

Results

The watershed plan for the San Juan Islands was reviewed by the Puget Sound Technical

Recovery Team (TRT: a group of seven scientists) and an interagency committee facilitated by the Shared Strategy staff. The TRT reviewed the plan to determine the degree of certainty that the plan can achieve recovery goals. The conclusions of this analysis are below. For the most part, the issues identified below by the analysis are discussed in the watershed plan to some extent, but the reviewers felt they merited particular attention or additional effort to increase the certainty of achieving plan outcomes. Where the analysis identified key uncertainties,

proposals are included for consideration. If implemented along with the watershed plan's other actions, these proposals would increase the certainty of results and achieve the requirements for a recovery plan under the Endangered Species Act.

The watershed plan takes an ecological process based approach to identifying the important functions for fish and the processes that create the habitats that they use. The high quality of current environmental conditions and the focus on protection through a variety of programs provides the region with certainty that ESU recovery can count on continued environmental quality in the San Juan Islands.

The certainty of achieving this plan's outcomes and the resulting contribution to overall ESU recovery will increase if the following issues receive focused attention as described below.

The planned strategies and actions will need to be linked to results for fish, the Viable Salmonid Parameters (VSP; abundance, productivity, spatial distribution diversity) to describe the expected outcomes from plan implementation. Once the linkage between the ecosystem principles, stressors, and geographic priorities are linked to VSP, then these four parameters can be used as a measure for monitoring.

The adaptive management and monitoring program, slated for completion by December 2005, is expected to incorporate measures relating to assessing the effectiveness of protection measures to help salmon.

The plan wisely identifies implementing protection measures as part of their approach to salmon recovery. The certainty of the plan's effectiveness will be increased as San Juan County works to identify specific areas within the County where such protection measures should have highest priority. Linking such a strategy back to the hypotheses



Photo courtesy the Washington State Salmon Recovery Funding Board

for what habitat factors are limiting salmon will strengthen the plan's outcomes.

The review process also identified a number of issues and uncertainties that are common to many Puget Sound watersheds. Strategies to address these issues that are contained in this local watershed chapter are a good approach, based on the current state of scientific understanding. Nevertheless, because (1) these issues are very important to the success of watershed approaches to recovery and (2) the effects of some of these strategies on salmon populations at watershed scales are relatively untested, these issues deserve particular attention. Reducing the uncertainties in the issues below could come through local and/or regional inclusion in adaptive management and monitoring programs, regional or local pilot studies to explicitly test their effects, or through additional implementation actions. The complexities associated with these issues are discussed in the regional strategy section of this document or in the regional adaptive management and monitoring program. The "cross-watershed" issues identified are:

- The importance of habitat protection strategies and the need to assess the results for fish from the combination of protection tools available,
- The need to develop H-Integration strategies or, where they are included, to move them further along the integration continuum over time,
- The need to reconcile local nearshore

strategies and actions with the regional near-shore chapter,

- The need to address water resources, both water quality and water quantity,
- The need to better link the effects of land use to habitat-forming processes and to habitat conditions. In turn, the effects of these changes in habitat, processes and landscapes on salmon populations need to be estimated,
- The need to develop or complete a robust adaptive management and monitoring program.

If the proposals in the plan are implemented, and the above uncertainties are addressed, this watershed will provide a critical contribution to the recovery of Puget Sound Chinook.