

Final Report for the Habitat Strategic Initiative

Recovery of select freshwater salmonid habitat in the San Juan Islands

San Juan County Public Works

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PUGET SOUND

National Estuary Program

Title: Recovery of select freshwater salmonid habitat in the San Juan Islands

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Summary: We studied eight of the highest priority salmonid watersheds on San Juan and Orcas Islands. Common themes across watersheds were: numerous in-channel ponds that restrict flows, limited salmonid summer rearing refugia, stream corridors with poor riparian condition, two watersheds where livestock have free access to stream reaches, invasive reed canary grass in riparian corridors, and warm-water fish planted in ponds. Solutions are presented in the “San Juan Islands Limiting Factors and Recommended Actions.”

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Project goals and objectives

The primary goal is to create a salmonid restoration and protection plan for eight priority watersheds in the San Juan Islands. The eight watersheds are: San Juan Island, Garrison Creek, False Bay Creek, Orcas Island, West Beach Creek, Fish Trap Creek, Crow Valley Creek, Bayhead Creek, Cascade Creek, and Doe Bay Creek. The objectives we met through the course of this effort were:

1. Create a GIS database using existing data layers to serve as a base layer for further actions.
2. Collect streamflow data on watersheds where that data is absent.
3. Summarize what we know in a Literature report.
4. Meet with a team of experts to create, review, and write a Limiting Factors and Recommended Actions report.
5. Present findings to communities and landowners on Orcas and San Juan Islands.
6. Meet with landowners interested in having restoration projects on their property.

Methods

The **team of experts** that guided this plan were, alphabetically:

Russel Barsh, Director, KWIAHT,

Michael Boyd, GIS student intern, Western Washington Spatial Institute,

Jenny DeGroot, biologist, Speckled Trout Consulting,

Kyle Dodd, Environmental Health manager, San Juan County Health and Human Services,

Jamie Glasgow, Science Director, Wild Fish Conservancy,

Judy Meyer, retired aquatics professor, San Juan County salmon technical advisory group,

Mike Ramsey, Director, San Juan Islands Conservation District,

Marcus Reaves, Area Habitat Biologist, Washington Department of Fish and Wildlife,

Kim Sundberg, retired AK Fish and Game habitat biologist, San Juan County salmon technical advisory group,

Tyson Waldo, GIS Instructor and Habitat Biologist, Western Washington Spatial Institute.

List of priority watersheds (Task 2.1A)

Originally the San Juan County salmon technical advisory group, proposed nine watersheds (see project goals). During the literature review, we dropped Hummel Creek on Lopez Island as having too many habitat issues with a poor likelihood of success.

GIS (Task 2.1A and B)

We created a GIS database using existing data layers to organize further actions. We were fortunate to contract with Western Washington University Spatial Institute for an affordable GIS instructor and their intern student to complete the GIS tasks. The most difficult part of this action was to convert the Wild Fish Conservancy geo-located text files to a relational database. This required many hours of their time. A metadata record was created for each GIS layer; the results will be transferred to San Juan County GIS for continued use in the County.

Layers and their source include:

- a. San Juan County: roads, parcels, streams, stream types, and lakes-ponds.
- b. Wild Fish Conservancy (WFC): from 2004-2007 WFC completed stream surveys across San Juan County. We converted their geo-located text file to a relational GIS database.
 - i. Created a culvert layer from this survey. The WFC survey identified culverts as “complete barrier,” “partial barrier,” “passable,” and “unknown.”
 - ii. Updated the County lakes/pond layer from this survey. The WFC survey identified ponds, using their text and photos we identified them as “complete blockage,” “partial blockage,” “passable,” and “unknown.”
 1. If the County missed the waterbody, added it by creating a polygon around the pond.
- c. Ecology water rights data layer, dams layer.
- d. Project: created two riparian vegetation layers from a LiDAR analysis using established protocol. The first layer was a stream vegetation layer using County regulatory buffers for that stream type. The second was the same vegetation layer watershed-wide.

Literature (Task 2.1B)

The amount of information for each watershed varied widely across the eight basins. With the exception of False Bay Creek, the reports were 10 years or older. We organized information for each watershed under the following topical headings:

1. Salmonid observations
2. Salmonid habitat
3. Hydrology
4. Restoration recommendations

The literature report is titled: *San Juan Islands salmonid literature summary, eight basins report*, 59 pgs.

Water flow (Task 2.2A)

We installed continuous monitoring data loggers in four streams that lacked flow data, West Beach, Fish Trap, Crow Valley, and Doe Bay Creeks. Cascade Creek is monitored by the San Juan County Land Bank; they provided their data to us. Flow data collection followed Washington Department of Ecology protocol and Ecology provided a QAPP waiver for this project.

Limiting factors and recommended restoration and protection actions (2.2A, 2.2B, 2.2C)

The team of experts met over many months moving from the Literature, “what do we know,” to “what restoration or protection actions are needed.” With the guidance of the team, I wrote a strong draft product that was then taken on the road (see 3.1).

The timing of 2.2A, B, and C varied by island. Orcas Island has many tight-knit small communities, so they wanted to see a finished product before I engaged with them. That communication was started at the watershed community meetings and is ongoing. The report for the Orcas watersheds (Task 2.2C) evolved from the community meetings (Task 3.1 and 2.2A).

San Juan Island does not have small tight-knit communities like Orcas Island. In False Bay Creek, two major landowners, San Juan County Land Bank and San Juan Preservation Trust provided input. In False Bay Creek, there was ongoing discussion and planning, of which this report served to further. In Garrison Creek, I am working with the Park Service, the major landowner in the headwaters watersheds.

Output was the “*San Juan Islands salmonid limiting factors and recommended actions, eight basin report.*”

Communication and outreach (Task 3.1)

The grant time extension from December 2018 to June 2019 greatly aided the outreach component of this project, and allowed feedback loops from meeting to rewriting the final report (Task 2.2C). Many thanks.

The following are public presentations, meetings, or field visits:

1. Terrestrial Managers Meeting, all eight watersheds. 80 participants March 2019.
2. Olga (Cascade Creek) community dinner. April 2019.
3. Eastsound, Orcas Women’s Coalition, all six Orcas watersheds. 70 participants May 2019.

4. Westsound (Crow Valley Creek) community dinner. 40 participants May 2019.
5. National Park Service (Garrison Creek) training. May 2019. 30 participants. Walked Garrison Creek June 2019 with the Park biologist looking for restoration sites.
6. San Juan County Clean Water Advisory Committee, all eight watersheds. 12 participants. May 2019.
7. False Bay Creek stream walk and San Juan Preservation Trust planning meeting to implement actions (May and June 2019).
8. Crow Valley Creek stream walk (two reaches, from landowners met at the presentation (June 2019).
9. San Juan County Local Integrating Organization, all eight watersheds. June 2019.
10. Deer Harbor (Fish Trap Creek) community dinner. June 2019. 40 participants. Invitation that night to visit stream habitat and to discuss a county culvert.
11. Doe Bay (Doe Bay creek) community meeting. June 2019. 12 participants. Discussions began that night regarding this watershed and Cascade Creek (the Doe Bay community gets its drinking water from Cascade Creek).

I have also received invitations to walk Bayhead Creek and Fish Trap Creek by key landowners who heard my presentation.

Results

PROJECT OUTCOMES

Attached are the Literature Review and the Limiting Factors and Recommended Actions documents.

SUCCESS OF ACHIEVING PERFORMANCE MEASURES

This project has successfully begun multiple concurrent conversations on freshwater recovery across the eight watersheds. Honestly it has exceeded my expectations.

Conclusions

LESSONS LEARNED

Funding was limited. For example, I was extremely fortunate to have a friend who taught GIS at Western Washington; their costs were a fifth of a GIS consultant. Additionally a student gained valuable work experience.

I began this project assuming we were planning for salmon restoration across multiple watersheds. Following the Literature review, it became obvious that these watersheds mostly support cutthroat and in one case coho salmon. Over the course of this planning effort, we shifted from a salmon recovery project to mostly a cutthroat recovery project.

Now that we have created much local interest and excitement, we need a staff person to locate funding and organize projects. In three of the watersheds (Garrison, False Bay and Crow Valley Creeks) I have funding to do beginning to end restoration work. In the other five watersheds on Orcas I can only provide technical support, and not support writing grants, etc. Project funding must be located. Luckily, the Orcas Women's Coalition is very active and engaged in these five watersheds. If they can locate funding that includes funding for my time, I can oversee restoration work in these five watersheds as well.

RECOMMENDATIONS FOR FUTURE WORK

We need funding for further studies/data gaps. They include:

1. Instream flow analysis for seven of the watersheds.
2. Watershed-wide cutthroat survey for all eight watersheds.
3. Warm-water fish surveys on in-channel ponds across most watersheds.
4. Funding for Washington Water Trust to engage with the three water users on Cascade Creek to retain more instream flows for fish.
5. Project funding across all eight watersheds. Mostly this is cutthroat habitat work.
6. Funding to continue stream gauge monitoring and to hire a hydrologist to create ratings curves for the data we collected.
7. Survey blocking culverts using WDFW survey protocol.

See the Recommended Actions report, Appendix A for a complete list of projects.