Final Report for the Habitat Strategic Initiative

Living with Beavers Program

Snohomish Conservation District

NTA  2016-0071

WDFW Contract 17-08141

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Summary: The Living With Beavers programs offers solutions and financial assistance to property owners struggling with the impacts of beaver living on their property. Beaver impacts on landowners and infrastructure pose challenges that may result in removal of beaver from the landscape, but beaver and the habitat they create are critical to ecosystem and human resiliency in the changing climate. Living With Beavers provides landowner education through workshops and one-on-one technical assistance site visits to evaluate management options, and financial and permitting assistance for implementation of non-lethal management approaches such as deceivers and levelers. The combination of education and financial assistance for management actions provides long-term solutions for landowners while maintaining many of the valuable ecosystem benefits beaver provide to the landscape.


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Project Overview
Climate change is predicted to significantly affect hydrology and temperatures in the Puget Sound region through higher intensity rainfall events in winter months, less snowpack and groundwater recharge, and less rainfall and higher temperatures in summer months. Beaver ponds have the potential to mitigate these changes in hydrology by storing water and allowing it to be released into streams year-round, as well as recharging groundwater and decreasing downstream flooding. Beavers and their ponds also play a vital role in creating rearing habitat for salmon. Beaver ponds, however, can create problems for landowners. The Living with Beavers program provides outreach and assistance to landowners such that humans and beavers can successfully coexist on the landscape.

Snohomish Conservation District and Beavers Northwest are working to help landowners manage their property in ways that allow beavers and humans to live together. We achieve this goal by providing landowners with:

- technical assistance and education on the ecosystem benefits of allowing beavers to live and exist on their property
- alternatives to dam removal and trapping, including management devices such as flexible pond levelers, culvert exclusion fencing, and wire caging protectors on trees to prevent herbivory
- permitting assistance to landowners interested in installing these devices
- cost-share funding to install beaver management devices that allow landowners and beavers to live together

Project goals and objectives
Through this NTA award, the Snohomish Conservation District and Beavers Northwest worked to expand the reach and impact of the Living with Beavers program to include landowner workshops, development of outreach materials, and cost share resources to landowners to help them protect infrastructure while retaining beaver and beaver-created habitat on the landscape. Specifically, the District and Beavers Northwest set out to complete the following goals and objectives:

- Overall project goal: Maintain and expand beavers on the landscape through reducing negative impacts to landowners.
- Objectives:
  - Develop and provide outreach materials to inform landowners of the benefits of beavers on the landscape
  - Provide technical assistance to determine alternatives to beaver dam removal and trapping
Methods

The Living with Beavers Program aimed to preserve the benefits of beavers of the landscape in the Snohomish and Stillaguamish Watersheds by both educating landowners and providing direct technical and financial assistance to manage beaver on-site.

Landowner education focused on teaching streamside landowners about the benefits of preserving beaver on the landscape, as well as the potential methods for managing beaver on a property. The goal of this outreach and education was to get landowners to rethink the age-old default management actions, such as dam removal and lethal trapping, and to consider the benefits, both to their property and the ecosystem, of allowing beaver to remain on-site, potentially with the aid of a management device.

Landowners that were interested in managing beaver on-site were offered on-site technical assistance, in the form of site evaluations and management recommends. Eligible landowners were also able to apply for cost-share funding to assist with the permitting, materials, and installation costs associated with installing a beaver management device.

Results

PROJECT OUTCOMES

Snohomish Conservation District exceeded outreach and technical assistance deliverables set during the grant. The District and Beavers Northwest demonstrated that landowner education, one-on-one technical assistance, and beaver management device installations can reduce human and beaver conflicts and contribute to a greater number of beaver and beaver-created habitat allowed to remain on the landscape.

The District completed the following grant deliverables:

**Task 0**: The District completed all deliverables for Task 0, including the QAPP Waiver (0.1), the Detailed Project Plan (0.2), and the Effectivness Consultation (0.3).

**Task 1**: The District completed all deliverables for this Task throughout the grant period, including the Project Fact Sheet (1.1), Quarterly Progress Reports (1.2), and this Final Report (1.3).

**Task 2**: The District completed a variety of Landowner Outreach activities for the Living with Beavers program. These efforts focused primarily on in-person landowner workshops and site
tours, along with a project webpage and social media posts to advertise the District’s events and services.

Summary of Landowner Outreach Activities:

- The District participated, along with Beavers Northwest and King Conservation District, in a Beaver Management workshop for landowners in the Snoqualmie Valley on June 20, 2017.
- The District launched a project webpage (http://snohomishcd.org/living-with-beavers).
- The District participated, along with Beavers Northwest and King Conservation District, in a Beaver Management workshop for landowners in Fall City on August 15th, 2017.
- Beaver Management workshops in Snohomish County were held in Marysville, Stanwood, and Monroe, on October 10th, 12th, and 19th, 2017.
- The District and Beavers Northwest contributed to a King Conservation District led Farm Tour at the Sno-Valley Tilth Project Site. Beavers Northwest staff attended the event to discuss the pond levelers and to promote the program.
- The District held a Living with Beavers Workshop in partnership with the City of Lake Stevens on August 30th. The workshop was not funded by this grant, but we spread the invitation beyond the city limits and the workshop resulted in site visits and potential projects under this grant.
- Twelve social media posts promoting these workshops and Living With Beavers were posted to the District’s Facebook page. Screen shots of these posts have been included with Quarterly Progress Reports.

Workshops & Tours Completed: 7
Social Media and Outreach Materials Produced: 15, including 12 social media posts
Project Webpages: 1

Task 3: The District completed 67 site visits with a total of 29 unique landowners, and consequently installed 11 beaver management devices on 9 different properties; an additional management device (flexible pond leveler) is planned for one property visited during the grant period. Many of the site visits that did not result in device installation involved landowners who ultimately chose a no-action management approach as a result of the landowner education provided during the visit (rather than their initial desired approach to either trap/remove or modify the dam); this landowner education amplifies the effect of this program in preserving beaver populations and ponds on the landscape to benefit hydrology and salmon habitat.

Requested Site Visits: 67 (29 landowners)
Completed Site Visits: 67 (29 landowners)
Number of Sites Eligible for Device Installation: 9  
Devices Installed: 11  
Permits Obtained: 9  
Number of Landowners Assisted with Plant & Cage Installation: 2  
Number of Native Plants & Beaver Cages Installed: 20

**Task 4:** Four sets of Before & After project photos have been included with Quarterly Progress Reports, and are included as an attachment to this Final Report.

**SUCCESS OF ACHIEVING PERFORMANCE MEASURES**

The Snohomish Conservation District and Beavers Northwest were able to achieve the project goal to maintain beavers on the landscape through landowner education and device installations that minimized negative impacts to landowners and enabled them to work with rather than remove the beaver. Quantitative outputs are summarized in Table 1.

The District and Beavers Northwest successfully developed high-quality outreach materials, including workshop presentations, a fact sheet, news articles, a program webpage, and social media posts. These outreach efforts resulted in one-on-one site visits with 29 property owners to assist with management solutions that would encourage the landowner to retain beaver and beaver-created habitat on the property. Nine property owners applied for cost-share funding and the District assisted them in installing 11 total management devices; the other 20 property owners either installed devices on their own or decided, after the site visit, to pursue a no-action management approach and allow the beaver habitat to remain intact un-modified.

<table>
<thead>
<tr>
<th>Quantitative Outputs</th>
<th>Unit (e.g. ‘acres’)</th>
<th>Target</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop outreach materials and advertise program on website and newsletter</td>
<td>Materials</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Technical assistance provided to a minimum of 15 landowners</td>
<td>Assistance visits</td>
<td>15</td>
<td>67</td>
</tr>
<tr>
<td>Installation of 5 beaver management devices</td>
<td>Devices</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Collect data on effectiveness of program</td>
<td>Photos</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 1. Summary of quantitative outputs from the Living With Beavers project
Conclusions

LESSONS LEARNED
This funding allowed the District to become more proactive with its beaver management services than it had ever been in the past. It’s clear that there is a real demand for these services, and it seems that the limiting factor for completing this work is simply making people aware that the services exist, and may provide benefit to them and the environment. We noticed a real spike in site visit requests, and subsequent project opportunities, each time we completed an in-person landowner workshop or when local media published an article about the project. Beaver management methods are still relatively new and most people are completely unaware of them, and our opportunity to complete projects appears to be related to the resources we invest in advertising our services.

There is also a need to communicate more freely with the larger salmon recovery and restoration community to be sure that these efforts are coordinated with other efforts to restore salmon populations and relocate beavers.

Additionally, we encountered inconsistency among permitting staff in regards to how these projects were permitted or scrutinized, which is a potential stumbling block for attempting to establish these practices more broadly in response to beaver conflicts.

RECOMMENDATIONS FOR FUTURE WORK
Recommendations for future include:

• Working with regulatory agencies to ensure clarity and consistency in regards to beaver management devices, such as Flexible Pond Levelers and Culvert Exclusion Fences.
• Quantifying the effect of installing beaver management devices as an alternative to lethal control and dam removal. Alternative beaver management devices, which allow beaver to remain on-site, have the potential to be a hugely cost-effective tool in the effort to improve hydrology and salmon habitat in our region. It would be very beneficial to perform some studies to quantify the relative benefit of installing management devices as opposed to trapping.
• Exploring more efficient or effective methods of educating streamside landowners about the benefits of beavers and alternative management methods. We found in-person workshops and tours, although there are drawbacks to relying on this approach, as you are generally reaching landowners who are already somewhat inclined to explore alternative approaches, and the amount of landowners you can reach is relatively constrained.
Similarly, it is important that beaver management practitioners continue to innovate and get creative with their prescriptions. The standard designs for Flexible Pond Levelers and Culvert Exclusion Fences are relatively simple, although minor tweaks and variations may suit certain sights more than others, improve the efficacy of the device, or improve chances of obtaining a permit.

Project Photographs

Photo 1. Flexible pond leveler installed on beaver dam to lower pond level several inches and reduce flooding of nearby agricultural fields, Snoqualmie Valley, King County, WA.
Photo 2. Snohomish Conservation District staff work with King Conservation District staff, property owners, and volunteers from Sno-Valley Tilth to construct exclusion cages on the flexible pond leveler pipe to prevent beaver from daming the pipe. This hands-on training was offered to project partners, Tilth volunteers, and nearby property owners.
Photo 3. Beaver dam and pond on agricultural ditch in the Stillaguamish Watershed near Arlington, WA. Photo taken before installation of a pond leveler device.

Photo 4. After device installation. Pond leveler installed on agricultural ditches to reduce flood impacts while retaining most of the beaver pond and water impoundment.
Photo 5. Pond leveler device several months after installation; dam and beaver pond intact and leveler maintaining pond height as designed, Snoqualmie Valley, King County, WA.
Photo 6. Culvert exclusion fencing to prevent beaver from constructing a dam on a culvert.