EcoTrust Whole Watershed Restoration Project Completion Report

Project Title: Salmon Habitat Enhancement through Beaver Reintroduction
Grant Number: MC BR 08 01

Methow Conservancy
PO Box 71
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509-996-2870

Steve Bondi
September 2009

(1) A brief, narrative description of the project including:

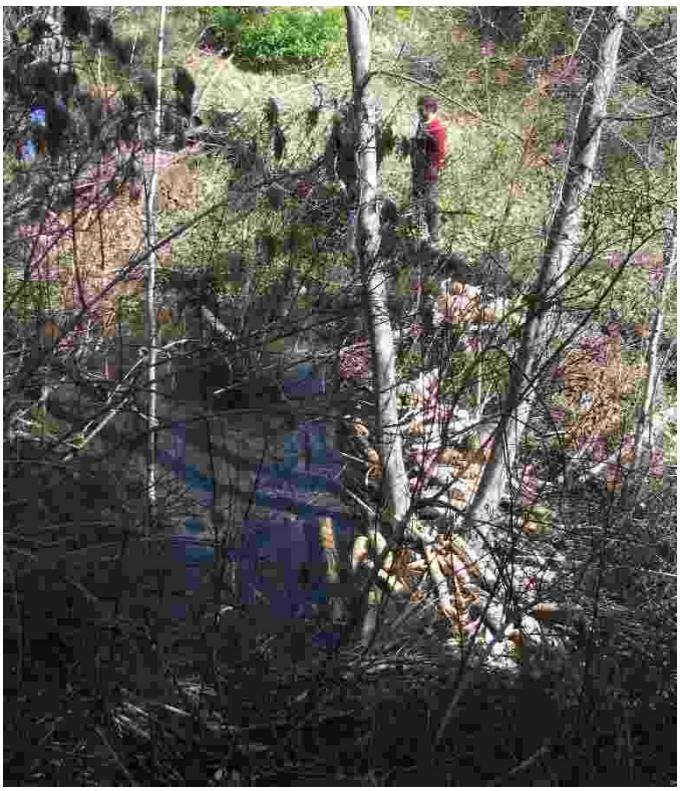
(a) Background on the *problem* that generated the project;

The last 200 years of Anglo settlement and land use transformed the Methow watershed, like most in the west, from a dynamic and complex system of streams and rivers into a relatively static, simplified system. One of the sources of stream system simplification in the Methow watershed was the intense trapping of beaver populations (Poole et al. 2001) that began here in the in the early 19th century. By some estimates, 90% of beaver populations were removed to supply the intense demand for fur in Europe and to create a "fur desert" to discourage colonization of land controlled by Hudson's Bay Company (Hammond 1993, Outwater 1996, Johnson and Chance 1974).

Beaver trapping continued throughout the West as a commercial activity through the end of the 20th century. In 2000, the Washington State Legislature passed laws banning body gripping traps. This significantly reduced beaver trapping in Washington and initiated a new era for beaver population recovery. It also opened the door for use of beavers as agents of change in overly simplified stream systems.

Beginning in 2003 a part-time project was attempted in the Methow watershed to respond to the ban on body gripping trapping and see if other beaver restoration efforts were functional here. These part-time efforts were successful and in 2008 our full-time pilot project was initiated with funds from multiple sources.

Our project goal was simple: use beavers and their unmatched engineering abilities to reintroduce complexity and dynamism to streams in the Methow watershed.



Beaver dam established on Libby Creek showing stored water behind dam (April 2009).

Poole et al. (2001) noted that beavers increased the complexity of stream channels where present and that decimation of beavers (along with other factors) contributed to the simplification of stream channels and subsequent reduction in thermal diversity, fish and wildlife habitat, and water storage. Pollock et al. (2003) showed beaver dams measurably affected the rates of groundwater recharge and stream discharge and retained enough sediment to cause measurable change in valley floor morphology.

In order to achieve *stream restoration* benefits using a man-made or mechanical approach commensurate with the "natural engineering" that will occur in the long term with our project, a substantial investment in design, implementation, permitting, and ongoing maintenance would be required. The ability to manually raise the water table and create the riparian expansion and improved aquifer recharge on the scale that this project will realize would require an immense investment. Whether manual improvements (if they could be designed and implemented) would be ecologically compatible or sustainable is questionable and not at all proven. Maintenance for such a project would be a constant need.

In contrast, restoring native wildlife to places where they have been removed is comparably simple, very cost effective, requires no permits, and is, by definition, ecologically compatible. In fact, this technique has been functioning here for millennia, and only in the last 15 to 18 decades has the process been interrupted with beaver removal. By returning key ecological agents to entire drainage systems (where they were removed in the mid-19th century through intensive trapping), a very substantial improvement is possible. The benefit potential is more than might be experienced through the implementation of a project on a single reach because the biological momentum of beaver productivity, that allows natural expansion to fill vacant niches, will continue the growth of project benefits for many years if not decades.

(b) A description of the work done;

We broke down our work done, as funded by multiple sources, into the following categories:

Project Management/Administration

Methow Conservancy fiscally and administratively managed the beaver project. The Methow Conservancy worked with project partners, including Washington Department of Fish and Wildlife, USFS Okanogan National Forest Methow Valley Ranger District, Pacific Biodiversity Institute, and the USFWS Winthrop National Hatchery. The Methow Conservancy is the repository for all project records for all grant agreements related to the beaver project.

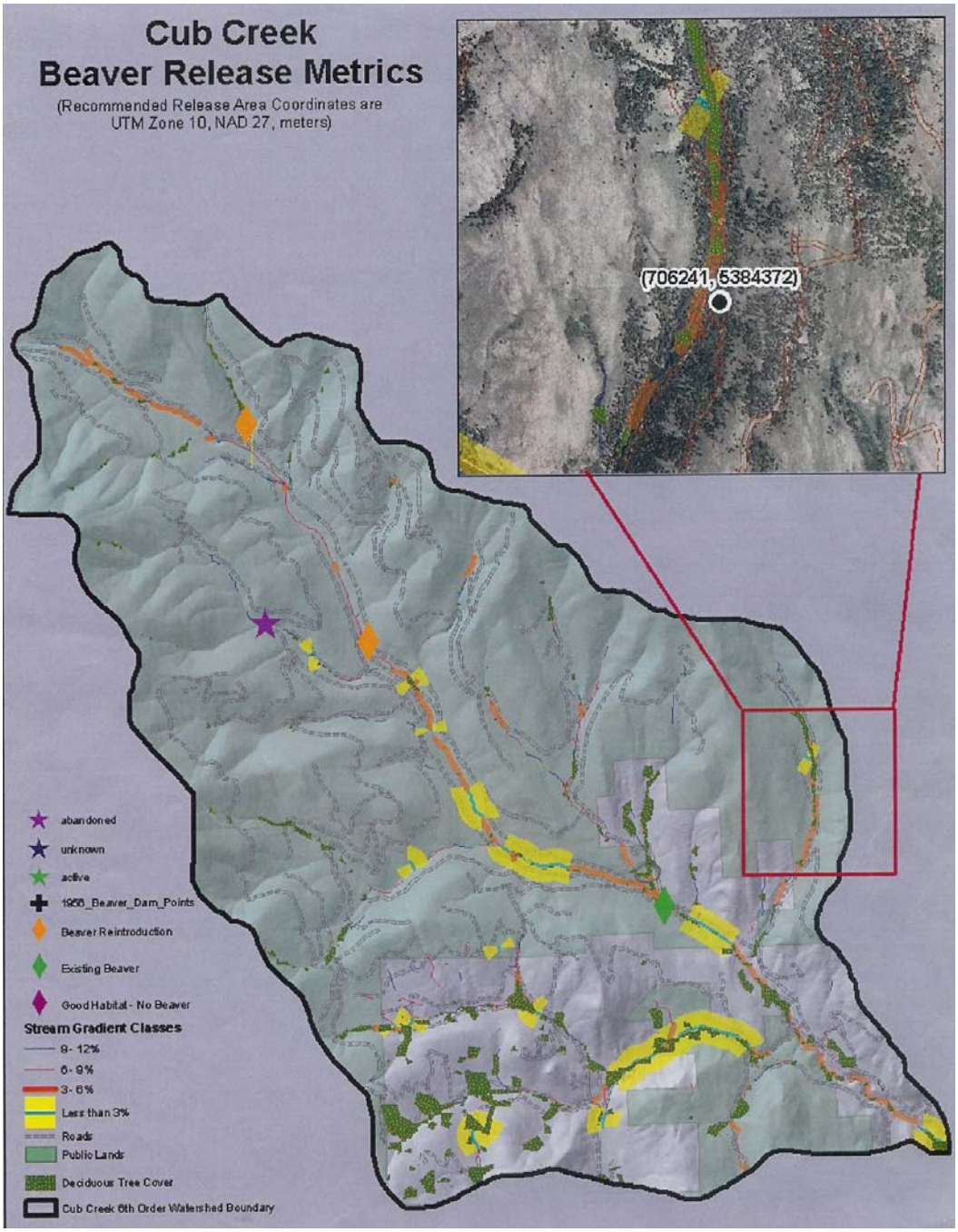
Other funders (cash and in-kind) of the 2008-2009 effort included:

- Community Salmon Fund of the National Fish and Wildlife Foundation and the Salmon Recovery Funding Board
- Washington Department of Ecology Direct Implementation Fund
- Audubon of Washington
- Yakama Nation
- US Fish and Wildlife Service Winthrop National Fish Hatchery
- USFS Region 6 Cost Share Program

Mapping

Pacific Biodiversity Institute built a GIS model of available habitat in the watershed and a prioritization methodology to focus our efforts in the chosen tributaries. Locations were preselected using a combination of historical maps, GIS work, stream width, reach gradient, available food supply, and potential habitat benefits.

For 2008 we worked in Libby and Cub Creeks. In 2009 we worked in Falls and Beaver Creeks in addition Libby and Cub Creeks. Our GIS model includes data sets and prioritization criteria useful to future project work in any of the 10+ tributaries to the Methow River.



Education

A major component of our project was community education. A sampling of some of the opportunities includes:

- In December Kent Woodruff of the USFS Okanogan National Forest and Steve Bondi of the Methow Conservancy presented a beaver and water ecology presentation to over 150 people as part of the Methow Conservancy First Tuesday Presentation Series (see promo poster below right). This presentation described the historical context of beaver and water and salmon, our understanding of the current situation, and our project's aim for future watershed restoration. This was perhaps the pinnacle of our project education element as we outreached to multiple community elements at once, entertained a diversity of questions, and left people with the feeling that this first year of our project was just the tip of the iceberg.

METHOW CONSERVANCY NEWS

For Wildlife ◆ For Farming ◆ For Community ◆ Forever

Fall/Winter 2008

This Issue Features:

Conservation in Mazama
Beavers
Volunteer Leadership
Conservation Easements 101
Riparian Restoration
Common Values
From the Director
Business Members
Halloween FUNraiser
Upcoming Events

Creative Conservation in Mazama

Thanks to the shared vision of several private landowners, another important step forward has been made to preserve one of the Methow Valley's signature view corridors at the Mazama Junction. Through a creative and collaborative process, commercial and residential development slated for the gateway to Mazama has been reconfigured to permanently protect 32 acres of open space.

A collaborative effort to protect the scenic beauty of the Mazama Junction has permanently protected 32 acres. This project adjoins an existing 33 acre Methow Conservancy conservation easement to create a 65 acre scenic and farmable corridor at the west entrance to the Methow Valley.

Background
The Mazama Junction refers to the large, open fields at the turn into Mazama from Highway 20. The fields are on the north side of Highway 20 between the Highway and the Mazama bridge. In the 1970s, the Early Winters Ski Resort was proposed and the junction was zoned commercial to accommodate the ski area. While plans for the ski resort were scrapped, the commercial zoning at the junction remains today.

During the Comprehensive Plan revision for the Upper Methow (1996-2000), a consistent theme in comments at public meetings was the desire to preserve the view-shed and the open and pastoral feel at

(Continued on page 4)

Improving Water Quality with Beavers

The beaver was once one of the most widespread animals in North America. Before European colonization, it is estimated that 60-400 million beavers were found in nearly 15 million square kilometers of all aquatic habitats from the artic tundra to Mexican deserts. Beavers are quite possibly the most important piece of the puzzle for maintenance of a healthy watershed- they modify streams by cutting wood and building dams, which in turn stores water, creates and maintains wetlands, increases groundwater recharge and retains sediment.

Systematic trapping of beaver for their fur began in North America in the 17th century and in the Methow Valley in the early 19th century. By some estimates, 90% of beaver populations were removed to supply the intense demand for fur in Europe and to create a "fur desert" to discourage colonization of land controlled by competing nations. Beaver trapping continued throughout the West as a commercial activity through the end of the 20th century. In 2000, the Washington State Legislature passed laws banning body gripping traps. By then, beaver numbers were a fraction of their original numbers and their function was removed from most watersheds in the west including the Methow Valley.

This year, a coalition of partners, including the Methow Conservancy, Pacific Biodiversity Institute, US Forest Service, Washington Audubon, the Washington Department of Fish and Wildlife, and the US Fish and

(Continued on page 3)

Methow Conservancy PO Box 71 315 Riverside Winthrop, WA 98862 (509) 996-2870 www.methowconservancy.org

Fall/Winter 2008 Methow Conservancy newsletter

Tuesday, Dec. 2 7:00-8:30 pm
at the Twisp River Pub

THIS ONE

Leave It To Beavers

Beavers are the most successful engineers in the world.

Steve Bondi
Methow Conservancy Stewardship Directo
and
Kent Woodruff
USFS Biologist
will talk about the historic activities, current effects, and future possibilities of Methow Valley beavers.

Learn about the fascinating life of beavers in our streams, and the Conservancy's project to restore wetlands using beaver relocation.

NOT THIS ONE

Methow Conservancy

A Methow Conservancy First Tuesday program.
The event is free and open to everyone.
For more information, contact Mary at 996-2870 or info@methowconservancy.org

The pub will open at 6 p.m. for attendees who would like to purchase drinks or something from the light menu.

12/09 First Tuesday Presentation PR flyer

- Our public education efforts continued with an article about beavers, salmon, and streams in the Fall/Winter 2008 Methow Conservancy member newsletter (see article above left). The Conservancy newsletter reaches over 1000 households and businesses in the Methow valley and beyond. It was amazing to us how many responses we received about this topic- most folks had positive comments about how we (society) are "missing the boat" of using beavers for large scale habitat restoration. A few negative comments said beavers were the devil and we should push them to the margins wherever possible. Hearing from constituents on both sides of the issue is the point of PR, I guess.

- In September of 2009 Steve Bondi of the Methow Conservancy and Kent Woodruff of the USFS visited Little Star Montessori School in Winthrop. After an in class sharing, Steve and Kent escorted the kindergarten class to the holding facility across the street at the USFWS Hatchery where the children watched three beavers active in the ponds, then cheered on the loading of the 3 for transport to sites for release that afternoon.

- In November 2008, Steve Bondi of the Methow Conservancy shared information on beaver ecology, wetlands, hydrology, and fish and wildlife with 30 students from the Methow Valley Community School in Winthrop, WA. We toured the beaver ponds near Sun Mountain Lodge, shared observations, explored habitat restoration opportunities, and tried to get close enough to see an active beaver lodge, but stopped short for fear of getting more than our feet wet!

- Audubon Washington provide part of our non-federal match in the form of bird surveys at release sites. Using volunteers from the Methow and North Central Washington Audubon Chapter in spring 2009, we recorded birds detected by sight and/or sound at each of four release sites. The data collected provides us with baseline information about the avian communities against which we will compare future data collected to assess change.

- July 2008 Methow Valley News article (see conclusion of this report) highlights elements of the project and opens another door to public relations

- Our project information sheet (see conclusion of this report) was disseminated to the public upon request and as a handout at various gatherings and events.

- Interacted with 100+ visitors annually to the captive beaver holding facility at the USFWS Winthrop National Fish Hatchery, including July 2008 and 2009 National Fishing Day participants.

- Toured 30 public participants in May 2008 to existing and potential beaver habitat at the Sun Mountain beaver ponds and the Little Cub Creek release site, and described the importance of beaver to a healthy functioning robust watershed.

- Face to face conversations with 20 different landowners, irrigators, and land managers at capture sites about the merits of beaver on the landscape and why or why not to consider beavers nuisance and/or candidates for relocation.

Capture/Care/Release

The Methow Conservancy Stewardship Program outreached to local landowners, irrigators, land managers, and others such as fish hatchery visitors to identify opportunities to help with nuisance beavers. Outreach efforts provided at least six capture sites. Outreach also gave project staff an opportunity to provide education about riparian protection to landowners in and out of the Methow River watershed.

We deployed traps at identified capture sites and over the course of the 2008 season captured 30 animals in multiple family groups. In 2009, we set traps at 28 locations and ultimately *captured* 31 nuisance animals. At each capture site, trappers carefully set and scented traps, checked the traps daily, collected trapped individuals, and reset traps as needed.

Scent marking capture site

Trapped beaver at dusk

Captive beaver taken to holding facility

Captive beaver released into holding facility

Care for captive bears took place at our captive beaver holding facility at the USFWS Winthrop National Fish Hatchery. See the 'Facility' narrative below.

Release site preparations included cutting/piling onsite material for shelter and food for the beavers. We made small log dams on creeks to entice the beavers to stay and to induce larger dam construction. We established photopoint photographs at each site pre-release, fully understanding that released beavers might not stay at the release sites, but doing our best to document what we could. Team members filled out site assessment data sheets for comparison over time as beaver establishment affects site conditions. Assessment parameters included wetted area, channel width, channel gradient, and riparian vegetation presence/absence/condition (see data sheet at the conclusion of this report).

Preparation of shelter at release site

Camouflaging a shelter at release site

During 2008, our project team released 30 beavers at 7 sites in Cub and Libby creeks. Weekly observation throughout the rest of the summer kept track of the animals, and by snowfall in November, we had at least 3 groups established with others under continued observation and monitoring.


Transport to Cub Creek release site


Nearby on the Cub Creek release site.

We reassessed site occupancy and activity when access was possible in spring. In June 2009, 3 sites were occupied of the seven sites from 2008, including the site at Ben Canyon at Libby Creek (photos below) where beavers have constructed 7+ dams.


Dam construction along Ben Canyon


Dam making material

In 2009, our team released 24 beavers at 8 sites in Falls, Beaver, Little Bridge, and Cub creeks. Weekly observation throughout the rest of the summer kept track of the animals, and by late September and the writing of this report, we had at least 6 sites active (dam building, tree cutting) with others under continued observation and monitoring.

Summary table for 2008 nuisance beaver capture/release.

2008 Beaver Capture Info.				
Date	age	Location captured	disposition	Location released
12-Apr	1 subadult	Winthrop Barn	Rel 5-15	Little Bridge Creek
18-Apr	1 subadult	Winthrop Barn	Rel 5-15	Little Bridge Creek
1-May	1 adult	Mocassin Lake	Rel 7-9	Little Cub Creek
24-May	1 subadult	Twisp R fish ponds	Rel 7-9	Little Cub Creek
17-Jun	1 subadult	hatchery diversion	Rel 7-2	Upper Cub Creek
18-Jun	2 subadults	hatchery diversion	Rel 7-2	Upper Cub Creek
19-Jun	1 adult	hatchery diversion	Rel 7-2	Upper Cub Creek
20-Jun	1 adult	hatchery diversion	Rel 7-2	Upper Cub Creek
21-Jun	1 yearling	Patterson Lake	Rel 7-29	Middle First Creek
23-Jun	1 yearling	Patterson Lake	Rel 7-29	Middle First Creek
26-Jun	1 adult	W. Foster Creek	Rel 7-29	Middle First Creek
28-Jun	1 yearling	Patterson Lake	Rel 7-9	Little Cub Creek
4-Jul	1 adult	Methow R - Mazama	escaped 7-8	
15-Jul	1 adult	Methow R - Twisp	Rel 7-21	Upper First Creek
16-Jul	1 adult	Patterson Lake	Rel 7-31	Lower First Creek
16-Jul	1 yearling	Patterson Lake	Rel 7-31	Lower First Creek
17-Jul	1 subadult	Patterson Lake	Rel 7-31	Lower First Creek
18-Jul	1 subadult	Patterson Lake	Rel 7-31	Lower First Creek
5-Aug	2 adult / 1 yearling	Barclay ditch	escaped 9-25	
5-Aug	1 adult	hatchery diversion	Rel 9-4	Ben Creek
6-Aug	1 yearling	Barclay ditch	Rel 9-5	Upper First Creek
6-Aug	1 adult	hatchery diversion	Rel 9-4	Ben Creek
7-Aug	1 subadult	hatchery diversion	Rel 9-4	Ben Creek
15-Aug	1 subadult	Barclay ditch	Rel 9-5	Upper First Creek
5-Sep	1 adult	hatchery diversion	mortality	
9-Sep	1 adult	hatchery diversion	Rel 9-18	Little Cub (private)
10-Sep	1 subadult	Patterson Lake	Rel 9-18	Little Cub (private)
15-Sep	1 adult	Columbia R near Entiat	Rel 9-18	Little Cub (private)
18-Sep	1 subadult	hatchery diversion	Rel 9-18	Little Cub (private)

Facility

One of the primary objectives of this project was to establish a new protocol for beaver restoration techniques. In different watersheds, beavers typically were captured and released as individuals without concern for family structure. Also, they were released passively to new sites without consideration for their immediate safety from predators or whether or not food was available to them. The development of a captive beaver holding facility allowed the project to incorporate these considerations into the project implementation.

We built a captive beaver holding facility in un-used fish rearing raceways on property owned and managed by the USFWS Winthrop National Fish Hatchery. Project technicians maintained the holding facility all summer 2008 and 2009. Each of four raceways held up to 4 beavers. We had as many as 7 beavers at the facility during the course of the project.

Erecting shade structures over shelter/hut.

Shelter/hut construction in raceway.

Each raceway at the holding facility consisted of shade structures erected over a central shelter. The shelters provided sanctuary for 2-3 individuals. A ½ PVC irrigation pipe inverted provided the shelter on top of a board perched on cinder blocks above the high water line. A ramp leading to the shelter provided access for captive beavers. Hatchery irrigation water circulated to maintain flow in the raceway, to flush waste, and to keep beavers healthy. We held individual beavers at the holding facility for variable lengths of time (but as short as possible) before relocation- typically no more than one week. Staff fed the beavers aspen limbs and donated spent produce while they occupied the holding facility.

Captive beaver preening on ramp

Captive beaver comfortable in shelter.

Project staff winterized the holding facility at the end of the field season in 2008 and is currently doing the same in 2009. Winterizing the facility involves draining the raceways, cleaning waste, and removing structures. The holding facility was restarted as the project commences in March 2009 and continues to operate at the time of this report (June 2009).

Hundreds of guests visit the fish hatchery a year. Signage and beaver presence at the holding facility provided an opportunity to educate a large audience on how beavers help streams.

(c) A description and explanation of any changes to the original proposal:

When we first proposed this project, we envisioned building a captive beaver holding facility on land owned by the Washington Department of Fish and Wildlife and managed by the WDFW Methow Wildlife Area. We were going to use volunteer labor to accomplish tasks needed to create the facility. Tasks included perimeter fence construction, water delivery (upgrade old irrigation system), and construction of swimming pools for beaver.

Conversations in late winter 2008 with staff at the USFWS Winthrop National Fish Hatchery about the merits of the project opened the door to use of unused hatchery raceways used for fish rearing. The USFWS Hatchery had 10 unused antiquated raceways and copious amounts of water available and, upon further discussion, the use of these were donated to the project.

By spring 2008, we set down a new path of utilizing these raceways and the available plumbing for our purposes. We realized quickly this reality far exceeded any expectations we had for constructing our own holding facility. We were able to hone our focus on capture/care/release and actual project outcomes, rather than tinker with construction of a holding facility.

(d) A summary of any public awareness or educational activities related to the project;

See ‘Education’ narrative above.

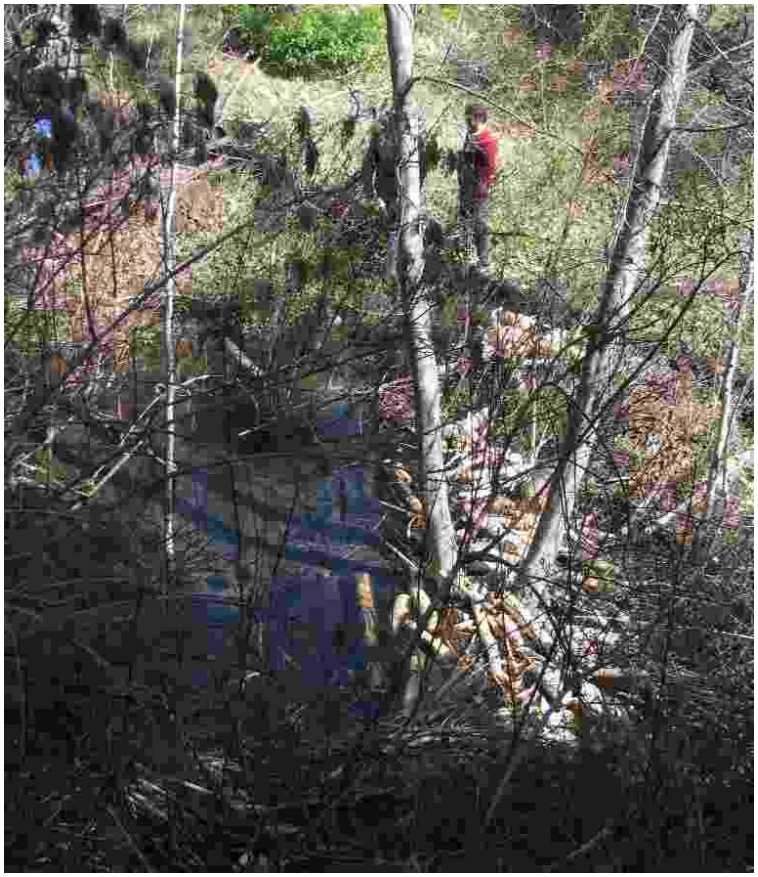
(e) Lessons learned from the project;

The benefits of beaver dam complexes on watershed health are well demonstrated in the literature. One of this project’s goals was to demonstrate a holistic methodology for relocating nuisance beavers for improved watershed health. This project has established a methodology for relocating beavers at a higher success rate than most projects. With a small amount of money, this project re-established beaver activity in four sub-watersheds of the Methow River watershed. On Libby Creek, beavers created 7 dams since the project began. In addition, beaver re-inhabited a beaver complex on Little Cub Creek, thus restoring the storage capacity of the Little Cub system.

We estimate that the dams built on Libby Creek have increased surface water storage by 22,806 gallons in the first year. Continued maintenance of beaver dams usually increases surface storage. However, groundwater storage at successful re-introduction sites such as Libby Creek and Little Cub Creek has the potential to restore ephemeral streams to perennial stream. Pollock (2003) and Poole (2001) states that groundwater storage is perhaps the single most significant benefit to instream temperature and flows of beaver activities.

Benefits of successful beaver relocation include maintenance and development of riparian shade, downstream habitat improvements through the creation of channel complexity, and riparian and wetland habitat expansion through dam and pond creation. Due to the reproductive habits of beavers, the benefits of successful re-introduction of one family will perpetuate up and downstream of establishment sites.

Simply moving 50+ beavers from point A to point B achieves certain short term goals: education, experience, on the ground changes to habitat in a few locations. We will demonstrate the full potential of this project with the long term implementation of this methodology. Future funding, including continuing funding now in place, will help move 75+ beavers from nuisance sites to priority restoration sites using the methodology developed with this project. We will monitor existing beaver sites for their long term stability and impact on habitat modification, instream parameters, and late season flows. In the future, this we hope this will be one of the most impactful and longest lasting projects to address watershed health in the Methow Watershed.



Beaver dam established on Libby Creek showing stored water behind dam

(2) Color photographs of the project areas.

See photos included in this report.

(3) Not available in internet distributed version.

(4) Restoration Information

List the habitat type(s) and acres restored/enhanced/protected or created to date (cumulative) and remainder to be restored/enhanced/protected or created (projected) with Ecotrust funds by the end date of the award. If the project restores fish passage, list the stream miles opened upstream and downstream for fish access. Actual and Projected columns should add up to the total(s) for acreage to be restored with Ecotrust funds indicated in the approved proposal.

Habitat Type (e.g. tidal wetland, oyster reef, mangrove)	**Actual Acres Restored*** (To date-cumulative)	**Projected Acres**** (i.e. Remainder to be restored with CRP funds by award end date)	**Actual Stream Miles Opened for Fish Access*****	**Projected Stream Miles Opened for Fish Access** (i.e. Remainder to be restored with CRP funds by award end date)
Wetland	**4**	**40+**	**TBD**	**TBD**

*20 dams created (as of 9/09), each impounding 1/4 of an acre = 4 acres.
**20 dams/ponds created, each with self-perpetuating beaver populations; expected 10x increase in wetlands at each pond in the next five years = 20 ac. Not including new ponds created in the same time.
***Dams/ponds expected to return ephemeral streams to perennial streams as aquifer is recharged and ponds grow.

What indirect benefits resulted from this project? (e.g. improved water quality, increased awareness/stewardship):

The unique quality of our restoration project is the atypical temporal and spatial scales. In other words, there is no recipe to draw from that says we will restore X number of widgets in X defined location. Careful release methods and even more careful site monitoring will, over time, result in successful beaver population establishment and associated habitat engineering and long term downstream benefits. The beaver will maintain the habitat, and within ten years we will see a higher water table, more even release of water through the seasons, and a return of channel complexity.

In the meantime, we have:

- Built a GIS prioritization database to guide relocation efforts.
- Built a top notch holding facility that will be available for the project indefinitely.
- Obtained 30 “nuisance” beavers from the watershed and relocated to six sites in two prioritized tributaries of the Methow River (Cub and Libby Creek).
- We used promotional information, visibility at the holding facility (federal hatchery site-open to the public), and a public tour to increase awareness of the importance of beaver-maintained wetlands to salmon, steelhead, and bull trout recovery.

Overarching instream benefits include- increased water storage for late season flows, improved water quality (temperature moderation), fish and wildlife habitat alterations (wetland and riparian + instream enhancements), sediment reductions, increase LWD, increase channel complexity.

List of species (fish, shellfish, invertebrates) benefiting from project (common name and/or genus and species):

1. Federally Endangered Upper Columbia spring Chinook salmon
2. Federally Endangered Upper Columbia summer steelhead
3. Federally Threatened bull trout
4. Summer Chinook and Coho salmon, Redband trout
5. Neotropical migratory songbirds
6. Pretty much any riparian and/or wetland centric species

MONITORING ACTIVITIES

List of monitoring techniques used (e.g. salinity, fish counts, vegetation presence/absence):

1. Monitoring field form at release sites
2. Prerelease photopoint photographs
3. Spring (2009) breeding bird surveys
4. Occupancy or abandonment of release sites

Note: Water quality monitoring at release sites (temperature, flow) is part of our 2010-2012 project effort, funded by Department of Ecology Water Quality Grant Program and the Yakama Tribe.

Report Prepared By: _____ _____

Signature Date

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Methow Valley News Wednesday, July 2, 2008

Beaver relocation project hopes to put nuisance flattails to beneficial work

By Carol Stull

Human visitors to Winthrop's National Fish Hatchery this summer may meet visiting beaver families awaiting relocation to new homes and jobs as wetland engineers.

This opportunity comes courtesy of the Methow Beaver Project, designed by a collaboration of multiple agencies with the aim of resolving nuisance beaver problems while enhancing water quantity and quality at the same time.

To that end, with funding secured by the Methow Conservancy, biologists last month began trapping beavers in spots where their presence is deemed undesirable. The animals – 11 so far – have been temporarily housed in cement ponds at the fish hatchery, where they enjoy shaded shelter, aspen leaves and branches to chew on, supplemented by fresh fruits, vegetables and beaver chow.

Once all members of each beaver family have been rounded up, the lot is ready to be introduced into a more appropriate habitat – one where their gnawing and damming activities can be beneficial. This week (Wednesday (July 2) the first family of five are to be living back in the wild at Cub Creek. A couple weeks back they had been creating problems in a diversion ditch leading into the fish hatchery.

"Water is our most important resource – especially here in the Methow," declares beaver project coordinator Kent Woodruff, a biologist with the Forest Service. "If we do water right, everything else will fall into place."

And people need to realize the benefits of beavers," added Woodruff. "They are water specialists."

He admits the critters do have faults – plugging culverts, creating inconvenient floods, and destroying landscapes of ornamental shrubs and trees. On the other hand, they can create new wetlands. And according to some experts, by slowing the release of water, their dams send more water into aquifer storage.

This Methow project is not a new idea. Beneficial beaver relocation has been done in Idaho and Wyoming, said Woodruff. Here, local ranger district biologist John Rohrer previously had established a couple beaver families in new home sites. This year, a bigger group got together to try the experiment on a larger scale.

Project partners include the Forest Service, Methow Valley Ranger District, Washington Department of Fish and Wildlife, the Methow Conservancy, the National Fish Hatchery in Winthrop, Pacific Biodiversity Institute, Okanogan County Conservation District and the Wenatchee Forestry Sciences Laboratory.

Financial support comes from the National Fish and Wildlife Foundation, Ecotrust, and Washington Department of Ecology. Winthrop Red Apple Market has been donating outdated produce to the tenant beavers' diet.

Biologists Dan Russell and Lindsay Welfelt, hired to perform hands-on beaver duties, agree they are learning as the project progresses. They have constructed and furnished the beavers' shelters and generally meet the animals' daily needs while they reside at the hatchery.

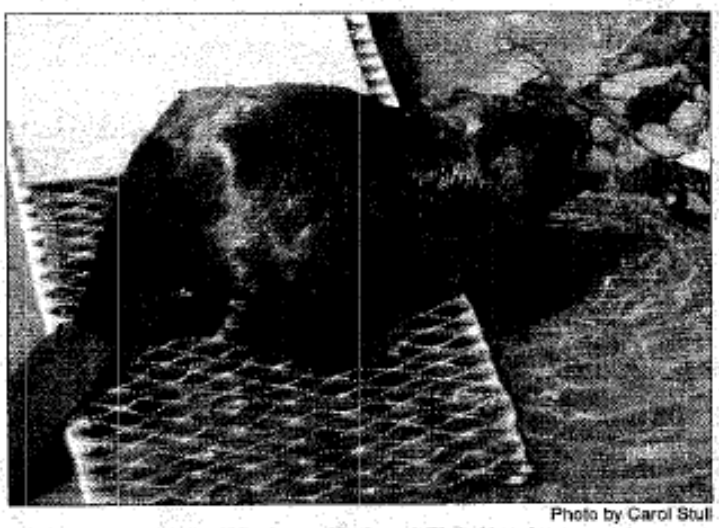

Photo by Carol Stull

The beavers at the Winthrop National Fish Hatchery get to gnaw on aspen leaves while they await relocation. Biologists working with several agencies on the project hope that once relocated, the beavers will create new wetlands.

Incoming tenants are trapped at night near the water's edge using wire purse-type traps. Russell stresses that the beavers have plenty of room to move in the confinement and are not harmed in any way.

When beaver relocation time comes, some logs from hatchery pond waters will go with them to provide familiar-scents. And in hopes they will more readily accept their new home, release sites are chosen in places where beavers likely have lived in the past.

Hatchery visitors should have plenty of chances to meet more beavers, since the plan calls for moving as many as 30 animals this summer.

Long-term goals of the program are big: more water, plus improved habitat for fish and wildlife.

"In 100 years this effort could result in 100 new wetlands," said Woodruff.

Project: **Methow Beaver Restoration for Watershed Improvement Project**

Goal: **Restore viable, self-sustaining beaver populations to locations where they previously occurred in the Methow Drainage Basin.**

Methods and Approach:

- Partner for success with local landowners, non-profits, and government agencies.
- Sustain existing beaver populations by mitigating and solving beaver problems.
- Where absolutely necessary, trap problem beavers and put into a holding facility.
- Relocate beaver families to priority locations in the Methow Drainage Basin.
- Monitor relocation areas for beaver sustainability and accrued ecological benefits.

Beaver Project Benefits:

- Decrease summer water temperatures and reduce stream sedimentation.
- Recharge groundwater, elevate water table and increase late season flows.
- Enhance anadromous fish habitat and increase riparian area and vegetation.
- Create aquatic insect diversity and habitat for waterfowl, birds, and amphibians.

Beaver History:

- Populations drastically reduced by trapping in North America.
- Nearly extinct by late 19th century (mainly for fur hat trade in Europe).
- Trapping in Methow Valley began in early 19th century.
- Loss of beaver created wetlands which may have covered 1/10th of total U.S. land.

Methow Beaver Project Release Site Information

Year	Release Date	Subwatershed	HUC	Tributary	Site ID#
Access road #	**Grazing impacts**	**Fire history**	**Fish/amphibian spp**	**Previous beaver use** ***YES NO***	**Observer(s):**

Site Coordinates

	Release location UTM (NAD 27)	Photopoint UTM (NAD 27)
Easting		
Northing		
Bearing		

Riparian Plant Assocation

_____

Upland Plant Association

_____

Site evaluation of Habitat Unit

Parameter	Description	Record	*Score
Habitat unit size (acres)			
Gradient of habitat unit (avg %)			
Floodplain width (avg ft)			
Stream width (avg ft)			
Food / building material			
Total score			

*SCORE

Habitat Unit Size (determined using GIS ARCMap)

1. at least 1 acre; 2. 1-3 acres; 3. ≥3 acres

Gradient of Habitat Unit (determined using GIS ARCMap)

1. at least 1 section ≤6%; 2. at least one section ≤3%; 3. all Habitat Unit is ≤3%

Floodplain Width (record average width from Data Record below)

1. at least as wide as stream; 2. potential for widening stream and backwater areas; 3. old stream channels evident and high potential for wetland complexes

Stream Width (record average width from Data Record below)

1. single channel, small widthl; 2. multiple channels in places, medium 3. multiple channels throughout, large

Food / Building materials

1. decidous forest present; 2. willow and aspen at least 50% of deciduous forest 3. willow and aspen significant component of deciduous forest

Habitat condition baseline within habitat unit (averages). Date Collected _____

Parameter	Average measured
Substrate	
Stream shade	
Stream Flow	
Water Surface Area (sq. ft)	
Water Volume (cu. ft)	
Water Temperature (°F)	

Data Record for Habitat Condition Baseline- Stream Cross Section. Date Collected _____

Enter averages in Site Evaluation and Baseline table above

#	Floodplain Width (ft)	Riparian Canopy Width (ft)	Stream Width (ft) 1	2	3	Stream Shade	Depth (in) 1	2	3	Temp (ºF)	Substrate 1	2	3	Photo No.	Bearing (degrees)	Notes
1																
2																
3																
4																
5																
avg																

Stream s substrate descriptors-

Fines (F)	<0.5 mm	
Sand (S)	0.5-2 mm	
Gravel (G)	3-10 mm	
Cobble (C)	0.5 – 12.5 in	
Boulder (B)	12.5 in	
Muck (M)	organic material <1 mm	
coarse detritus (CD)	organic material >1 mm	

Stream shade descriptors- percent tree/shrub canopy covering stream

None (N)	0-5 %
Low (L)	6-25 %
Moderate (M)	26-50%
High (H)	51-75 %
Closed	76-100%

Riparian vegetation description within habitat unit (ocular estimate). Date collected _____

Trees	**sp**	**%**	**age**	**Shrubs**	**sp**	**%**	**age**	**Herbaceous Plants**			
Sp 1				**Sp 1**				**Sp 1**			
Sp 2				**Sp 2**				**Sp 2**			
Sp 3				**Sp 3**				**Sp 3**			
Sp 4				**Sp 4**				**Sp 4**			
Sp 5				**Sp 5**				**Sp 5**			

Wildlife Species (amphibians, birds, mammals, ect).

Notes:_____

Map of release site and habitat unit on aerial photo

Methow Beaver Project Site Visit Notes

Year	Release Date	Subwatershed	HUC	Tributary	Site ID#
Access road #	Grazing impacts	Fire history	Fish/amphibian spp	Previous beaver use *YES NO*	Observer(s):

Date OBSERVER Notes

Photopoint photo Date_____
GPS Coordinates E_____N _____ Bearing from post_____