

Tribe to begin river work

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Tribe to begin river

habitat restoration work

BONNERS FERRY — This summer and fall the Kootenai Tribe of Idaho will be leading construction of two river habitat restoration projects in the braided reaches of the Kootenai River upstream from Bonners Ferry.

These two projects are part of a Bonneville Power Administration funded, multi-year habitat restoration program in the Kootenai River. In addition, Burlington Northern Santa Fe is providing some mitigation funding for one of the projects.

Kootenai Tribal Council member Gary Aitken Jr. said, “Through building these projects we hope to create better habitat conditions in the river for Kootenai River white sturgeon, burbot and other native fish.”

A major focus of the restoration program is on helping to recover endangered Kootenai River white sturgeon.

Councilman Aitken Jr. explained, “Kootenai sturgeon are spawning in an area of the river right below Bonners Ferry near Shorty’s Island. The spawning seems to go okay but then something happens between the time the sturgeon eggs are deposited on the river bottom and the fish grow up.”

Sue Ireland, Director of the Kootenai Tribe’s Fish and Wildlife Department explained, “Because of where the sturgeon are spawning, the eggs are currently deposited over clay shelves and over sandy areas on the river bottom. But what sturgeon need is rock and gravel material where their eggs can stick when they are first deposited, and where the larvae can hide for a while among the rocks after they hatch so they aren’t eaten by something else.”

The biologists who study Kootenai sturgeon believe that the eggs aren’t surviving to hatch, or the eggs are hatching but the larvae aren’t surviving during the very early stage of their life.

Restoration Strategies

Two different habitat restoration strategies are being implemented by the Tribe to address this lack of survival of the sturgeon eggs or larvae.

One strategy is to place the right kind of rocky substrate on the river bottom in the meander reaches of the river where sturgeon are currently spawning; in other words, to bring better habitat

to the fish. The Tribe will be implementing a project to do just this near Shorty's Island in the winter of 2013 or 2014.

The other approach is to encourage the sturgeon to migrate and spawn farther upstream where there the right kind of rocky substrate is already on the river bottom; that is, to encourage the fish to go to the better habitat.

One possible reason that the sturgeon don't currently move further upstream to the better habitat above Bonners Ferry is the lack of deep water and places to rest through the straight and braided reaches of the river near Bonners Ferry.

But the challenge with providing deeper water through the straight and braided reaches is how to do that without putting any more water into the river and increasing the risk of flooding.

To meet this challenge the Tribe, working with multi-disciplinary teams of biologists, hydrologists, engineers, modelers, and river restoration experts, came up with the idea of creating a chain of pools through the straight and braided reaches.

"The idea," said Ireland "is to create a sort of ladder of deep pools that sturgeon and other fish can use by moving upstream from pool to pool." The pools will provide deep water for sturgeon to rest and feed as they move upstream and to stage for spawning.

Restoration Projects

One of the two river restoration projects being built this summer, called the Middle Meander Project, includes development of these deep pools.

The pools will be created through a construction of fin shaped structures that will help direct water away from the riverbank and minimize erosion, while also helping scour and maintain the pools. The 2013 project will also include some excavation work to create an especially deep pool.

The areas between the fin shaped structures will create eddies and will be shaped into alcoves that will provide places for Kootenai sturgeon and other native fish to rest and feed. These low flow alcove areas will also support development of floodplain areas.

Pools created by the 2013 project will link up with pools created through a similar project the Tribe constructed in 2012.

The 2013 Middle Meander Project will also include re-grading of a portion of the riverbank, creation of a riparian buffer and some fencing to manage grazing.

The second 2013 project is an extension of side channel restoration work that was completed in 2011.

The project will include re-grading of an eroding stream bank, riparian plantings, and improvements to side channel habitat that is used by a number of different native fish species.

Although a major focus of the river habitat

restoration work is providing habitat for Kootenai sturgeon, making sure that there is a variety of habitats that support burbot and other native fish is also important to the Tribe. The chain of pools and other habitat actions will provide habitat for foraging, migration and overwintering for other native fish including burbot and bull trout.

The Tribe will monitor all of the projects over a number of years to see if they work as they are supposed to.

The Tribe is also coordinating with Idaho Department of Fish and Game and the University of Idaho to monitor the biological response of sturgeon and other native fish to these and other river restoration projects.

Both projects include work on privately owned land or require access through private land. Patty Perry, the tribal administrative director said, "We couldn't implement this project without the support and cooperation of those landowners."

Construction Timeline

Construction work in the water will take place during a two to three month period from September through mid-November because of the need to do the work during low flow and also due to Endangered Species Act regulations for some projects.

Because of this short in-water construction season work may possibly occur six and sometimes seven days a week during these two months to three months.

Construction contractors are currently staging materials and equipment and will begin land based construction work in August.

During construction, local residents will see some increased construction traffic. There will also be some noise associated with the pile driving while the fin shaped structures are being created. Contractors will be pre-drilling the pile holes to minimize noise disturbance associated with pile driving.

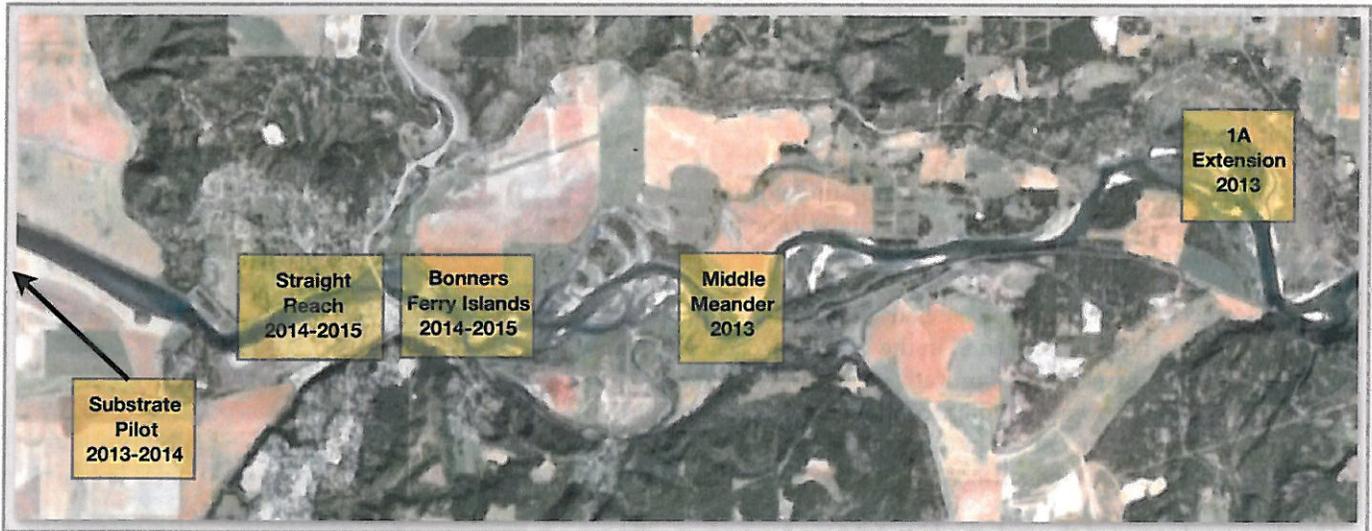
In addition, local residents may also hear some heavy equipment noise associated with the bank re-grading, construction of large wood structures and related activities. There will also be increased silt in the river for a short period of time during the excavation of the large pool.

Throughout the construction the Tribe's contractors will be implementing best management practices to control silt, site disturbances, and other impacts from construction.

Councilman Aitken, Jr. said, "The Kootenai River Habitat Restoration program is very important to the Tribe. It will help to restore the Kootenai people's resources and culture and provide multiple short and long-term benefits to the local community."

info:<http://www.restoringthekootenai.org/>

Kootenai River Habitat Restoration Program



2013-2014 Projects

The Tribe is currently beginning construction of two projects that will be completed in the summer/fall of 2013. The two projects, 1A Extension and the Middle Meander project, are both located upstream of Bonners Ferry in the Braided Reaches.

The 1A Extension project will expand on bank stabilization and riparian restoration work done in 2011. The Middle Meander project will contribute to the pool ladder and enhance habitat complexity in the Braided reach.

The Tribe is also currently completing design work for a substrate enhancement pilot project in the Meander Reach near Shorty's Island. This pilot project will be constructed between November and February or 2013/2014 and will test the sustainability and effectiveness of placing rock substrate over existing clay surfaces in a reach of the river where wild Kootenai sturgeon currently spawn. At present the sturgeon are successfully spawning in this reach over clay and sand. This project is designed to address the first two known bottlenecks to Kootenai sturgeon recruitment.

2014-2015 Projects

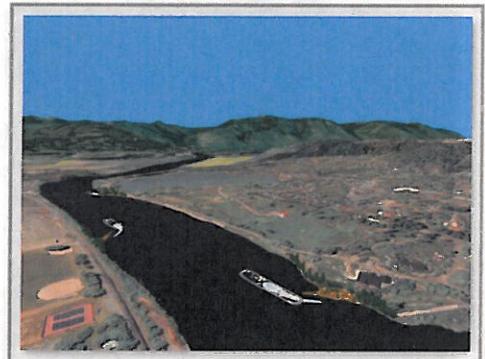
The Tribe is also working on development of designs for two projects slated for construction in 2014 and 2015.

One project located in the Straight Reach adjacent to the town of Bonners Ferry will incorporate in-stream structures that create deep pools for sturgeon migration and resting, as well as riparian and floodplain habitat enhancement.

The second project, the Bonners Ferry Islands project, will include construction of vegetated floodplain islands on top of existing gravel bars in the river channel. These islands will create nodes of ecological productivity to enhance the food web, create hydraulic complexity, and provide hiding and resting areas for Kootenai sturgeon and other native fish. The Bonners Ferry Island site is located just upstream from Bonners Ferry.

Out-Year Projects

The Tribe is currently scoping a suite of potential out-year projects in the Braided and Meander reaches. Prioritization, concept development, review, and design for these projects will occur in 2013-2015.



Photos top to bottom: General project area and location of 2013-2015 projects, concept design for Straight Reach project, concept design for Bonners Ferry Islands project.



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Kootenai River Habitat Restoration Program

2012 Projects

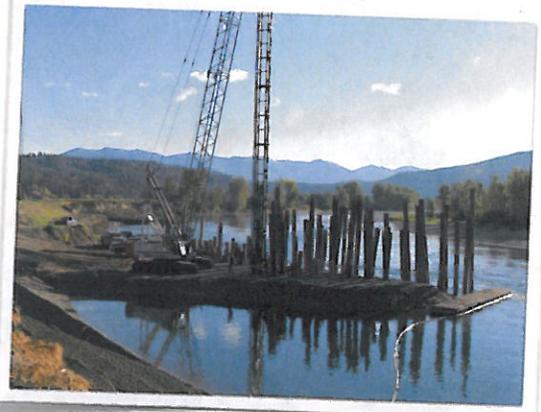
Two projects, the North Side Channels project and Upper Meander project, were completed in 2012. Both are located in the Braided Reach upstream of Bonners Ferry.

The North Side Channel project restored existing side channels and enhanced aquatic, floodplain and riparian habitat. The project is also designed to enhance the food web.

The pre-project Upper Meander site had some of the most extensive erosion and land loss found in the Braided Reaches. This project included construction of innovative structures (“sturgeon fins”) that redirected flow away from the banks, while simultaneously creating desirable aquatic habitat in the form of recirculating eddies and pools that provide a range of complex hydraulic conditions.

The deep pools created through the Upper Meander project will be complemented by pools created through implementation of additional projects in 2013, 2014 and 2015, effectively creating a ladder of pools to support sturgeon migration and holding through the Straight and Braided Reaches of the Kootenai River.

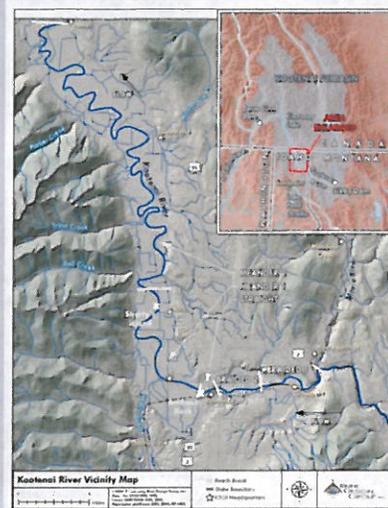
Photos top to bottom: Upper Meander “sturgeon fin” construction, Upper Meander bank restoration, North Side Channels after project photo.



Kootenai River Habitat Restoration Program

The Kootenai River Habitat Restoration Program is designed to address limiting factors including river morphology, aquatic habitat, riparian habitat, and to function within existing constraints. To accomplish this, the Program will be implemented through construction of approximately 8 to 15 individual habitat restoration projects. Each project is designed to address a number of different limiting factors through a combination of treatments. The overall approach is ecosystem-based.

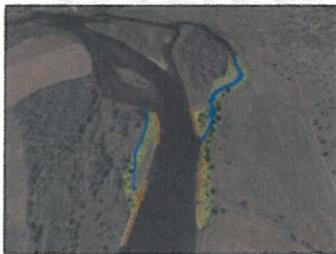
The individual projects are prioritized for implementation and designed in collaboration with a multi-disciplinary team including biologists, river design experts,



engineers, hydrologists, geomorphologists and other technical experts. As part of the design process the Tribe has convened a Peer Reviewer Advisory Team, a Co-

manager/Agency Review Team, and a Policy Team to provide critical review, analysis, and technical and policy advice. Development of each project also includes extensive coordination with local landowners and members of the local community.

The Program includes physical monitoring activities to determine the effectiveness of individual projects in achieving specific goals and objectives, and to support short-term adaptive management actions. Key agency partners, including Idaho Department of Fish & Game and Montana Fish, Wildlife & Parks, assist with biological monitoring activities to support longer-term hypothesis testing and monitoring of the biological response to the Program.



Phase 1A Project Design Concept

2011 Projects

Two projects, Phase 1A and Phase 1B, were completed in 2011. Both projects were located in the Braided Reach upstream of the town of Bonners Ferry and were located on privately owned lands. Prior to the project construction both sites had severe bank erosion and land loss and contributed significant sediments downstream.

The Phase 1A and 1B project actions restored 1,600 linear feet of mainstem bank and installed large wood, restored 2,800 feet of side channel, created or enhanced three side channel pools, 2,600 feet of side channel large wood, restored 8.5 acres of floodplain and wetland, placed 5,400 plants, and installed 5,000 linear feet of riparian buffer fencing. Construction of the two projects was completed during the short in-water work window from August to November.

The completed 2011 projects contributed to ecosystem restoration by restoring valuable side channel habitat for fish, restoring and enhancing floodplain and riparian habitat, restoring the food web, and reducing sediment loading to the river. In addition, the projects contributed to community needs by stabilizing severely eroding banks, thus preventing ongoing land loss.

Photos right top to bottom: 2011 project immediately after construction was completed, during construction, microtopography in 2012.





2011 Kootenai River Habitat Restoration Program Project

Kootenai River Habitat Restoration Program

Kootenai Tribe of Idaho - July 2013

The Kootenai River Habitat Restoration Program is a large-scale, ecosystem-based habitat restoration program to restore and maintain Kootenai River habitat conditions that support all life stages of Endangered Kootenai River white sturgeon and other native fish.

The program is being implemented within a 55-mile reach of the Kootenai River in Idaho, over a period of 7 to 15 years. Implementation of the program, in combination with other Tribal and agency programs, will help to restore native fish populations and sustain the Tribal and local culture and economy. The Kootenai River Habitat Restoration Program is being developed in collaboration with multiple agency partners. Funding for the Program is primarily from the Bonneville Power Administration through the Northwest Power and Conservation Council's Fish and Wildlife Program.

In July 2009 the Kootenai Tribe of Idaho completed the *Kootenai River Habitat Restoration Program Master Plan*, which outlined a framework for implementing the ecosystem-based Kootenai River Habitat Restoration Program. 

Program Goals

1. Restore physical habitat by reducing the negative effects to river and floodplain ecological processes caused by river response to the altered landscape.
2. Restore native vegetation by establishing stream bank and floodplain conditions that sustain plant community development processes.
3. Restore aquatic habitat conditions that support all life stages of native fish (including Endangered Species Act listed Kootenai River white sturgeon) and promote sustainable populations.
4. Create opportunities for river and floodplain stewardship in the community.

See: www.restoringthekootenai.org



Kootenai River Native Fish Conservation Aquaculture

Kootenai Tribe of Idaho Conservation Aquaculture July 2013 Update

Kootenai River white sturgeon and burbot were keystone species in the Kootenai River and are of immeasurable cultural value to the Kootenai Tribe.

These native fish once sustained a culturally important Tribal fishery as well as a valued recreational fishery. A precipitous decline in both populations eliminated the Tribe's ability to fish for these culturally important species.

The U.S. Fish and Wildlife Service listed Kootenai sturgeon as endangered under the ESA in 1994.

The Tribe began a sturgeon conservation aquaculture program in 1989 in order to preserve an adequate demographic and genetic base for a healthy future population.

Native Kootenai River burbot are almost extinct. A Kootenai Valley Resource Initiative (KVRI) Burbot Conservation Strategy was completed in 2005 and a multilateral conservation agreement was signed to ensure burbot population decline would be addressed.

CONSERVATION AQUACULTURE PROGRAM GOALS



The Kootenai Tribe of Idaho's conservation aquaculture program is designed to restore populations of Kootenai sturgeon and native burbot.

The goals of the Kootenai River white sturgeon aquaculture program are to:

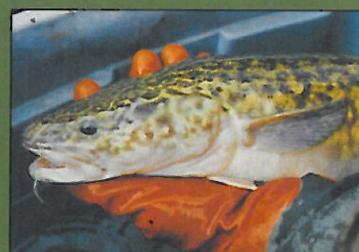
- Prevent extinction of Kootenai sturgeon by preserving the locally adapted genotypes, phenotypes, and associated life history traits of the population.
- Restore a healthy age class structure to enhance demographic and genetic viability and persistence of the population.
- Reestablish a sturgeon population capable of future Tribal Treaty subsistence and cultural harvest.

The goal of the Tribe's burbot aquaculture program is:

- To reestablish a native burbot population in the lower Kootenai River capable of future Tribal Treaty subsistence and cultural harvest and sport harvest once the population reaches sustainable levels.



KOOTENAI RIVER WHITE STURGEON (*Acipenser transmontanus*) are a naturally landlocked population of sturgeon unique to the Kootenai River. They are listed as Endangered.



LOWER KOOTENAI BURBOT (*Lota lota*) once had multiple populations in Idaho, Montana, and British Columbia. The lower Kootenai River component is now functionally extinct.

UPGRADES TO EXISTING KOOTENAI TRIBAL HATCHERY AND CONSTRUCTION OF NEW TWIN RIVERS HATCHERY

The existing Tribal Sturgeon Hatchery facilities were developed to meet near-term objectives of avoiding demographic extinction with the assumption that natural requirement would be restored by implementing flow measures. Since flow measures have not restored recruitment, numbers of broodstock, families and total releases provided by current production facilities are inadequate to address longer-term conservation risks.

The existing Tribal Sturgeon Hatchery is operating at its physical and functional capacity limiting any program operational flexibility in the future. Expansion of the current facilities is not a viable alternative because the available space and water sources are currently fully utilized.

The new sturgeon hatchery, in concert with the existing facility, will enable more families to be

reared in temperature and density conditions that optimize in-hatchery survival. Additional rearing space will also improve fish health by reducing density-related pathogen transmission and disease susceptibility.



Additional space will also support separation of sturgeon progeny groups (families) in the hatchery in order to maintain distinct family lineages until the fish are large enough to be marked with passive integrated transponder (PIT) tags. Additional space is also required to facilitate separate rearing of large and small components of individual families to reduce mortality due to size-based selection in the hatchery.

There is no physical capacity available at the existing Tribal Sturgeon Hatchery to accommodate the burbot conservation aquaculture program. The construction of a new facility is critical to advancing the burbot conservation efforts and to meeting the biological objectives identified in the KVRI Burbot Conservation Strategy.



Above: Location of existing Kootenai Tribal Hatchery and planned Twin River hatchery

ACCOMPLISHMENTS TO DATE

Kootenai River white sturgeon program successes to date include:

- Over 300 wild white sturgeon adults spawned.
- Over 200 sturgeon families produced.
- Over 220,000 juvenile sturgeon released.
- Good survival rates; juvenile hatchery sturgeon are dispersing throughout the river.
- Successful completion of the Northwest Power and Conservation Council's required Step 1 Master Plan (2009 and 2010), Step 2 document and preliminary facility design (2012), and completion of Step 3 (final design and implementation).

Burbot programs successes to date include:

- Development of successful burbot aquaculture techniques (there was no culture history for burbot).
- Completion of a pilot study to evaluate movement and habitat use.
- Completed successful experimental releases in 2009-2012.
- Burbot are dispersing extensively in the river.
- Ready to move to the next phase of production per the Conservation Strategy MOU.

Upgrades at the existing Kootenai Tribal Hatchery and construction of the new Twin River Hatchery are beginning in summer of 2013.



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