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January 4, 2011

MEMORANDUM

TO: Council Members

FROM: Kerry Berg

SUBJECT: Presentations by Montana Fish, Wildlife & Parks

At the January Council meeting representatives from Montana Fish, Wildlife & Parks (MFWP) will discuss some of the work they are doing under the Libby and Hungry Horse Mitigation Programs and other work related to the Council's Program. At the Fish Committee Brian Marotz, Matt Boyer, Scott Relyea, and Amber Steed will discuss this work in some detail. At the Council meeting Brian Marotz will give a higher-level summary of the work but the other representatives from MFWP mentioned above will be available for questions as well. Attached please find a short briefing packet sent by MFWP that gives an introduction to some of the work they are accomplishing. Please let me know if you have any questions.

Presentation to NWPCC by Montana Fish, Wildlife & Parks

The Hungry Horse and Libby Mitigation Programs were designed to direct most funding toward on-the-ground actions that offset the impacts from construction and operation of Hungry Horse and Libby dams. Only a fraction of contract budgets are applied to the most relevant applied research and monitoring.

Collaboration with other agencies, organizations, and user groups (cost-share, in kind services) have allowed our program to complete on-the-ground conservation projects in an efficient, cost effective manner.

Kootenai Subbasin

Preparations are beginning for the second spill test at Libby Dam during 2011, as per the white sturgeon settlement. Monitoring during the 2010 spill test was summarized in a recent MFWP report and an after action report by the US Army Corps of engineers.

Three Kootenai white sturgeon were captured downstream of Kootenai Falls in Montana. All of these fish originated as hatchery releases from the Kootenai Tribe of Idaho's conservation facility.

Therriault Creek had been channelized. Work began in 2005 to restore flow in the natural channel and has since doubled the quantity and quality of stream habitat. Recent work has focused on restoring a healthy riparian community to promote the long-term stability of previous investments.

An irrigation fish screen was installed on Deep Creek to prevent fish loss. The turbulent fountain design is self-cleaning, inexpensive and nearly 100 percent effective in preventing fish entrainment.

Habitat restoration on Pipe Creek will benefit one of the two primary spawning and rearing streams for bull trout downstream of Libby Dam.

Redband trout are the only native rainbow trout in Montana, found only in the Kootenai River and a few tributaries in the Kootenai Subbasin. MFWP cooperated with Washington State University to develop a non-lethal technique to identify redband populations throughout their range.

Flathead Subbasin

Over 13,000 acres of fish habitat in the Flathead Subbasin were protected by acquiring land or through conservation easements. We are attempting to conserve and protect fish bearing and other aquatic habitats over the broadest geographical extent possible, and conserve the maximum diversity of habitats possible to support all life stages of fish and other aquatic organisms.

The potential for aquatic invasive species in the Columbia River headwaters is a concern for the entire watershed. Collaborative work with Yellow Bay Biological Station and UM will advance techniques for rapid and accurate detection of zebra and quagga mussels (*Dreissena* spp.) from routinely collected plankton samples.

Mitigation staff is removing nonnative trout and hybrids from mountain lakes and replacing them with unique genetic stocks of pure westslope cutthroat trout (WCT) (South Fork Drainage Westslope Cutthroat Trout Conservation Project). Wild fish from Danaher Creek were transported by packstock from the Bob Marshall Wilderness to the Sekokini Springs Isolation Facility in 2009 and 2010. Wild WCT are being reared to maturity to conserve unique genetic strains as WCT populations are restored in mountain lakes.

Ongoing experiments at Sekokini include 1) evaluating the feasibility of the facility to isolate and rear wild WCT whose gametes will be infused into Montana's captive broodstock; 2) creating short-term broodstocks for conserving locally adapted genetic variation for restoring WCT populations; 3) measuring effects of hatchery rearing conditions on the survival and growth of outplanted WCT; 4) measuring effects of triploidy on survival and growth of WCT (if 3N WCT are going to be used as a conservation tool, it is important to understand how these GMO's behave/interact in the wild compared to 2N fish).

Advances in molecular genetics techniques allow us to address important conservation issues that have been intractable until now. For example, linking genes to adaptive traits and their distribution among populations will help us understand the genetic basis of local adaptation or inbreeding depression. Matt Boyer will introduce a few specific problems in WCT and bull trout conservation and how new genetic tools can provide robust empirical data to address these issues in the Flathead and Kootenai subbasins.

Future work will include: 1) replicate additional wild WCT populations for genetic conservation; 2) test for persistence of geochemical signatures in samples collected lethally (otolith) and non-lethally (scale/fin ray) to identify population of origin, etc.; 3) measure change in fitness related traits owing to translocation/genetic rescue in small inbred populations of WCT and bull trout; 4) identify super-invasive RBT genes and their adaptive significance; 5) assess performance of natural feeds on growth and fertility of captive wild trout. The natural setting of Sekokini Springs coupled with the hatchery's facilities will create a hotspot for ecological and genetic research at the university level as well as an educational opportunity for local schools and conservation organizations. The sky's the limit as we continue to develop this unique resource.

Mainstem Amendments Monitoring

Amber Steed will speak about the Mainstem Amendments Monitoring project in the Flathead Subbasin and similar work by Ryan Sylvester in the Kootenai Subbasin. This applied research allowed us to assess spawning and rearing of transboundary fish populations in British Columbia and Montana, determining and mitigating for the potential effects of proposed and active Canadian mines and timber harvest practices.

The movements and spawning locations of WCT captured immediately downstream of Hungry Horse Dam in the South Fork Flathead River showed that 54 percent of study fish spawned annually, with 89 percent of the spawners detected using different tributaries.

The food habits and condition of WCT immediately downstream of Hungry Horse Dam and in the Mainstem Flathead River are being compared to assess the biological response to dam operations, during the operation of selective withdrawal temperature control and when thermal control is not in use.

A nuisance growth of a stalked diatom (*Didymosphenia geminata*) has been documented for several miles downstream of Libby and Hungry Horse Dams. The dense mats fill the spaces between river gravels and nearly eliminate insect life (fish food), which displaces fish. We do not yet understand how to control this recent impact to the fishery and are initiating research to learn how to correct the problem.

Subadult bull trout become susceptible and vulnerable to flow regulation after they migrate from their natal tributaries into the mainstem rivers regulated by dams. The survival rate of adfluvial bull trout must be assessed to examine instream survival and survival after juveniles emigrate. Unfortunately, research in two Flathead River tributaries was recently suspended due to concerns about potential impacts to weak stocks.

Trout migrate into and out of the river reaches affected by dam operation, making it difficult to directly assess the biological response to various dam operating strategies. However, mountain whitefish may remain in the regulated reach long enough to detect influences on growth, condition and survival. Staff continues to evaluate of distribution, movement, survival, growth, genetic structure, and spawning locations of mountain whitefish throughout the Flathead River system. These data will be compared to historical records.