

2013 ACCOMPLISHMENT REPORT

Bighorn National Forest – Supervisor's Office
2013 Eastside 2nd Street
Sheridan, WY 82801

AQUATICS PROGRAM



Tongue River, upstream of Box Canyon

TABLE OF CONTENTS

TABLE OF CONTENTS	2
LIST OF TABLES	2
LIST OF FIGURES	2
INTRODUCTION	3
FISHERIES.....	3
<i>Buckskin Ed Creek/Trail 360 Stream Crossing Improvement.....</i>	<i>3</i>
<i>West Fork South Tongue River</i>	<i>4</i>
<i>Sucker Creek.....</i>	<i>4</i>
<i>Population Estimates</i>	<i>4</i>
HYDROLOGY	5
<i>Stream Monitoring.....</i>	<i>5</i>
<i>Water Temperature Monitoring.....</i>	<i>5</i>
AIR QUALITY	6
PROGRAM MANAGEMENT	6
<i>Best Management Practice Reviews</i>	<i>6</i>
<i>Miscellaneous</i>	<i>6</i>
<i>Education.....</i>	<i>6</i>
<i>NEPA Project Support.....</i>	<i>6</i>
<i>Professional Meetings Attended.....</i>	<i>6</i>

LIST OF TABLES

TABLE 1. PROJECT-LEVEL AND LONG-TERM MONITORING (LTM) STREAM SURVEY SITES MONITORED IN 2013	5
---	---

LIST OF FIGURES

FIGURE 1. CURRENT CONDITION OF THE BUCKSKIN ED CREEK/TRAIL 360 STREAM CROSSING. INSTALLATION OF A TRAIL BRIDGE IS EXPECTED TO OCCUR IN 2014.	3
FIGURE 2. FENCE CONSTRUCTION AND WILLOW PLANTING IN THE 20-ACRE WILDLIFE/LIVESTOCK EXCLOSURE ON THE WEST FORK SOUTH TONGUE RIVER.	4
FIGURE 3. ELECTROSHOCKING ON THE SOUTH TONGUE RIVER	4
FIGURE 4. BULL CREEK OVERVIEW, INSIDE EXCLOSURE MONITORING SITE.....	5

INTRODUCTION

The Bighorn National Forest has combined hydrology, fisheries, air, minerals and geology, soils, and botany into an integrated unit referred to as the Aquatics Program. The combination of these resource areas has created an integrated blend of specialists and allows for more efficient work. The Aquatics Program consists of three permanent employees.

Aquatics Program Manager, Chris Williams, is responsible for overall program direction and administration, as well as serving as the Forest Hydrologist. This position is the primary contact for hydrology issues and also serves as the point of contact for air, minerals and geology, soils, and botany. The program leader provides oversight on budget and personnel, for both permanent and seasonal employees in the Aquatics Program.

Forest Fisheries Biologist, Mike Bower, provides program management for the fisheries program and the wildlife program. The position serves as the primary contact for fisheries issues and is responsible for overseeing implementation of on-the-ground fisheries enhancement projects and monitoring efforts.

Amy Nowakowski occupies the interdisciplinary aquatics position, as Hydrologist/Fisheries Biologist. This position is divided equally between hydrology and fisheries resources and is also responsible for providing expertise on soil, geology, and air quality issues.

In 2013, the seasonal workforce consisted of one fisheries technician, one hydrology technician, and one botany technician: Jeff Hinton, Jarrett Moore, and Kat Brown, respectively.

The intent of this report is to give the reader a brief view of the work accomplished by the Aquatics Program during calendar year 2013. Descriptions are intentionally brief. Please contact the Aquatics Program Manager for further detail.

FISHERIES

Buckskin Ed Creek/Trail 360 Stream Crossing Improvement

Initial reconnaissance and data collection were completed for restoration of sensitive species habitat at the Buckskin Ed Creek/Trail 360 motorized trail crossing within a recent Yellowstone cutthroat trout reintroduction area. This crossing is a ford stream crossing, where vehicles drive through the channel bottom (Figure 1), which has caused excessive trail and streambank erosion, aquatic sediment deposition, an unnaturally wide and shallow stream channel, and poor aquatic habitat conditions. Crossing design and NEPA will be conducted during the winter of 2013/2014 to replace the ford stream crossing with a trail bridge and to reconstruct streambanks to natural channel dimensions. Construction is expected to take place during late summer 2014. This project will reduce trail erosion and sediment inflow to Buckskin Ed Creek, restore natural channel geometry at the stream crossing approaches, and provide uninterrupted stream habitat for Yellowstone cutthroat trout and other aquatic organisms. This will be the third aquatic organism crossing improvement within the watershed; the other two installed bottomless arch culverts in 2012 on the Battle Park Road at the Buckskin Ed Creek and Soldier Creek stream crossings.



Figure 1. Current condition of the Buckskin Ed Creek/Trail 360 stream crossing. Installation of a trail bridge is expected to occur in 2014.

West Fork South Tongue River

A 20 acre fence was constructed to eliminate wildlife browse and livestock grazing on section of the West Fork South Tongue River in 2013, just upstream of the Woodrock Guard Station. In addition, over 1,000 container stock willows were planted within the enclosure fence. This section of stream exhibits a lack of willow species and general ground cover, has accelerated lateral channel erosion, and a high sand and gravel bedload. The fencing and willow planting project was developed to speed recovery of riparian vegetation and streambank stability to improve aquatic and riparian habitat along this section of stream. Fence construction was successfully completed by the Wyoming Conservation Corps, Wyoming Game & Fish Department, and Bighorn National Forest wildlife, aquatics, engineering, and fire personnel.



Figure 2. Fence construction and willow planting in the 20-acre wildlife/livestock enclosure on the West Fork South Tongue River.

Sucker Creek

A 13-acre wildlife/livestock enclosure fence was completed in 2013 on Sucker Creek, a tributary to the South Tongue River. At Sucker Creek, half the enclosure eliminates wildlife browse while the other half prohibits livestock grazing. This will give a future comparison of browse intensities between different grazers, as well as identify willow growth potential within the Sucker Creek riparian area.

Population Estimates

All fisheries population work is coordinated with and led by the Wyoming Game & Fish Department (WGFD). The descriptions below provide detail on the fish population projects that Bighorn National Forest personnel assisted with in 2013. Results of all population estimates can be obtained from the Sheridan and Cody WGFD offices.

Aquatics Program personnel assisted Wyoming Game & Fish Department with population estimates in the South Tongue River drainage, using backpack, cord reel, and raft electrofishing techniques. Population estimates were conducted at recent stream habitat improvement projects on the West Fork South Tongue River and Sucker Creeks (described above) to look for population changes over time, and at the Pine Island and Shutt's Flats stations on the South Tongue River to assess the status of mountain sucker populations (USDA Forest Service Region 2 sensitive species).

Additional population estimates were conducted on the West Fork Little Bighorn River to assess a Yellowstone cutthroat trout (YCT) core conservation population (Region 2 sensitive species), on East Tensleep Creek to identify presence/absence of YCT, and on North Fork Crazy Woman Creek to collect baseline data in anticipation of a future riparian enclosure fencing project.



Figure 3. Electroshocking on the South Tongue River

HYDROLOGY

Stream Monitoring

Long-term stream monitoring locations were established as part of the 2005 Forest Plan monitoring efforts. Long-term monitoring sites are located at low stream gradients (< 3%) near the outlet of a 6th-level watershed. Data collected at each site includes cross-sections, longitudinal profile, pebble count, 50 cumulative widths and depths, and photo points. In addition, project-level monitoring sites are established as part of specific NEPA decisions. In some instances, project-level sites also double as long-term monitoring sites.

There are seventy-four 6th-level watersheds that contain lands administered by the Bighorn National Forest. All watersheds have been evaluated for monitoring locations, although only nineteen have met the criteria that allowed establishment of a long-term stream monitoring site. However, twenty additional sites have been established as project-level sites, totaling thirty-nine total stream monitoring locations across the forest and twenty-four 6th-level watersheds containing stream surveys. Stream surveys completed in 2013 are identified in the table below.

Table 1. Project-level and long-term monitoring (LTM) stream survey sites monitored in 2013

Stream Name	Site Name	Survey Type	Stream Name	Site Name	Survey Type
Soldier Creek	Culvert	Project	North Fork Powder River	Inside/Outside Enclosure	LTM
Buckskin Ed Creek	Culvert	Project	Shell Creek	Willett	LTM
Buckskin Ed Creek	ATV Trail	Project	North Tongue River	Road 175	LTM
North Paint Rock Creek	Kinky White	LTM	Medicine Lodge Creek	599	LTM
Mill Creek	Culvert	Project	Leigh Creek	Bar	LTM
Balm of Gilead Creek	Gilead	Project			



Figure 4. Bull Creek overview, Inside Enclosure monitoring site

Water Temperature Monitoring

Year-round water temperature monitoring is conducted at each of the 19 long-term stream monitoring locations (described above). Each temperature logger is visited annually to download data and to ensure proper operation. Year-round water temperature monitoring on the forest began in 2011. Long-term trends will provide valuable information on thermal regimes for aquatic biota, water quality, and thermal changes due to land management and/or climate change for hydrologic regimes specific to the Bighorn National Forest.

AIR QUALITY

The Bighorn National Forest continues its long-term air quality monitoring program, which began in 1993. The monitoring program is part of a national effort in the western United States to determine changes in high elevation lake chemistry from particle deposition from upwind sources of pollution. Two lakes are monitored annually in the Cloud Peak Wilderness, Emerald Lake and Florence Lake, and are sampled three times per year by Wilderness Rangers. Water samples are analyzed for anions, cations, pH, alkalinity, and conductivity by the U.S. Forest Service Air Resource Management Laboratory in Fort Collins, Colorado.

PROGRAM MANAGEMENT

Best Management Practice Reviews

Best Management Practice (BMP) reviews are conducted each year to meet the requirements of the Clean Water Act and the direction outlined in the Revised Forest Plan (2005). The reviews follow Watershed Conservation Practices Handbook (WCPH) management measures and design criteria (USFS 2006). BMP field reviews identify if WCPH criteria are followed, if guidelines are implemented, and provide an opportunity to recognize future opportunities for soil and watershed improvements in an interdisciplinary team setting. On average, one timber BMP review is conducted on the Forest each year and one randomly selected grazing BMP review is conducted on each of three districts per year, totaling an average of four BMP reviews a year.

Miscellaneous

Education

Aquatics personnel assisted with Kid's Fishing Day, a community event sponsored by the Wyoming Game and Fish Department to promote fishing and fisheries education to kids. The event was held in June during Free Fishing Day and was attended by approximately 30 people. This event is a cooperative effort between numerous individuals and groups including Wyoming Game & Fish Department, Bighorn National Forest, Trout Unlimited, Wal-mart, Jake's Lures, Pepsi, and Tongue River Bait.

In addition, an education program was conducted at the YMCA Camp of the Bighorns in July. Aquatics personnel discussed healthy stream ecosystems to 4th and 5th graders from the community of Buffalo. Topics included: healthy uplands and riparian areas, intact streambanks, fisheries and macroinvertebrate communities, and how we all can make a difference in the watershed we live in.

NEPA Project Support

The Aquatics Program provides support to all NEPA projects on the Forest. On a typical project, one person from the Aquatics Program is assigned to each project team and is responsible for representing hydrology, fisheries, air, soils, and geology and minerals resources. The following projects were part of the 2013 NEPA workload: Crater Ridge Timber Sale, Escapee #1 revised placer mining operations project, YMCA Camp stream and pond improvements, Cedar Creek Beef Trail bridge improvement, Jaws Cabin relocation, temporary road layouts for the West Tensleep and Dome Lake Timber Sales, and Willett Creek motorized trail crossing improvement.

Professional Meetings Attended

- Colorado Wyoming Chapter of American Fisheries Society
- Yellowstone cutthroat trout interagency working group