USDA Forest Service
Intermountain Region
Aquatic and Riparian Restoration
2015 Annual Report
The Intermountain Region is situated in Idaho, Utah, Nevada, western Wyoming, and a small part of eastern California. It has approximately 21,000 miles of fishable streams and 167,000 acres of lakes on National Forest System (NFS) land, which constitutes about 16% of the estimated 128,000 stream miles and 8% of the lake acres on NFS lands nationally. The U.S. Fish and Wildlife Service’s “2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation” states that the Region’s world class aquatic resources provide 3,701,850 angler days with total associated expenditures valued at nearly $300,000,000.

The Intermountain Region emphasizes proactive conservation to prevent species listing. Efforts focus on status assessments, conservation agreements, and strategies for sensitive species most at risk, followed by high priority actions to conserve those species. Recovery actions for listed aquatic species are also implemented as required under ESA.

The conceptual strategy for conserving aquatic species is based on conservation biology principles that protect the best remaining habitats and restore degraded ones. Restoration of degraded areas is accomplished by reestablishing habitat connectivity and integrity where feasible. For coldwater species, highest quality streams and lakes are at high elevations which are primarily NFS lands. Consequently, the Intermountain Region plays a key role in protecting the best aquatic habitat for coldwater species. Maintaining integrity of these core areas improves water quality downstream and provides strongholds for native fishes and other aquatic species. Mid-elevation streams and lakes are often of mixed ownership, and various land uses have fragmented streams with roads, diversions, and dams which deny aquatic species access to important downstream habitats. Removing dams and diversions, replacing road culverts to facilitate aquatic passage, increasing stream flows, and reconnecting headwaters to valleys allow fish to move when disturbances such as wildfires and floods make their habitat unsuitable for a period of time. Valley bottoms typically have the lowest quality habitat due to land development but often hold the highest restoration potential. Working with various State and federal agencies through partnerships such as the Western Native Trout Initiative, Desert Fish Habitat Partnership, and
Salmon Stronghold is critical in identifying landscape-level priorities and implementing actions to protect, reconnect, and restore aquatic habitats.

In 2015, the Intermountain Region either enhanced or restored 327 miles of stream habitat and 3,711 acres of lake habitat. This annual report features one selected project of the many restoration projects occurring on each Forest in the Region, providing outstanding examples of restoration and its outcomes. We thank our many internal and external partners contributing to the success of these projects and look forward to continuing to work with you, and achieving mutual conservation goals.

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Funding through the Utah Watershed Restoration Initiative made it possible for fishery enhancement work to be completed on the Lower Stillwater Pond complex on Rock Creek during FY2015. A collection agreement between the Forest and the Utah Division of Wildlife Resources (UDWR) was completed to specify responsibilities for accomplishing the identified work and how it would be funded. The bulk of the work, which included a track hoe to excavate sediment from three ponds, two dump trucks to haul off dredge material and a backhoe to move materials, was completed in June 2015. Below is a quick overview of the work accomplished.

The project was funded for $53,000. The total cost estimate for the work that has been completed to date is $25,000 with $20,000 funded by the UDWR through Utah’s Watershed Restoration Initiative and $5,000 from the Ashley National Forest. Additional work is planned for Lower Stillwater in FY16.

Pond 2 – This pond is approximately 2 surface acres, and ¼ of the pond was dredged in October 2014 on the west side to remove brush and increase water depth. This pond has a headgate structure that delivers water to the Kids’ Pond (Pond 8) through a pipeline. Five rock rubble piles were created to provide habitat complexity and islands within the pond. Rainbow trout were stocked during summer 2015.

Pond 3 – This pond is approximately 3 surface acres. The dike which was damaged from burrowing rodents and beaver activity was repaired in June 2015. The work was completed with the use of a backhoe. Material was hauled to the site using a dump truck loaded with suitable fill material obtained from one of the ponds.

Pond 8 (Kids’ Pond) – The dike on the south end of the pond was reshaped and stabilized by placing large angular rip rap along the slope down to the waterline. The disturbed soil on the top of the dike was reseeded with a native grass and forb mixture. Additional work planned for next spring will include anchoring logs to the bank in several locations to improve bank stability and provide fish hiding cover.
Ponds 5 and 6 were drained and dredged. Accumulated sediments were dredged out and placed in the fill location adjacent to pond 5 and north of the big pond. Pond 5 was restocked with catchable size tiger trout during summer 2015.

For more project information contact Ron Brunson, Fisheries Biologist, Ashley National Forest, at 435-781-5202 or rbrunson@fs.fed.us
GRAIP to WINe Watershed Restoration Project

The upper South Fork Salmon River Subbasin is water quality impaired due to fine sediment deposition and is critical habitat for bull trout, spring/summer Chinook salmon, and steelhead, all listed as “Threatened” under the ESA. Storm events in 1964 and 1965 triggered massive and widespread road failures throughout the middle and upper portions of the Subbasin, leading to heavy fine sediment deposition in Chinook salmon and steelhead spawning and rearing habitat in the main stem South Fork Salmon and some tributaries. Wildfire, most notably a 2007 event, burned large sections of the Subbasin, leading to several debris torrents and road washouts. Aquatic habitat is functioning at risk due to limiting factors, primarily elevated fine sediment levels. Historically, the SFSR Subbasin produced a large percentage of all the Chinook salmon and steelhead in the entire Snake River Basin. These fish returns are currently much reduced from historical numbers.

In 2014, the GRAIP to WINe Project ("Geomorphic Roads Analysis/Inventory Package to Watershed Improvement Network") was initiated to reduce existing and potential fine sediment sources in the upper South Fork. That year, 2.6 miles of the Old South Fork Salmon River Road, a large potential sediment source immediately adjacent to the river, was recontoured, seeded and planted, and a foot trail was constructed throughout its length. Additionally, 11.5 miles of old non-system logging roads in the Six Bit and Two Bit Creek watersheds were fully recontoured using their previously deposited fill material, seeded, and clump planted, and channel conditions at all stream crossings were restored. In 2015, 12.7 miles of old logging roads in the Dime and Nickle Creek watersheds were recontoured and stream channels were restored at all road crossings using the same techniques as in 2014. Finally, in 2016 approximately 12 additional miles of recontouring will occur in the Nickle Creek watershed.

Benefits include improved spawning conditions and improved rearing conditions for juvenile steelhead, Chinook salmon, bull trout and other resident species, reduction in erosion, reduced probability of mass failure events, improved hillslope hydrology, and improved wildlife habitat and security.

Total expenditures by the Nez Perce Tribe and the Forest Service consisted of $135,700 in 2014 and $143,500 in 2015. The project was made possible via a partnership between the Nez Perce Tribe and Boise National Forest. Most of the funding was provided by the Bonneville Power Administration through the Nez Perce Tribe, with Forest Service funds also contributing.

For more information, contact: Dave Mays, Fisheries Biologist/Resource Staff, Boise National Forest, at 208-382-7420 or jamesdmays@fs.fed.us
In 2015, the Bridger-Teton National Forest, Wyoming Game and Fish Department (WGFD), and Trout Unlimited teamed up to restore a pure population of Colorado River Cutthroat Trout to nine miles of Bare Creek, a tributary to South Cottonwood Creek in the Wyoming Range. Many of the native Colorado River cutthroat trout populations in Wyoming are at high risk of replacement or hybridization by non-native trout. The Bare Creek population of cutthroat had previously been protected by raising the elevation of the culvert and placing a small concrete pad below the culvert in 1990; however, over time the splash pad was undermined and a jump pool formed below the culvert.

WGFD conducted a fish movement study and found that non-native fish could move through the culvert. Further investigation revealed that the cutthroat trout population above the culvert had become hybridized and competing brook trout were present. Consequently the conservation value of the Bare Creek population had dramatically declined.

Meanwhile, genetic and population investigations elsewhere had identified that Maki Creek, a tributary within the same watershed, contained a pure population of cutthroat trout. Although this small tributary showed no sign of non-native trout invasion, the stream is connected to a stream with competing and hybridizing non-native trout, and the risk of future invasion is high.

Ultimately, the best course of action was determined to be the removal of the hybridized and non-native trout in Bare Creek, reconstruction of the fish barrier with a more robust design, and then the reintroduction of pure, local native cutthroat trout from Maki Creek to Bare Creek to rebuild the population.

In 2015, the fish barrier was reconstructed and Bare Creek was treated with piscicide in preparation for native fish reintroduction from Maki Creek. In 2016, fish transfer will begin, taking only as many fish from Maki Creek as will safely conserve that fishery; therefore, multiple years of fish transfer will likely be needed to fully restore the population in Bare Creek.
Partners: Wyoming Game and Fish Department, U.S. Forest Service, Trout Unlimited, Wyoming Wildlife Natural Resource Trust, National Fish and Wildlife Foundation

Total Project Cost: $121,000 cash; $13,500 in-kind

For more information contact Matthew Anderson, Fishery Biologist, Bridger-Teton National Forest, at 307-367-5751 or manderson08@fs.fed.us

Reconstructed fish barrier in 2015
CARIBOU-TARGHEE NATIONAL FOREST

West Pine Creek Highway Bridge Replacement and Stream Restoration Project

State Highway 31 crosses West Pine Creek approximately 8 miles North of Swan Valley, Idaho, in Bonneville County. Caribou-Targhee National Forest provides an easement for the land the bridge and Highway cross. The original bridge was constructed in 1936 by the US Forest Service. Upgrades and widening occurred in the mid-1950’s when about 800 feet of West Pine Creek was channelized upstream of the bridge to straighten and contain the stream’s approach. Immediately south of the current West Pine Creek Hwy 31 Bridge is an intersection with Forest Service Road (FSR 230) that provides access to a highly used organizational camp and trailhead. The Forest Service Road runs parallel to the channelized West Pine Creek. This intersection is pinched between a rock bluff and the West Pine Hwy Bridge, limiting sight and stopping distance and was a traffic hazard for vehicles turning onto or off of the Hwy.

This project was implemented between July and September, 2015, through a contract administered by Idaho Transportation Department. The old undersized Hwy 31 Bridge had a 14 foot wide stream opening that was replaced with a 20 foot wide span to restore hydrologic function and stability and to increase public safety. The associated stream restoration work re-meandered the straightened, ditch-like channel, increasing its length from about 907 feet to 1,143 feet and restoring 236 feet of channel and associated aquatic habitat. West Pine Creek provides essential habitat for the native Yellowstone Cutthroat Trout and this project has direct benefits for this sensitive species. The increase in channel length decreases stream slope and power, creating more pool habitat for all aquatic organisms to benefit. The restored channel also reconnects the stream to its floodplain by elevating the stream nearly 4 to 6 feet at the lower end. An additional 17,450 sq. ft. (0.4 acres) of wetlands will be created along the restored stream corridor at a minimum. The project will also restore up to 5 acres of riparian habitat by converting adjacent sagebrush areas into willow and cottonwood dominated valley bottom.
Inlet of new bridge location- constructed in West Pine Creek’s historic channel location. Construction performed by Knife River Corporation

Newly re-constructed West Pine Creek channel now flowing water in its meandering historic location

West Pine Creek historic channel being re-constructed with whole tree revetment for stream stability and instream aquatic habitat

The total project costs (design and implementation) totaled about $878,000 for bridge replacement and stream restoration. The Forest Service provided technical stream restoration review and oversight along with the design contractor (Forsgren Associates Inc).

For more information contact Lee Mabey, Forest Fisheries Biologist, Caribou-Targhee National Forest, at 208-557-5784 or lmabey@fs.fed.us
John's Valley Riparian Improvement project

The invasion of pinyon and juniper into riparian areas and legacy cottonwood galleries along East Fork Sevier River tributaries caused wildfire to travel down riparian corridors during the 2002 Sanford fire, extirpating native Bonneville cutthroat trout populations and severely impacting flow and sediment transport dynamics.

Unburned riparian stands remained overstocked with upland conifers, increasing the risk of high severity fire and inhibiting the growth and regeneration of riparian ground cover and native hardwoods.

Sensitive species managed under Conservation Agreements and Strategies.

Project implementation protected and enhanced 642 acres of riparian habitat along with more than 20 miles of stream habitat for Bonneville cutthroat trout and Southern leatherside chub. Total project costs amounted to $129,795. The forest contributed $94,795 while the Utah Watershed Restoration Initiative contributed $35,000.

For more information contact Michael Golden, Forest Fisheries Biologist, Dixie National Forest, at 435-865-3726 or mgolden@fs.fed.us

In 2015, pinyon and juniper were thinned and piled for burning, lopped and scattered or chipped to reduce fire risk, improve riparian vegetation and reduce sediment input to habitat for Bonneville cutthroat trout and Southern leatherside chub, both Intermountain Region

Southern leatherside chub, West Hunt Creek

Junipers felled underneath legacy cottonwoods on West Hunt Creek
FISHLAKE NATIONAL FOREST

Clear Creek Native Fish Reintroduction and Habitat Restoration

The long term objective of this project is to establish an interbreeding meta-population of native Bonneville cutthroat trout in 62 miles of stream with a full native non-game fish component and no non-native fish species. Initial work began with surveys in 2004 and a multiagency treatment plan and Environmental Assessment for 3 tributaries in 2007. Implementation work started in 2009, but was delayed by the Twitchell Canyon fire. Major fire effects eliminated most non-native fish in Clear Creek, so reintroduction plans were expanded to the entire drainage. Habitat restoration work was funded in FY14. All rotenone treatments to remove non-natives have been completed and reintroductions are now being conducted.

FY 2015 accomplishments included Bonneville cutthroat trout (BCT) reestablished into 2.5 miles of habitat and native non-game fish, including Southern Leatherside, reestablished into .5 miles of habitat on National Forest lands. In addition, 3 miles of habitat work were implemented under FY14 contract.

Total project costs were $16,000. Partners contributed $8,000, and included Utah Division of Wildlife Resources, Snow College, and Utah State Parks.

For more information about this project, please contact James E Whelan, Forest Fisheries Biologist, Fishlake National Forest, at 435-896-1061 or jwhelan@fs.fed.us
The Paiute cutthroat trout (listed under ESA as Threatened) is the rarest trout in North America, and its historic range is limited to 9 miles of Silver King Creek in the Carson-Iceberg Wilderness. In 2013, after 12 years of planning efforts and overcoming legal challenges, 9 miles of Silver King Creek were chemically treated to remove non-native trout which had displaced Paiute cutthroat trout.

The final treatment was completed in 2015. It is expected that Paiute cutthroat trout will be released back into their historic range in summer 2016.

The project will not only improve the status of Paiute cutthroat trout but will restore important wilderness values and characteristics to the Carson-Iceberg Wilderness. Nine stream miles were restored for a total project investment of $350,000. The forest contributed $50,000 and California Department of Fish and Wildlife and United States Fish and Wildlife Service funded the remaining $300,000.

For more information about this project, please contact: Jim Harvey, Forest Fisheries Biologist, Humboldt-Toiyabe National Forest at 775 355-5343 or jimharvey@fs.fed.us
PAYETTE NATIONAL FOREST

Dispersed Recreation Improvements South Fork Salmon River

The South Fork Salmon River (SFSR) was and continues to be an important watershed for Chinook salmon, steelhead and bull trout. The high density of fisherman walking down the banks from parking areas and wide spots along the road to access fishing spots has created multiple user trails. These trails impact Riparian Conservation Areas (RCA) of the SFSR. Many of the trails are very steep, capture and funnel water, and transport fine and coarse sediment to the SFSR, potentially impacting Chinook salmon, steelhead, and/or bull trout spawning grounds. This high intensity fisherman use has also created dispersed campsites that affect RCAs by increasing bare ground, causing extensive bank disturbance, and leaving trash and human waste.

During August 2015, the Nez Perce Tribe-Watershed Division (NPT-WD), PNF staff, and a Northwest Youth Corps crew constructed eight trails on six sites and closed 64 trails along the SFSR. An existing trail was modified and hardened to create a safer, less-impactful route to the river for fisherman and recreationists. Rocks were obtained on-site or nearby, or shuttled from a quarry near the confluence of the SFSR and the EFSFSR. Ground disturbance was limited to the area between the road and bankfull. For most trails, crews built crib rock walls both uphill and downhill from the beginning of the trail. When necessary, more cribbing was constructed to maintain a moderate grade on the trail. Check steps from local downed wood were anchored to maintain grade and limit sediment movement down the trail. All but one trail were built on a traverse to reduce sediment movement downhill to the river.

Because many trails were gullied and actively eroding, logs, large rocks, and brush were used to eliminate recreational use at these sites. To rehabilitate these unneeded trails, several methods were used: large rock crib walls to limit fine sediment erosion; log/rock check dams to create an area for vegetation to grow; log/rock barriers at parking area edge to limit recreational use; slash placement to discourage new trail development; and planting native vegetation to stabilize soils.

This trail rehabilitation in 2015 was a pilot for a larger project to address many trails and campsites with resource impacts along the South Fork Salmon River. Problem sites were inventoried by the NPT-WD in coordination with the PNF. Field trips with PNF and NPT-WD staff in the spring 2015 identified trails for rehabilitation. NPT-WD staff helped write a project description and PNF fisheries staff saw the project through the small NEPA process. The 2015 phase of this
The project was funded by Trout Unlimited ($5,000), the NPT-WD ($15,000 plus staff time), and the PNF (staff time). These funds covered the Northwest Youth Corps for two weeks, plants, fencing and planting materials, hand tools, and other costs. NPT-WD and PNF fisheries and recreation staff spent three weeks on the project, ensuring all components of the project were implemented as planned, and that NEPA mitigation measures were followed.

For more information about this project contact Clayton Nalder, Forest Fisheries Biologist at 208-634-0788 or claytonnalder@fs.fed.us.
The Upper Yankee Fork Large Wood Restoration Project is located on the Yankee Fork approximately 23 air miles southwest of Challis, Idaho. The purpose of the project is to restore large wood abundance to natural levels over a 7.36 mile section of the Yankee Fork of the Salmon River between Jordan Creek and Eightmile Creek. The project is a collaborative effort between the Forest Service, Bureau of Reclamation, Trout Unlimited, and Shoshone-Bannock Tribes. The project will be overseen by the Forest Service and will be implemented by the Forest Service, Trout Unlimited, and private contractors.

The successful restoration of Chinook depends on the implementation of habitat improvements. Significant water quality improvement measures have been completed at some former mine sites in the Yankee Fork, and partners are engaged in restoration activities in the Yankee Fork to address habitat limiting factors. The Tribes have a long history of managing fish, wildlife and their habitats within and beyond the Fort Hall Reservation through a variety of government and Tribal funds. The Tribes’ Fish and Wildlife Department is obligated to protect, preserve and enhance fish, wildlife and their habitats in perpetuity for all Tribal members, and the Department pursues partnerships with state and federal agencies to help achieve mutual resource goals and management objectives. The successful implementation of the “Upper Yankee Fork Large Wood Restoration Project” will be achieved by continuing this cooperation with agencies that include the US Forest Service, Idaho Department of Fish and Game, Trout Unlimited and the Bureau of Reclamation.

Beginning in 2013, the U.S. Forest Service, Bureau of Reclamation, Trout Unlimited, Shoshone Bannock Tribes and Idaho Department of Fish and Game developed a plan to add large wood to over seven miles of the Yankee Fork of the Salmon River as an interim restoration measure until more large wood could be added naturally. The project began in 2014 and will continue through 2016. Thus far, countless days and nearly $170,000 have been contributed by all partners.

In 2014, over 330 trees or wood pieces, and 70 yards of rock were carefully placed across three stream miles to mimic natural streamside, avalanche, and debris flow recruitment. Of the 330 trees, 180 were placed by an excavator, 48 by helicopter, and 108 with hand tools. The coordination of people, equipment, timing, travel, and tree and rock placement was a major undertaking. The project was completed without accidents, injuries, or mishaps. Fish occupied the simulated debris flow within 30 minutes of tree placement, signifying this project’s benefit to habitat, populations and viability of three Federally listed fish species. During the summer of 2015, another 398 pieces of large wood were added to this section of the Yankee Fork. Avalanches and debris flows were simulated by the placement of this large woody debris and boulders in the stream.

For more information contact Bart Gamett, Fisheries Biologist, Salmon-Challis National Forest at 208-588-3420 or bgamett@fs.fed.us.
Large wood placement in Yankee Fork

Simulated avalanche

Large wood placement by helicopter
SAWTOOTH NATIONAL FOREST

Redfish Lake Aquatic Invasive Species Inspection Station

A watercraft inspection station for aquatic invasive species (AIS) began at Redfish Lake during the summer of 2009. Since the inception of this program, it has operated continuously during the summer season through 2015, during which a total of 9,101 watercraft have been inspected for AIS.

Inspections have been geared towards watercraft entering morainal lakes around the Sawtooth Valley, but also provide public outreach to boaters by discussing AIS risks and threats to the aquatic ecosystem.

![Eurasian Water Milfoil intercepted on watercraft entering Redfish Lake](image1.jpg)

A total of 1,799 boats were inspected in 2015. Invasive weeds were found on 23 boats and 26 boats were hot washed to reduce the risk of introducing dreissenid mussels. The project cost $32,000, with the Forest Service contributing $30,000 and partners contributing $2,000. Partners included Idaho State Department of Agriculture and Recreation Resources of America.

For more information contact Scott Vuono, Fisheries Biologist, Sawtooth National Forest at 208-727-5000 or svuono@fs.fed.us

Redfish Lake is the natal home of endangered sockeye salmon and other native fishes that are at tremendous risk if aquatic invasive plants or animals, such as Eurasian watermilfoil, and zebra or quagga mussels, become established. Species protected within these lakes include bull trout, Chinook salmon, sockeye salmon, steelhead, and Westslope cutthroat trout.

![Idaho’s (ISDA)/Sawtooth NRA Aquatic Invasive Species Program involves prevention, survey and education to protect valuable aquatic resources](image2.jpg)
Mud Creek Boreal Toad Habitat Improvement Project

Mud Creek is in the Strawberry Reservoir Management Area located in Wasatch County, UT. This area is an important boreal toad breeding site. Multiple use includes grazing, road OHVs, dispersed camping, and snowmobiling on a groomed trail west of the creek. Mud Creek is in a summer cattle allotment with a pasture rotation. Utah Division of Wildlife Resources (UDWR) has expressed a concern about the timing of cattle grazing and potential impacts to boreal toad breeding within the riparian area. To minimize impacts to the toads but still allow multiple-use of the area, the Heber-Kamas Ranger District worked with UDWR on a habitat improvement project.

The purpose of the project was to protect boreal toad breeding habitat on Mud Creek by minimizing the bank compaction and sediment delivery that occurs during livestock grazing. Approximately 3,000 feet of buck and pole fence was installed to project the Mud Creek riparian area. A 20x20-foot hardened crossing was constructed to allow livestock access to both sections of the Mud Creek pasture. In addition, a pipeline from a spring to three livestock troughs was constructed to provide off-channel watering for the pasture.

Total project costs amounted to $44,321 of which UDWR contributed $3,000.

For more information contact Traci Allen, Fish and Wildlife Program Manager, Uinta-Wasatch-Cache National Forest, at 801-999-2167 or traciallen@fs.fed.us.
Uinta Mountain Lake on the Ashley National Forest

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