

Lower Klickitat Riparian and In-channel Habitat Restoration Project



**Annual Report
1999 - 2000**



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Bonneville Power Administration
P.O. Box 3621
Portland, OR 97208

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LOWER KLICKITAT RIPARIAN AND IN-CHANNEL HABITAT ENHANCEMENT PROJECT



**ANNUAL REPORT
AUGUST 1999 – JUNE 2000**

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Prepared for:

**David Byrnes, Fish and Wildlife Project Manager
Bonneville Power Administration
905 NE 11th Avenue
Portland, Oregon 97232**

Prepared by:

**Bill Sharp, Klickitat Basin Manager
Will Conley, Habitat Biologist**

**Yakama Nation Fisheries Resource Management
P.O. Box 151
Toppenish, Washington 98948
(509) 865-6262
Fax (509) 865-6293**

Introduction

The Lower Klickitat Riparian and In-Channel Habitat Enhancement Project was initiated in August 1997 to address habitat enhancement (Section 7.6), and cooperative habitat projects with private landowners (Section 7.7). Both of which are measures of the NPPC's 1994 Columbia River Basin Fish and Wildlife Program. Specific measures within those sections that the project is designed to address include: 7.6A, 7.6.A.2, 7.6B.3, 7.6B.6, 7.7, 7.8E.2

Project Goals

The overall goal of the Lower Klickitat River Riparian & In-Channel Habitat Enhancement Project (Project) is the elevated survival and production of salmonids in tributary streams of the lower Klickitat subbasin. The Project proposes to accomplish this goal through development of a habitat database used to prioritize activities and implementation of projects to improve in-channel habitats and riparian conditions, and amelioration of both water quality and hydrology problems.

The objective of this project is to implement watershed restoration projects, and develop multi-agency watershed assessment of individual tributaries to guide project development. This project will use information gathered from the BPA funded Yakima Klickitat Fisheries Project Monitoring and Evaluation Project (YKFP-M&E)) to assist in gathering baseline information and monitor project success. Project scoping of restoration efforts will rely upon the following related projects and documents: Version I of the Habitat Limiting Factors Water Resources Inventory for the Klickitat Watershed developed through the Washington State Klickitat Technical Advisory Group, Ecosystem and Diagnosis and Treatment (EDT) modeling being conducted under the BPA's Yakima Klickitat Fisheries. These documents developed using local expertise will guide restoration activities in a logical and prioritized manner. The interagency collaboration allows for cross-fertilization of ideas and strategies that will open the door to multiple cost share opportunities. Techniques that have been implemented and will be expanded on include; no-till alternative farming implementation, stabilization of stream banks and channels, introduction of large woody debris and structures to the channel, revegetation of riparian areas with native deciduous and coniferous plant species, exclusion or management of livestock grazing in riparian areas, reduction of fine sediment transport, enhancement of summer flows for fish passage and juvenile rearing, and project monitoring. Additionally, Yakama Nation (YN) staff under the Project became the driving force charged with assembling and synthesizing available habitat information for incorporation to the Northwest Power Planning Council's (Council) Subbasin Summary. The Council's Provincial Planning process will guide restoration activities throughout the Columbia Basin through a cyclical funding strategy. As this process will be the driving force for several years to come, considerable resources were directed to this effort during this project year. Lower Klickitat Basin Timber Fish & Wildlife (TFW) Ambient Monitoring habitat survey completed through YKFP-M&E are the primary assessment information used identify and prioritize restoration activities outlined in this report. As

additional TFW information becomes available throughout the Subbasin it is anticipated that a change in geographic scope to the Project will be requested.

Through these planning and on-the-ground restoration efforts, knowledge leading to restoration prioritizes and available habitat is anticipated to increase measurably for spawning, juvenile rearing, velocity refugia, and adult holding. In addition, water quality impacts, such as fine sediment delivery, will be moderated, and overall hydrologic conditions are expected to improve. This work will benefit both anadromous and resident salmonid populations, including steelhead, coho, and resident rainbow trout.

Project accomplishments during this reporting period

Objective 1. Identify watershed restoration projects for lower Klickitat subbasin tributaries.

Through Washington State HB 2496 and 2514 the Klickitat Technical Advisory Group (KTAG) was formed in early 1999. This group has completed Version I of the Habitat Limiting Factors Water Resources Inventory for the Klickitat Watershed. This document and subsequent revision are being used to identify watershed restoration projects within the boundaries of the Lower Klickitat Project. The Ecosystem and Diagnosis and Treatment (EDT) model being developed under the YKFP will also be used to identify restoration needs in the near future.

Task 1.1. Using Version I of the Klickitat Basin Limiting-Factors Analysis (LFA), members of the KTAG will identify tributaries in need of restoration activities. Gather knowledgeable professionals and local landowners to form watershed assessment team.

Methodology: Develop a prioritized list with estimated costs of stream habitat restoration projects within the project area.

Accomplishments: The LFA document has been used to identify projects in lower basin tributaries such as the following. The draft EDT model was completed for spring chinook (March, 2000), and has identified mainstem Klickitat River reaches in need of restoration. The steelhead draft EDT model was completed in early July 2000, identifying both mainstem and tributary Klickitat River reaches. The Steelhead EDT model is proving to have greater application, as steelhead usage of the tributaries within the Project boundaries is highlighted.

Task 1.2. Gather and analyze all existing pertinent information

Methodology: The KTAG will research project tributaries and individual project areas using all available information for the newly initiated Washington State Salmon Recovery effort. Information collected will include local maps, county records, fisheries and habitat resource data.

Accomplishments: Project development has been generated from the documents described under Task 1.1. During this reporting period the Northwest Service Academy (NWSA), a division of Americorps mailed a project solicitation sheet to landowners in the Swale, Little Klickitat, Dillacort and Wheeler Creek watersheds. A 70% response rate was received back from landowners. Of the responses 60 % requested a site visit by Project personnel and 40 % requested a more information prior to a site visits. Site visits have begun, with the reminder scheduled over a 1½-month period from August to mid-September.

Task 1.3. Investigate all cost-sharing opportunities.

Methodology: The KTAG provides the opportunity for a professional staff from various organizations to collaborate and identify various internal and external funding sources. The Project manager will used this opportunity to investigate cost-share opportunities within and outside of all participating agencies.

Accomplishments: Cost share opportunities have been identified and developed between, Washington State Salmon Recovery Funding Board (SRFB), and WDFW Regional Enhancement Group. Klickitat County has been awarded a SRFB grant to perform project maintenance for SRFB restoration projects, as well as augment maintenance costs under this BPA Project. Project staff time has been used to develop the TFW habitat surveys and EDT analysis into a usable format to guide overall KTAG strategy tailored to individual project proposals across membership. Reciprocally, during this contract period there has been considerable in-kind contribution of project staff from Bill Weiler (WDFW), Jodi Hastings and Mike Blakely (NRCS) for fencing design and layout to the Project.

Objective 2. Increase survival and production of salmonids in tributary streams of the lower Klickitat through livestock management.

Task 2.1. Exclusion or management of livestock grazing from sensitive stream habitats.

Methodology: Standardized techniques for riparian fencing will be employed to complete Task 2.1. Standard 4-strand barbed-wire fence or hog-wire fence will be used, depending of livestock in the area.

Swale Creek

Specific Activity: 1). Construction of approximately 1.5 miles livestock exclusion fencing was completed on Swale Creek at RM 14.2 of Swale Creek. The fencing was to exclude sheep that have denuded riparian habitat along the creek. Riparian re-growth will help restore proper stream function and reduce sediment inputs into the creek. Fencing livestock from the creek required development of an alternative livestock-watering source (e.g. pressurized well), see Task 2.2 for details. The three previously completed sediment retention ponds were all fenced to exclude livestock use (see previous annual report).

Little Klickitat River

Specific Activity: Complete negotiations with landowner and construct 6 miles livestock exclusion fencing within RM 8.6 and RM 15.3 of the Little Klickitat River

Accomplishments: Landowner site visit were conducted with the three adjacent landowners in early July and August. No fencing activities were conducted during this Project cycle. On site scoping sessions were held with KTAG members to work with landowners to delineate future riparian fence locations. Project Staff working with KTAG members have developed project proposals under SRFB that are likely to be funded in FY01. Cost-share opportunities between SRFB and this BPA Project will be explored in the next funding cycle. It is desired to implement activities in this reach of the Little Klickitat River as it has been shown to have a high restoration potential under EDT.

Wheeler Canyon Creek

Snyder Creek

Dillacort Creek

Specific Activity: Complete negotiations with landowner and construct 6 miles livestock exclusion fencing upper watershed of Wheeler Canyon within the area bounded by T3N, R13E, Section 27-29, 30-36.

Accomplishments: Additional landowner site visits were conducted in early July of 2000. Landowner solicitation for fencing projects were also investigated in Snyder and Dillacort watersheds, located at rivermile 14.0 and 5.4 respectively.

Task 2.2. Development of off-channel livestock watering systems.

Methodology: The most effective method for livestock watering will be investigated using a site specific approach. Methods, which may be employed, include riparian fence with water gap, In-channel pump, and off-site well construction.

Accomplishments: The 60-ft deep well previously constructed to provide the sheep rancher with livestock water, was connected to the multiple pastures. This was needed as the livestock have been excluded from Swale Creek from a recently completed exclosure fence (Task 2.1). A pressure tank was installed to deliver water to nine pastures using approximately 9,400 feet of PVC piping to 9 frost-free watering troughs. At the time of this reporting the project was not completed and system has not been fully tested.

Task 2.3. Plant riparian vegetation within exclusion fencing to reestablish riparian corridor.

Methodology: Standardized techniques for riparian revegetation were conducted. To minimize costs local cuttings were be used to reestablish riparian cover. In areas where local stock was not available rooted-stock was purchased from a local vendor in Lyle Washington.

Accomplishments: Areas fenced under Task 1.2 were evaluated on likelihood of natural riparian regrowth. Riparian vegetation was planted though cuttings or rooted stock to “jump start” the natural revegetation process within all exclusion fences constructed. Revegetation efforts will be monitored with assessments made for incorporated into a site-specific management plan. Plans are being developed for a fall 2000 planting at all sites.

Task 2.4. Work with local rancher to develop grazing practices to minimize impacts to riparian cooridor impact.

Methodology: Knowledgeable professionals within the KTAG will develop grazing practices with willing landowners. Techniques which may be employed include; seasonal rest-rotation, avoiding late summer grazing, develop winter grazing options.

Accomplishments: Upon completion of the site visits, necessity and methods to develop a grazing management plan with NRCS and CKCD Range specialists were developed. Local NRCS officials have requested that they be the primary contact with local ranchers/landowners on riparian habitat projects identified by the KTAG members. Due to the sensitive nature of this with the local community, this approach was deemed prudent at this point in time. NRCS through existing federal incentive programs will address this situation. Updates and feedback by NRCS are being provided at monthly KTAG meetings.

Swale Creek

Specific Activity: Attempt to enlist livestock ranchers in the upper Swale Creek Drainage (RM 20 to RM 28) in a livestock management program, developed by the local NRCS and Conservation Districts. Coordinate with existing conservation programs, such as Conservation Reserve Program (CRP) and the Conservation Reserve Enhancement Program (CREP) to augment Project funds.

Accomplishments: The NWSA completed breakaway fencing at the Crocker and Martin property. This two-mile section of Swale Creek is now completely fenced off from grazing livestock. Riparian vegetation is now successfully taking root within the fenced off area. Subsequent reports will document riparian revegetation through the monitoring efforts.

Dead Canyon Creek

Specific Activity: Reduce grazing impacts to the lower reaches of Dead Canyon Creek at its confluence with the Klickitat River. Field observations have identified the lower most reaches (RM 0.25 – RM 2.0) of Dead Canyon Creek as important steelhead spawning habitat. In cooperation with the landowner (Champion Timber, Co.), local NRCS staff was enlisted to site and select appropriate design on a cattle drift fence.

Accomplishments: The NWSA completed three quarters of a mile of four-strand barbed wire drift fence on Dead Canyon Creek. The fence will

exclude open range cattle from accessing the sensitive riparian area immediately adjacent to steelhead spawning on both Dead Canyon Creek and the mainstem of the Klickitat River. Additionally portions of a mature white oak woodland will be protected.

Objective 3. Increase survival and production of salmonids in tributary streams of the lower Klickitat to improve water quality.

Task 3.1. Riparian revegetation along stream corridor to increase stream shading and lower stream temperatures.

Methodology: Planting of appropriate riparian species using standardized techniques will be employed along tributaries indicated through KTAG project development. This task will be conducted as a separate activity. Under most all activities within the riparian area revegetation will be an associated task.

**Dillacort Creek
Wheeler Canyon Creek
Swale Creek**

Specific Activity: Plant appropriate stocks of native vegetation riparian on both banks of the lower Dillacort Creek between RM 0.0 and RM 2.0., Wheeler Creek (RM 0.0 – 1.0), and Swale Creek (RM 0.0 – RM 2.0). Due to the rocky nature of these three tributaries, a stinger attachment on a thumbed-excavator will be utilized. Equipment cost-share will be between the Project and CKCD

Accomplishments: A contract was secured for Dayton Tractor Inc of Dayton WA. to perform this task during the fall planting season. The Underwood Conservation Service contracted Dayton Tractor to revegetate 400 ft. of Swale Creek. The YN will costshare with the local NRCS and CKCD, however this task was not initiated during this funding cycle. Updates will be provided in the next project cycle.

The NWSA completed riparian fencing around the four remaining six sediment retention ponds previously constructed in upper the Swale Creek basin. There are now six sediment retention ponds operational in the agricultural reach of Swale Creek. At the time of this reporting, site preparation for a fall 2000 revegetation of the two remaining ponds on the Martin property are underway.

Objective 4. Increase survival and production of salmonids in tributary streams of the lower Klickitat through improved upland farming practices.

Task 4.1. Investigate no-till-farming alternatives suitable for agricultural lands in the Lower Klickitat basin.

Methodology: Conduct research and literature review through the local NRCS office in Goldendale.

Specific Activity: Contribute cost-share funds to support NRCS/CKCD for the development of no-till demonstration plot. Employ all possible means to solicit local farmer involvement through development of participatory cost-share opportunities and incentives.

Accomplishments: No activity was conducted on this task during this reporting period. Local NRCS officials have requested that they be the primary contact with local ranchers/landowners to develop no-till-farming alternatives identified by the KTAG members. Due to the sensitive nature of this with the local community, this approach was deemed prudent at this point in time. NRCS through exiting federal incentive programs will address this situation. Updates and feedback by NRCS are being provided at monthly KTAG meetings.

Objective 5. Increase survival and production of salmonids in tributary streams of the lower Klickitat through construction of in-channel habitat structures.

Task 5.1. Construct in-channel structures and placement of large woody debris (LWD) into the stream channel to expedite adult upstream migration into favorable spawning and rearing habitats.

Methodology: Identify areas determined to limit upstream passage. Engineering and hydraulic surveys will be conducted to clearly identify locations. Habitat Engineers from WDFW will be used on a no-cost basis to perform this task. Industry standard techniques will be employed to concentrate flow to increase passage. Techniques to be used include, but are not limited to; barbs, groins, and boulder clusters.

Identify areas determined to be limiting in LWD. Surveys will be conducted to locate areas for LWD placement. Habitat engineers from WDFW will be used on a no-cost basis to perform this task. Techniques to be used include, but are not limited to LWD debris jams, bank structures and boulder clusters that incorporate LWD.

Swale Creek

Specific Activity: Construct in-channel structures between RM 3.5 and RM 5.0 of Swale Creek to improve passage, recruit gravels to create spawning and rearing habitat, and deposit sediments for the establishment of woody vegetation along the stream banks.

Accomplishments: Design plans for the most severely denuded portion of the lower Swale Creek (4.5 –6.0) were completed by WDFW habitat Engineers on a no-cost basis. Landowner approval was established during the original investigation. Formal landowner endorsement confirmation and project permitting was in late July. Project staff initiated development of the bid package for release.

Trout Creek

Specific Activity: Construct in-channel structures between RM 0.1 and RM 1.5 of Trout Creek to improve passage, recruit gravels to create spawning and rearing habitat, and deposit sediments for the establishment of woody vegetation along the stream banks.

Accomplishments: No site-specific activity was conducted on this task during this reporting period. However, the soon to be completed update of the Steelhead EDT analysis that incorporates Trout Creek will be used to guide Project staff on strategies to employ. The model will indicate the most severely impacted life stages and habitat requirements of those life stages that are limiting production in Trout Creek. Restoration actions will then be developed to address those identified.

Wheeler Canyon Creek

Specific Activity: Construct in-channel structures between RM 0.0 and 1.0 of Wheeler Canyon Creek to improve passage, recruit gravels to create spawning and rearing habitat, and deposit sediments for the establishment of woody vegetation along the stream banks.

Accomplishments: Consultation was conducted the landowner at the confluence with the Klickitat River (Photo 1.), for the purposes of describing properly functioning conditions of an alluvial fan, and the local impact of poorly placed in-channel structures. Wheeler Creek was not incorporated into the EDT model for steelhead. Existing TFW habitat transect and fisheries survey information will be utilized during future project development.



Photo 1. Overhead view of Wheeler Cr. – Klickitat River confluence.

Logging Camp Canyon Creek

Specific Activity: Construct in-channel structures between RM 0.0 and 0.5 of Logging Camp Canyon Creek to improve passage, recruit gravels to create spawning and rearing habitat, and deposit sediments for the establishment of woody vegetation along the stream banks. Construct a unified channel through a highly altered reach to allow juvenile outmigrants passage to Klickitat River. This activity will augment Klickitat County \$25,000 SRFB grant to facilitate passage.

Accomplishments: Site investigations have occurred with Project staff and WDFW habitat engineers. Conceptual design plans have been developed. The Klickitat County Watershed Coordinator (SRFB sponsor) has initiated permitting process. YN Project staff conducted a site survey of channel and floodplain morphology to delineate project

boundaries and flow conveyance design requirements. Preliminary design plans call for construction of an armored ford to allow Klickitat PUD utility access along abandoned railroad right-of-way. The original railroad trestle (Photo 2) caused the initial passage problem, by blocking high flow and deflecting flows to various points across the railroad embankment. Installation of an armored ford will allow effective high flow conveyance, adult migration, and low flow vehicle crossing.



Photo 2. Logging Camp Creek railroad trestle.

Dillacort Creek

Specific Activity: Construct in-channel structures at RM 0.1 of Dillacort Creek to improve passage, adult upstream passage, and more importantly, eliminate stranding and death of juvenile wild steelhead outmigrants during summer lower conditions (Photo 3.). Work with Washington Department of Transportation (WDOT) personnel through cost-share funds to improve current in-channel habitat conditions at the SR 141 and Dillacort Creek crossing. Install permanent pool-step structures over 0.1 miles of Dillacort Creek to facilitate passage and minimize ponding at low spring/summer baseflows.

Accomplishments: A site visit with WDOT held in mid July. Project staff will initiate a more detailed topographical survey of channel and floodplain morphology to delineate project boundaries and flow conveyance design requirements in late July. Updates will be provided during the next funding cycle.



Photo 3. Dillacort Cr. Immediately upstream of Highway 142 crossing.

Snyder Creek

Specific Activity: Engineer and construct modifications of the milldam (RM 0.5) at Snyder Creek (Photo 4) to facilitate steelhead passage to upstream spawning and rearing habitat. Coordinate efforts between this project and Klickitat County (recipient of a \$100,000 Governor's Salmon Recovery grant), to extend passage efforts from the concrete flume to the upper watershed. Additionally, this activity will address two impassable culverts within the last ¼ mile of Klickitat Mill property on Snyder Creek at RM 0.6 and RM 0.7. Engineering design (pending) will determine applicability of armored fords, culverts, and/or bridges. Stabilization of sediments within the abandoned mill pool of the Klickitat mill on Snyder Creek will also need to occur. To accomplish this activity Project staff will plant appropriate vegetation stocks through cuttings or rooted stock on both banks of the abandoned millpond to secure

sediments from transport. Additional bank stabilization practices will be implemented as identified in the engineering study.

Investigate cost share options. Work with WDFW Regional Enhancement Coordinator to augment Project funding. Work with Klickitat County to Coordinate Klickitat mill flume fish passage efforts to defray heavy-equipment mobilization costs.

Accomplishments: WDFW habitat engineers have completed the design plans for Snyder Creek Restoration Project (SCRCP) to the 85% completion stage. Implementation is expected to begin during the summer and early fall of 2000. Project permitting is being conducted by Klickitat County the project sponsor of the SRFB grant. The Project will cost share milldam passage with both the SRFB and WDFW Regional Enhancement funds. Project staff will investigate using BPA FY01 project dollars to costshare for this much needed project. Snyder Creek in-channel and riparian habitats immediately upstream of the old mill site are virtually intact, offering the highest quality stream habitat in the lower Klickitat Basin. There are approximately two miles of high quality habitat available to anadromous stocks once passage is restored.



Photo 4. Klickitat mill dam on Snyder Creek.

Objective 6. Increase survival and production of salmonids in tributary streams of the lower Klickitat through development of conservation easements on key habitat.

Task 6.1. Development of conservation easements with willing landowners.

Methodology: Through the KTAG, personnel will identify areas of critical importance for the achievement of Project goals. County records will be researched to identify landowners and land use. Enhancement strategies will be pursued with individual landowners. If landowner is willing to participate in the Project, and personnel deem area is critical, then steps will be taken for development of conservation easements.

Accomplishments: No activity was conducted on this task during this reporting period. However, during site evaluation visits, Project staff informed landowners of opportunities available to them through NRCS, with additional cost share potential using Project funds.

Objective 7. General Project Monitoring Protocol

Task 7.1 Project personnel will conduct standardized habitat inventory methodology (Timber Fish and Wildlife Ambient Monitoring) at routine intervals to assess changes in stream channel morphology.

Methodology: The TFW Ambient Monitoring is the monitoring protocol used under this project. There are several modules within this protocol each of which is described in the TFW's Ambient Monitoring Program Manual (Scheutt-Hames et al., 1994). YN Fisheries Personnel working under the YKFP-M&E will be utilized to perform this task.

Accomplishments: Within Project boundaries baseline data was generated using the TFW protocol for the following streams under the YKFP M&E project: Dillacort, Swale, Logging Camp, Snyder, Wheeler, Trout, Dead Canyon, and White Creeks and the Little Klickitat River. Project staff established two new TFW sites within proposed restoration sites on the Little Klickitat River to serve as pre-implementation record. Additional TFW sites are to be established as pre and post restoration monitoring transects.

- Task 7.2** Project personnel will conduct standardized salmonid population monitoring at routine intervals to assess salmonid population trends.
- Methodology:** Upstream directed snorkel surveys using two snorkelers (one for each bank) or electrofishing will be used. The fish survey reaches will coincide with the habitat survey reaches. YN Fisheries Personnel working under the YKFP-M&E will be utilized to perform this task.
- Accomplishments:** The two new Little Klickitat River sites established for pre-restoration monitoring, population surveys were conducted. Data recorded included wetted survey area and population densities by species. Post monitoring on a periodic basis is scheduled to determine any population or age structure changes within the restored areas. Additionally, a control site was established immediately outside the restore area for periodic monitoring.
- Task 7.3** Project personnel will conduct point-step vegetation inventory within randomly selected riparian exclosures to assess changes in riparian vegetation condition.
- Methodology:** Daubenmire-type vegetation inventory within randomly selected riparian exclosures. This methodology is outlined in Daubenmire, R. 1957. Northwest Science 33:43-64.
- Permanent photo-points will be established at each habitat enhancement project. Photos will be taken prior to project initiation and at regular intervals throughout Project duration to document riparian regrowth. Riparain exclosures projects will be photographed on a tri-yearly basis. In-channel structures and sediment retention ponds photographed on a bi-annual basis.
- Members the NWSA under guidance from the CKCD and NRCS will be employed to perform this task.
- Accomplishments:** All previously constructed restoration projects have permanent photo points established on-site. Vegetation inventories will be conducted after the 2000-growing season, and will be presented in future reports. Project staff are employing the Daubenmire-type approach as it provides a measure of cover in addition to frequency of vegetation type. Where woody vegetation is of primary concern, a line-intercept approach will be employed as it provides a more efficient measure of canopy cover (Mueller-Dombois, D and H. Ellenberg. 1974. Aims and Methods of Vegetation

Ecology. 547 p.). Annual re-inventory will be sufficient for quantitative transects, while paired photo-points will be revisited multiple times yearly.

Additional Accomplishments:

Project Fisheries Biologist (Habitat Specialist) hired:

To more effectively implement project goals and objectives the Yakama Nation Fisheries Program hired Mr. Will Conley as a fulltime Project biologist. Mr. Conley recently received a M.S. in Water Resources from the University of Wyoming that compliments a B.S. in Wildlife Ecology earned at the University of Maine. His professional background includes nine field seasons on the Shoshone National Forest in Wyoming that focused on stream and riparian monitoring but included work in soils, range, timber, and wildland fire. His interdisciplinary experience makes him a valuable asset to Project.