

Indian Creek Fisheries Stream Restoration Partnership Project
January 23, 2004

Project Name: Indian Creek Fisheries Stream Restoration Partnership Project

Project Location: T.24N., R.19E., Section 24 The proposed project is located on Indian Creek, in the Lower Salmon River ESA Section 7 Watershed. Indian Creek is located approximately 11 miles west of the town of North Fork, Idaho (see [maps](#) 1-3). The project area is within the Forest Service Indianola Helibase administrative site.

Project Description: The proposed work would include the hand construction of up to 6 low profile log drop structures and approximately a 30 foot stretch of bank stabilization work with logs, rootwads and other biodegradable materials. Also, within the approximate ¼ mile of the Indian Creek Stream Restoration project area there will be native riparian plantings associated with the log structures, the bank stabilization work and along both sides of the streambanks. This work would be accomplished over a two-year period using volunteer hand labor and Forest Service employees. The logs used for this project would be approximately 6 inches in diameter. This project area's stream reach is within National Forest System Lands administered by the Salmon-Challis National Forest and is entirely within the Forest Service Indianola Helibase's administrative site. This stretch of Indian Creek is also within the ½ mile corridor of the Recreational segment of the designated Wild and Scenic Salmon River. The work would begin on Saturday April 3, 2004 using volunteer manual labor in a Challenge Cost Share partnership with the Upper Snake River Chapter of Trout Unlimited. The work not completed that day would be finished in 2005 with volunteer hand labor or with Forest Service employees before September 30, 2005.

Along with public scoping and coordination with State agencies, other federal agencies, and tribal governments, part of the approval process for Categorically Excluding the project from documentation in an EIS or EA, as stated in the Environmental Policy and Procedures Handbook under Chapter 30 Sec 31.2, will be; the acquisition of the appropriate State and Federal permits (i.e. Cultural Resource Clearance and a Stream Alteration - Joint Application for Permit from the US Army Corps of Engineers and the State of Idaho, Department of Water Resources and Department of Lands), the completion of a Biological Assessment (for federally listed endangered, threatened, and proposed species occurring on the Salmon-Challis National Forest), the completion of a Biological Evaluation (for Region 4 Regional Forester's designated sensitive species occurring on the Salmon-Challis National Forest), the development of a project file, an affects analysis, and the signing of a Decision Memo.

Purpose of Proposed Action: The purpose is to restore the degraded resident and anadromous fisheries rearing habitat in Indian Creek to more natural conditions using the USFS 1994 R1/R4 Stream Habitat Inventory Data as it relates to the USFS Intermountain Research Station's publication *User's Guide to Fish Habitat: Descriptions that Represent Natural Conditions in the Salmon River Basin, Idaho* (INT-GTR 322, August 1995).

Need for Proposed Action: The need for the proposed action is established by the degraded condition of the fisheries habitat within the proposed project area and the desired future condition of the forest aquatic habitats and habitat requirements of all trout species as stated in the Salmon National Forest Land and Resource Management Plan (SNFLRMP 1988 pg. IV-19, IV88).

The SNFLRMP also lists stream bank stability, increased cover, improved riparian management and improved water quality (among others) as habitat enhancement opportunities for resident trout (SNFLRMP 1988 pg. II-28)

The Forest Service Manual 2670.12 - Secretary of Agriculture's Policy on Fish and Wildlife. Department Regulation 9500-4 directs the Forest Service to:

1. Manage "habitats for all existing native and desired nonnative plants, fish, and wildlife species in order to maintain at least viable populations of such species."
2. Conduct activities and programs "to assist in the identification and recovery of threatened and endangered plant and animal species."

The Forest Service Manual 2670.21 - Threatened and Endangered Species. Manage National Forest System habitats and activities for threatened and endangered species to achieve recovery objectives so that special protection measures provided under the Endangered Species Act are no longer necessary. Promote recovery efforts through Research and State and Private Forestry programs.

The Forest Service Manual 2670.22 - Sensitive Species.

1. Develop and implement management practices to ensure that species do not become threatened or endangered because of Forest Service actions.
2. Maintain viable populations of all native and desired nonnative wildlife, fish, and plant species in habitats distributed throughout their geographic range on National Forest System lands.
3. Develop and implement management objectives for population and/or habitat of sensitive species.

The Forest Service Manual 2670.31 - Threatened and Endangered Species.

1. Place top priority on conservation and recovery of endangered, threatened, and proposed species and their habitats through relevant National Forest System, State and Private Forestry, and Research activities and programs.

The May 1993 Forest Service Lower Salmon River Section 7 Watershed BA package for sockeye and chinook salmon indicates Indian Creek has limited quality spawning and rearing habitat. The June 1998 and the January 2000 Forest Service's Lower Salmon River Section 7 Watershed BA packages for bull trout and steelhead, respectively, states limiting factors for spawning and rearing steelhead populations include the lack of large woody debris and the lack of quantity and quality of pools.

Over the years, this stream reach of Indian Creek has had a significant portion of its streambanks rock rip rapped in order to protect against flooding and prevent loss of land within this Forest Service administrative site. The negative impacts associated with this type of streambank alteration has contributed to the degradation of the spawning and rearing habitat in this reach of Indian Creek.

Without this fisheries habitat restoration work the Indian aquatic resources will continue to function well below desired and optimum conditions. The stream's rearing habitat potential for chinook salmon, steelhead, and westslope cutthroat trout will continue to be depressed.

Time Frame: The volunteer workday, which involves only hand labor, will take place Saturday April 3, 2004. The work not completed that day would be finished before September 30, 2005 with volunteer hand labor or with Forest Service employees.

Project Area Description: The project area begins at the confluence of Indian Creek and the mainstem Salmon River and goes up Indian Creek approximately 0.2 miles (1056 feet) and is as wide as the stream and its associated riparian habitat (approximately 15 feet on either side of the channel). Indian Creek is a 4th order stream with a mean width of 4.5 meters (14.75 ft) and a mean max depth of 0.59 meters (2 ft) that flows into the mainstem Salmon River approximately 11 miles downstream from the town of North Fork, Idaho.

The fisheries data files used in the development of this proposed project are stored and maintained on the North Fork Ranger District.

Stream Habitat Data

A summary of the R1/R4 Stream Habitat Inventory for 3.3 miles of Indian Creek can be seen in Table 1. The Desired Future Condition (DFC) is based on the Forest Service General Technical Report "User's Guide to Fish Habitat: Descriptions that Represent Natural Conditions in the Salmon River Basin, Idaho" (INT-GTR 322, 1995).

The 1994 R1/R4 habitat inventory data indicates Reach 1 of Indian Creek is significantly deficient in both pools/100m and large woody debris (lwd/100m).

Table 1 Summary 1994 R1/R4 Stream Habitat Inventory Data for 3.3 miles of Indian Creek

| Stream Name | Reach Type | Length (m) | Mean Width (m) | Pools/100m & % Pools | LWD/100m | Mean % Stable Banks | Mean % Undercut Banks | Mean % Surface Fines |
|-------------------|------------|------------|----------------|----------------------|----------|---------------------|-----------------------|----------------------|
| Indian Creek | 1994 | | | | | | | |
| Reach 1 | B | 5319 | 4.5 | 1.32 / 10.6% | 8.20 | 99.50 | 1.60 | 13.1 |
| Natural Condition | | | | 3.87 | 17.25 | | | |

Table 2 Indian Creek Mean Annual Monthly Flow in Cubic Feet per Second (CFS)

| Stream | Drainage Area (Sq Mi) | Mean Annual Flow (CFS) | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec |
|--------------|-----------------------|------------------------|-----|-----|-----|-----|-----|------|------|-----|------|-----|-----|-----|
| Indian Creek | 54.1 | 27.5 | 9 | 9 | 10 | 20 | 80 | 110 | 35 | 15 | 12 | 11 | 10 | 9 |

Fish Presence/Absence Data

Since 1997, the North Fork Ranger District has partnered with IDF&G Region 7 collecting fish presence/absence and population data, following IDF&G electro-fishing methodologies, and involves the IDF&G entering the raw data and maintaining the Microsoft Access fisheries database for Region 7. The electro-fishing stations on the North Fork Ranger District are permanent monitoring stations that along with monitoring the streams fish presence/absence and population trends will help with population viability analyses. Since 1997 through electrofishing we have documented the presence of juvenile chinook salmon, rainbow trout/steelhead, westslope cutthroat trout, mountain whitefish, sculpin and tailed frogs within the project area. Higher up in the drainage we have also documented the presence of bull trout.

As IDF&G's Region 7 fisheries data base continues to grow these fish population density numbers will be used in the future for trend analysis and in comparison of like streams in the Upper Salmon River Basin.

Table 3 Indian Creek Fish Presence/Absence and Population Density Trend Monitoring

| ESA Section 7 Lower Salmon River Watershed | | fish/100m ² rainbow trout / steelhead | fish/100m ² westslope cutthroat trout | fish/100m ² brook trout | fish/100m ² bull trout | fish/100m ² chinook | P/A mountain whitefish | P/A sculpin | P/A longnose dace | P/A tailed frogs |
|--|-----------|--|--|------------------------------------|-----------------------------------|--------------------------------|------------------------|-------------|-------------------|------------------|
| Indian Creek (0.19 mi.) | lower 1/3 | | | | | | | | | |
| | 1997 | 6 | 0 | 0 | 0 | observed | observed | observed | 0 | 0 |
| not monitored | 1998 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| not monitored | 1999 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| not monitored | 2000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| | 2001 | 12 | 0 | 0 | 0 | observed | observed | observed | 0 | 0 |
| | 2002 | 15 | observed | 0 | 0 | 10 | 0 | observed | 0 | observed |
| not monitored | 2003 | NA | NA | NA | NA | NA | NA | NA | NA | NA |

Note: "observed," indicates not enough fish were collected to run IDFG Mfish population estimator. Numbers have been rounded off.

Since 1991 adult steelhead monitoring of Indian Creek, within the project area, indicates 3 to 10+ redds are being constructed annually. In recent years, within the project area, the number of redds have been increasing in part due to the increase in suitable spawning habitat associated with past stream restoration efforts. In the last 10+ years no adult chinook salmon or bull trout have been observed spawning within the project area.

Table 4 TEP&S Fish Species That Occur on the Salmon-Challis National Forest

| Common Name | Scientific Name | Endangered Species Act Status |
|--|-----------------------------------|-------------------------------|
| Snake River sockeye salmon | <u>Oncorhynchus nerka</u> | Endangered |
| Snake River spring/summer chinook salmon | <u>Oncorhynchus tshawytscha</u> | Threatened |
| Snake River Basin steelhead | <u>Oncorhynchus mykiss</u> | Threatened |
| bull trout | <u>Salvelinus confluentus</u> | Threatened |
| westslope cutthroat trout | <u>Oncorhynchus clarki lewisi</u> | R4 Sensitive |

Table 5 Indian Creek's TEP&S Fish Species Presence/Absence

| TEP&S Fish Species | Habitat Present | Habitat Absent | Species Presents | Species Absent |
|--|-----------------|----------------|------------------|----------------|
| Snake River sockeye salmon | | X | | X |
| Snake River spring/summer chinook salmon | X | | X | |
| Snake River Basin steelhead | X | | X | |
| bull trout | X | | X | |
| westslope cutthroat trout | X | | X | |

Stream Temperature Data

Indian Creek has stream temperature data that has been collected within the project area from 1993 to present. This stream temperature data was collected using continuous monitoring thermographs that were programmed to take readings every one to three hours. Since 1997, with new technology, all district thermographs have been standardized to take readings every two hours. The analysis of the stream temperature data, at present, supports the conclusion that stream temperature is not a limiting factor for resident and anadromous fish in Indian Creek.

Stream Core Sampling Data

Indian Creek has core sampling data within the proposed project area. Core sampling is used in trend monitoring to determine the amount of percent fines by depth within the stream's substrate. Indian Creek receives a 6-inch dig instead of a 4-inch dig because it has suitable anadromous habitat. The amount of percent fines is used in determining the stream's biotic potential, using the *Guide for Predicting Salmonid Response to Sediment Yields in the Idaho Batholith Watersheds* (Stowell, et al.1983). Biotic potential is the condition of spawning substrate quality, which maximizes survival and emergence of fish embryos.

Indian Creek, within the project area, has received core sampling from 1993 to present. The SNFLRMP anadromous goals for percent fines are <20% mean depth fines.

Table 6 Indian Creek's Core Sampling Percent Fines by Depth

| Year | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 |
|--------------|------|------|------|------|------|------|------|------|------|------|------|
| Mean % Fines | 16.6 | 15.5 | 20.6 | 20.6 | 31.6 | 14.6 | 18.8 | 23 | 14.2 | 19.5 | 11.6 |

The 1997 spike of 31.6% depth fines is linked to the approximate 700 feet of Indian Creek road washout with the 1997 spring runoff floods, which was one of the largest events on record and would be between a 50 and 100-year flood event.

Past Stream Restoration Activities

Previous stream restoration activities on Indian Creek involved three other volunteer partnership workdays. Two were with Trout Unlimited in 1994 and 1999 and one day with the Salmon Alternative School in 2000. The work in 1994 involved hand labor placing large boulders, up to 3 feet in diameter, in a random boulder pattern and in a dam forming design. There were 10 rock dam structures and 4 random boulder pattern sites that were constructed to restore spawning and rearing habitat within the same proposed project area. The work completed in 1994 was partially undone and reconfigured by the extremely high 1997 spring runoff. Those rock structures remaining after 1997 were completely removed by the very high spring runoff in 2003. In 1999 there were 4 low profile log drop structures constructed within this same proposed project area. Three of these structures remain fully functional but a log damaged one structure during the 2003 spring runoff. In 2000 volunteers from the Salmon Alternative School constructed one low profile log drop structure within this same proposed project area. This structure remains fully functional today.

Past and Present Fish Restoration Activities

A 1995 partnership with the Lemhi Model Watershed, Shoshone-Bannock Tribes, Idaho Fish and Game, Trout Unlimited, and others installed two fish egg incubation boxes on Indian Creek. One box was placed on private land, at the Indian Creek Guest Ranch, and the other on National Forest System Lands. The purpose of these fish egg incubation boxes was a pilot study to test the effectiveness of hatching salmonid eggs on stream site with the potential for naturally supplementing declining fish stocks. From 1995 through 2003 each of these two boxes were stocked with approximately 50,000 steelhead eggs, supplied from the Pahsimeroi and Sawtooth Hatcheries. Monitoring has determined that the egg incubation boxes can successfully produce steelhead fry into Indian Creek. But to date there has been no monitoring

efforts proposed or implemented which will demonstrate the egg incubation boxes effectiveness in successfully supplementing declining fish stocks.

Desired Future Condition

The DFC for aquatic habitats, as stated in the 1988 SNFLRMP page IV-89, is to manage at a level sufficient to meet State water quality goals and to maintaining habitat capabilities to meet species production goals for both resident and anadromous species. Species production goals are linked with maintaining fry survival at 60% for resident trout and 68% for anadromous species. Resident trout and anadromous species habitat will be improved in productive capacity, through reduction in sedimentation, better riparian management, and habitat enhancement.

Forest management goals stated in the SNFLRMP Chapter IV: "Forest Management Direction" includes the following for wildlife and fisheries:

- 1) Provide wildlife habitat of sufficient quantity and quality to sustain target populations of economically important management indicator species.
- 2) Provide wildlife habitat of sufficient quantity and quality to at least maintain minimum viable populations for all other management indicator species.
- 3) Manage classified threatened and endangered species habitat to maintain or enhance their current status.
- 4) Maintain aquatic habitat capability at a level sufficient to meet State water quality and species production goals for both resident and anadromous fisheries.

The SNFLRMP general objective for anadromous fish management indicator species (MIS), including chinook salmon and steelhead trout, is to rebuild adult populations to the 1960 level (SNFLRMP II-29). The SNFLRMP general objective for trout is to increase the allowable harvest and meet demand at improved catch rates (SNFLRMP II-29). General direction statements specified in the SNFLRMP for MIS species are actions, measures, or treatments for inclusion as integral components of management activities, or the environmental conditions expected to exist after such general direction actions are implemented (SNFLRMP IV-5). General direction statements for Salmon National Forest ANADROMOUS MIS SPECIES mandate maintenance of stream habitats with adequate cool and clean sediment-free spawning gravels in stream and lake habitats, channels free of migration barriers and ample instream flow and streamside cover (SNFLRMP IV-19). General direction statements for Salmon National Forest TROUT (ALL SPECIES COMBINED) MIS SPECIES mandate maintenance of stream habitats with adequate cool and clean sediment-free stream and lake habitats, ample instream flow and streamside cover (SNFLRMP IV-19). General direction statements for Salmon National Forest AQUATIC, AQUATIC MACROINVERTEBRATES MIS SPECIES mandates cool, clean stream and lake environments (SNFLRMP IV-19). To meet desired future conditions (DFCs) identified in the SNFLRMP for MIS fish species, aquatic habitats will be managed at a level sufficient to meet State water quality goals and maintain habitat capability to ensure a 68% fry survival rate for anadromous species (SNFLRMP IV-88).

To meet anadromous and resident fish streams DFCs, a diverse habitat capable of supporting viable populations of game and non-game fish and aquatic organisms is desirable so that spawning, rearing, foraging, and security is maintained or enhanced. Genetically pure strains of westslope cutthroat trout will be recovered, maintained, or increased where possible. Continuing supplies of woody debris will be available to provide sediment storage, pool creation, and cover.

Monitoring of Similar Past Stream Restoration Projects

The North Fork Ranger District and two Idaho Trout Unlimited Chapters (Upper Snake River Chapter – Idaho Falls and River of No Return Chapter – Salmon) have been using volunteer hand labor constructing: low profile log and rock drop structures, half log artificial undercut banks, log bank stabilization structures,

and anchoring rootwads within a stream channel to restore coldwater fish habitat since 1990. Over the last 13 years the district's implementation and effectiveness monitoring along with fisheries technical field reviews from the Interagency PACFISH/INFISH Implementation Review Team (Sept. 1997), the Salmon-Challis National Forest's Level I Team that includes NMFS and the USFWS (July 1999) and the USFS Region 4 Regional Office and Rocky Mountain Research Station (Aug. 1999) have recognized the long term benefits both to fish and with public information/education using this type of partnership activity in the restoration of coldwater salmonid fish habitat. Over the last 13 years the district's monitoring efforts have found strengths and weaknesses in the design, placement and construction of these low profile instream structures. Today's design, placement and construction of these instream structures include: better strength by keying the structure into the streambank, improved anchoring of the log structure with rebar to the streambed, improved upstream sealing of the log structure to prevent streambed movement under the log structure which could cause structure washout, improved downstream sealing of the log structure to prevent high stream flows from under scouring and under mining the log structure, and improved placement of the instream structure to ensure long term stability and design performance. Considering all effects to fish and fish habitat, this type of pre-spring runoff fish habitat restoration work has acceptable short-term effects, from one day to up to 2 months or post spring runoff, with long-term benefits of five, ten and even twenty years or more.

Summary: Indian Creek provides spawning and rearing habitat for resident and anadromous fish. The fish and fish habitat data collected over the years indicates the lower reaches of Indian Creek is significantly deficient in both quantity and quality of pools/100m and large woody debris/100m. Both of these habitat features play an important role in the quality and quantity of available spawning and rearing habitat. All available data indicates the need to restore the spawning and rearing habitat associated with pool quality and pool forming features such as large woody debris. The 1994 R1/R4 Stream Inventory Data was used in determining the need, type, and amount of habitat restoration activity as well as the locations where the proposed instream structures will be constructed. Monitoring of past stream restoration efforts in this reach of Indian Creek have documented steelhead using the spawning habitat created by the structures to create their redds.

Without this fisheries habitat restoration work the Indian Creek aquatic resources will continue to function below desired and optimum conditions. The stream's spawning and rearing populations of chinook salmon, rainbow/steelhead, bull trout, and westslope cutthroat trout will continue to be limited and depressed.

/s/Daniel A. Garcia

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Enclosures

Maps 1-3