

United States Department of the Interior



NATIONAL PARK SERVICE
Water Resources Division
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Response to Technical Assistance Request

To: Steve Fetting, Wildlife Biologist, Bandelier National Monument (BAND), New Mexico

Cc: Jason Lott, Superintendent; Barbara Judy, Chief of Resources

From: (Carl) Nicolas Medley, Aquatic Ecologist/Fisheries Biologist, Aquatic Systems Branch, WRD-NRPC-WASO-NPS, Fort Collins, Colorado

Re: Technical Assistance Request (TAR) 1068. Request for a review of natural recovery of native Rio Grande cutthroat trout habitat after the 2011 Las Conchas Fire

Date: November 28th, 2012

Primary Recommendations

- **BAND should consider implementing a planning process that will result in a comprehensive, long-term Fisheries Management Plan (FMP) for the fisheries and aquatic resources within the park. Specifically, the plan should address the conservation and management of native Rio Grande cutthroat trout (RGCT) populations within BAND, consistent with NPS policies regarding the protection of threatened and endangered species, management of harvested species, and visitor uses and recreational fishing**
- **Reintroduction of Rio Grande cutthroat trout should only occur when the stream has fully recovered and sufficient habitat exists to support a healthy, self-sustaining RGCT population**
- **Rio Grande chub and longnose dace (and possibly Rio Grande suckers?) should also be introduced if sufficient habitat exists**
- **Recreational fishing should only be considered when the RGCT population is fully recovered**
- **If the park decides that fishing is an appropriate use of the fisheries resource, the park should promulgate park specific fisheries/fishing regulations to adequately protect the fisheries resource from unacceptable impacts. The NRSS recommends “catch and release” fishing with strict fishing regulations**

Introduction

This TAR response provides guidance and recommendations regarding the conservation and management of Rio Grande cutthroat trout and their habitat in Bandelier National Monument (BAND). While the scope of TAR was focused on the recovery of the Rito de los Frijoles, there is little that should be done to promote fish habitat other than let the stream heal naturally with as little active management as possible. However, there are many other issues that BAND will need to consider in order to introduce, protect and manage future RGCT populations within the park. Accordingly, this TAR is somewhat broader in scope than the original TAR, but provides a summary of the technical and policy issues that the park should consider in the future, and initial NRSS recommendations on how the park might choose to proceed.

Problem Statement (From “nrpestar” website TAR 1068)

“Rito de Frijoles is a perennial stream of approximately 14-miles length, lying entirely within Bandelier National Monument and terminating at the Rio Grande. In prior years, stocking put non-native fish in the stream. The stream may not have had a fish population historically, because it originates with flows from an aquifer and includes two falls at the approach to the Rio Grande. There are no feeder streams into the Rito. Park staff deliberated in prior years about the

potential for removal of the non-native fish population and restoration of historic conditions, or alternatively providing a habitat option for Rio Grande Cutthroat trout, a species of special concern for which the New Mexico Game and Fish Dept maintains an ongoing restoration program. Earlier deliberations included NMGF as a partner and centered on that agency's commitment to poisoning, based on their judgment that electroshock removal would be ineffective. NMGF concerns for effectiveness are based on their need for 100% removal of the non-native fish to allow for restoration of Rio Grande Cutthroat trout. The park is not amenable to a poisoning regime for fish removal as a first course of action, due to a range of resource concerns. These include the presence of unstudied and potentially unique invertebrate species in the creek. The park's resource management division, however, is interested in a knowledgeable evaluation of the potential for electroshock regime for fish removal to be effective in the Rito. In 2011, the Las Conchas fire burned more than 50% of the Rito. Photographs suggest that fish have been removed from greater than 95% of the Rito's length by post-fire flash flooding. Thus, a much smaller electroshock regime may be needed to clear the Rito of non-native fish. The park's resource management division would like to evaluate a range of options regarding fish presence in the Rito **and settle on feasible a** management direction given the habitat changes produced in the wake of the Las Conchas fire."

What is [BAND] asking the NRSS to do?

"We are asking for assistance to determine whether an electroshock treatment is needed for non-native fish removal given extensive flash flooding and channel downcutting after the 2011 Las Conchas fire. If post-fire flash flooding has removed all non-native fish, we are also asking for an evaluation of macro-invertebrate data for determining when the creek has recovered sufficiently to support the reestablishment of native fish."

Objectives of the TAR

Upon initial review of the TAR by staff of the Water Resources Division (WRD) of the Natural Resource Science and Stewardship Directorate (NRSS), ((Carl) Nic Medley, Fisheries Biologist/Aquatic Ecologist), the first question that needed to be answered was whether the entire trout population in the Rito de Frijoles had been extirpated due to the effects of the fire, or whether there were some upstream sections of the river that still had habitat sufficient to hold fish. In the former case, all the issues (see TAR Problem Statement above) related to the need to remove any remaining fish become mute and the focus of future management would be the natural recovery of the stream and restoration and management of a native fish population. In the latter case, any plans to restore a native fish community become administratively and technically much more difficult because any remaining non-native trout would need to be removed, either mechanically or chemically (rotenone) before reintroduction of native Rio Grande cutthroat.

Accordingly, the NRSS response to the TAR addresses the following areas of potential concern:

1. Determination of the current status of the non-native trout population in the Rito de Frijoles
2. Considerations regarding the natural recovery of the river and the benthic macroinvertebrate community and how this may influence the schedule for future reintroduction of native RGCT
3. Future NPS policy considerations regarding management and conservation of a restored and potentially federally listed native RGCT population

Introduction

There is considerable interest from fishermen concerning the introduction of RGCT into the Rito de los Frijoles. This is not only because it represents an opportunity to catch native fish, but also because the potential federal listing may limit future opportunities to fish for the species. If there are insufficient numbers of well managed and protected RGCT populations then FWS may determine that fishing for the species should be prohibited. While the FWS will address these issues in its future listing decision (2014) the NPS may have to consider the appropriate use of the resource and balance the use with its obligation to protect a federally and state listed fish consistent with NPS policies.

1. Initial determination of the status of the historic non-native trout population: April 2012 Field Trip

The scope and magnitude of future planning and implementation activities will be greatly determined by the presence or absence of non-native trout that may remain after the fire. If a few trout may have survived, it is important to know where and how many, and to attempt to remove them as soon as possible before they have a chance to recover and repopulate the entire Rito de Frijoles. Recovery of the non-native trout population throughout the entire river will greatly complicate future conservation efforts.

The historic trout population is composed of either brown or brook trout; the two existing reports differ in their findings. However, both species are non-native, fall spawners. Therefore, if any trout have survived, it would be desirable to attempt to remove them, by whatever means are available, before they attempt to spawn in the fall.

A preliminary visual fish survey of the upper reaches of the river was conducted by NPS staff on April 17, 2012; Steve Fettig, Nic (Carl) Medley and Art Volmer (Conservation Coordinator, Truchas Chapter of Trout Unlimited, Santa Fe, New Mexico) who hiked down the North Fork of the Rito de los Frijoles from State Highway 4 on the northern boundary of the Monument, to ~1/2 mile below the confluence with the West Fork. Some areas of the upper watershed did not burn as severely as areas lower in the watershed and were thought to perhaps have some habitat that remains unimpacted by the fire and might still hold fish.

The survey confirmed this supposition. Springtime flows and habitat availability in the upper reaches of the North Fork below the road were not sufficient to hold fish and it is likely that the river dries completely later in the summer (Photo NF1). An unmapped, likely ephemeral stock pond in this reach is also highly unlikely to hold fish. Approximately 3/4 mile below the SHW 4, a waterfall creates a barrier to any upstream fish movement (NF2). Below the falls, and upstream of a small spring fed tributary, we observed a short section of river that appears to have escaped any effects of the fire (NF3, NF4). However, it also appears too small to hold fish during dry periods and none were observed. Below the confluence with the small spring fed tributary (NF5, NF6) there is evidence of higher flows and large sediment loads that have severely impacted the river (NF7, NF8) and it appears extremely unlikely that any fish could now be holding on downstream of this point, although it is possible that prior to the fire, sufficient habitat did exist. Similarly, there appears to be no remaining fish habitat in the West Fork or in the mainstem of the Rito de los Frijoles below the confluence of the North and West Fork (RF2, RF3), and no fish were observed.

Electrofishing surveys conducted by New Mexico Department of Game and Fish (NMGF) between April 16- 18, 2012 also failed to find any fish in the West Fork or in the mainstem of the RF a mile downstream of the confluence of the two forks. Surveys conducted from the park headquarters, upstream to the turnoff for the trail leading to the Ponderosa Campground also failed to find any fish (RF4, RF5, RF6, RF7).

At this time, the available information appears to indicate that the fire has caused the complete extirpation of the non-native trout population in Rito de los Frijoles and that active removal as a prerequisite for reintroduction of native Rio Grande cutthroat, will not be necessary. However, not finding a fish is not proof that they are not there. Additional surveys will need to be conducted in forthcoming years to confirm these initial findings. If fish should be found, the park will need to work with NMGF to attempt to remove as many fish as soon as possible by mechanical (electrofishing) means. Since it is unlikely that mechanical removal can remove all fish that may be present, at the same time, the park should initiate an effort to start the administrative process to implement a chemical removal as soon as possible. With the stream in a degraded condition and with few fish present, there will never be a better opportunity to treat the river within BAND.

2. Recovery of the river and macroinvertebrate community

With the reduction and loss of vegetation in the watershed due to Las Conchas Fire, the channel of the Rito de los Frijoles has undergone considerable adjustment in response to changes in hydrology and sediment regime. The rate of recovery of the channel is uncertain, but it will take many years (5-10?) for the geomorphic regime to recover sufficiently to create and maintain fish habitat necessary to support a self-sustaining fish population.

The reintroduction of RGCT should not be based on an inflexible schedule driven by administrative concerns, but should be based upon an adaptive management approach informed by the quantitative assessment of factors important to sustain the fish community; pool to riffle ratios, pool availability, pool depth, substrate quality, food abundance, water quality. An experienced fisheries biologist should also be able to make a reasonable assessment based upon a professional experience but quantitative data is always preferable if available.

The abundance and diversity of the macroinvertebrate community and the abundance of functional feeding groups may be used as good indicators of many of these factors. Specifically, the recovery of the community to a pre-defined level of its pre-fire condition (e.g. 75 % total abundance) may be used as one of a suite of indicators to suggest when the RGCT may be reintroduced. Regular monitoring will be required to assess macroinvertebrate recovery, but it is unlikely that it will fully recover for many years. **The park must decide how much recovery is necessary before fish are introduced and which indices and criteria will be used to evaluate it.**

3. Fish Restoration and Management Considerations

The following is a summary of the major NPS policies that relate to the protection and management of fish and fishing. It is provided as background information so that the reader will clearly understand the responsibilities, obligations and authorities of the NPS when managing fisheries resources within parks. The actual policies may be found at:

<http://www.nps.gov/policy/MP2006.pdf>

General policies for the management of fish and fishing

Recreational fishing and the harvest of fish and shellfish are activities that support the fundamental purpose of providing for the enjoyment of national parks. Although these activities are allowed, the National Park Service is statutorily required to ensure they are regulated in a manner that leaves target native species and interrelated biological resources unimpaired for future generations. If it is determined that the activity is in conflict with the fundamental purpose of conservation, managers are obligated to restrict or even prohibit the activity to resolve this conflict. When there is a conflict between the conservation of fish or interrelated resources and fishing and / or harvest, conservation is to be predominant (MP 1.4.3).

Fishing has been an allowed activity in National Parks since before the National Park Service (NPS) was established by the Organic Act of 1916. Harvest of fish (including shellfish) is the only consumptive use of NPS resources allowed by general regulation. Current NPS fishing regulations (36 CFR§2.3 and park-specific regulations), NPS Management Policies (MP 2006), and this Directors Order are intended to prevent fishing from causing unacceptable impacts leading to impairment.

36CFR§2.3 establishes the general fishing regulations that apply to all parks. Fishing, and the harvest of fish (any member of the subclasses Agnatha, Chondrichthyes, or Osteichthyes, and any mollusks or crustacean found in saltwater) in units of the National Park System shall be conducted in accordance with the laws and regulations of the State within whose exterior boundary a park or portion of the park is located, except in designated areas where special park regulations apply (36 CFR§7, Superintendents Compendium), or as otherwise provided in 36CFR§2.3. State regulations that do not conflict with 36CFR§2.3 or with any special park regulations for the NPS unit in question are adopted as part of §2.3. The NPS is responsible for enforcing the provisions of §2.3, including adopted state regulations, as well as any special regulations that apply to all or part of an NPS unit. Where there is a conflict between a state and federal regulation the state regulation is superseded and the federal regulation applies.

Although states have overlapping regulatory authority in NPS units with concurrent or proprietary jurisdiction, the NPS still has the primary responsibility to ensure that fishing is managed consistent with NPS statute, regulation and policy, and does not result in unacceptable impacts to either: (1) native fish species for which fishing and / or harvest are allowed; or (2) interdependent native aquatic and terrestrial resources. Thus NPS managers are responsible for ensuring that the regulations governing fishing and the harvest of fish are adequate to preserve the ecosystem roles of native fish species. Where it is determined that the provisions of 36CFR §2.3 and adopted state regulations are not sufficiently protective, NPS managers may need to promulgate special regulations for all or some portion of an NPS unit in accordance with 36CFR §1.5

Recreational Fishing

Recreational fishing is allowed only when it is authorized, or not specifically prohibited by federal law (36CFR§2.3(a)), provided that it has been determined to be an appropriate visitor use (MP 1.5, 8.1, 8.2, 8.2.2.5); that the monitoring requirements have been met (MP 8.1.2), and; the activity does not lead to unacceptable impacts (MP 1.4.7). Recreational fishing always has some degree of impact on park fisheries resources, either through disturbance, allowable harvest or unintentional hooking injury and mortality. When fishing is allowed, it will be conducted in accordance with applicable federal laws and treaty rights, and non-conflicting state laws and regulations (MP 8.2.2.5).

Visitor Carrying Capacity and Thresholds for Unacceptable Impacts

Superintendents must identify visitor carrying capacities for the use and harvest of fisheries within their unit boundaries to prevent unacceptable impacts. Decisions about carrying capacity should be based on indicators and standards that define an acceptable level of visitor use that protects the desired resource conditions and visitor experiences. Allowable carrying capacities must be consistent with maintaining the desired condition for target species and interdependent resources and must provide for a quality experience for both fishermen and other park visitor uses (fish viewing).

Harvest of Fish

The harvest of designated fish and shellfish may be allowed where (1) recreational fishing is not specifically prohibited; (2) commercial fishing is specifically authorized by statute or regulation; (3) subsistence use, or other harvesting is specifically authorized by statute, treaty or regulation and not subsequently prohibited by regulation. However, where the harvest of fish and shellfish is subject to NPS control, it may only be allowed when monitoring is conducted in accordance with MP 4.4.2 and when the Park has determined that harvest will not cause unacceptable impacts to park resources or natural processes.

Obligation to Monitor

Fishing, like all park uses must be continually monitored and evaluated to ensure that it does not cause unanticipated and unacceptable impacts. Where the harvesting of fish and /or shellfish is allowed, monitoring must provide sufficient information for the Service to determine that the criteria in MP 4.4.2.1 are being met and, specifically, to determine whether harvest is unacceptably impacting park resources or natural processes, including the natural distributions, densities, age-class distributions or behaviors of harvested species, native species that the harvested species use for any purpose, or native species that use the harvested species for any purpose.

Special Fishing Regulations (36CFR7 and SC)

Parks should annually review all park fishing regulations (NPS general fishing regulations, including adopted state regulations, (36CFR§2.3) park specific regulations (36CFR§7 and Superintendents Compendium) to ensure they are adequate to avoid unacceptable impacts to park fish resources. In general, park specific fishing regulations should be at least as protective as the applicable state fishing regulations and the NPS general fishing regulations. Where it is determined that unacceptable impacts are occurring superintendents may establish special regulations that impose conditions or restrictions on fishing activities and close all or a portion of a park to fishing and / or harvest as described by 36CFR§1.5.

Cooperation with States and Others

Although Parks have the primary responsibility for the protection of the native fish and aquatic ecosystems within their boundaries, Departmental policy calls on the NPS to consult with state agencies on certain fish management actions, and encourages the execution of MOU's as appropriate to ensure the conduct of programs that meet mutual objectives, as long as they do not conflict with federal law or regulation (43CFR§, MP 4.4.2). Before the NPS issues rules and regulations or other restrictions on fishing, it will consult with appropriate tribes and state and federal agencies, consistent with 36CFR§1.5 and §2.3.

Management of Native Fisheries

The NPS will maintain as parts of the natural ecosystems of parks, all fishes and other aquatic species native to park ecosystems by (1) preserving and restoring the natural abundances, diversities, dynamics, distributions, habitats and behaviors of native fish populations and the communities and ecosystems where they occur; and (2) minimizing human impacts on native fish populations, communities and ecosystems, and the processes that sustain them (MP 4.4.1.) Parks may intervene to manage individuals or populations of native fishes only when such intervention will not cause unacceptable impacts to the fish species or interrelated components and processes of the ecosystems that support them (MP 4.4.2)). Parks will strive to protect the full range of genetic types of native fish populations by perpetuating natural evolutionary processes and minimizing human interference (e.g. fishing and harvest) with evolving genetic diversity (MP 4.4.1.2).

Management of Non-Native (Exotic) Fisheries

Exotic fish species will not be allowed to displace native fish or other aquatic native species, if displacement can be prevented (MP 4.4.4). In general, new exotic species will not be introduced into parks. In rare situations, an exotic species may be introduced or maintained to meet specific, identified management needs when all feasible and prudent measures to minimize the risk of harm have been taken and the criteria in MP 4.4.4.1 have been met. All exotic fish species that are not maintained to meet and identified park purpose will be managed – up to and including eradication- if control is prudent and feasible, and one of the criteria in MP 4.4.4.2 is met. The NPS will manage fishing activities (MP 8.2.2.5) and may encourage the intensive harvesting of exotic fish species in certain situations when needed to meet park management objectives (MP 4.4.3).

Use of Live Bait

NPS general fishing regulations prohibit the use of live or dead bait fish, amphibians and non-preserved fish eggs in park waters, except in designated waters that meet the criteria in 36CFR(d)(2). Parks should review, and when necessary promulgate park specific bait fishing regulations, to ensure that that living, reproducing individuals of any non-native bait species, (including but not limited to fish, amphibians, worms, mollusks, crustaceans) are not introduced into park waters, consistent with 36CFR2.1(a)(2).

Specific fisheries issues relevant to Bandelier National Monument and NRSS initial recommendations

Which fish species should be reintroduced?

Historically, there were probably no natural fish populations in the Rito de los Frijoles due to the presence of the waterfall barrier in the lower reaches. This would have prevented the initial colonization and the recolonization of fish from the Rio Grande after historic fires.

However, some evidence suggests that Indian populations that historically occupied the canyon introduced fish into the Rito de los Frijoles as a food supply. Accordingly the park has made the decision to introduce RGCT because they were thought to be culturally important to the area and the need to create additional populations of the fish because they are increasingly at risk in their native range.

Rio Grande chub, longnose dace and perhaps Rio Grande suckers may be found in the presence of RGCT and it has been suggested that the fish should be reintroduced as a community when appropriate. The NRSS recommends that this approach at least be tried. It is possible that not all the fish species will persist; for example there may not be sufficient habitat for Rio Grande sucker or chub, but the potential long term conservation advantages may outweigh the risk that the introduced fish would not persist.

When should fish be reintroduced?

Fish should only be reintroduced when the habitat is sufficient to create self-sustaining populations of fishes in the river (see above)

Where will fish come from and will the Rito de los Frijoles population, and other park fish populations be managed as part of a larger RGCT conservation effort within the park?

Reintroduced fish may be derived from a single important conservation population of RGCT from a nearby stream, or may be taken from a range of natural RGCT populations from several nearby streams. The NRSS does not have a specific recommendation on which fish populations should be used, only that we recommend that wild fish, or eggs derived from wild fish from Rio Grande drainages of the Jemez Mountains above Cochiti Reservoir be used as the source of fish for the Rito de los Frijoles.

Similarly there are other streams within the park that had, or still have introduced or native populations of RGCT that may be managed to create replicates of other RGCT conservation populations. However, all are at risk of extirpation from the effects of future fires. Which native RGCT populations should be replicated, where they may be reintroduced in the park, how they might be managed, and what management actions would be implemented in the event of future fire related extirpations should be addressed in a Fisheries Management Plan. Accordingly, the NRSS recommends that before fish are reintroduced into Bandelier National Monument, the Park, in cooperation with US Fish and Wildlife Service (FWS), New Mexico Game and Fish, U. S. Forest Service and other potential partners, develop a long-term Fisheries Management Plan for the introduction and management of RGCT, Rio Grande chub, Rio Grande sucker and longnose dace populations within the park.

What should be considered in the management of the RGCT population?

Federal Listing Status of RGCT

The Rio Grande cutthroat trout is a candidate species under the federal Endangered Species Act (ESA 1973). Candidate species are plants and animals for which the U.S. Fish and Wildlife Service (FWS) has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities. On July 12, 2011, the Center for Biological Diversity and the FWS agreed to a legal settlement requiring the agency to make initial or final decisions on whether to add hundreds of imperiled plants and animals to the endangered species list by 2018, including the RGCT. Under this agreement, the FWS is required to make a final decision on the listing of the RGCT by 2014. While the final outcome is unknown, it is likely that unless significant progress is made to conserve the species, there is a high likelihood that the species will become listed at that time. This means that federal agencies will have an obligation to protect and conserve populations of RGCT within BAND.

Should fishing be allowed?

If RGCT become listed under ESA, the allowance of fishing will then be a federal FWS decision, that will be made at the time of listing. In certain circumstances the general prohibition of take under ESA may be relaxed under the authority of the 4(d) rule, as long as it is allowed consistent with an approved program, such as a state or federal recovery or conservation plan. Often the 4(d) rules allow some regulated fishing because it is seen as a tool to foster conservation through the involvement of fishermen whose interest can promote conservation goals.

While fishing may be allowed under section 4(d), and by general regulation in National Parks, it is not a question on which BAND will have to make a final decision for at least a decade. Not only has the river to recover sufficiently to provide adequate habitat, but once fish are reintroduced, they need to be given enough protection for the fish to reproduce and to grow so that they may establish a population, characterized by natural abundances, size and age class structure, and genetics.

Only when reintroduced fish populations have fully established should fishing be considered. However, the park must decide to what extent fishing should be allowed and how it may be regulated to adequately protect the fishery per NPS policies. Again, the NRSS recommends that these issues be addressed during a comprehensive planning effort resulting in a fisheries/aquatic resource management plan for the park. The following issues/questions should be addressed;

- Is it appropriate to fish for a federally listed fish species within a national park?
- How will the park ensure that other appropriate uses of the fisheries resource, such as fish viewing, be protected and that conflicts between visitor uses be managed?
- If fishing is allowed, what is the appropriate threshold for an unacceptable impact to the resource. How will the park ensure that it meets the monitoring requirement to evaluate the impact of fishing on the resource?
- Is harvest of a federally listed fish appropriate in national park? If harvest is allowed, how will the park ensure that it meets the monitoring requirement to evaluate the impact of harvest on the resource?
- If fishing is allowed, what regulations need to be in place to protect the fishery resource?
- Should there be limits on the use of the resource to limit impacts to the fishery and streamside damage?

“Catch and release” fishing

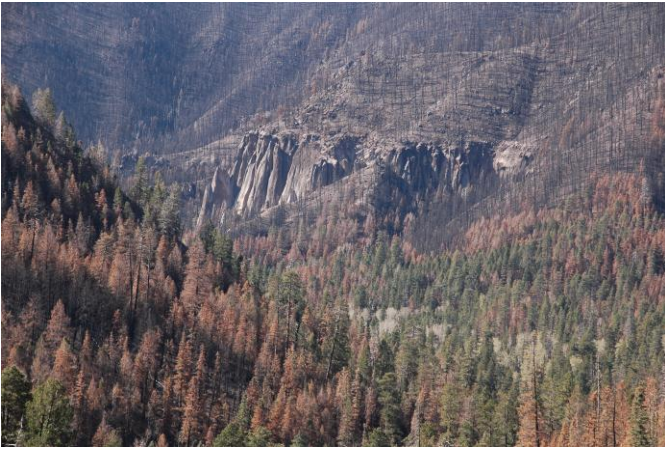
The NRSS recommends that if the park determines that fishing is an appropriate use in its streams, the park should implement a general “catch and release” fishing regulation, with strict regulations addressing fishing methods and tackle restrictions to limit hooking mortality and injury. This would be easy to enforce and would also avoid the monitoring and enforcement issues related to harvest that may be administratively difficult for the park. The NRSS also recommends that there should be areas within each canyon where fishing is prohibited so that there is a section of river that represents a pristine, unimpaired fishery. This is not just to protect the general health of the fishery and to protect other visitor uses, but it may be used as a reference reach to better assess the impacts of fishing on the fishery. For example, as an initial recommendation for the Rito de los Frijoles the NRSS recommends the following;

- Catch and release fishing downstream of the visitor center
- No fishing in the river within the heavily visited section by the ruins
- Catch and release fishing from the upstream end of the ruins trail up to the Ponderosa Campground trail junction
- No fishing above the Ponderosa Campground trail junction
- Fly-fishing only with single barbless hooks
- Only two fishermen per day, one in each fishing section
- Spawning season restrictions during the spring and early summer to protect spawning fish and redds (fish nests with eggs). For example, fishing might only occur between July 1st and October 31st

Depending upon park natural resource management goals, the potential intensity of visitor use and the potential for fishing impacts to fish populations, similar regulations should be considered for all streams within BAND.

Need for Park Specific Regulations

The NRSS recommends that subsequent to the planning process and the development of fishing regulations, the park promulgate park specific regulations in the Code of Federal Regulations, consistent with the authority of 36CFR1.5



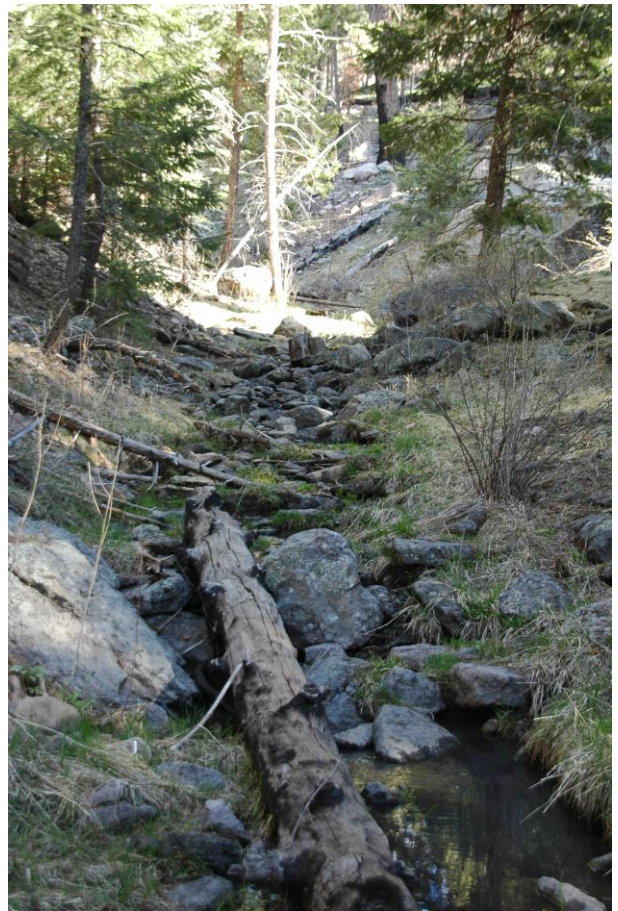
RF 1. View of upper watershed of Rito de los Frijoles from a rock outcrop above waterfall on North Fork



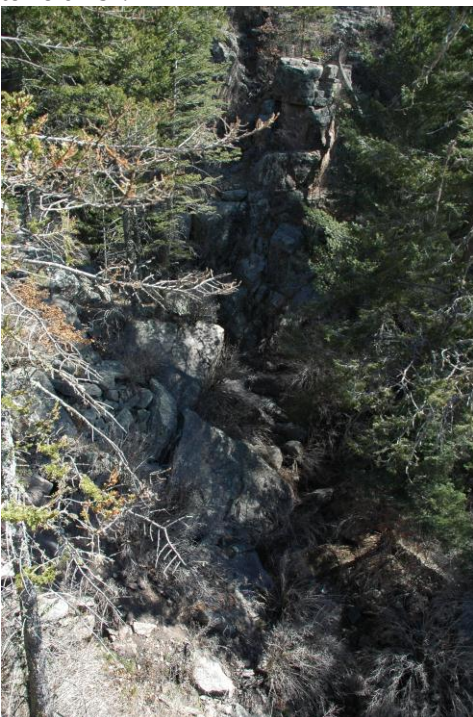
NF3. Stream habitat in NF a short distance below NF barrier waterfall



NF1. Upper reaches of North Fork of Rito de los Frijoles above waterfall barrier. Habitat in this reach is not sufficient to hold fish.



NF4. Stream habitat a short distance below waterfall barrier on the North Fork of RF where habitat is largely unaffected by the las Conchas Fire. However, it is unlikely that flows are sufficient in dry years to provide sufficient habitat to support a fish population. No fish were observed in this reach during the April 2012 field visit.



NF2. Waterfall barrier on North Fork of RdIF



NF5. Spring area of NF that supplies the majority of the flows in an unmapped tributary entering the NF on river right below the waterfall barrier



NF6. Unmapped spring-fed tributary of NF entering on river right that supplies the majority of the flows of the lower NF below the waterfall barrier

NF7. Reach of NF below unmapped tributary showing impact of Las Conchas Fire on stream habitat. Compare to NF 4 that was a short distance upstream.



NF8. Another photograph of NF below unmapped tributary showing adjustments in stream channel in response to changes in hydrology and sediment regime after the Las Conchas Fire



RdlF. Mainstem of RdlF a short distance below confluence of NF and West Fork



RdlF. Mainstem of RdlF upstream of park headquarters



RdlF. Mainstem of RdlF a short distance below confluence of NF and WF



RdlF. NMGF conducting initial electroshocking survey upstream of the park headquarters.



RdlF. Mainstem of RdlF upstream of park headquarters



RdlF. Mainstem of RdlF immediately adjacent to park headquarters showing effects of high flows and sediment on fish habitat



RdlF. Rito de los Frijoles prior to the Las Conchas Fire