



TU Chapter 582
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Executive Summary

1) The Silver and Prospect Lakes YCT Restoration Project is submitted by Magic City Fly Fishers (Chapter 582), in support of and in partnership with Montana Fish, Wildlife and Parks (FWP). This project would be accomplished cooperatively utilizing resources contributed by the FWP, Gallatin National Forest, Magic City Fly Fishers, and the Back Country Horsemen. The total project cost is estimated at \$23,358.32. Approximately \$21,358.32 is provided by matching contributions from various sources, including TU volunteer labor from the chapter. \$1,750 has been approved from the Montana Trout Unlimited Mini-Grant program, along with a \$250 chapter contribution, both to be applied as part of the matching funds portion for an EAS grant of an additional \$2,000.

2) The purpose of this project is to replace the existing rainbow trout fisheries in Silver and Prospect Lakes with Yellowstone Cutthroat Trout (YCT). Silver and Prospect Lakes are located at the head of Four Mile Creek (T5S R11E Sec 34, 27), the largest tributary to the Boulder River, which is a major tributary of the Yellowstone River. Both lakes are also located within the Absaroka-Beartooth Wilderness Area, approximately 40 miles south of Big Timber, MT. The eventual goal of this project will be to replace the rainbow trout fishery in the Four Mile Creek drainage with YCT. This grant will support the first phase of the overall project, which involves removal of rainbow trout from Silver and Prospect Lakes at the head of the drainage and replacement with YCT.

3) This project helps achieve the goals listed in the "Cooperative Agreement for Yellowstone Cutthroat Trout within Montana" of which Trout Unlimited is a signatory. The social benefit of this effort will be the preservation of this unique and rare fish species and population, allowing future generations of citizens to enjoy this native fish species in its natural habitat. This project is ideal for the participation of Magic City Fly Fishers as a cooperative partner, and it clearly meets the guidelines for EAS funding as it involves the protection and restoration of important trout habitat.

Background

1) Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*) once inhabited most of the streams in the Yellowstone River drainage. A survey of streams within the Yellowstone River basin has revealed 38 populations, of which 35 were deemed threatened (USDA Forest Service et al. 1998). The distribution of these populations is in approximately 428 stream miles, representing about 10% of the estimated historic stream habitat of 4,260 miles (FWP et al. 2000). The current plight of the YCT is due to loss of habitat, competition from non-native species, hybridization with non-native species, predation by non-native species, and over-harvest by anglers. Many of the identified riverine populations of YCT in Montana are found within or near the boundaries of the Custer and Gallatin National Forests. According to Montana fish stocking records, 31 of the 38 streams/watersheds identified with YCT have also been stocked with one of the following species: rainbow trout, brook trout, brown trout, YCT, or other unidentified trout. Many of the YCT populations that exist in this area are isolated remnants of original populations that have survived above barriers to fish migration or are populations resulting from stocking above natural and man-made barriers.

2) Of the several YCT populations in the Boulder River drainage, the most abundant and secure from the threats of competition and hybridization resides in Pacer Basin (East Boulder River). The main Boulder River downstream of Natural Bridge Falls and the West Boulder River contain only a few cutthroats. The species assemblage in these areas is dominated by brown and rainbow trout. Non-native trout species compete for food and space with native trout, but the more immediate threat is hybridization between the two species. Immediately upstream of Natural Bridge Falls cutthroat are also rare, but their abundance increases farther upstream. In the vicinity of Four Mile Creek, cutthroats are more abundant than rainbow trout. Genetic testing of cutthroat trout upstream of Four Mile Creek suggests that YCT in the main stem river are hybridized with Westslope cutthroat trout and rainbow trout. Tributaries to the main Boulder upstream of Natural Bridge Falls that harbor cutthroat populations include Hawley Creek, Meatrack Creek, Bridge Creek, Upside Down Creek, and East Fork Boulder River. Past genetic testing from Hawley Creek and East Fork Boulder River (upstream of the confluence of Rainbow Creek) has suggested these populations are pure YCT. An extensive survey of the tributaries to the Boulder River conducted during 2003 suggested that Four Mile Creek has one of the most abundant fish populations and is likely a significant source of fish to the main Boulder River. Rainbow trout, cutthroat trout and hybrids were present in the lower reaches of the creek near the confluence with the Boulder River. If the Four Mile Creek drainage fishery is converted to YCT, it will continue to serve as a major source of fish to the main Boulder River; however, these fish will be pure YCT.

3) YCT are a part of Montana's heritage, and are a symbol for one of the nation's most famous parks. Catching a native trout is still one of the values that Montana has to offer its residents and visitors. Due to their current status in Montana, YCT are managed for "catch and release" fishing in most streams where they are present. A "Cooperative Conservation Agreement for Yellowstone Cutthroat Trout within Montana" drafted in 1999 has the goal to: "Ensure the persistence of the Yellowstone cutthroat trout subspecies within the historic range in Montana at levels and under conditions that provide for protection and maintenance of both intrinsic and recreational values associated with this fish."

4) The TU National Conservation Agenda (NCA) identifies native salmonid conservation, protection and restoration projects as tier 1 issues, having immediate and final impacts, and of the utmost urgency in terms of prioritization for action by TU. By preserving and restoring a native YCT population in its native habitat, this project clearly meets the criteria of this classification and merits funding through the EAS grant program. This project is also consistent with the values expressed in the TU 2003-2008 Five Year Strategic Plan. At a relatively modest cost, it provides an excellent opportunity for the local chapter to partner with other agencies to have a significant impact on the restoration and preservation of a native fish species and habitat. The location of this project is in the "heartland" of blue ribbon trout fishing waters in America. It is anticipated that a project that involves a native fish species such as YCT, will undoubtedly create a great deal of public interest, thereby generating favorable publicity in our local area, which will have a potential positive impact on membership and revenue at both the local and national level.

Proposal Goals and Objectives

1) The US Fish and Wildlife Service (USFWS) was petitioned to list the YCT as threatened in August of 1998 under the Endangered Species Act (ESA). The recovery efforts currently being conducted in Montana, Wyoming, and Idaho resulted in a rejection of this petition. Had the YCT been listed local management options would have given way to federal management of the recovery. On January 13, 2004, conservation groups initiated a lawsuit against the U.S. Fish and Wildlife Service for illegally denying listing of the Yellowstone cutthroat trout as a threatened or endangered species under the ESA in 2001. The USFWS ruled again in 2005 that listing was not warranted for Yellowstone cutthroat trout, but litigation continues. This project will produce a resident native YCT population in two wilderness lakes that currently have non-native rainbow trout populations. Recent data suggests that YCT will grow as well or better than the resident rainbow trout in Silver Lake, producing a quality recreational fishery in addition to achieving long-term cutthroat conservation goals. This project would be conducted in two phases: Phase 1 would involve mechanically removing rainbow trout from Silver and Prospect lakes and inhibiting natural reproduction, while also attempting to "swamp out" the rainbow population through the stocking of YCT into the lakes. Phase 2 would involve chemically removing rainbow trout from Four Mile Creek and hybrid fish from lower Meatrack Creek. This document will cover only Phase 1 of the project. A separate environmental assessment will be prepared by FWP for Phase 2 once additional data is collected from Four Mile and Meatrack creeks. If Phase 1 and Phase 2 of the project are completed, the Meatrack Creek population of cutthroats will be protected from hybridization, and a new resident YCT fishery will be created in Four Mile Creek, Prospect Lake, and Silver Lake.

Four Mile Creek will serve as a source of pure YCT to the Boulder River and will increase the frequency of cutthroat genes in the main stem river population.

2) The goal of this project is to replace the rainbow trout population in Four Mile Creek drainage, beginning at Silver and Prospect lakes, with YCT. The proposed action is expected to result in an increase in native YCT and a decrease in non-native rainbow trout (both are considered game fish in Montana). The loss of rainbow trout from Silver and Prospect lakes is considered only a minor impact because the fisheries will be replaced with a YCT fishery. Further, many rainbow trout will remain in the nearby Boulder River and lakes of the Lake Plateau located between the Stillwater and Boulder River drainages. The project will increase YCT distribution, a unique and potentially endangered species with limited distribution in the Yellowstone River basin. The increase in YCT associated with this project will help ensure their long-term existence in Four Mile Creek and the Boulder River.

3) This project will produce a resident native YCT population in two wilderness lakes that currently have non-native rainbow trout populations. Recent data suggests that YCT will grow as well or better than the resident rainbow trout in Silver Lake, producing a quality recreational fishery in addition to achieving long-term cutthroat conservation goals. If Phase 1 and Phase 2 of the project are completed, the Meatrack Creek population of cutthroats will be protected from hybridization, and a new resident YCT fishery will be created in Four Mile Creek, Prospect Lake, and Silver Lake. Four Mile Creek will serve as a source of pure YCT to the Boulder River and will increase the frequency of cutthroat genes in the main stem river population. This project will help achieve the goals and objectives listed in the "Cooperative Conservation Agreement for Yellowstone Cutthroat Trout within Montana" both statewide and locally. There is also a significant social benefit of this effort that will preserve a unique and rare fish species and population, and allow future generations to use and enjoy this native fish species in its natural habitat.

4) In addition to the conservation objectives highlighted above, this project allows provides an excellent opportunity for the local chapter and the TU name to be tied to a significant conservation effort with a potential impact extending well beyond the local area and region. This is the first time that the chapter has applied for an EAS grant and if approved, it will serve to strengthen the bond between Trout Unlimited and the local chapter. It is anticipated that there will be local and regional media interest, and part of the chapter's involvement will be to help generate public awareness and interest in the conservation efforts of TU at the local level. Specifically, this project accomplishes the following goals of the Five-Year Strategic Plan; 1) strengthening TU's leadership in coldwater conservation regionally and locally through preserving and restoring a native fish species; 2) integrating and enhancing the development of the TU team by providing an opportunity to develop leadership in the field of conservation at the local chapter level while partnering with state and federal agencies; 3) increase public awareness of TU and its mission through favorable media coverage of a significant local and regional conservation activity; and 4) increase and motivate an effective membership by getting behind and actively participating in a well organized project with a long lasting impact.

Work Plan

1) Four Mile Creek is a tributary to the upper Boulder River, and its watershed is located almost entirely within the A-B Wilderness. Four Mile Creek supports a self-sustaining population of rainbow trout. Meatrack Creek is a tributary to Four Mile Creek and harbors a 99% pure population of YCT, the most highly productive and largest self-sustaining population in the upper Boulder River. There is no barrier keeping rainbow trout from moving into Meatrack Creek and hybridizing with YCT; however, the high gradient of the creeks near their confluence has retarded rainbow movement upstream. Approximately 1 mile upstream from the Four Mile-Meatrack confluence, Meatrack Creek runs through a series of large meadows with excellent aquatic and riparian habitat. Within this section of creek, the YCT population is most abundant (2,100 fish/mile). Genetic data collected in 2003 from the meadows section of the creek suggest that rainbow trout are now invading this population and hybridizing with the cutthroats. Although the current contribution of rainbow genes to the population is low (1%), the genetic analysis indicates that the hybridization has occurred recently, suggesting a recent invasion of rainbows. More recent survey data from 2005 suggest that hybridized fish are becoming abundant in the lower meadows down to the confluence with Four Mile Creek. The high productivity of the YCT population in Meatrack Creek and the hybridization threat from rainbow trout have prompted FWP, in cooperation with the Gallatin National Forest (GNF), to propose a YCT restoration and enhancement project in the Four Mile Creek drainage.

2) Silver Lake (9,043 ft), situated at the head of Four Mile Creek, also has a self-sustaining population of rainbow trout. Patient and Prospect lakes are located upstream of Silver Lake. Prospect Lake has historically

contained rainbow trout, and surveys conducted during 2005 suggest the lake still contains a trout population. Patient Lake has historically been fishless, and surveys conducted during 2005 indicate the lake is still fishless. There are no management changes proposed for Patient Lake. Barrier waterfalls present below both Prospect and Silver lakes prevent fish from Four Mile Creek from migrating into the lakes. Silver Lake has a surface area of 10.0 acres with a maximum depth of 30 ft. Due to the lack of spawning habitat, it is likely that most of the reproduction in Silver Lake is occurring in the inlet area and inlet stream. Prospect Lake (6.8 acres) has a maximum depth of 36 ft. The reproduction in this lake likely occurs in the outlet stream.

3) Mechanical removal would consist of intensively gill netting Silver and Prospect lakes immediately prior to and several weeks after spawning. Spring-spawning trout in the A-B high mountain lakes usually spawn within 2 weeks of ice-out. It is anticipated that gill nets would be initially set in late June or early July depending on snow pack and ice conditions at the lakes. Ice conditions would be checked from the air using a helicopter. Four to 8 nets would be set in each lake over a period of 3-5 days. The lakes would be netted for a second time for 3-5 days in August. During these times, gill nets would be set with the aid of a pontoon raft. Captured fish would be disposed of by sinking the carcasses in the deepest portions of the lakes (30 feet in both lakes) using the raft. In addition to gill nets, temporary block nets would be installed in the inlets and outlets, and around any spawning areas in the lakes in late June or early July. The purpose of these nets is to prevent fish from reaching spawning habitat. Unlike the gill nets that would be removed after each week of netting, the block nets would be left in the lakes until spawning time has passed (3-6 weeks). Block nets would be initially set in June or July and removed in August. Depending on the accessibility of the lakes in early spring, block nets may also be set in the fall and remain in the lake under the ice during the winter and spring. During the first year of the project, sinking gill nets may also be fished all winter under the ice. No motorized equipment would be used for this project. If spawning can be eliminated in the lakes, and if netting is successful, it is anticipated that mechanical removal will take 3-6 years to complete. Removal will be considered complete when no rainbow trout are captured during netting.

4) Equipment necessary for Phase 1 of the project would be packed into Silver and Prospect Lakes via horse/mule pack train and helicopter landing on private land (a private in-holding within the Wilderness boundary) near Prospect Lake. The local Backcountry Horsemen group has volunteered the time and animals to pack the equipment into the lakes and back out once the project is completed. The crews performing the netting and packing would practice minimum-impact camping techniques and would comply with all food storage orders to reduce wilderness impacts. An overnight camp for livestock would be established at a meadow approximately 1 mile downstream from Silver Lake, or at another campsite, but not at Silver Lake. A secondary camp may be established near Silver Lake for a crew of 2-6 people setting and pulling nets. Equipment going to Prospect Lake will be carried by hand from the landing location on private land to the lake. Gill nets, a raft and other equipment from Silver Lake (except block nets, which will stay in the lakes) will be packed out between the first and second gill nettings. Gill nets at Prospect Lake will be cached on private land. All equipment from Silver Lake will be packed out at the end of each field season. Equipment from Prospect Lake will be cached over the winter on private land.

5) Swamping would consist of intensively stocking both lakes annually with genetically pure YCT from the Yellowstone River Trout Hatchery in Big Timber. Initial stockings of YCT in Silver Lake began in 1997 and occurred again during 2001. Survey data collected during 2005 indicated that YCT from the 2001 plant have survived and grown well in the lake. Other studies in Montana have shown that cutthroat trout stocked into lakes with rainbow trout or hybridized fish can be successful at surviving and competing. The stocking frequency of YCT will be increased to an annual plant, and the numbers of fish increased from 100 to 200-400/acre in Silver Lake (2,000-4000 fish). Prospect Lake, which has not been stocked with YCT, will also be stocked annually with 200-400 fish/acre (1,200-2,400 fish). Stocking usually occurs in late July or August using a helicopter. Stocking of YCT into the lakes would begin after the second year of the project to reduce gillnet mortality of stocked cutthroat trout. To distinguish stocked trout from wild trout, the adipose fin would be clipped on all YCT stocked into the lakes. All fish captured in gillnetting after the second year with an adipose fin would be removed, so that wild fish that are potentially hybrids and/or pure rainbows can be readily distinguished from pure YCT from the Big Timber Hatchery. All live fish captured with a clipped adipose will be released back into the lakes. By stocking the lakes each year with YCT at a high rate, and releasing all known YCT captured in gill nets, Silver and Prospect lakes would continue to provide a recreational fishery for cutthroat trout for backcountry visitors during the rainbow trout removal.

6) To inform the public, and in particular persons recreating near Four Mile Creek, signs will be prepared in cooperation with the GNF and placed at the Four Mile trailhead. These signs would briefly describe the objectives of the project, why it is important, and the techniques being used to accomplish the objectives. Further, the crews that perform the block- and gill-netting would make an extra effort to inform visitors about the project and its purpose. The Backcountry Horsemen have also offered to provide netting hosts who would stay in the area in the

interim between initial block net installation and removal to watch over the nets and inform any visitors about the project. All nets set in the lakes would be marked with small tags with an FWP emblem.

7) It is unclear if there is a self-sustaining population of rainbow trout in the creek between Prospect and Silver lakes. The creek will be surveyed during the summer of 2006 using backpack electro fishing. Captured trout will be removed. If it is determined that there is a self-sustaining population of trout in this reach of stream, and that electro fishing is not sufficient to remove it, a chemical treatment would be applied to the stream each year during the netting of the lakes to remove resident fish. A review of potential piscicide treatment between the lakes will not be included in this document, but will be covered in Phase 2 of the project. Phase 2 of the project would involve chemically treating Four Mile Creek, lower Meatrack Creek and potentially the stream between Prospect and Silver lakes where rainbow trout and hybridized fish are present. The treatment of Four Mile and Meatrack Creeks would not be conducted until no rainbows are captured in Silver and Prospect lakes and the stocked YCT populations are established. The need for additional information about Four Mile Creek, such as the extent of fish passage from the main Boulder and the current genetic status of the Meatrack Creek population of cutthroat, precludes including this phase of the project in this assessment. Necessary information for this phase of the project will be collected in the coming field seasons, and a separate EA will be prepared by FWP.

8) The Gallatin National Forest (GNF) manages all of the land on which the project is to take place. In Challenge Cost Share Agreement 11-98-CCS-27 between federal agencies and FWP, responsibilities were acknowledged as follows: "The FS (Forest Service) and BLM (Bureau of Land Management) are responsible for management of aquatic habitats and for coordination of land uses consistent with laws, rules and regulations." "FWP (Montana Fish, Wildlife and Parks) has primary responsibility for management of fish and wildlife resources within the State of Montana, including all State, Federal and Private lands." The "Conservation Agreement and Management Guidance for Westslope Cutthroat Trout (*Oncorhynchus clarki lewisi*) and Yellowstone cutthroat Trout (*O. c. bouvieri*)" within Gallatin National Forest Administered Lands, between the GNF and FWP states that "The FWP shall: ...Take appropriate actions to remove non-native trout that have potential to contaminate and/or compete with native cutthroat populations." Magic City Fly Fishers is partnering with FWP who as stated above, has jurisdiction for the conduct of this project. No additional permits are necessary.

9) The participation of Chapter volunteers will be coordinated by Chris Fleck, Chapter President and Conservation Director, and under the supervision of FWP personnel. The role of Chapter volunteers will be to provide labor and assist with the netting and removal of fish. As outlined in the budget form, it is estimated that four volunteers will participate for eight days each. FWP Regional Fisheries Biologist, Jim Olsen is the sponsoring professional for the Chapter's involvement in the project. A biologist from the National Forest service will also participate.

10) Over the course of the upcoming months, it is intended that a comprehensive outreach plan will be developed jointly by Magic City Fly Fishers and FWP. The regional FWP office maintains a public affairs official on staff and it is envisioned that this individual will be able to assist in this effort. Part of this plan will include utilizing local and state TU publications to publicize Magic City Fly Fishers participation in the project.

11) The success of the project will be evaluated based upon increases in the YCT population based on numbers captured during subsequent gillnetting operations. In addition to wild trout already present, genetically pure YCT from the Yellowstone River Trout Hatchery in Big Timber will be stocked in the lakes. The stocking frequency of YCT will be increased to an annual plant, and the numbers of fish increased from 100 to 200-400/acre in Silver Lake (2,000-4000 fish). Prospect Lake, which has not been stocked with YCT, will also be stocked annually with 200-400 fish/acre (1,200-2,400 fish). Stocking usually occurs in late July or August using a helicopter. Stocking of YCT into the lakes project to reduce gillnet mortality of stocked cutthroat trout, is the portion of the project that is scheduled for the upcoming year, and for which these funds are requested. To distinguish stocked trout from wild trout, the adipose fin would be clipped on all YCT stocked into the lakes. All fish captured in gillnetting after the second year with an adipose fin would be removed, so that wild fish that are potentially hybrids and/or pure rainbows can be readily distinguished from pure YCT from the Big Timber Hatchery. All live fish captured with a clipped adipose will be released back into the lakes. By stocking the lakes each year with YCT at a high rate, and releasing all known YCT captured in gill nets, Silver and Prospect lakes would continue to provide a recreational fishery for cutthroat trout for backcountry visitors during the rainbow trout removal.

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