

Sand Creek Rio Grande Cutthroat Trout Reclamation Project – Phase 1 Final Report

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Objective:

The Upper Sand Creek Drainage was treated with rotenone on September 1st and September 2nd, 2020 as part of a multi-phase effort. The objective of this reclamation was to remove all mixed genetic and non-native Cutthroat Trout from the system and restore the native Rio Grande Cutthroat Trout to the drainage. After treatment, restocking will occur after all mixed genetics Cutthroat Trout have been confirmed to be removed by electrofishing, gill nets, and eDNA samples. The overall goal of this project is to reclaim habitat for native Rio Grande Cutthroat Trout and help preserve the genetics of the population.

Methods:

Phase one of the Sand Creek treatment area extended from the two lakes and their surrounding wetlands down to a natural waterfall fish barrier past the confluence of the two creeks (Figure 1). Liquid rotenone was applied to both the creeks and lakes at a concentration of 1 ppm, the Pika and Marmot wetlands were treated at 2 ppm due to their complexity. For the treatment of both creeks and wetlands, five-gallon bucket drip stations were used for four-hour durations and calibrated to dispense at 20ml per 15 seconds. Drip stations were set at two-hour flow times apart to allow for proper coverage of rotenone. The leading edge of the rotenone was marked with tracer dye at every drip station. Treatment of Bunch creek and the wetlands was synchronized with the flows of the main creeks for treatment to prevent fish from moving into untreated waters. Spray crews were given charges of 180 ml for backpacks and designated to spray backwaters and any areas where the dye was not present. Spray crews were also given rotenone sand mix to place on any seeps or springs seen during treatment. For the lake treatment, rotenone was dispersed using small gas pumps that mixed CFT Legumine with water from the lake and dispersed the mixture into the prop wash of the boat. The original plan was for lakes to be treated individually, starting with Upper Sand Creek Lake, with two boats, one focusing on deepwater and one on shallow water areas. Both boats were then to be moved to Lower Sand Creek Lake for treatment the following day. Rotenone concentrations were calculated for each shallow and deep section for dispersal. After the dispersal of rotenone was complete, boat captains drove at higher speeds to help mix the rotenone more thoroughly throughout the lake.

To determine spacing for the drip stations, flow rates and tracing dye time of travel tests were done several times throughout July and August to determine travel times for the drainage. A staff gauge was also placed past the confluence and near the lower terminus of the treatment area to allow for last-minute adjustment if flows changed significantly. During the treatment, flows were at 2.5 CFS and the drainage was treated at such.

No detoxification was necessary at this project as the creek below the barrier is set to be treated with rotenone in the coming years to continue to expand habitat for Rio Grande Cutthroat Trout. This section of the creek is approximately eight miles long and runs into the Great Sand Dunes in

the national park where the water flows subsurface therefore no detoxification was necessary per the CFT Legumine label.

During treatment, the drainage was closed to public access to any of the streams and lakes, and pesticide signs were posted at the trailhead and NPS boundary along with an NPS law enforcement ranger at the boundary.

Results:

On September 1st, 2020, all running water, including creeks and wetlands, were treated with rotenone. On September 2nd, 2020 all streams and wetlands were treated a second time and both lakes were treated. The delay in the treatment of lakes until the second day was due to high winds preventing the helicopter to land necessary equipment at the lakes on September 1st. Due to these difficulties, lakes were treated with one boat each on the same day. Lakes were still partitioned into two sections with rotenone being properly dispersed in each. The treatment used 16 drip stations, 8 spray crews, and two boat crews. All drip stations were started on time with the first drip station starting at 11am on September 1st, 2020. All drip stations were regularly checked for proper flow rates and all fish in sentinel cages in streams and wetlands were deceased by the end of the first day. On the second day, all drip stations were started on time again along with boat crews launching. All rotenone was evenly dispersed by boat crews and all fish in different depth sentinel cages were deceased by the end of the day in Lower Sand Creek Lake. Upper Sand Creek lake had all fish deceased in the shallow cages however there were fish alive in the deep sentinel cage.

Discussion:

Phase one of the Sand Creek Drainage treatment, including 4 miles of stream habitat and two lakes to help conserve Rio Grande Cutthroat trout have appeared to be a success. All fish in sentinel cages in the creek were deceased after the first day of treatment and no living fish were noticed by any member of the crew on day two of treatment. It should be noted that fish in the deep sentinel cage at Upper Sand Creek Lake were not deceased at the end of treatment. This is concerning; however, we believe that since rotenone was only dispersed at the surface of the lake and has not had enough time to reach depths around 70 feet.

The treated Sand Creek drainage will still need to be confirmed to be absent of fish before stocking can occur; this will take place in July 2021. This will be done through a combination of electrofishing the streams and wetlands, taking eDNA samples, and using experimental gill nets on both lakes. If fish are confirmed to be absent, then restocking will occur as soon as possible. If fish are still be found to be present, the retreatment will have to occur in some capacity in the system before restocking can proceed.

Funding:

Phase one of the Sand Creek Drainage treatment was a collaborative effort with many funding partners. Colorado Parks and Wildlife led the project and purchased all the chemical needed for treatment. Great Sand Dunes National Park provided staff support for the planning and implementation of the project. The U.S. Fish and Wildlife Service purchased necessary equipment for chemical treatment, camping, and safety for donation to Colorado Parks and Wildlife. Trout Unlimited provided staff support and outfitter service including meals during the

week of the project. Running Rivers and Western Native Trout Initiative both contributed funds to support helicopter services. Estimated contributions by agency or organization:

\$66,130	Colorado Parks and Wildlife
\$53,500	National Park Service
\$18,105	Trout Unlimited
\$18,000	Running Rivers
\$10,000	U.S. Fish and Wildlife Service
\$8,000	Western Native Trout Initiative
<u>\$173,735</u>	<u>Total</u>

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Figure 1: Sand Creek drainage treatment area; Main Sand Creek is displayed in blue, Lower Sand Creek in green, and Bunch Creek in yellow. The incidental kill area for this project is seen located in red.



Helicopter Staging area at Grape Creek



Helicopter moving supplies into treatment site



Figure 2 Upper Sand Creek Lake crew treating lake



Dye time travels done on Sand Creek