Translocation of Rainbow Trout to the Arroyo Seco

from the Bobcat Fire Burn Area

Fall 2020

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Introduction

Following the 2020 Bobcat Fire, CDFW led a fish rescue in the West Fork San Gabriel River (WFSGR) and Bear Creek (tributary to WFSGR) in Los Angeles County, within the Angeles National Forest. This report is a follow up to the Bobcat Fire Fish Rescue Report (Pareti 2021) and focuses on the translocation of rescued native coastal rainbow trout (*Oncorhynchus mykiss irideus*) to the Arroyo Seco in Los Angeles County, within the Angeles National Forest.

The Bobcat Fire began on September 6, 2020 and burned 115,796 acres of the Angeles National Forest, including 93% of the lower West Fork San Gabriel River watershed and 81% of the Bear Creek watershed (InciWeb 2020). CDFW biologists conducted reconnaissance level surveys on October 13 and 14, 2020 resulting in the observation of the extensively burned watersheds with little to no vegetation remaining on the steep surrounding mountainsides. The Burned Area Emergency Response Report (BAER) projected that upon the arrival of moderate rainfall, heavy debris and sediment loads would occur within the stream resulting in high mortality of native fish species throughout the WFSGR and Bear Creek (USFS 2020). A fish rescue was discussed with US Fish and Wildlife and US Forest Service, and all were in agreement with the CDFW rescue and release plan. Additionally, CDFW evaluated plans for a conservation translocation of rainbow trout to the Arroyo Seco.

The Arroyo Seco, a tributary to the Los Angeles River, has historically supported a rainbow trout population, however the watershed burned extensively in the 2009 Station Fire. Stream habitat within the Arroyo Seco has recovered to a level which should support rainbow trout but fish have not been observed during CDFW reconnaissance level and electrofishing surveys. Fish passage is not currently possible in the Arroyo Seco around Devil's Gate Dam, and therefore, there is no way for native rainbow trout to naturally repopulate the Arroyo Seco. The WFSGR coastal rainbow trout population is recognized as a valuable genetic resource for southern California Steelhead and native coastal rainbow trout (Abadia-Cardosa et al. 2016, NMFS 2012). Translocating WFSGR rainbow trout into Arroyo Seco provided an opportunity to preserve valuable WFSGR genetics as well as potentially re-establishing a native rainbow trout population in Arroyo Seco.

A reconnaissance level survey was conducted in Arroyo Seco on November 12, 2020 to assess the stream habitat. The water level in the stream was low following a year of below average rainfall, but the habitat was still suitable for rainbow trout. Approximately 3 miles of stream were selected for the translocation and 500 rainbow trout was determined as target population size to be translocated. Due to the shallow habitat in the Arroyo Seco at the time of the fish rescue, it was decided to only translocate small rainbow trout (less than 5 inches).

Rescue

Fish rescues in the WFSGR for translocation to Arroyo Seco were conducted by CDFW staff over two days: November 24, and December 1, 2020. Rescue efforts varied in number of rescue teams and rescue locations based on staff availability and are shown in Table 1 and Figure 1. Rescue teams were made up of 5-6 CDFW staff.

Table 1. West Fork San Gabriel River and Bear Creek Fish Rescue Dates and Locations

Rescue Date	GPS Coordinates of Rescue Locations by Rescue Date	
	WFSGR	Bear Creek
November 24	34.244782, -117.946519	N/A
December 1	34.242414, -117.919680	34.240860, -117.884622

Electrofishing was utilized to capture all fish and was conducted using one to two backpack electrofisher units (Smith Root Models LR-20B and LR-24) depending on staff availability, as well as stream width and morphology. Electrofisher voltage settings ranged from 150-250 Volts depending on water depth. Remaining settings were as follows: 30 Hertz pulse frequency, 5 milliseconds pulse width, and 15 percent duty cycle. Rescue locations were selected based on CDFW 2018 habitat and fish data as well as accessibility (Pareti 2020). Electrofishing was conducted in an upstream direction in selected rescue locations and consisted of one or two electrofishers with at least two neters assigned to each unit.

Captured fish were placed in buckets with water and transferred to streamside holding containers with aerators. All fish were identified and counted by species. Rescued rainbow trout individuals were sorted by approximate size to less than or greater than 5 inches (127 mm). Fish translocated to Arroyo Seco had their adipose fin clipped to mark fish for future identification. Fish were weighed and measured (fork length) as time allowed. A representative number of adipose fin clips were collected for genetic sampling and stored dry in individually marked envelopes.

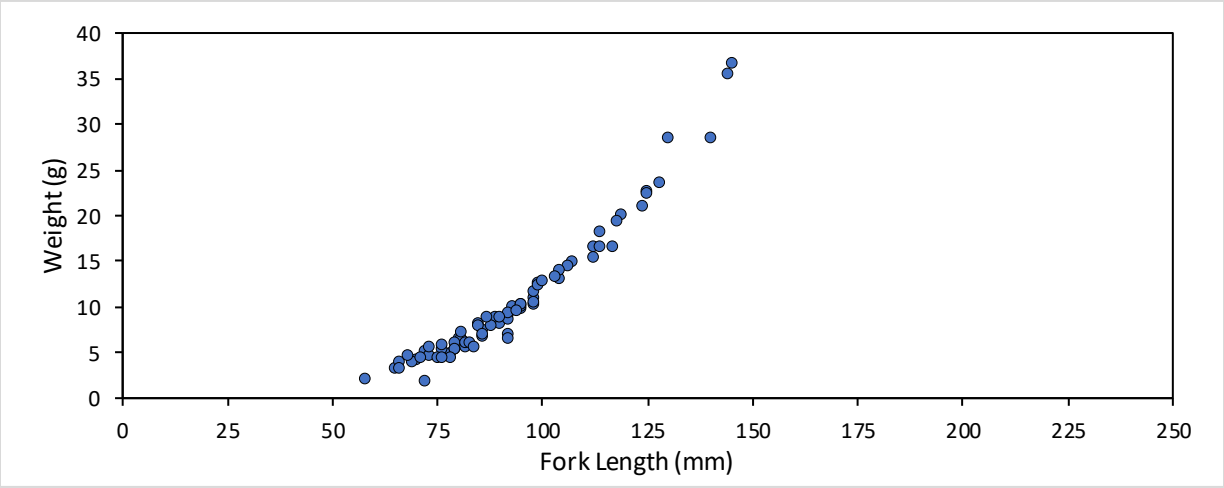
The total number of rainbow trout rescued are listed in Table 2 below along with the numbers of fish translocated to the Arroyo Seco as well as released into the East Fork San Gabriel River. Graph 1 shows length vs. weight relationships for all measured individuals translocated to the Arroyo Seco.

Fish were transferred to coolers filled with stream water for transport to release locations. Water temperature was monitored within the coolers and multiple battery-operated aerators were used for each cooler. Fish collection efforts concluded by 1:30 PM each day.

Table 2. Total Rainbow Trout Rescued from West Fork San Gabriel River and Bear Creek and Released in Arroyo Seco and East Fork San Gabriel River (EFSGR). Due to habitat availability, only rainbow trout less than 5 inches (127 mm) were considered for translocation to Arroyo Seco.

	Number of Rainbow Trout by Date		**Total Fish**
	11/24	**12/1**	
Total Rescued	271	379	650
Total Released in Arroyo Seco < 5 inches (127 mm)	**197**	**272**	**469**
Total Released in EFSGR > 5 inches (127 mm)	69	107	176
Total Mortalities	5	0	5

Graph 1. Length vs. weight of measured and weighed rainbow trout (n=78) rescued in West Fork San Gabriel River and Bear Creek and translocated to the Arroyo Seco, November 24 and December 1, 2020. Due to habitat availability, only rainbow trout less than 5 inches (127 mm) were considered for translocation to Arroyo Seco.



Release

A total of 469 rainbow trout were released into the Arroyo Seco on November 24 and December 1, 2020, distributed over 2.5 miles of stream (Figure 2). Fish were acclimated prior to release by slowing adding water from the Arroyo Seco stream into the coolers until the cooler water temperature was within 2°F of the Arroyo Seco. Once acclimated, fish were transferred to buckets and backpacks of 100% Arroyo Seco water to ensure no water from WFSGR entered the Arroyo Seco. Fish were hiked to release locations in buckets and backpacks and released in small quantities (3-10 fish) into areas with the best available rainbow trout habitat. Fish were observed following release to confirm that they were behaving normally. Mortalities were collected and preserved in ethyl alcohol.

Future Monitoring

A monitoring plan has been designed to collect data on Arroyo Seco stream conditions where rainbow trout were released and in downstream areas where fish may disperse. Fish surveys will be conducted by CDFW in the summer and/or fall.

Acknowledgements

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Figure 1: Bobcat Fire Fish Rescue Locations on the West Fork San Gabriel River. November 24 and December 1, 2020.

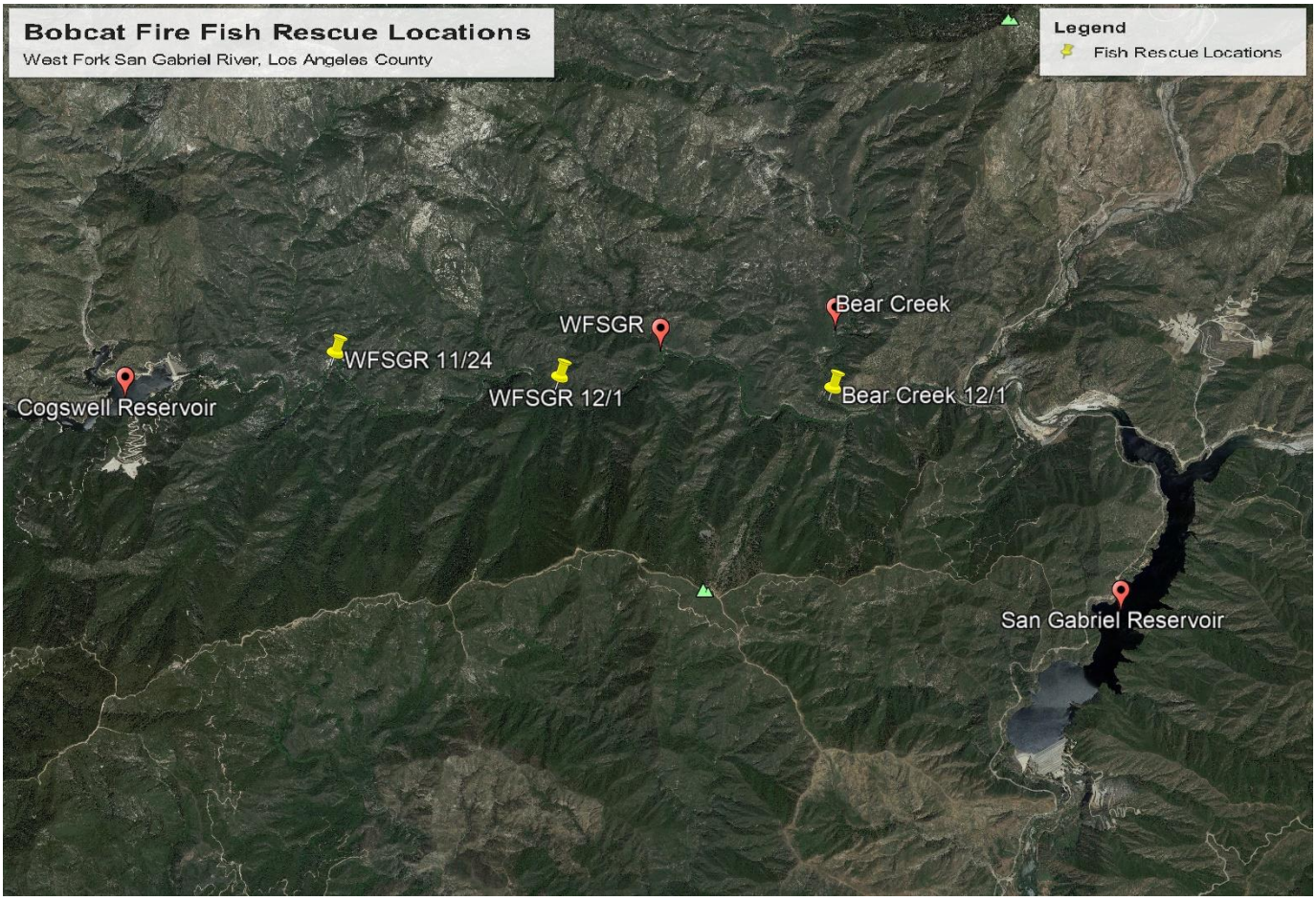
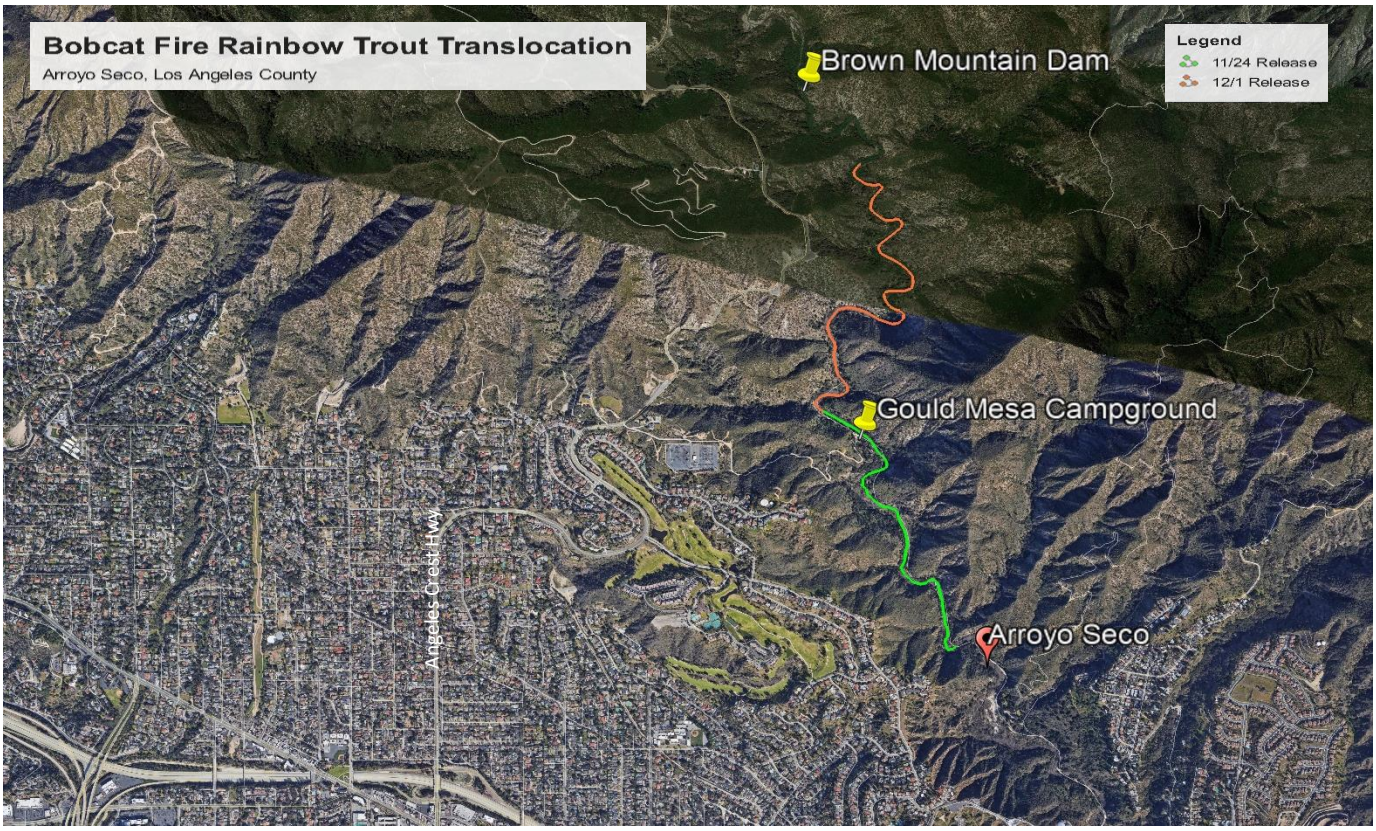


Figure 2. Bobcat Fire Rainbow Trout Translocation Locations on the Arroyo Seco. November 24 and December 1, 2020.



Figures 3-4. Capturing fish in the West Fork San Gabriel River and Bear Creek using backpack electrofishing.

Figures 5-8. Processing fish. Fish were sorted and counted by species. Rainbow trout were further sorted into two size classes, less than or greater than 5 inches (127 mm). Top and bottom left, rainbow trout less than 5 inches. Top and bottom right, rainbow trout greater than 5 inches

Figures 9-10. Processing fish. Fish were measured, weighed, and fin clipped according to the rescue and translocation plan.

Figures 11-14. Representative photographs of fish being acclimated and released to the Arroyo Seco on November 24 and December 1, 2020.

Figures 14-18. Representative photographs of fish being acclimated and released to the Arroyo Seco on November 24 and December 1, 2020.