

South Fork San Joaquin River 2010 Summary Report

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State of California

Natural Resources Agency

California Department of Fish and Game

Heritage and Wild Trout Program



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Introduction

On an annual basis, the California Department of Fish and Game (DFG) Heritage and Wild Trout Program (HWTP) is responsible for recommending to the California Fish and Game Commission (CFGC) 25 miles of stream and one lake that fit the criteria for designation as a Wild Trout Water. Wild Trout Waters are those that support self-sustaining wild trout populations, are aesthetically pleasing and environmentally productive, provide adequate catch rates in terms of numbers or size of trout, and are open to public angling (Bloom and Weaver 2008). Wild Trout Waters may not be stocked with catchable-sized hatchery trout. The HWTP evaluates candidate waters using a phased approach in order to systematically collect data and evaluate whether or not a stream or lake meets Wild Trout Water designation criteria.

Since 2007, the HWTP has been conducting Phase 1 (initial resource) and Phase 2 (candidate water) assessments of waters in the South Fork San Joaquin drainage including Piute Creek and numerous high-elevation lakes that feed into this system (Weaver and Mehalick 2007 and 2009). The majority of this drainage is located in the John Muir Wilderness of the Sierra National Forest; due to the popularity of backcountry recreation in California, the HWTP is interested in identifying and designating high elevation waters in the Sierra Nevada Mountains and other remote locations throughout the state as "Wilderness" Wild Trout Waters. Royce Lake #2 and Lower Honeymoon Lake, both headwater lakes in the Piute Creek drainage, are designated by the CFGC as Wild Trout Waters. In 2010, the HWTP conducted direct observation snorkel, habitat, and hook and line assessments in the South Fork San Joaquin River as a continuation of Phase 2 candidate water assessments in this watershed.

The South Fork San Joaquin River (Fresno County) originates at an elevation of approximately 3500 meters in the Goddard Canyon of Kings Canyon National Park and flows in a north-northwest direction for approximately 20 miles before emptying into Florence Lake. Historically, portions of this watershed may have been fishless. The 2010 HWTP surveys occurred outside of the national park boundaries in the portion of the stream downstream of Piute Creek and upstream of Florence Lake (Figure 1).

Methods

The HWTP conducted direct observation surveys at four locations on the South Fork San Joaquin River on September 9, 2010 using snorkeling methods, an effective survey technique in many small streams and creeks in California and the Pacific Northwest (Hankin and Reeves 1988; Figure 2). The 2010 surveys were limited in scope and geographic extent due to a crew member illness. Sections were spaced approximately every one-half mile and the start of each section was selected at random. Specific section boundaries were located at distinct breaks in habitat type and/or stream gradient. Surveys were conducted

with three divers; the number of divers per survey section was determined based on wetted width, water visibility, habitat complexity, and the availability of divers trained in direct observation survey techniques. Surveys were conducted in an upstream direction where feasible; in Section 210, water velocity was such that a downstream dive was performed.

Divers maintained an evenly spaced line perpendicular to the current and counted fish by species. All observed trout were further separated and counted by size class. Size classes were divided into the following categories: young of year (YOY); small (< 6 inches); medium (6-11.9 inches); large (12-17.9 inches); and extra-large (\geq 18 inches). YOY are defined by the HWTP as age 0+ fish, emerged from the gravel in the same year as the survey effort. Depending on species, date of emergence, relative growth rates, and habitat conditions, the size of YOY varies greatly, but are generally between zero and three inches in total length. If a trout was observed to be less than six inches in total length but it was difficult to determine whether it was an age 0+ or 1+ fish, by default it was classified in the small (<6 inches) size class.

Divers were instructed in both visual size class estimation and proper snorkel survey techniques prior to starting the survey (establishing a dominant side, determining the extent of their visual survey area, how and when to count (or not count) fish observed, safety considerations, etc.). For each section, surveyors measured section length along the thalweg (ft), water and air temperature ($^{\circ}$ C), average wetted width (ft), and water depth (ft), and water visibility (ft). Habitat type (flatwater, riffle, or pool) was identified following Level 2 protocol as defined in the California Salmonid Stream Habitat Restoration Manual (Flosi et al. 1988). Representative photographs were taken and coordinates were recorded for the section boundaries using Global Positioning System hand-held units (North American Datum 1983).

An angling effort was conducted on the South Fork San Joaquin River on September 9, 2010 to better understand catch rates and size class distribution (Figure 2). Anglers used fly fishing gear and recorded total fishing effort (hours) and the number of fish captured by species and size class, using the size classes defined above for direct observation surveys.

Figure 1. Vicinity map of South Fork San Joaquin River 2010 survey locations.

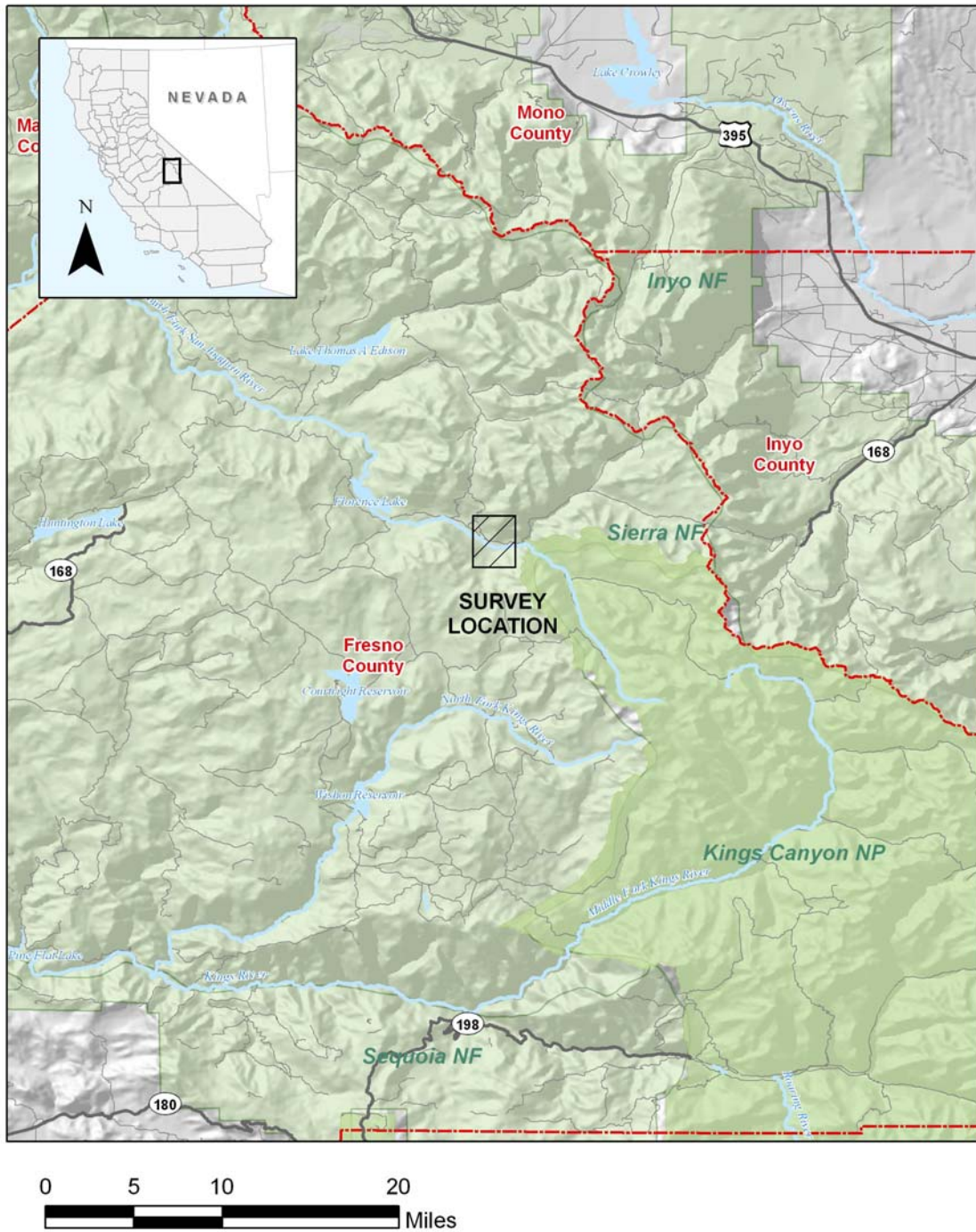
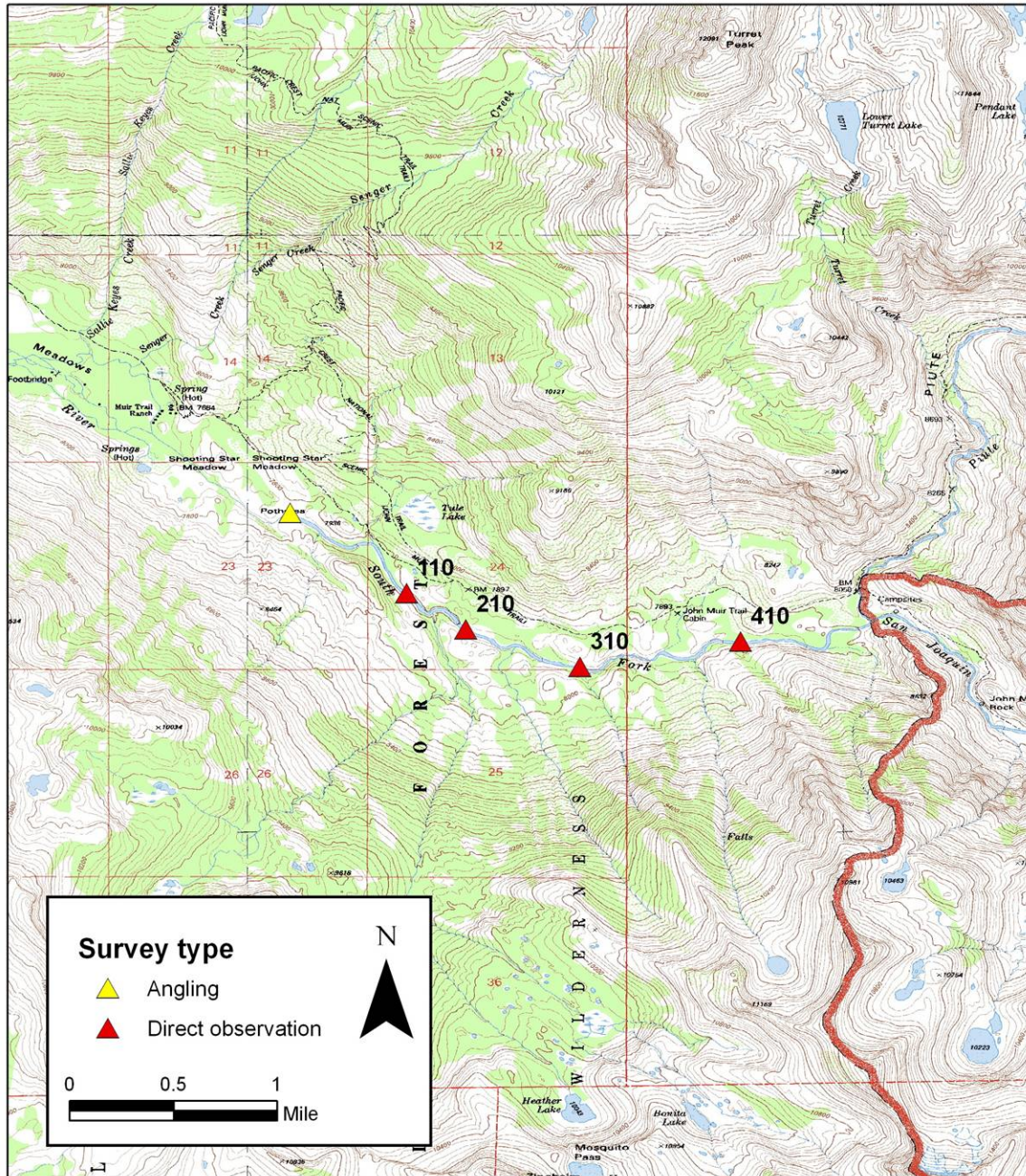


Figure 2. Detail map of South Fork San Joaquin River 2010 survey locations.



Results

The South Fork San Joaquin River in the vicinity of the 2010 direct observation surveys was a low to medium gradient stream with substrate consisting mostly of boulder and cobble with some bedrock and gravel. The four sections spanned approximately 1.7 river miles. A total of 727.8 feet of stream habitat was surveyed with an average wetted width of 47.7 feet and an average water depth of 1.3 feet. Water temperature ranged between 10 °C and 12 °C and air temperature was measured at 17 °C and 25 °C, depending on the time of day. The four sections consisted of 37% riffle and 63% flatwater habitat (Figure 3). A total of 150 rainbow trout (*Oncorhynchus mykiss*), seven brown trout (*Salmo trutta*), and two brook trout (*Salvelinus fontinalis*) were observed (Table 1). Size class distribution of rainbow trout included 24% YOY, 30% small, 43% medium, and 3% large-sized fish. The brown trout observed consisted of 29% medium, 43% large, and 29% extra-large fish; the two brook trout observed both fell within the small size class. Estimated fish densities across all sections surveyed were 1088 rainbow trout per mile, 51 brown trout per mile, and 15 brook trout per mile.

Table 1. Summary of 2010 direct observation survey data from the South Fork San Joaquin River (RT = rainbow trout; BN = brown trout; BK = brook trout).

Section	Section length (ft)	Habitat type	Species	Number of fish observed					Totals	Estimated density (fish/mi)
				YOY	Small < 5.9"	Medium 6" - 11.9"	Large 12" - 17.9"	Extra-large > 18"		
110	154.1	flatwater	RT	0	14	15	1	0	30	1028
			BN	0	0	1	0	0	1	34
210	192.1	flatwater	RT	36	10	24	0	0	70	1924
			BK	0	1	0	0	0	1	27
310	267.1	riffle	RT	0	12	20	0	0	32	633
			BN	0	0	1	2	2	5	99
			BK	0	1	0	0	0	1	20
410	114.5	flatwater	RT	0	9	5	4	0	18	830
			BN	0	0	0	1	0	1	46

Figure 3. Representative photographs of the South Fork San Joaquin River.



The angling effort was conducted from the southern edge of Shooting Star Meadow upstream to direct observation survey Section 110 and spanned a distance of approximately one river mile (Figure 2). The total effort among the three anglers was 7.33 hours (Table 2). Twenty-one rainbow trout (19% small and 81% medium-sized) and one brook trout (medium-sized) were captured. Catch rates ranged from 2.1 fish per hour to 4.5 fish per hour with an average of 3.1 fish per hour.

Table 2. Summary of 2010 angling data from the South Fork San Joaquin River. Each row represents an individual angler.

Total effort (hrs)	Species	Number of fish captured				Totals	Catch per unit effort (fish/hour)
		Small < 5.9"	Medium 6" - 11.9"	Large 12" - 17.9"	Xlarge > 18"		
2.5	coastal rainbow trout	2	4	0	0	6	2.8
	brook trout	0	1	0	0	1	
2	coastal rainbow trout	1	8	0	0	9	4.5
2.83	coastal rainbow trout	1	5	0	0	6	2.1
Average							3.1

Discussion

The South Fork San Joaquin River from Florence Lake upstream to the confluence with Piute Creek contains wild rainbow, brown, and brook trout in a remote and scenic wilderness setting. The DFG does not stock this portion of the river with hatchery trout. Anglers can catch three different species of trout in the

same water and it appears to be a relatively fast-action fishery with catch rates exceeding two fish per hour (catch rates from previous surveys higher in the watershed were as high as 50 fish per hour; Weaver and Mehalick 2007 and 2009). The presence of brown trout larger than 18 inches in total length may also provide the opportunity for a trophy trout fishery. DFG Sierra District General fishing regulations allow for the take of five trout per day with a total of ten trout in possession. In addition to the daily bag and possession limits, up to ten brook trout per day (less than ten inches in total length) may be taken and possessed. The portion of the South Fork San Joaquin River from the confluence with Piute Creek downstream to Florence Lake is located on both public (Sierra National Forest) and private land. This segment of river is approximately eight miles in length. The Piute Creek and South Fork San Joaquin watersheds meet numerous criteria for designation as Wild Trout Waters. The HWTP recommends continued Phased 2 assessments in 2011 throughout the watershed, with emphasis on the South Fork San Joaquin River (from the confluence with Piute Creek downstream to Florence Lake), French Canyon, and other headwater lakes. The HWTP recommends collaborating with the USFS, private landowners, recreational users, and other stakeholders as part of the phased approach to evaluating the South Fork San Joaquin as a candidate for Wild Trout Water designation.

References

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