East Fork San Gabriel River 2010 Summary Report

August 26-31, 2010

State of California

Natural Resources Agency

Department of Fish and Game

Heritage and Wild Trout Program

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Introduction:

The East Fork San Gabriel River (East Fork) is located within the Angeles National Forest (Los Angeles County) approximately 40 miles to the northeast of Los Angeles, CA (Figure 1) and supports wild populations of coastal rainbow trout (*Oncorhynchus mykiss irideus*) within their native range. Portions of the watershed are located within the Sheep Mountain Wilderness. The California Department of Fish and Game (DFG) Heritage and Wild Trout Program (HWTP) has been evaluating the East Fork as a Heritage and Wild Trout candidate water since 1997. Wild Trout Waters are those that support self-sustaining (wild) populations of trout, are aesthetically pleasing and environmentally productive, provide adequate catch rates in terms of numbers, size, or species of trout, and are open to public angling. Wild Trout Waters may not be stocked with catchable-sized hatchery trout (Bloom and Weaver 2008). Heritage Trout Waters are a sub-set of Wild Trout Waters and highlight populations of California's native trout found within their historic drainages.

In 1997, 2000, and 2003, the HWTP conducted multiple-pass electrofishing surveys at various locations in the lower portion of the East Fork, in the vicinity of Heaton Flat and San Gabriel Reservoir. To increase the geographic range of sampling within the East Fork drainage and obtain current information on trout distribution, size class structure, and abundance, the HWTP conducted Phase 2 candidate water assessments in 2009 on the East Fork and two headwater tributaries (Iron and Fish forks) via direct observation and hook and line surveys (Weaver and Mehalick 2009). HWTP Phase 2 assessments provide a comprehensive evaluation of the fishery, habitat, and angler use and generally occur over a multi-year period. Based on the results of the 2009 surveys, the HWTP recommended:

1. Multiple-pass electrofishing surveys on the East Fork at Heaton Flat and Shoemaker Canyon to yield estimates of fish abundance and to better understand species distribution and size class structure of coastal rainbow trout, Santa Ana sucker (*Catostomus santaanae*), and Santa Ana speckled dace (*Rhinichthys osculus* ssp.).

2. Multiple-pass electrofishing surveys on the Prairie Fork to yield estimates of trout size class structure and abundance.

3. Direct observation snorkel surveys on the East Fork and other headwater tributaries (including the Prairie Fork) to gather more information on species distribution, composition, size class structure, and abundance (including fishes and other aquatic species) at a broader geographic scale within the drainage.

4. Delineate distribution of Santa Ana sucker (due to its status as federally threatened under the Endangered Species Act).

5. Continued monitoring and maintenance of the angler survey box (ASB) at Heaton Flat.

Following these recommendations, in 2010, the HWTP conducted multiple-pass electrofishing and direct observation snorkel surveys throughout the drainage and continued to monitor and maintain the ASB at Heaton Flat (Figure 2). This report summarizes the results of this effort.

Figure 1. Vicinity map of East Fork San Gabriel River location.

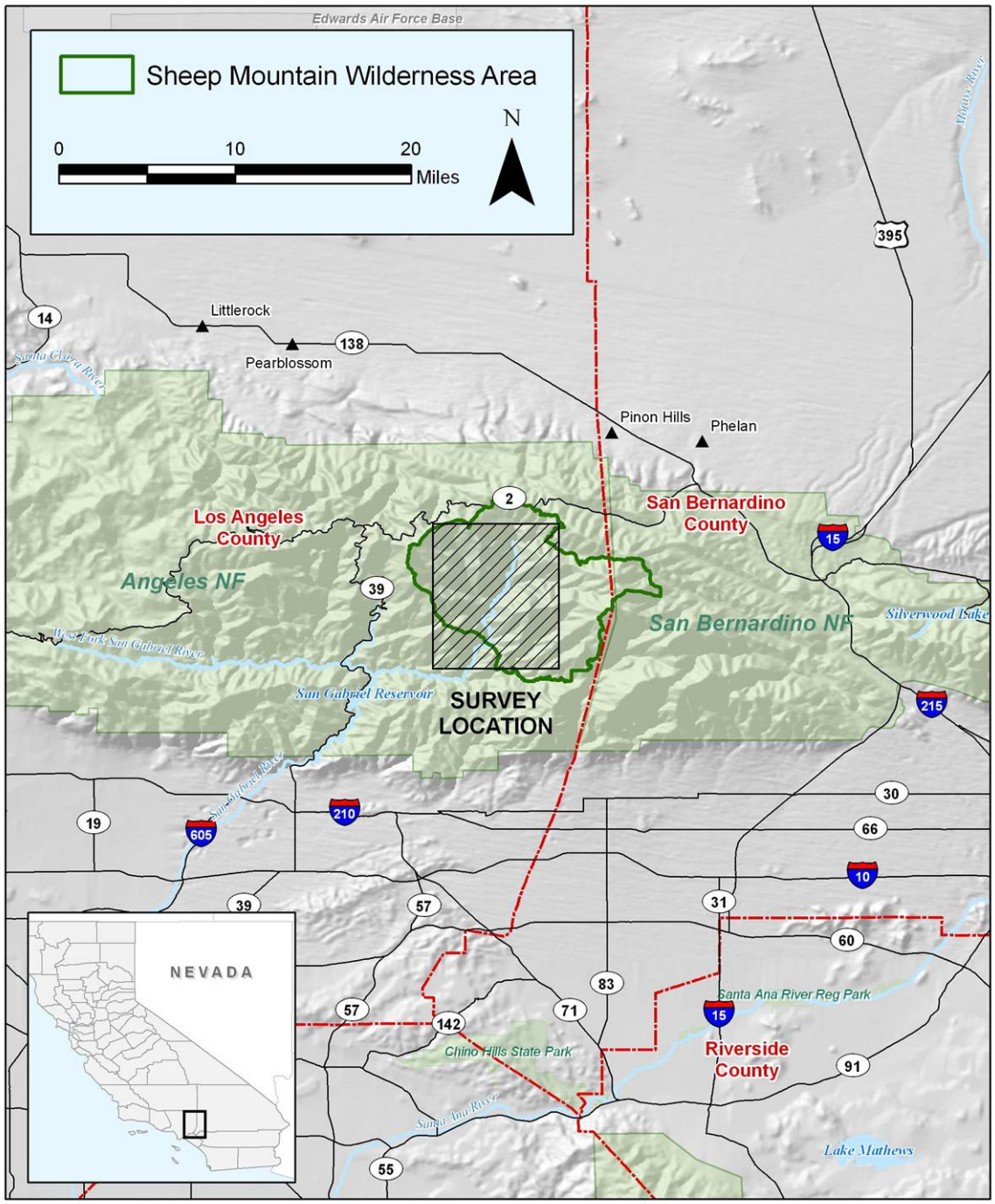
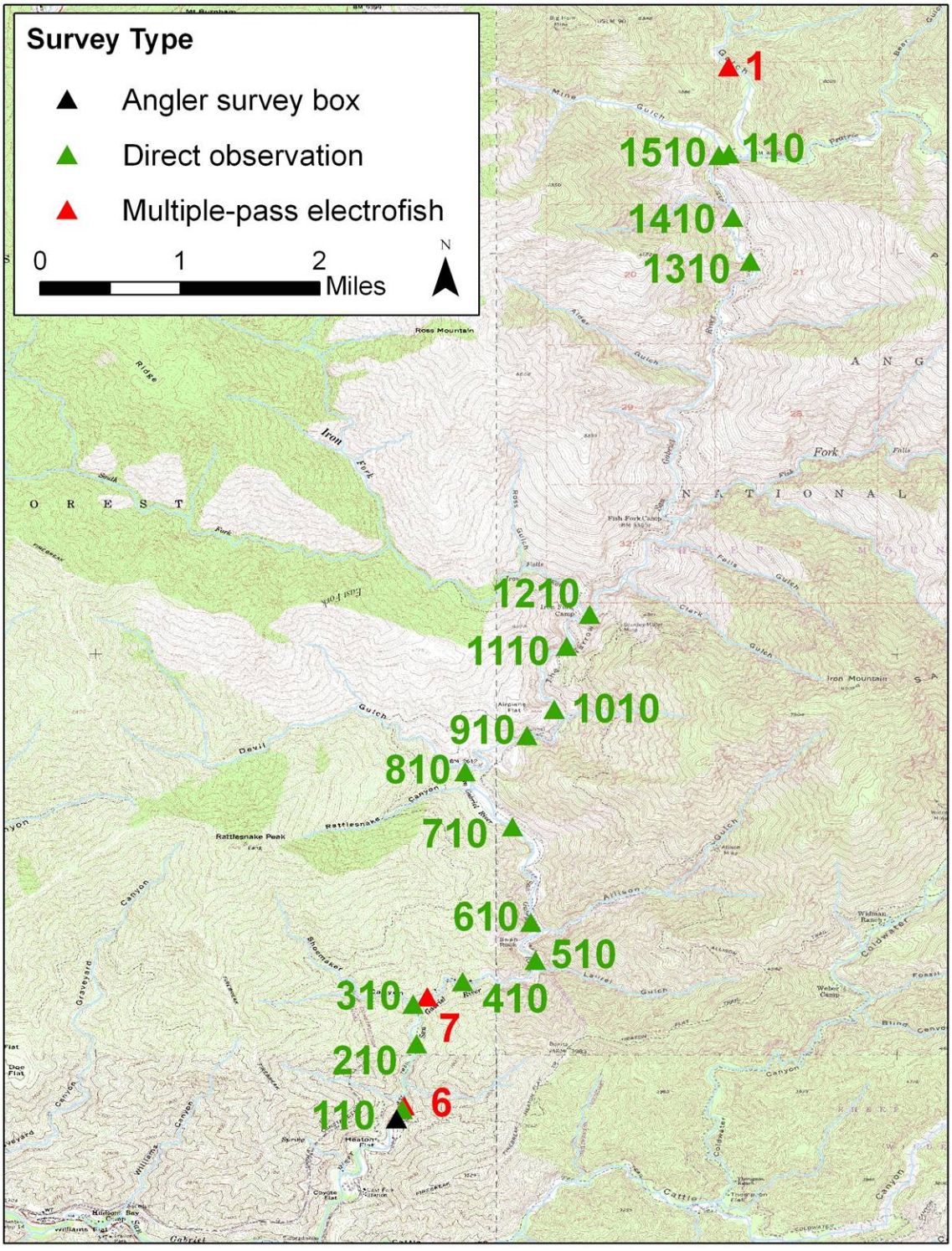


Figure 2. Map of East Fork San Gabriel River angler survey box and 2010 survey locations.



Methods:

Multiple-pass electrofishing

Multiple-pass electrofishing surveys were conducted on the East Fork in the vicinity of Heaton Flat (Section 6) and Shoemaker Canyon (Section 7) and on Vincent Gulch (Section 1) from August 28-31, 2010 (Figures 2-5). These surveys were used to generate population-level data including species composition, size and age class structure, and estimates of fish abundance and can be compared over time to study trends in the population. Personnel included HWTP staff (from Headquarters and South Coast Region) and numerous volunteers. All sections were newly established in 2010 and were selected based on recommendations from 2009, accessibility, and survey feasibility. Section boundaries were chosen at areas where mesh block nets could effectively be installed and maintained throughout the survey effort. The HWTP 2009 survey identified the Prairie Fork as a potential headwater tributary for analysis (multiple-pass electrofishing). Following these recommendations, in June 2010, the HWTP South Coast Region Biologist conducted a reconnaissance of the upper watershed and a Phase 1 hook and line assessment on Vincent Gulch, tributary to the Prairie Fork. Based on relatively high catch rates, the identification of multiple size classes of coastal rainbow trout, and the close proximity to a previously documented population of mountain yellow-legged frogs (*Rana muscosa)*, the HWTP selected Vincent Gulch as a headwater tributary for analysis in 2010. Due to time constraints and difficulty of access, the Prairie Fork was not surveyed via multiple-pass electrofishing in 2010.

At each section boundary, nylon mesh block nets were installed across the wetted width, effectively closing the population within the section. Both ends of the nets were secured above bankful, heavy rocks were placed side by side along the bottom of the nets, and the nets were secured in such a way as to hold the top of the net out of the water. These nets were routinely monitored and inspected throughout the survey to ensure their integrity and to prevent fish from moving into or out of the section during the course of the survey.

Prior to electrofishing, physical measurements of the stream and environmental conditions were taken, including air and water temperature (ºC) and conductivity (both specific and ambient in microsiemens). These factors were used to determine appropriate electroshock settings. Coordinates were recorded for both the upstream and downstream boundaries of the survey using a hand-held Global Positioning System (GPS) unit (North American Datum 1983). Current weather conditions were noted and the section was visually surveyed to determine the presence or absence of any species of concern prior to commencing the surveys (with an emphasis on mountain yellow-legged frogs which are known to occur within the drainage).

Personnel needs were determined based on stream width, habitat complexity, and water visibility. For each of the surveys, individuals were assigned to

electroshock, net, and tend live cars for the duration of the effort. Surveys were initiated at the downstream block net and proceeded in an upstream direction, with netters capturing fish and placing them in live cars to be held until processed. Live cars consisted of 32-gallon plastic trash bins perforated with holes to allow water circulation. All captured Santa Ana suckers were placed in a separate live car enclosed with metal hardware cloth (to limit the electrical field within the live car, thus reducing stress on the fish), and were closely monitored throughout the survey. Three to four passes were conducted within each section, with fish from each pass stored separately. Over the course of the survey, fish were handled carefully to minimize injury and stress. Fish were processed separately by pass number (Santa Ana suckers were processed first and returned to the river immediately upon recovery). Each fish was identified to species and total length (mm) and weight (g) were measured. Fish were then recovered in live cars secured in the stream (with fresh flowing water) and released back into the section.

A habitat assessment was conducted to document resource condition by collecting base-line data on habitat types and quality, water conditions, substrate, discharge, bank condition, and other attributes. The HWTP habitat assessment is a pared down synthesis of Rosgen (1994) and the California Salmonid Stream Habitat Restoration Manual (CSSHRM; Flosi et al. 1988). Section length (ft) was measured along the thalweg. The length of the section was then divided into five cells of equal length. Wetted widths (ft) were measured at the center of each of the five cells. Across each width transect, five depths (ft) were taken (also at the center of five evenly divided cells), and both widths and depths were averaged for each section.

Stream characteristics, including active erosion (erosion occurring in the present), erosion at bankful, and canopy closure were measured as percentages of either the total stream area (canopy cover) or bank area (erosion). Section percentages were defined for each habitat type (riffle, flatwater, and pool) following Level II protocols as defined by the CSSHRM. Using visual observation, substrate size classes and the percentage of each class relative to the total bottom material within the wetted width were quantified. A rating (between poor and excellent) was given to the instream cover available to fish and cover types were identified and defined as percentages of total instream cover. The change in water surface elevation (section gradient) and streamflow (cubic feet per second; cfs) were measured. Representative photographs of the section were taken.

Fish measurements were entered into DFG's Fisheries Information Sharing Host (FISH) database and were extracted into MicroFish (MicroFish Software). Based on the capture rate (number of fish captured per pass) and probability of capture, a population estimate was determined for each species in each section. MicroFish also calculated the average weight of each species by section. The population estimate was used to determine abundance in terms of both biomass (pounds per acre) and density (fish per mile) of each species. Fish biomass

estimates incorporate habitat parameters such as section length, average wetted width, and average weight of fish (by species) and density estimates are determined based on section length and the estimated population.

Direct observation (snorkel surveys)

The HWTP conducted direct observation surveys at 15 locations (Sections 110-1510) throughout the East Fork and at one location on the Prairie Fork (Section 110) using snorkeling methods, an effective survey technique in many small streams and creeks in California and the Pacific Northwest (Hankin and Reeves 1988). Surveys occurred between August 26-31, 2010 and were used to generate information on species distribution (specifically to delineate the upper extent of Santa Ana sucker and Santa Ana speckled dace occupancy), size class structure of coastal rainbow trout, and fish abundance (fish per mile). Sections were selected in areas of the drainage that were not surveyed in 2009 and included the main-stem between Heaton Flat and the Iron Fork (Sections 110-1210), the East Fork above Fish Fork (Sections 1310-1510), and the Prairie Fork (Section 110). Sections were spaced approximately every one-half mile (not including the Prairie Fork) with the start of each section selected at random. Specific section boundaries were located at distinct breaks in habitat type and/or stream gradient. Surveys were conducted in an upstream direction with between one to three divers; the number of divers per survey section was determined based on wetted width, water visibility, and habitat complexity.

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 (≥ 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 (ft) along the thalweg, water and air temperature (ºC), 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 CSSHRM. Representative photographs were taken and coordinates were recorded for the section boundaries using a hand-held GPS unit (North American Datum 1983).

Data from the ASB located at Heaton Flat on the East Fork were examined to better understand angler use, catch rates, catch sizes, and angler satisfaction for the years 2003 through 2009. Forms missing pertinent information (date, number of hours fished, and/or fish size classes) were not included in the analysis; all complete forms were examined.

Figure 3. Detail map of East Fork angler survey box location, multiple-pass electrofish survey Sections 6-7, and direct observation survey Sections 110-610.

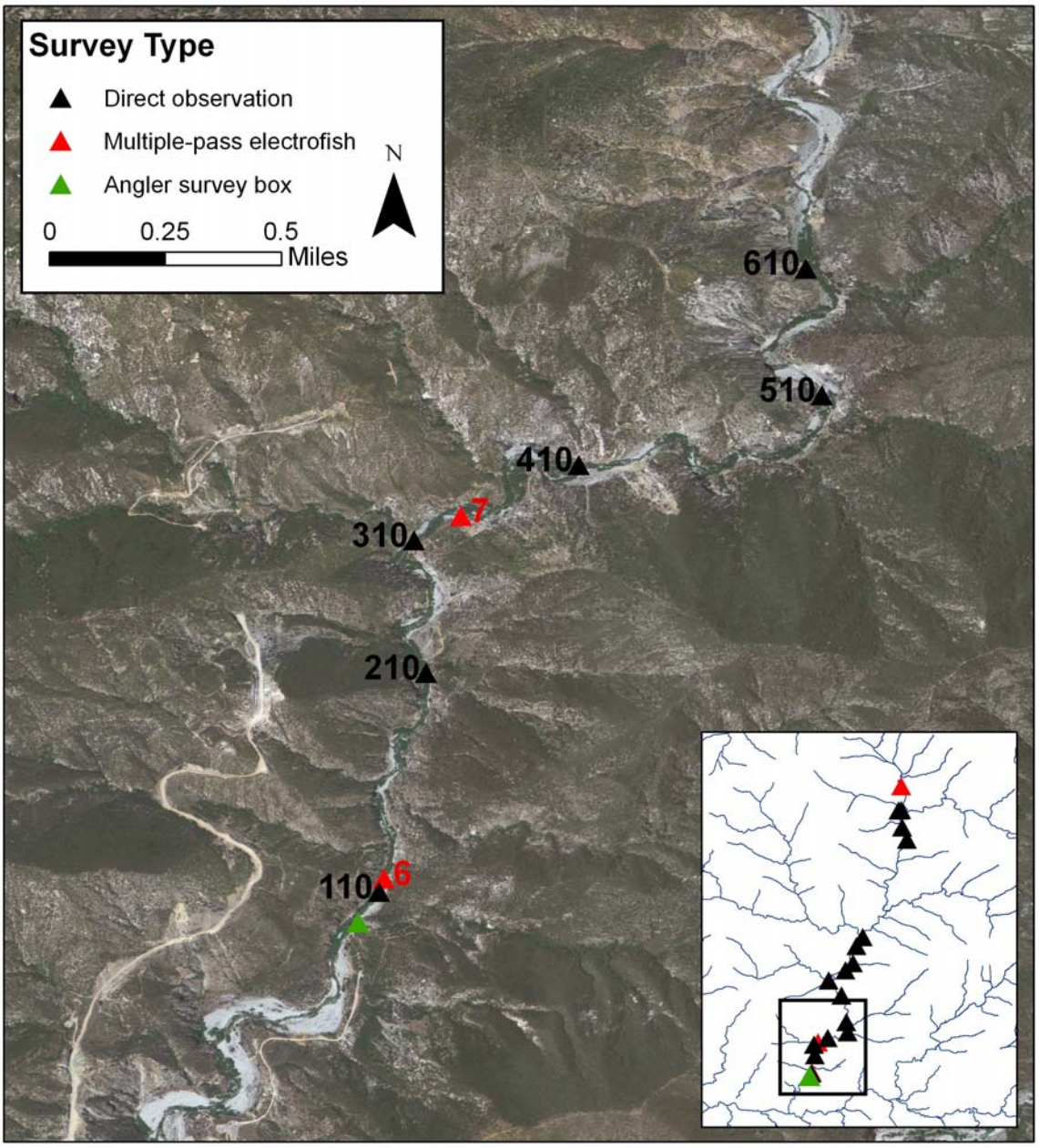


Figure 4. Detail map of East Fork San Gabriel River direct observation survey Sections 710-1210.

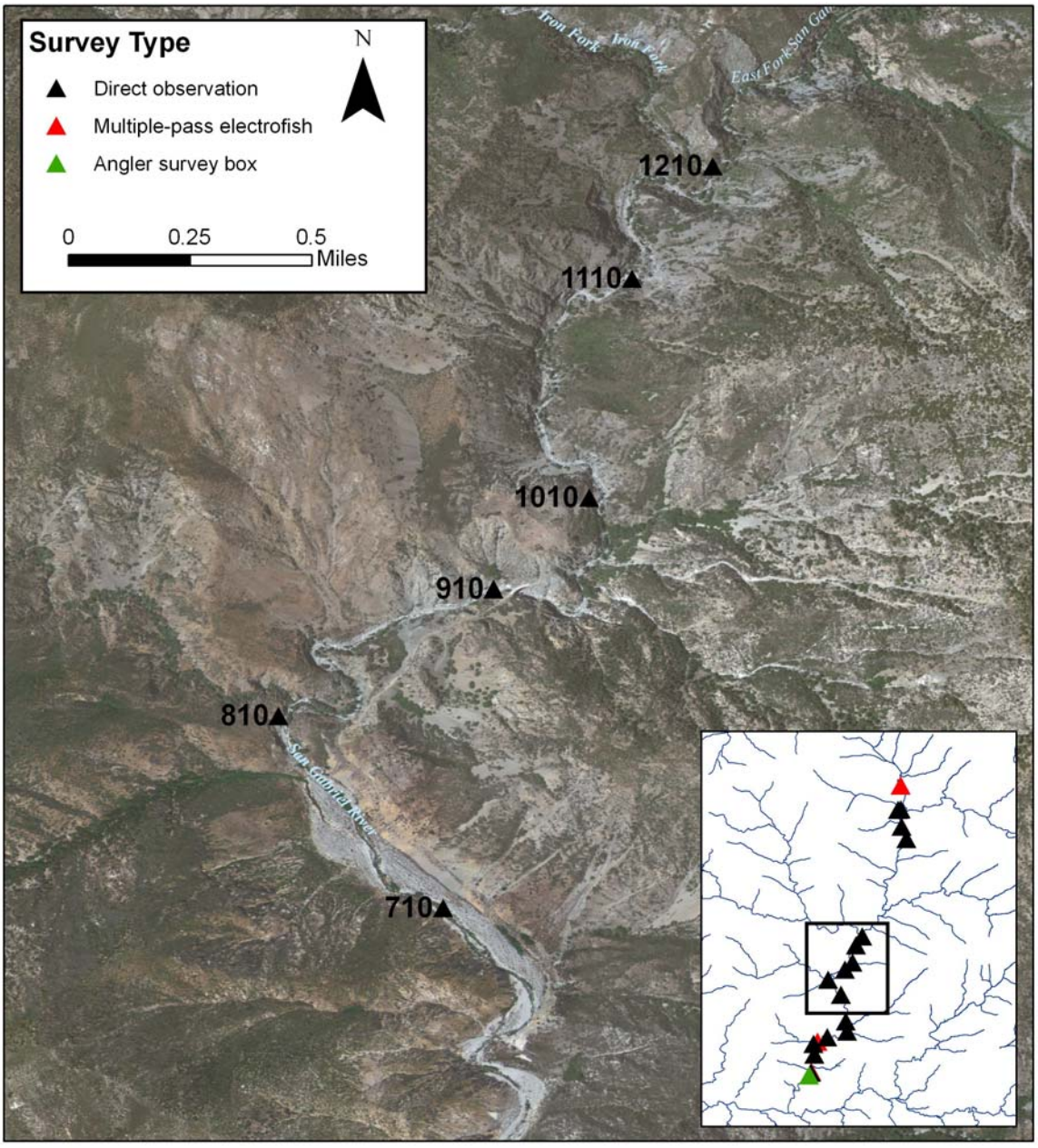
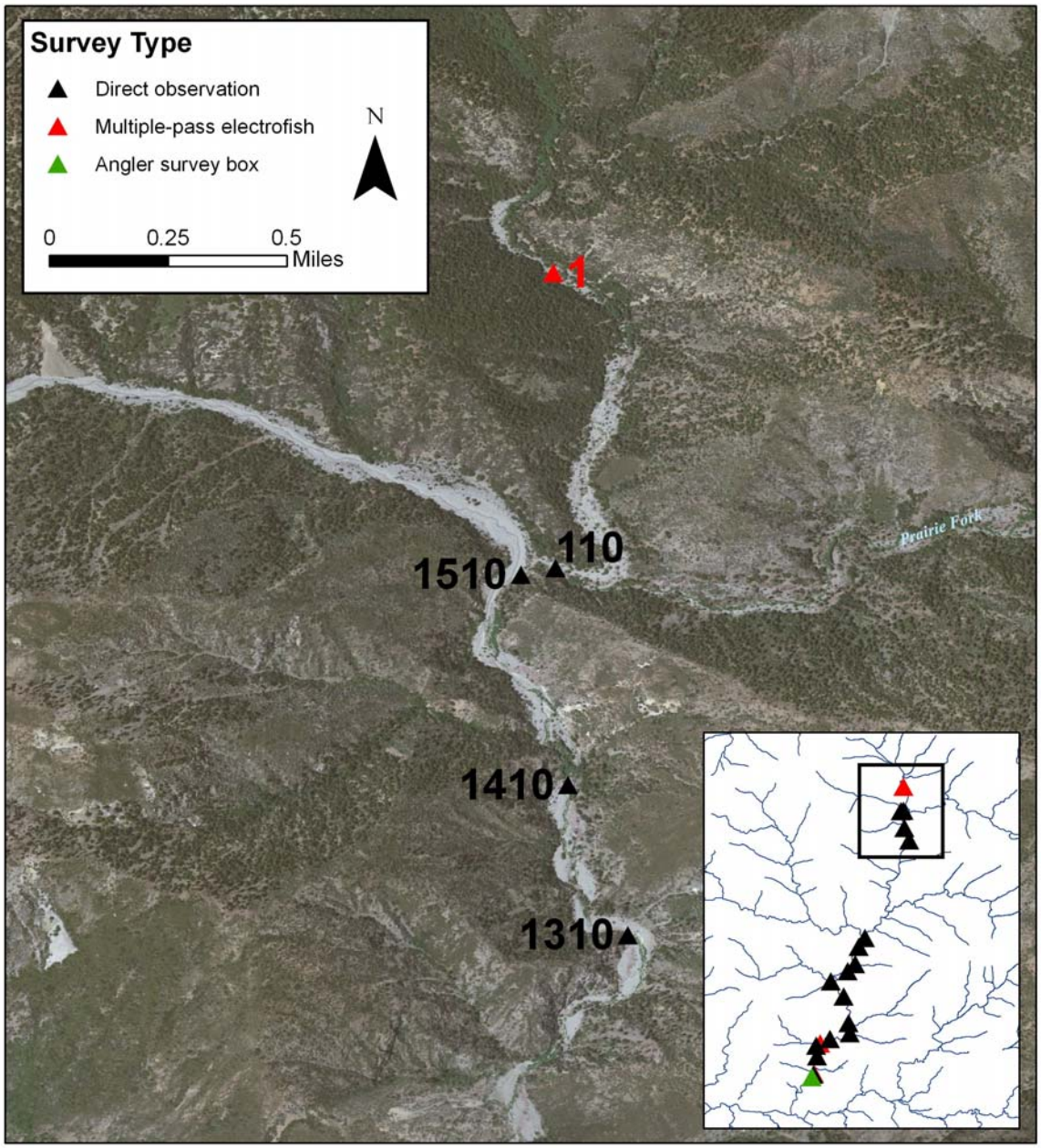


Figure 5. Detail map of East Fork San Gabriel River direct observation survey Sections 1310-1510, Prairie Fork direct observation survey Section 110, and Vincent Gulch multiple-pass electrofish Section 1.



Results:

Multiple-pass electrofishing

East Fork Section 6 was located directly upstream of the US Forest Service Heaton Flat Campground (Figures 3 and 6). The section was 280 feet in length with an average wetted width of 31.7 feet and an average water depth of 0.7 feet. Habitat consisted of 60% riffle and 40% flatwater with substrate dominated by cobble (50%) and boulder (30%). Overall instream fish cover was rated as poor with the majority of cover provided by water turbulence (55%) and overhanging vegetation (30%). The section was low in gradient (1%) and canopy closure was estimated at 40%. Streamflow was measured at 17.13 cfs. A total of 83 coastal rainbow trout, 108 Santa Ana suckers, and 304 Santa Ana speckled dace were captured in three passes (Table 1; Figure 7). The latter two species are currently listed as state species of special concern and the Santa Ana sucker is a federally-listed threatened species (Moyle 2000). Captured coastal rainbow trout ranged in size from 46 mm to 186 mm total length with a mean of 74 mm; Santa Ana suckers were between 63 mm and 143 mm total length with a mean of 117 mm; and Santa Ana speckled dace were between 42 mm and 85 mm total length with a mean of 65 mm. Abundance was estimated at 1980 coastal rainbow trout per mile (7.27 pounds per acre), 2489 Santa Ana suckers per mile (28.99 pounds per acre), and 7430 Santa Ana speckled dace per mile (13.21 pounds per acre; Table 1).

Figure 6. Representative photographs of 2010 East Fork San Gabriel River multiple-pass electrofishing Section 6.

Figure 7. Representative photographs of fish captured in East Fork San Gabriel River System: coastal rainbow trout (top left and right), Santa Ana sucker (bottom right), and Santa Ana speckled dace (bottom left).

Table 1. Summary of East Fork and Vincent Gulch 2010 multiple-pass electrofishing data.

Water	Section number	Section length (ft)	Species	Total number captured	Estimated population	Average weight (g)	Estimated density (fish/mile)	Estimated biomass (lbs/acre)	Capture probability
East Fork San Gabriel River	6	280	coastal rainbow trout	83	105	6.4	1980	7.27	40.3%
			Santa Ana sucker	108	132	20.3	2489	28.99	43.0%
			Santa Ana speckled dace	304	394	3.1	7430	13.21	38.8%
	7	391	coastal rainbow trout	92	109	26.3	1472	24.45	50.0%
			Santa Ana sucker	146	194	25.8	2620	42.69	29.3%
			Santa Ana speckled dace	116	137	4.2	1850	4.91	37.2%
Vincent Gulch	1	302	coastal rainbow trout	2	2	5.9	35	0.32	66.7%

East Fork Section 7 was located in the vicinity of Shoemaker Canyon (approximately 1.4 miles upstream from Heaton Flat; Figures 3 and 8). The section was 391 feet in length with an average wetted width of 28.8 feet and an average water depth of 0.8 feet. Habitat consisted of low to medium-gradient flatwater with substrate dominated by cobble (35%) and gravel (30%). Overall instream fish cover was rated as good with water turbulence (40%), water depth (30%), and boulders (24%) comprising the principal cover types. Canopy closure was estimated at 15%. A total of 92 coastal rainbow trout, 146 Santa Ana suckers, and 116 Santa Ana speckled dace were captured in four passes (Table 1). Captured coastal rainbow trout ranged in size from 52 mm to 290 mm total length with a mean of 119 mm; Santa Ana suckers were between 74 mm and 166 mm total length with a mean of 124 mm; and Santa Ana speckled dace were between 49 mm and 91 mm total length with a mean of 69 mm. Abundance was estimated at 1472 coastal rainbow trout per mile (24.45 pounds per acre), 2620 Santa Ana suckers per mile (42.69 pounds per acre), and 1850 Santa Ana speckled dace per mile (4.91 pounds per acre).

Figure 8. Representative photographs of East Fork San Gabriel River multiple-pass electrofishing Section 7.

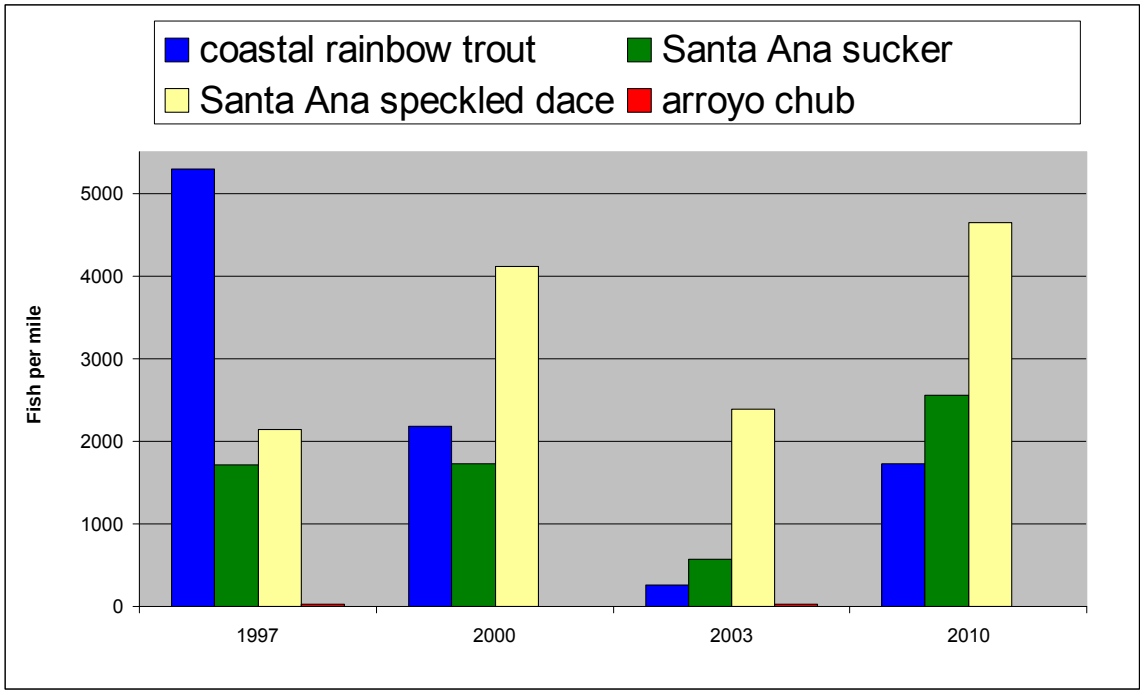
Population data from East Fork Sections 6 and 7 were averaged to yield overall abundance estimates for this portion of the river (Table 2). Santa Ana speckled dace were the most abundant in terms of density with 4640 Santa Ana speckled dace per mile (9.06 pounds per acre). Santa Ana suckers were the most abundant in terms of biomass with 35.84 pounds per acre (2555 Santa Ana suckers per mile). Coastal rainbow trout abundance was 1726 fish per mile with a biomass of 15.86 pounds per acre. These data were compared to results from past electrofishing surveys conducted in the vicinity of Heaton Flat and Shoemaker Canyon (Table 2). Historical coastal rainbow trout densities have ranged from 253 fish per mile (Heaton Flat; 2003) to 6691 fish per mile (Shoemaker Canyon; 1997). The densities observed in 2010 fell within the range

of previous surveys. Biomass estimates appear to have declined from 1997 to 2010; however, in 2003, wetted widths were not measured and, therefore, biomass estimates were not generated (2003 represents the lowest observed density of coastal rainbow trout since 1997). Observed Santa Ana sucker densities have ranged from 574 fish per mile (Heaton Flat; 2003) to 2620 fish per mile (Shoemaker Canyon; 2010). Observed Santa Ana speckled dace densities ranged from 732 fish per mile (Heaton Flat; 1997) to 7430 fish per mile (Heaton Flat; 2000).

Table 2. Comparison of multiple-pass electrofishing data on the East Fork 1997-2010.

Section	Location description	Survey date	Species	Estimated density (fish/mile)	Estimated biomass (lbs/acre)
1	Heaton Flat	7/18/1997	coastal rainbow trout	3906	50.48
			Santa Ana sucker	1785	71.36
			Santa Ana speckled dace	732	4.06
			arroyo chub	45	0.39
2	Shoemaker Canyon	9/24/1997	coastal rainbow trout	6691	28.67
			Santa Ana sucker	1643	31.03
			speckled dace	3553	9.46
	1997 Average		**coastal rainbow trout**	**5299**	**39.58**
			Santa Ana sucker	**1714**	**51.20**
			Santa Ana speckled dace	**2143**	**6.76**
			arroyo chub	**23**	**0.20**
1	Heaton Flat	6/14/2000	coastal rainbow trout	2702	31.64
			Santa Ana sucker	1402	25.93
			Santa Ana speckled dace	1237	4.58
2	Shoemaker Canyon	6/13/2000	coastal rainbow trout	1655	13.91
			Santa Ana sucker	2056	17.28
			Santa Ana speckled dace	6988	13.05
	2000 Average		**coastal rainbow trout**	**2179**	**22.78**
			Santa Ana sucker	**1729**	**21.61**
			Santa Ana speckled dace	**4113**	**8.82**
5	Heaton Flat	7/15/2003	coastal rainbow trout	253	n/a
			Santa Ana sucker	574	n/a
			Santa Ana speckled dace	2387	n/a
			arroyo chub	23	n/a
6	Heaton Flat	8/28/2010	coastal rainbow trout	1980	7.27
			Santa Ana sucker	2489	28.99
			Santa Ana speckled dace	7430	13.21
7	Shoemaker Canyon	8/29/2010	coastal rainbow trout	1472	24.45
			Santa Ana sucker	2620	42.69
			Santa Ana speckled dace	1850	4.91
	2010 Average		**coastal rainbow trout**	**1726**	**15.86**
			Santa Ana sucker	**2555**	**35.84**
			Santa Ana speckled dace	**4640**	**9.06**

Figure 9. Graph of East Fork average fish densities by species from multiple-pass electrofishing surveys 1997-2010.



Vincent Gulch Section 1 was located approximately 0.7 miles upstream from the confluence with the Prairie Fork (Figures 5 and 10). This stream falls within critical habitat of *Rana muscosa* (Federal Register 2006) and a visual encounter survey was conducted in the section prior to electrofishing. No mountain yellow-legged frogs were observed. Section 1 was 302 feet in length with an average wetted width of 11.9 feet and an average water depth of 0.2 feet. Habitat consisted of 95% flatwater and 5% pool with canopy closure at approximately eight percent. Substrate consisted of a thin layer of compressed minerals (including silts, sand, and fines) forming a hardened “crust” on the surface of cobbles and boulders. Overall instream fish cover was rated as fair; water depth (32%), boulders (30%), large woody debris (18%), and water turbulence (15%) formed the dominant cover types. Streamflow was measured at less than one cubic foot per second and stream gradient was six percent. There was evidence of past flooding including a meandering stream channel, areas of scour, and downed woody debris. Two coastal rainbow trout were captured in three passes and were 79 mm and 85 mm in total length. The estimated abundance in this section was 35 fish per mile (0.35 pounds per acre).

Figure 10. Photographs of Vincent Gulch multiple-pass electrofishing Section 1.

In June 2010, the HWTP South Coast Region Biologist conducted a Phase 1 initial resource assessment on Vincent Gulch via hook and line (C. McKibbin, DFG, personal communication, 2010). A total of 22 small- and medium-sized coastal rainbow trout were captured in 1.6 hours of effort; this survey was conducted upstream of multiple-pass electrofishing Section 1. Based on the limited number of fish captured in Section 1 in 2010, the HWTP opportunistically spot-shocked three small pools approximately one-half mile downstream of Section 1. Three medium- and two small-sized coastal rainbow trout were captured. Coastal rainbow trout occupancy in Vincent Gulch (and other first order headwater tributaries in the watershed) may be dependent on the time of year, surface flows, water temperatures, and/or other factors. Coastal rainbow trout densities observed in the Iron and Fish forks in 2009 were much higher than those observed in either Vincent Gulch or the Prairie Fork in 2010. It is unclear whether this is due to survey timing (surveys in 2009 were performed in the spring) or differences in habitat and productivity between these tributaries.

Direct observation

Direct observation snorkel surveys were conducted on the East Fork between Heaton Flat and the Iron Fork (Sections 110-1210; Figures 3 and 4) and in the headwaters (Sections 1310-1510; Figure 5). Due to the large geographic separation among the sections surveyed lower downstream in the system and those surveyed in the headwaters and differences in habitat, substrate, and fish composition, the data from these two different portions of the watershed were analyzed separately.

Twelve sections were surveyed between Heaton Flat and the confluence with the Iron Fork (Sections 110-1210), spanning a distance of approximately six river miles. Habitat was predominantly flatwater with some riffles and few pools (Figure 11). Overall substrate in this portion of the river was dominated by cobble and gravel with boulder, silt, sand, and bedrock present in lower percentages. However, in some areas, silt was more prevalent and formed a thin layer over

portions of the streambed. Among these 12 sections, a total of 1669.9 feet of river were surveyed with an average wetted width of 25.5 feet and average water depth of 1.0 feet. Water temperature ranged from 18 ºC to 22 ºC and air temperature was measured between 20 ºC and 33 ºC. Water visibility was dependent on the amount of silts and fines present in each section and ranged from three to ten feet. A total of 658 coastal rainbow trout, 497 Santa Ana suckers, and 307 Santa Ana speckled dace were observed in Sections 110 through 1210 (Table 3). Coastal rainbow trout ranged in size from YOY to large with 90% falling into the small size class (Table 3) with an average abundance of 2081 fish per mile. Santa Ana suckers and Santa Ana speckled dace were observed from Heaton Flat upstream approximately 4.5 miles to the confluence with Devil Gulch (Sections 110-810; a total of 1217.2 feet of stream habitat); average abundance of non-game fishes in these eight sections was 2156 Santa Ana suckers per mile and 1332 Santa Ana speckled dace per mile. In Sections 910-1510, coastal rainbow trout were the only fish species observed.

Figure 11. Representative photographs of East Fork San Gabriel River direct observation survey Sections 110-1210.





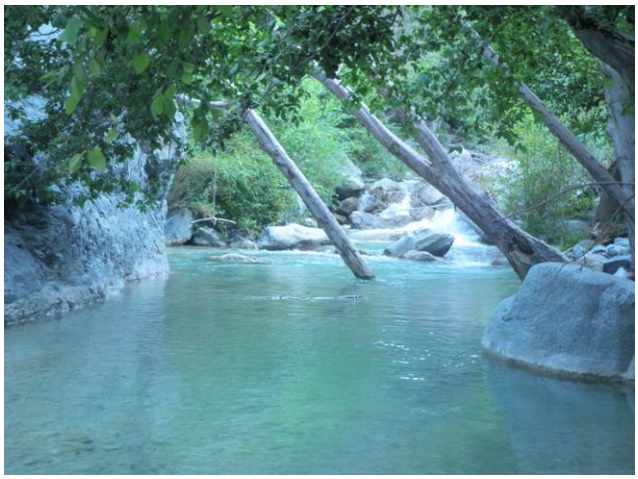
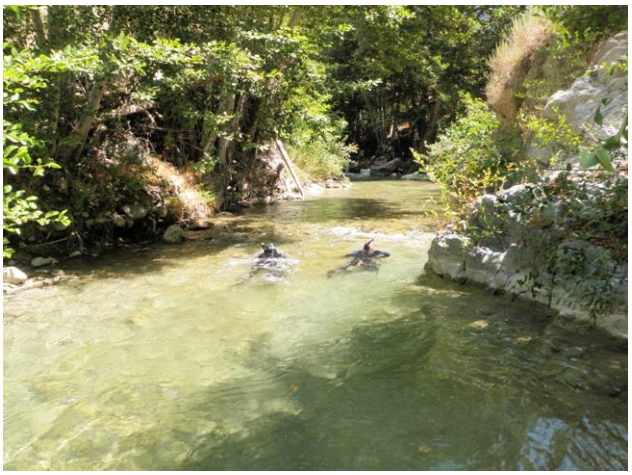



Table 3. Summary of 2010 direct observation data from the East Fork San Gabriel River, including the number of coastal rainbow trout observed within each section by size class and the estimated density.

Section	Section length (ft)	Habitat type	Number of coastal rainbow trout observed						Estimated density (fish/mi)
			YOY	Small < 5.9"	Medium 6" - 11.9"	Large 12" - 17.9"	Extra-large > 18"	Totals	
110	100.0	flatwater	0	61	0	0	0	61	3221
210	137.0	flatwater	0	41	7	0	0	48	1850
310	144.0	flatwater	0	42	3	0	0	45	1650
410	172.0	flatwater	0	86	5	0	0	91	2793
510	62.0	flatwater	0	25	5	0	0	30	2555
610	245.0	riffle	0	67	2	0	0	69	1487
710	261.2	riffle	0	144	4	0	0	148	2992
810	96.0	Flatwater	0	22	12	0	0	34	1870
910	89.7	Flatwater/pool	0	38	18	4	0	60	3532
1010	194.7	Flatwater	1	25	2	0	0	28	759
1110	132.8	Flatwater	0	37	4	0	0	41	1630
1210	35.5	Flatwater	0	2	1	0	0	3	446
1310	100.9	Flatwater	0	3	1	0	0	4	209
1410	87.5	Riffle	0	1	3	0	0	4	241
1510	101.4	Flatwater	0	4	4	0	0	8	417
Total	**1959.7**	**-**	**1**	**598**	**71**	**4**	**0**	**674**	**1816**

Three sections were surveyed in the upper portion of the East Fork (Sections 1310-1510), spanning a distance of 0.9 river miles (Figure 12). Habitat was mostly flatwater and riffle with cobble forming the dominant substrate. A total of 289.8 feet of stream were surveyed with an average wetted width of 9.5 feet and average water depth of 0.5 feet. The water temperature was 14 ºC and the air temperature was 25 ºC. A total of 16 coastal rainbow trout were observed with an even distribution of small and medium-sized fish and an estimated density of 292 fish per mile (Table 3).

Figure 12. Photographs of East Fork San Gabriel River direct observation survey sections 1310-1510.

The overall estimated coastal rainbow trout density observed in the East Fork in 2010 based on direct observation was 1816 fish per mile (Sections 110-1510). A comparison of direct observation survey results from 2009 and 2010 showed similar overall coastal rainbow trout densities in the main-stem (1552 fish per mile in 2009; Weaver and Mehalick 2009).

One section was surveyed on the Prairie Fork via direct observation (Section 110; Figure 13). This section was not selected at random but was surveyed from the confluence with the main-stem upstream 105 feet. The water temperature was 14 ºC and the air temperature was 24 ºC. Habitat was flatwater with cobble-dominated substrate. The average wetted width was 9.6 feet and the average water depth was 0.5 feet. Four coastal rainbow trout were observed with an estimated density of 201 fish per mile; these consisted of three small and one medium-sized fish (Table 4).

Figure 13. Representative photograph of Prairie Fork Section 110.

Table 4. Summary of 2010 direct observation data from the Prairie Fork, including the number of coastal rainbow trout observed by size class and the estimated density.

Section	Section length (ft)	Habitat type	Number of coastal rainbow trout observed						Estimated density (fish/mi)
			YOY	Small < 5.9"	Medium 6" - 11.9"	Large 12" - 17.9"	Extra-large > 18"	Totals	
110	105.0	Flatwater	0	3	1	0	0	4	201

Data from the ASB located at Heaton Flat on the East Fork were examined for the years 2003 through 2009 (Table 5). Voluntary fishing information from this ASB provides further insight into this fishery, including angling pressure, catch rates, and catch sizes. Based on the number of anglers who completed these forms, it appears that angler use was relatively high. Catch rates were similar for all years and averaged 2.17 fish per hour. The majority of fish captured were in the small- and medium-size classes.

Table 5. Summary of angler survey box forms from the East Fork at Heaton Flat from 2003-2009.

Year	Total anglers	Total hours fished	Trout captured by size class			Total number of trout caught	Average catch rate (trout per hour)
			Small	Medium	Large		
2003	142	519	422	617	14	1053	2.03
2004	138	576	282	522	32	836	1.45
2005	63	250	134	348	15	497	1.99
2006	129	516.5	503	659	23	1185	2.29
2007	132	501	570	570	11	1151	2.30
2008	146	581.75	1009	488	44	1541	2.65
2009	149	595.5	1087	379	1	1467	2.46
				Average			**2.17**

Discussion:

Multiple-pass electrofishing data on the East Fork in the vicinity of Heaton Flat and Shoemaker Canyon show Santa Ana speckled dace to be the most

abundant species based on our density estimates. Zero arroyo chubs (*Gila orcutti*) were captured in 2010; however, they are native to the drainage and have been captured in relatively low densities during previous surveys (1997 and 2003). In the vicinity of Devil Gulch, it appears species composition changes to a coastal rainbow trout fishery; neither Santa Ana suckers nor Santa Ana speckled dace were observed upstream of Devil Gulch (upstream of the Bridge to Nowhere). Coastal rainbow trout densities were lowest in the headwaters of the system.

A comparison of the two survey methodologies (multiple-pass backpack electrofishing versus direct observation snorkel survey) utilized in the lower portion of watershed in 2010 yielded a higher density estimate of coastal rainbow trout and lower density of Santa Ana suckers and Santa Ana speckled dace via the direct observation technique. Water visibility in these lower sections ranged from six to ten feet and did not appear to be a limiting factor. Habitat preferences of Santa Ana suckers and Santa Ana speckled dace may negatively bias visual counts of these species and account for lower density estimates via direct observation. Coastal rainbow trout may have been doubly counted during direct observation surveys or relatively low capture rates during the multiple-pass electrofishing (50% or less for all three species) may account for the differences in density estimates.

Conclusion:

The East Fork is within the native range of coastal rainbow trout and provides a wild trout fishery in close proximity to California's largest metropolitan area. In addition, 2474 acres of the upper East Fork drainage is designated as critical habitat for federally endangered mountain yellow-legged frogs (U.S. Fish and Wildlife Service, 2006) and includes Bear Gulch, Vincent Gulch, Fish Fork, Iron Fork, and Alder Gulch. No mountain yellow-legged frogs were observed in 2010. The lower portion of the watershed is easily accessed by road and is a popular destination for recreational activities including swimming, angling, hiking, camping, and gold panning. The upper watershed is remote, roadless, and within the Sheep Mountain Wilderness Area. Fishing on the East Fork is open year-round with a five fish-bag limit (DFG Southern District General freshwater fishing regulations). As of 2008, the DFG no longer stocks hatchery fish in the East Fork (C. McKibbin, DFG, personal communication, 2010).

Based on the results of the HWTP Phase 2 candidate water assessments conducted between 1997 and 2010, in September 2010, the DFG recommended to the California Fish and Game Commission that the East Fork San Gabriel River upstream of Heaton Flat including all tributaries be designated as both a Heritage and Wild Trout Water (watershed-level designation). This designation was adopted and includes approximately 33.6 miles of perennial stream habitat. The DFG HWTP (Headquarters and South Coast Region) will generate a fishery management plan for this water by 2013.

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