

Agua Blanca Creek Summary Report

June 28-29, 2009

State of California

Natural Resources Agency

Department of Fish and Game

Heritage and Wild Trout Program



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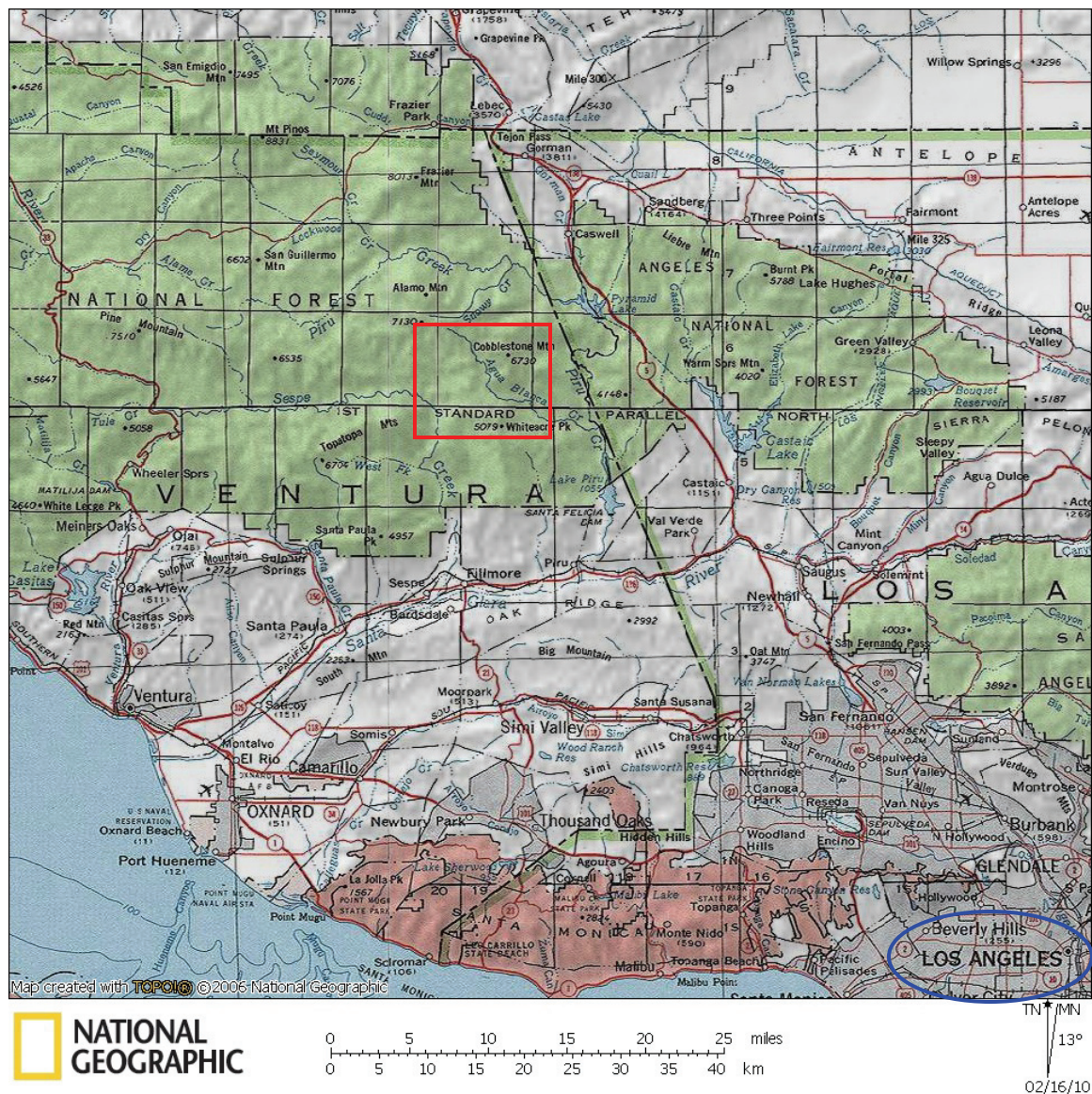
Introduction:

Agua Blanca Creek (Ventura County) is a tributary to Piru Creek in the Santa Clara River drainage and is located near the southern end of the historic range of coastal rainbow trout (*Oncorhynchus mykiss irideus*). In 2008, the California Department of Fish and Game's (DFG) Heritage and Wild Trout Program (HWTP) conducted Phase 1 initial resource assessments on Agua Blanca Creek at 13 locations throughout the watershed to determine whether this fishery meets the minimum qualifications for designation as a Wild Trout Water. Wild Trout Waters are those that support self-sustaining populations of trout, 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. On an annual basis, the HWTP is responsible for recommending to the California Fish and Game Commission 25 miles of stream habitat (and one lake) that meet the qualifications for Wild Trout Water designation. The HWTP utilizes a phased approach when evaluating waters for potential designation.

HWTP Phase 1 assessments are designed to provide baseline information on fish species composition, relative abundance and size of fishes (specifically trout), public access, aesthetics of the fishery, basic habitat attributes, and whether the trout present are wild or hatchery-stocked. Past direct observation snorkel surveys throughout the Agua Blanca Creek watershed showed relatively high densities of wild coastal rainbow trout (Weaver and Mehalick 2008). Although access is remote and difficult, Agua Blanca Creek is publicly accessible and open to fishing year-round with a bag limit of five fish. Based on the 2008 survey results, the HWTP recommended moving forward with Phase 2 Candidate Water assessments of Agua Blanca Creek.

HWTP Phase 2 assessments provide a more comprehensive evaluation of the fishery, habitat, and angler use. Through multi-year surveys, trends in the population and changes to habitat may be observed. In 2009, the HWTP initiated Phase 2 candidate water assessments on Agua Blanca Creek via direct observation snorkel surveys. These surveys were concentrated in the upper portion of the watershed in an area that was subject to past fire. Although the population estimates were relatively high in 2008, large trout were not readily observed. Objectives of the survey were to delineate the upper extent of fish distribution, document habitat changes post-fire, and gather population-level information including size class distribution and estimates of fish density. It is unclear whether Agua Blanca Creek is able to support larger fish or whether they were absent from the system as a result of negative effects and/or habitat degradation from the recent fires.

Figure 1. National Geographic Topo! overview map of Agua Blanca Creek (red box) in relation to Los Angeles, CA (blue circle).



Methods:

Direct observation surveys were conducted using snorkeling methods, an effective survey technique in many small streams and creeks in northern California and the Pacific Northwest (Hankin and Reeves 1988). Surveys were conducted on June 28th and 29th, 2009 in the vicinity of Borracho Spring and the United States Forest Service Ant Hill Campground (Figure 2). Thirteen new sections (Sections 109-1309) and three existing sections (Sections 408-608) were surveyed. The existing sections were first surveyed in 2008; GPS coordinates were used to relocate the downstream section boundaries. Due to

changes in habitat that occurred between 2008 and 2009, it was difficult to relocate the exact upstream boundaries of these three sections. Therefore, certain section lengths vary between 2008 and 2009. In particular, habitat changed significantly in the vicinity of Section 508. Surveyors who were present in both 2008 and 2009 used their prior knowledge to locate the upstream section boundary of Section 508 to the best of their ability.

Figure 2. National Geographic Topo! map of Agua Blanca Creek showing 2009 section locations and points of interest.



Figure 3. Satellite imagery-based map of Agua Blanca Creek showing 2009 section locations and points of interest.



All new sections were spaced approximately one-quarter mile apart and were chosen at random. Specific section boundaries were located at distinct breaks between habitat types and/or stream gradient. Surveys were conducted in an upstream direction with one diver counting fish by species. In some instances, a bank-side observer assisted the diver by counting fish in the areas too shallow to dive and/or at the upstream boundary of sections where the break in habitat or gradient was not distinct enough to limit fish movement out of the section. 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 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.

For each section, surveyors measured section length along the thalweg, water and air temperature (in the shade), average wetted width and water depth, and water visibility. Habitat type (flatwater, riffle, or pool) was identified following Level 2 protocol as defined in the California Salmonid Stream Habitat Restoration Manual (Flossi et al. 1988). Representative photographs were taken and GPS coordinates were recorded for the section boundaries.

Figure 4. Agua Blanca Creek 2009 direct observation survey sections showing the variety of habitat types and riparian vegetation observed.

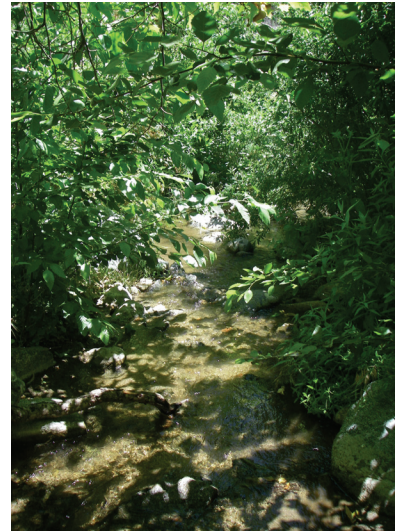
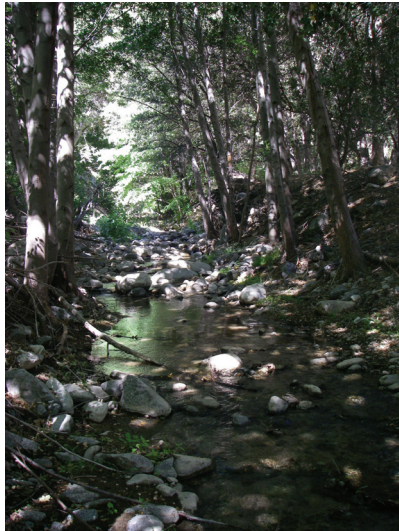


Figure 5. Photograph of coastal rainbow trout captured in Agua Blanca Creek in 2009.



Results:

Habitat throughout the system was varied and ranged from low-gradient, meandering reaches to more confined and steeper canyon areas (medium gradient). Sixteen sections were selected throughout the upper watershed for direct observation surveys, consisting of a combination of all habitat encountered (flatwater, riffle, and pool). Water temperatures ranged from 17 °C to 28 °C; air temperatures were between 25 °C and 35 °C. While measuring stream temperatures, there was notable variation from site to site due to the presence of cold-water springs. Substrate was dominated by sand and cobble with some gravel and boulders. The cumulative length of all 16 sections surveyed was 1,102 feet with an average wetted width of 6.4 feet and an average water depth of 0.4 feet (Table 1). Flow was estimated at less than five cubic feet per second based on visual observations.

Table 1. 2009 Agua Blanca Creek direct observation habitat data.

Section number	Section length (ft)	Habitat type percentages			Average wetted width (ft)	Average water depth (ft)	Water visibility (ft)
		Flatwater	Pool	Riffle			
109	110.0	0%	10%	90%	5.6	0.2	2
209	38.5	0%	0%	100%	4.9	0.3	4
309	104.0	90%	0%	10%	6.5	0.2	4
409	89.3	80%	0%	20%	5.7	1.4	4
509	124.0	0%	0%	100%	6.4	0.2	4
609	133.0	100%	0%	0%	4.4	0.2	4
709	22.5	100%	0%	0%	7.3	0.5	4
809	21.0	50%	50%	0%	4.8	0.4	4
909	53.0	100%	0%	0%	7.3	0.3	4
408	63.0	0%	0%	100%	5.8	0.3	4
508	83.0	75%	0%	25%	6.2	0.3	4
608	13.7	0%	100%	0%	10.0	0.9	4
1009	79.0	100%	0%	0%	7.1	0.2	4
1109	72.0	0%	0%	100%	7.5	0.2	4
1209	44.0	60%	0%	40%	7.6	0.2	4
1309	52.0	40%	0%	60%	5.5	0.1	4
Total	1102.0	n/a	n/a	n/a	6.4	0.4	n/a

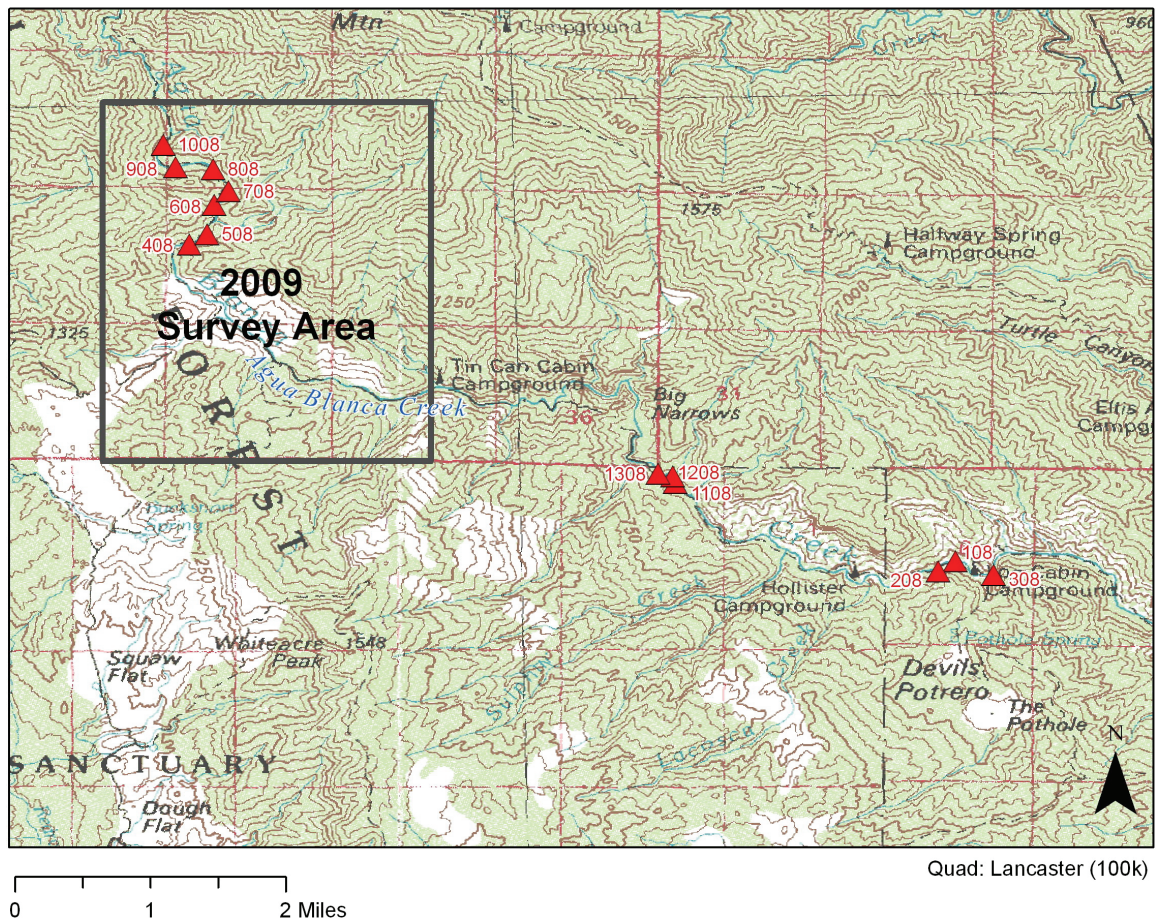
A total of 246 coastal rainbow trout were observed in the 16 sections surveyed in 2009 and included YOY, small, and medium-sized fish (Table 2). The majority were in the small size class (79% not including YOY). Based on the total section length surveyed and the total number of fish observed, the 2009 data indicate approximately 1,179 coastal rainbow trout per mile are present in the upper watershed of Agua Blanca Creek.

Table 2. 2009 Agua Blanca Creek direct observation survey data including the number of fish observed by section and size class.

Section number	Section length (ft)	Number of coastal rainbow trout observed					Totals	Estimated density (fish/mi)
		YOY	Small < 5.9"	Medium 6" - 11.9"	Large 12" - 17.9"	Xlarge > 18"		
109	110.0	0	10	0	0	0	10	480
209	38.5	0	2	0	0	0	2	274
309	104.0	2	16	2	0	0	20	1015
409	89.3	6	14	4	0	0	24	1419
509	124.0	0	15	2	0	0	17	724
609	133.0	0	18	1	0	0	19	754
709	22.5	0	5	4	0	0	9	2112
809	21.0	0	8	7	0	0	15	3771
909	53.0	0	17	1	0	0	18	1793
408	63.0	1	17	2	0	0	20	1676
508	83.0	4	14	3	0	0	21	1336
608	13.7	3	28	4	0	0	35	13489
1009	79.0	3	12	0	0	0	15	1003
1109	72.0	2	15	1	0	0	18	1320
1209	44.0	0	3	0	0	0	3	360
1309	52.0	0	0	0	0	0	0	0
Total	1102.0	21	194	31	0	0	246	1179

In 2008, 13 sections were surveyed (Figure 6). These sections were located throughout the watershed, from the confluence with Piru Creek upstream to Borracho Spring. The HWTP estimated 1,316 coastal rainbow trout per mile in 2008 (Weaver and Mehalick 2008). Density estimates for coastal rainbow trout in the upper portions of Agua Blanca Creek were similar for both 2008 and 2009. Size class distribution was also similar, with the majority of fish falling in the small size class. However, in 2008, two large-sized fish were observed. Surveyors in 2009 noted that, in comparison to 2008, there appeared to be a decrease in flow and an increase in both riparian vegetation and downed woody debris. Portions of the upper watershed showed evidence of past fire; however, in certain areas, there appeared to be a regeneration of herbaceous riparian vegetation. An examination of habitat data shows that the average water depth was the same in both years (0.4 ft) but the average wetted width in 2008 (11.6 ft) was nearly double the width measured in 2009 (6.4 ft).

Figure 6. Map of Agua Blanca Creek 2008 direct observation survey locations in relation to 2009 survey area.



In addition to the 16 sections surveyed in 2009, the HWTP went farther up the watershed on foot to explore flow connectivity and to locate potential fish migration barriers. In 2008, this portion of the drainage had intermittent flow. At approximately one mile upstream of Section 1309, a barrier consisting of two waterfalls (separated by a small pool) was located (Figure 6). Each waterfall was approximately 15 feet in height and the pool was approximately 11 feet in diameter and two feet deep. No fish were observed in the pool and HWTP surveyors were unable to ascend the waterfall to determine fish presence or absence higher in the system.

Figure 6. Photograph of waterfall located in upper Agua Blanca Creek.



Discussion:

The results of both the 2008 and 2009 direct observation surveys show Agua Blanca Creek to contain relatively high densities of coastal rainbow trout. Based on outward appearance (especially fin condition), all trout observed appeared wild. Agua Blanca Creek is publicly accessible and open to fishing, contains self-sustaining populations of native and wild fish, and is aesthetically pleasing. This small headwater stream most likely provides spawning and rearing habitat, as well as thermal refuge for coastal rainbow trout in middle Piru Creek. Presumably, larger fish have the ability to travel downstream to colonize Piru Creek. Piru Creek supports populations of both wild and hatchery-stocked rainbow trout, as well as non-salmonid fishes, and is subject to high temperature events and other stressors. Cold-water tributary streams such as Agua Blanca Creek may be critical to maintaining salmonid populations in the Piru Creek drainage by providing rearing and spawning habitat, cold-water influence, and a source population of wild-reared fish to the main-stem.

The HWTP recommends pursuing Phase 2 candidate water assessments on Agua Blanca Creek in future years to evaluate trends in the wild trout population, identify stressors and habitat-based limitations on population structure and abundance, and quantify angling use and catch rates.

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