

Steelhead/rainbow trout resources of Ventura County

Rincon

Rincon Creek consists of about 9.7 stream miles. It flows southwest, entering the Pacific Ocean at Rincon Point. The culvert at the Highway 101 crossing is a total passage barrier (Stoecker *et al.* 2002).

A watershed plan prepared for Rincon Creek includes a review of historical steelhead information. The review notes *O. mykiss* stocking occurred in the 1940s and subsequently. Anecdotal accounts of trout observations from the 1950s to the 1980s also are included (Tetra Tech 2007; Stoecker *et al.* 2002).

Rincon Creek was surveyed in 1993 and no fish were observed. The survey report states, “Sediment inputs from Casitas Creek are destroying downstream habitat” (Unknown 1993). A 1994 DFG memo relayed the results of surveys from that year. The memo states, “The Wheeler Fire [in 1985] could have been the event that eradicated rainbow trout from Rincon Creek, although there is anecdotal information from a landowner along Rincon Creek that suggests that the population was extirpated as early as the 1960’s” (DFG 1994a). The memo adds, “It appears that the Highway 101 culvert has prevented the recolonization of rainbow trout/steelhead in Rincon Creek” (DFG 1994a).

Consultants surveyed Rincon Creek as part of a steelhead study, and observed *O. mykiss* likely representing one year class in 2001 (Stoecker *et al.* 2002). A 2002 memo from NMFS staff states, “Rincon Creek provides approximately 4 miles of steelhead spawning and rearing habitat...” (NMFS 2002a). A 2002 study report notes water quality impacts on Rincon Creek from the large sediment load carried by Casitas Creek, a tributary (Stoecker *et al.* 2002).

A 2006 survey found seven trout in Rincon Creek upstream from the Casitas Creek confluence (Bates pers. comm.). Survey and other information was used to prepare a watershed plan in 2007. The plan notes reaches of “fair” and “good” steelhead habitat between the Highway 101 culvert and the Casitas Creek confluence, and “good” and “very good” habitat upstream to the rock quarry (Tetra Tech 2007). The plan recommends erosion control, non-native plant control, riparian re-vegetation, and channel re-configuration projects to address factors limiting steelhead habitat in the Rincon Creek watershed.

Ventura River

The Ventura River consists of about 16.5 stream miles and drains a watershed of about 228 square miles. Its headwaters are the confluence of Matilija Creek and North Fork Matilija Creek near the town of Ojai. It flows south, entering the Pacific Ocean west of the city of Ventura. The Robles Diversion Dam, located at about stream mile 14.5, was constructed in the mid 1950s and was used to convey Ventura River flows to Lake Casitas for storage beginning in 1959. The operating agreement for Ventura River diversions stipulates a 30 cfs flow during steelhead migration season. Immediately after storm events, 50 cfs is discharged and ramped down to 30 cfs to mimic the natural hydrograph (NHI 2006; Lewis pers. comm.).

A 1946 DFG correspondence concerning the then-proposed Matilija Dam included an estimate of the Ventura River watershed steelhead run of about 4,000 to 5,000 individuals (DFG 1946b). The estimating method is not described in the correspondence. The document states, “It is our belief that 48 percent of the adult steelhead spawn in the ten miles below the Matilija dam

site...” (DFG 1946b). In a 1973 DFG letter staff states, “As recently as in the 1950s, the Ventura River steelhead run involved an estimated 2,500 to 3,000 fish” (DFG 1973). The source of this estimate is not provided in the letter.

A DFG survey report from 1934 noted that the Ventura River was “of no [habitat] value except for SH run in winter” due largely to water diversion (DFG 1934). The California Fish and Game journal from 1938 states about the Ventura, “This is a trout stream right down to the ocean” (DFG 1938).

A 1946 issue of the journal notes, “The Division of Fish and Game reports large and consistent runs into [the] Ventura...” (DFG 1946c). In 1947 DFG staff noted, “An estimated 250-300 adult steelhead were found to be present in scattered pools throughout the [lower] 5 miles...” (DFG 1947a). The 1947 memo adds, “In general the adult steelhead averaged 24-26 inches in length and weighed an estimated 5-6 pounds” (DFG 1947a). Staff from DFG proposed that during a dry year about two miles of the lower Ventura River was suitable for spawning that could support a run of about 1,000 individuals.

As part of a study of freshwater fishes and habitat, the Ventura River was surveyed in 1975 at Foster Park and immediately downstream from the Mitilija Creek confluence. One *O. mykiss* individual about 7.9 inches in length was observed at the downstream location, while individuals between about 2.3 and 6.5 inches in length were observed upstream (Swift 1975).

The Ventura River was studied in 1976-1977 as part of a water resources planning process and juvenile *O. mykiss* was observed. The report states, “...the Casitas Springs trout population is a mixture of resident rainbow trout and steelhead” (EDAW 1981). The investigators estimated the average run size at about 100 individuals and concluded that the population was limited primarily by “the quantity and quality of the summer juvenile rearing habitat” (EDAW 1981).

An EPA memo documents observations of adult steelhead in-migrants in the upper Ventura River estuary in 1991 (EPA 1991). Staff from DFG observed multiple *O. mykiss* year classes, with individuals to about 13.8 inches in length upstream from the diversion dam in 1992 (DFG 1999). The survey report states noted “very good spawning habitat and good rearing habitat” upstream from the dam and “generally poor” habitat downstream from the dam (DFG 1999).

A fish survey crew observed adult steelhead between about 22 and 25 inches in the lower Ventura River in July 2007 and NMFS staff made additional observations of two adult steelhead in August 2007 (NFMS 2007). Two adult steelhead estimated to be about 21 and 25 inches in length were recorded on video in the Robles Diversion Fish Passage Facilities in February 2008 (Capelli pers. comm.).

Coyote

Coyote Creek consists of about 13.3 stream miles and is tributary to the Ventura River. The El Rancho Cola Dam was constructed in the early 1950s at about stream mile 2.7. Casitas Dam, forming Lake Casitas, was completed in 1959 at about stream mile 2.5.

A letter written by a long-time Ventura County resident describes steelhead resources of the Ventura River system. The letter states, “As kids [in the late 1930s through the mid 1940s] we fished the headwaters of [Coyote Creek] during the summer trout season and caught a good number of land-locked steelhead up to 30 inches in length” (Unknown 1970).

In a 1951 DFG memo staff refers to Coyote Creek flows as “permanent though limited”. The memo states, “Anadromous fishes reportedly have had access to the first 2 1/2 miles of stream above El Rancho Cola Dam where further progress is blocked by a falls. No tributaries of any importance are found in this 2 1/2 mile section which contains excellent spawning areas” (DFG 1951a).

Coyote Creek was stocked in 1976 (Moore 1980a). Staff from USFS surveyed Coyote Creek in 1979 and observed “abundant” *O. mykiss*, including YOY and individuals to 14 inches in length. The survey report states, “Coyote Creek at one time (prior to the construction of Casitas Dam, 1958) supported a “good” approx. 500 run of steelhead trout. I would presume that an unknown number of spawning rainbow trout from Lake Casitas currently utilize Coyote Creek for a portion of each winter/spring for spawning purposes, especially in the lowermost reaches of the stream” (Moore 1980a).

Santa Ana

Santa Ana Creek consists of about six stream miles and is tributary to Coyote Creek. The lower three miles of the creek was inundated by Lake Casitas.

A letter written by a long-time Ventura County resident describes steelhead resources of the Ventura River system. The letter states, “As kids [in the late 1930s through the mid 1940s] we fished the headwaters of [Santa Ana Creek] during the summer trout season and caught a good number of land-locked steelhead up to 30 inches in length” (Unknown 1970).

Staff from USFS surveyed Santa Ana Creek in 1979 and observed *O. mykiss*. A 1980 report recommends, “Stipulate conditions of diversion to insure sufficient surface flow [in Santa Ana Creek] for maintenance of fish below diversion in summer and fall and drought years” (Moore 1980a).

San Antonio

San Antonio Creek consists of about 8.5 stream miles draining an area of about 84 square miles. It flows southwest, entering the Ventura south of the town of Oak View.

Staff from DFG sampled San Antonio Creek in 1982 and noted two year classes of *O. mykiss* in the lower creek reach (DFG 1982). The creek was sampled again in 1992 when only one individual believed to be of hatchery origin was observed. The survey report states, “Habitat throughout San Antonio Creek is very good and this stream possesses the most abundant steelhead spawning areas presently available in the Ventura River system” (DFG 1999). In a 1993 survey of San Antonio Creek, no trout were observed (DFG 1994b).

Oncorhynchus mykiss was observed in an isolated pool in San Antonio Creek in 1999. The location was downstream from the Thacher Creek confluence (Padre Associates Inc. 2000). Staff from NMFS reported an observation of an adult steelhead in San Antonio Creek in 2001 (NMFS 2002b).

Ojai

Ojai Creek consists of about 3.6 stream miles and is tributary to San Antonio Creek. It flows south and is channelized for most of its length passing through the town of Ojai.

The California Fish and Game journal from 1946 states, “[Rainbow trout] was no doubt a native species in southern California. A specimen was collected in Ojai Creek, Ventura County, in 1875” (DFG 1946c).

Gridley Canyon

Gridley Canon Creek consists of about 3.1 stream miles and is a headwaters tributary of San Antonio Creek. It flows southeast to its confluence with Senior Canyon Creek.

A 1944 fish rescue report indicates that *O. mykiss* fingerlings were present in Gridley Canyon Creek (DFG 1944). In 1971, rainbow trout were moved from Matilija Creek to Gridley Creek (Moore 1980a). Staff from USFS surveyed Gridley Canyon Creek in 1979 and observed “common” *O. mykiss*. The survey report states, “Gridley Creek used to have a run of steelhead rainbow trout. This declined and vanished with the development of the Ojai Valley” (Moore 1980a).

Notes regarding steelhead sightings indicate that *O. mykiss* YOY were observed in 2001 (NMFS 2002c).

Matilija

Matilija Creek consists of about 14.8 stream miles. The confluence of Matilija Creek and North Fork Matilija Creek form the Ventura River. The creek flows southeast to join the North Fork Matilija upstream from Sopers Ranch. Matilija Dam, constructed in 1947, is located at stream mile 0.5.

A 1946 DFG correspondence concerning the then-proposed Matilija Dam included an estimate of the Matilija Creek steelhead run of about 2,000 to 2,500 individuals (DFG 1946b). The document states regarding the area affected by the dam, “This area comprises one of the best spawning grounds of the entire [Ventura] river system, and the distance above the dam represents approximately twelve miles of spawning area or one-half of the entire stream area of the Matilija-Ventura section” (DFG 1946b).

A DFG memo from 1956 indicated that successful *O. mykiss* reproduction occurred downstream from Matilija Dam. Regarding Matilija Creek upstream from Matilija Lake, the memo states, “This area supports and sustains a native trout population” (DFG 1956a).

As part of a study of freshwater fishes and habitat, Matilija Creek was surveyed in 1975 and *O. mykiss* was observed immediately upstream from the reservoir (Swift 1975). Staff from USFS surveyed Matilija Creek in 1979 and observed “common” *O. mykiss*. The survey report states, “Good summer holding water exists, high potential for excellent ‘large’ RBT fishery” (Moore 1980a). The report notes periodic stocking of the creek.

Matilija Creek was surveyed in 1992 between the North Fork confluence and Matilija Dam. Staff from DFG did not observe *O. mykiss* (DFG 1999). As part of a larger study of streams of the Los Padres National Forest, USFS staff surveyed Matilija Creek in 1999. Multiple *O. mykiss* year classes were observed at four sampling locations (USFS 1999).

Matilija Creek was sampled in 2003 as part of a study of the genetic structure of southern California *O. mykiss*. The resulting 2006 report notes that the Upper North Fork and Matilija creeks populations are most closely related to populations downstream from the Matilija Dam (Girman and Garza 2006). Steelhead habitat in the upper Matilija Creek basin was assessed in 2003. Four *O. mykiss* individuals were observed at one of the eight mainstem Matilija Creek survey reaches. The assessment states, "Most of the 'good' spawning and rearing habitat in the mainstem Matilija was located in the upper portions of the watershed, whereas the lower reaches typically contained little spawning habitat and only 'fair' or 'fair to good' rearing habitat..." (TRPA 2003, p. 21).

Matilija Dam removal is in an advanced state of planning and has been estimated to cost \$130 million to more than \$144 million. The project may occur in 2011 or 2012, according to staff from the Army Corps of Engineers (Biasotti 2007).

North Fork Matilija

North Fork Matilija Creek consists of about eight stream miles and is tributary to Matilija Creek. It flows southwest to join the mainstem, thus forming the headwaters of the Ventura River.

A 1946 DFG correspondence concerning the then-proposed Matilija Dam states, "The North Fork of the Matilija represents a very small portion of the available spawning area of the Ventura System due to the fact that water conditions are poor" (DFG 1946b).

As part of a study of freshwater fishes and habitat, North Fork Matilija Creek was surveyed in 1975 and *O. mykiss* between about 1.8 and 5.5 inches in length were observed (Swift 1975). Staff from USFS surveyed North Fork Matilija Creek in 1979 and observed "few" *O. mykiss*. The survey report states, "Intense angling pressure...has caused the elimination of the wild trout fishery..." (Moore 1980a). The report notes regular stocking of the creek.

North Fork Matilija Creek was surveyed in 1993 and multiple *O. mykiss* year classes were observed. The population appeared to be dominated by "wild rainbow trout" although individuals of hatchery origin also were present (DFG 1994b). Snorkel surveys conducted in 1999 and 2000 indicated that multiple *O. mykiss* year classes were present at two North Fork Matilija Creek sites (USFS 2006).

North Fork Matilija Creek was sampled in 2003 as part of a study of the genetic structure of southern California *O. mykiss*. The resulting report notes that the North Fork Matilija Creek population is more closely related to populations upstream from the Matilija Dam than to other populations considered in the study (Girman and Garza 2006). Steelhead habitat in the upper Matilija Creek basin was assessed in 2003. *Oncorhynchus mykiss* individuals were observed the two North Fork Matilija Creek survey reaches, and redds were noted in one of the reaches. The assessment states, "[The Lower North Fork] contained consistently good habitat throughout all mapped reaches" (TRPA 2003, p. 21).

Bear

Bear Creek consists of about three stream miles and is tributary to North Fork Matilija Creek. It flows west, entering North Fork Matilija Creek upstream from Wheeler Gorge.

Bear Creek was sampled in 2003 as part of a study of the genetic structure of southern California *O. mykiss*. Individuals between about three and seven inches in length were observed and tissue samples were collected (NMFS 2006). The resulting report notes that the Bear Creek population is more closely related to populations upstream from the Matilija Dam than to other populations considered in the study (Girman and Garza 2006).

Murietta Canyon

Murietta Canyon Creek consists of about 3.5 stream miles and is tributary to Matilija Creek. It flows east, entering Matilija Creek about five miles upstream from Lake Matilija.

Staff from USFS surveyed Murietta Creek in 1979 and observed “many” *O. mykiss*. The survey report notes periodic stocking and states, “Small but valuable and self sustaining RBT fishery” (Moore 1980a).

Murietta Canyon Creek was surveyed in 2003 as part of an assessment of steelhead habitat in the Matilija Creek basin. Two “rainbow trout” were observed during the surveys (TRPA 2003).

Upper North Fork Matilija

Upper North Fork Matilija Creek consists of about 6.7 stream miles and is tributary to Matilija Creek. It enters Matilija Creek from the north, opposite from Murietta Canyon Creek.

Staff from USFS surveyed Upper North Fork Matilija Creek in 1979 and observed “abundant” *O. mykiss*. The survey report notes stocking in that year and “Very poor habitat at base flows” (Moore 1980a).

Sampling was performed on Upper North Fork Matilija Creek as part of an academic study in 1993. One *O. mykiss* year class was recorded (Carpanzano 1996). Staff from USFS surveyed Upper North Fork Matilija Creek in 1996 and observed multiple *O. mykiss* year classes (USFS 2006).

Upper North Fork Matilija Creek was sampled in 2003 as part of a study of the genetic structure of southern California *O. mykiss*. The resulting 2006 report notes that the Upper North Fork and Matilija creeks populations are most closely related to populations downstream from the Matilija Dam (Girman and Garza 2006). Steelhead habitat in the upper Matilija Creek basin was assessed in 2003. *Oncorhynchus mykiss* individuals were observed at four of the four Upper North Fork Matilija Creek survey reaches. The assessment states, “[The Upper North Fork] contained consistently good habitat throughout all mapped reaches” (TRPA 2003, p. 21).

Upper North Fork Matilija tributary

An unnamed tributary to Upper North Fork Matilija Creek consists of about 2.5 stream miles. The creek flows southwest entering the Upper North Fork at about stream mile 2.6. A falls is located at about stream mile 0.8 on the tributary that is considered a total passage barrier (TRPA 2003).

Steelhead habitat in the upper Matilija Creek basin was assessed in 2003. Five *O. mykiss* individuals were observed at the Upper North Fork Matilija Creek tributary survey reach. The assessment states, "Overall the habitat quality rating for this tributary was judged as good" (TRPA 2003, p. 16).

Old Man Canyon

Old Man Canyon Creek consists of about three stream miles and is tributary to Matilija Creek. It flows east, entering Matilija Creek about 1.5 miles upstream from the Murietta Canyon and Upper North Fork Matilija creeks confluences.

Steelhead habitat in the upper Matilija Creek basin was assessed in March 2003. Two *O. mykiss* individuals were observed at one of the five Old Man Canyon Creek survey reaches (TRPA 2003).

Santa Clara River

The Santa Clara River drains a watershed of about 1,600 square miles and flows chiefly west, entering the Pacific Ocean south of the city of Ventura. The reach between the junction of Soledad and Aliso canyons and the mouth consists of about 75 stream miles.

The Vern Freeman Diversion Dam was constructed in 1991 at about stream mile ten. A fishway was provided at the facility that became operational in 1991. Additionally, several reservoirs are located in the basin on Santa Clara River tributaries.

A 1980 assessment of then-proposed improvements to the Vern Freeman Diversion included an estimate of the historical steelhead run in the Santa Clara River. Based on run size estimates for Matilija Creek and comparison of habitat information between Matilija Creek and the Santa Clara River watershed, the author projected a run of about 9,000 individuals (Moore 1980b, p. 15). The assessment report characterized the estimate as "reasonable" and "conservative" (Moore 1980b).

A 1946 issue of the DFG journal relays, "The Division of Fish and Game reports large and consistent [steelhead] runs into Ventura and Santa Clara rivers..." (DFG 1946c). Notes from 1947 state, "Below the intake the stream goes dry as all of the water is diverted... There are many small sand diversion dams across the stream and when the steelhead start running there is sufficient flow to wash out these diversions. It is difficult for the young steelhead returning" (DFG 1951b).

Field notes from DFG staff indicate the presence of multiple *O. mykiss* year classes in the Santa Clara River in 1951. A report from 1951 states, "The lower reaches of the Ventura and Santa Clara Rivers are of secondary importance as a means of access by which steelhead trout migrate upstream from the ocean to headwaters tributaries. With increased water development and reduced runoff to the oceans, these runs will unfortunately continue to diminish in size and importance" (DFG 1951c).

A 1974 DFG reference states, "...there is no fishery to speak of in the [Santa Clara] river now" although it notes that "...there are some [steelhead] now that come up during large flows" (DFG 1974). The mainstem Santa Clara was sampled in 1975 as part of a fish distribution study and *O. mykiss* was seen at one of 25 sampling stations. The investigator notes, "[*O. mykiss*] lives in the discharge of Fillmore Fish Hatchery" (Bell 1978). These fish likely were produced by the hatchery (McEachron pers. comm.).

To provide information for analyzing a water diversion application, DFG studied the lower Santa Clara River watershed in 1982-1984. The study indicated that a small number of adult steelhead spawned in the Santa Clara system and that the system supported smolt production (DFG 1985).

Trapping performed between 1994 and 1998 at the Freeman Diversion Dam indicated that a small number of adult steelhead, as well as juvenile *O. mykiss*, were present in the Santa Clara River watershed (Entrix 1998). The consulting biologists categorized the juvenile *O. mykiss* into four groups: wild smolts, wild resident rainbow trout, hatchery-reared rainbow trout, and hatchery-reared smolts. A 1998 report summarizing the results of five years of fish passage monitoring at the Vern Freeman Diversion noted that the 414 smolts captured in 1997 likely comprised "nearly all of the outmigrant steelhead" (Entrix 1998). Trapping results also suggested an emigration peak in April. According to NMFS, less than ten adult steelhead were observed during the period from 1994 to 2000 (NMFS 2000).

The Santa Clara River system was the subject of a 2005 assessment that included an analysis of steelhead recovery opportunities. The resulting report states, "While conditions are poor for spawning and sub-optimal for rearing in most reaches, the mainstem [Santa Clara] is a critical corridor for upstream and downstream steelhead movement" (Stoecker and Kelley 2005, p. 115).

Sampling was conducted in Santa Clara River tributaries in 2003 as part of a study of genetic structure of southern California *O. mykiss*. The resulting 2006 report states, "[The] results suggest that the Santa Clara River trout populations are the most distinct of the 5 basins studied" (Girman and Garza 2006, p. 22).

The current operating practice for the Vern Freeman Diversion Dam is to release 72 cfs through the fishway for ten days following major storm flows. The final biological opinion for operations of the diversion was issued in July 2008 and determined that proposed action would be "likely to destroy or adversely modify critical habitat for [steelhead]." The opinion provided a "reasonable and prudent alternative" for operations (NMFS 2008).

Santa Paula

Santa Paula Creek consists of about 15.5 stream miles and is tributary to the Santa Clara River. It flows south, entering the Santa Clara southeast of the city of Santa Paula. The Harvey Diversion Dam is located at about stream mile 3.8. A fishway is located at the upstream end of the channelization project in lower Santa Paula Creek. According to a 2005 assessment, "Fish ladder facilities at the Army Corps Channel near the mouth and at Harvey Dam were both damaged so severely [by high flows in 2004/2005] that fish passage at those sites is no longer possible and the entire drainage is effectively inaccessible to steelhead..." (Stoecker and Kelley 2005, p. 120).

An historical researcher noted a newspaper account of a ten pound trout caught in Santa Paula Creek in 1872 (Henke 2007) A field note from DFG staff in 1947 states, "Steelhead go up the Santa Paula, Sespe and Piru Creeks as well as up the main Santa

Clara” (DFG 1951b). In a 1979 survey of Santa Paula Creek, multiple *O. mykiss* year classes were present with individuals to 20 inches in length noted. The survey report indicates stocking of the lower portion of the creek (Moore 1980a).

Santa Paula Creek was surveyed in 1992 and two adult and one YOY *O. mykiss* were observed in a headwaters reach. The survey report noted high turbidity, “poor” habitat, and passage barriers in the lower creek (DFG 1999). In a 1993 survey multiple *O. mykiss* year classes were observed in Santa Paula Creek. The survey report indicates that hatchery fish are regularly planted in Santa Paula Creek (USFS 1993a).

A 1996 monitoring report notes, “...the Santa Paula Diversion blocks upstream access and reduces or eliminates flow downstream of the diversion during the dry season” (Entrix 1996, p. 10). According to the report, “The rainbow trout sampled in Santa Paula and Piru creeks were above barriers to upstream migration and represent a combination of self-sustaining wild and hatchery reared stocks” (Entrix 1996, p. A-3). According to a 1998 report, “A minimum release of 5 cubic feet per second (cfs) is maintained at the dam which may provide spawning and rearing habitat for steelhead in the lower creek” (Entrix 1998, p. 1-4).

As part of a larger study of streams of the Los Padres National Forest, USFS staff surveyed Santa Paula Creek in 1999. Multiple *O. mykiss* year classes were observed at three of four sampling locations (USFS 1999).

Santa Paula Creek was sampled in 2003 as part of a study of the genetic structure of southern California *O. mykiss*. The resulting 2006 report notes, “...population samples, both above and below dams, from the...Santa Clara River formed basin-specific lineages...” (Girman and Garza 2006). Sampling was conducted in Santa Paula Creek for an assessment of the Santa Clara River system in 2004. *Oncorhynchus mykiss* was present at five of 43 study sites and represented four year classes (Stoecker and Kelley 2005). The 2005 assessment includes an analysis of steelhead recovery opportunities in Santa Paula Creek and states, “Santa Paula Creek contained the most productive habitat in the study area for salmonids” (Stoecker and Kelley 2005, p. 4).

Sisar

Sisar Creek consists of about 7.4 stream miles and is tributary to Santa Paula Creek. It flows southeast, entering Santa Paula Creek near the town of Sulphur Springs.

As part of a study of freshwater fishes and habitat, Sisar Creek was surveyed in 1975 and *O. mykiss* between about 1.7 and 6.1 inches in length were observed (Swift 1975). Sisar Creek was surveyed in 1979 and multiple *O. mykiss* year classes were observed, including “abundant” YOY. The survey report states about the lower section, “...good summer holding water, abundant food, adequate cover, suitable water temps...” (Moore 1980a).

Sisar Creek was surveyed in 1992 and *O. mykiss* was not observed. The survey report states, “Sisar Creek has generally good trout habitat including adequate spawning areas” (DFG 1999). As part of a larger study of streams of the Los Padres National Forest, USFS staff surveyed Sisar Creek in 2000. One *O. mykiss* year class was observed (0+) at four sampling locations (USFS 2007).

Sampling was conducted in Sisar Creek for an assessment of the Santa Clara River system in 2004. *Oncorhynchus mykiss* was present at 19 of 36 study sites and represented four year classes (Stoecker and Kelley 2005). The 2005 assessment includes an analysis of steelhead recovery opportunities in Sisar Creek and states, “Sisar Creek accounts for 84% of the trout observed in the Santa Paula Creek drainage” (Stoecker and Kelley 2005, p. 4). Several passage barriers were noted on the creek.

East Fork Santa Paula

East Fork Santa Paula Creek consists of about 2.5 stream miles and is tributary to Santa Paula Creek. It flows west, entering Santa Paula Creek near the Big Cone Campsite.

East Fork Santa Paula Creek was surveyed in 1979 and *O. mykiss* was not observed. The survey report states, “Nevertheless, this stream has enough cover, low enough temperatures (much ground water input) and sufficient food to warrant the re-establishment of a RB trout population (USFS 1979a).

Willard Canyon

Willard Canyon Creek consists of about 2.5 stream miles and is tributary to the Santa Clara River. It flows north, entering the Santa Clara east of the city of Santa Paula.

A 1949 DFG stream survey report noted that stocking of Willard Creek had occurred and that “very few” *O. mykiss* were present. The report states, “This stream and the River of Doubt are the only good constant flowing streams in the Santa Clara River Drainage” (DFG 1949).

Sespe

Sespe Creek consists of about 55 stream miles draining a watershed of about 270 square miles. It flows east in its upper reaches and south in the lower, entering the Santa Clara River southwest of the town of Fillmore.

An account exists of photographs of steelhead caught in the upper Sespe Creek in 1936 (Henke 2007). Staff from DFG surveyed 48 miles of Sespe Creek in 1937 and observed “rare” YOY steelhead (DFG 1937). According to anecdotal accounts, fisherman caught steelhead weighing an estimated seven to eight pounds in upper Sespe Creek in the early 1940s (Henke 2007). A photograph of “a large steelhead kelt” caught near the Cherry Creek confluence also is reported to exist (Henke 2007).

A 1957 DFG analysis of a proposed water diversion states, “...even as late as the season of 1953-54 many steelhead were seen in all the spreading grounds [in the Santa Clara River]. There is evidence that some of these fish reach the upper Sespe and spawned, thus adding to the natural populations of the stream” (DFG 1957).

Sespe Creek was sampled in 1975 as part of a fish distribution study and *O. mykiss* was seen at six of ten sampling stations. The investigator notes, “[*O. mykiss*] almost certainly is native to Sespe Creek” (Bell 1978). Another 1975 study found *O. mykiss* between about 1.4 and 5.7 inches in length at three sampling sites (Swift 1975).

A 1979 survey report notes that Sespe Creek is stocked in its upper portion (Moore 1980a). Staff from USFS surveyed the lower section of Sespe Creek in 1979 and observed “abundant” *O. mykiss*, including individuals to 18 inches in length (Moore 1980a).

Sespe Creek was surveyed between 1981 and 1985. Four *O. mykiss* year classes and no anadromous adults were observed (DFG 1986).

Staff from USFS noted multiple *O. mykiss* year classes during surveys of four Sespe Creek sites in 1993. The resulting report indicated that exotic fish and bullfrogs constituted a management concern (USFS 1993b). The portion of Sespe Creek between Alder and Tar creeks was deemed “excellent” rainbow trout habitat.

In 1994, USFS staff determined that the Sespe Creek watershed was the highest priority of the 12 “anadromous fish watersheds on the Forest”. The watershed analysis notes, “The most suitable spawning areas are the riffles of the mid to upper section of the Sespe, Lion, and Tule Creek...” It adds, “The best rearing areas appear to be within the same localities as the best spawning reaches” (USFS 1997a, p. 43). A 1994 memo states, “Though rainbow trout populations are abundant and represented by all age classes, their populations are limited by availability of oversummering habitat” (USFS 1994).

Researchers from the USFS examined rainbow trout habitat use in Sespe Creek in 1994. In a subsequent journal article, the authors noted that seeps likely were essential to *O. mykiss* survival during the summer months for their capacity to create temperature refugia in pools (Matthews 1997).

As part of a larger study of streams of the Los Padres National Forest, USFS staff surveyed Sespe Creek in 1999 and 2000. Multiple *O. mykiss* year classes were observed at six sampling locations (USFS 1999).

A 2005 assessment of the Santa Clara system included an analysis of steelhead recovery opportunities in Sespe Creek. The resulting report states, “The greatest number of trout observed in the Santa Clara River watershed were in the Sespe Creek drainage...and the Sespe had the highest relative abundance of trout” (Stoecker and Kelley 2005, p. 122).

Coldwater Canyon

Coldwater Canyon Creek consists of about 2.2 stream miles and is tributary to Sespe Creek. It flows east, entering Sespe Creek upstream from Devils Gate.

A 1997 watershed analysis for Sespe Creek states, “Coldwater Creek had trout in the past but has become fishless due to severe flood damage and sedimentation within the last ten years” (USFS 1997a, p. 12).

West Fork Sespe

West Fork Sespe Creek consists of more than six stream miles and is tributary to Sespe Creek. It flows east, entering Sespe Creek west of Sulphur Peak.

Staff from USFS surveyed West Fork Sespe Creek in 1979 and observed “common” *O. mykiss*, including individuals to 12 inches in length (Moore 1980a). A 1980 USFS report notes regarding the creek, “The length of suitable Rainbow Trout [habitat] is limited. The cold spring water supplying the base flow is important for summering of young trout” (Moore 1980a).

A 1997 watershed analysis of Sespe Creek states, “Physical boulder or bedrock falls block fish from moving upstream into Coldwater, West Fork, Alder, and Bear Creeks. West Fork and Bear Creeks presently contain rainbow trout that are likely the descendants of fish stocked above the barriers during the 1970s” (USFS 1997a, p. 12).

Sampling was conducted in West Fork Sespe Creek for an assessment of the Santa Clara River system in 2004. *Oncorhynchus mykiss* was present at five of seven study sites and represented four year classes (Stoecker and Kelley 2005). The 2005 assessment included an analysis of steelhead recovery opportunities in West Fork Sespe Creek. The resulting report noted that the creek was important as one of nine streams in the watershed most likely "...to support significant *O. mykiss* stocks during critical low water years..." (Stoecker and Kelley 2005, p. 138).

Alder

Alder Creek consists of about 7.3 stream miles and is tributary to Sespe Creek. It flows south, entering Sespe Creek northeast of Devil's Heart Peak.

Staff from USFS surveyed Alder Creek in 1979 and observed "few" *O. mykiss*. The survey report states, "No evidence of reproduction. The few fingerlings below barrier (1/3 mile above Sespe Creek) believed to originate from Sespe Creek – as no spawning gravel exist in their stretch of stream" (Moore 1980a). The report adds, "Trout has existed in Alder Creek prior to the 1975-1976 drought years – either by stocking or natural occurrence. The total absence...suggests that the drought brought complete expiration [sic] to the inhabiting fish of Alder Creek" (Moore 1980a).

Staff from USFS noted *O. mykiss* during a survey of Alder Creek sites in 1993. Fish habitat was deemed to be "good" (USFS 1993b). A 1997 watershed analysis of Sespe Creek states, "Physical boulder or bedrock falls block fish from moving upstream into Coldwater, West Fork, Alder, and Bear Creeks" (USFS 1997a, p. 12).

Park

Park Creek consists of about 3.1 stream miles and is tributary to Sespe Creek. It flows northwest, entering Sespe Creek downstream from Ten Sycamore Flat.

A 1997 watershed analysis of Sespe Creek states, "Rainbow trout extend up most of the major tributaries of the Sespe including... Park [Creek]..." (USFS 1997a, p. 12).

Sampling was conducted in Park Creek for an assessment of the Santa Clara River system in 2004. *Oncorhynchus mykiss* was present at one of six study sites and represented four year classes (Stoecker and Kelley 2005).

Timber

Timber Creek consists of about four stream miles and is tributary to Sespe Creek. It flows north, entering Sespe Creek near Oak Flat Campsite.

Timber Creek was surveyed in 1979 and *O. mykiss* was observed. The survey report states, "Timber Canyon Creek offers a few trout of catchable size, but serves predominantly as a summer nursery for juveniles, for which the habitat is best suited" (Moore 1980a).

A 1997 watershed analysis of Sespe Creek states, “Rainbow trout extend up most of the major tributaries of the Sespe including... Timber [Creek]...” (USFS 1997a, p. 12).

Sampling was conducted in Timber Creek for an assessment of the Santa Clara River system in 2004. *Oncorhynchus mykiss* was present at four of 14 study sites and represented four year classes (Stoecker and Kelley 2005). The 2005 assessment included an analysis of steelhead recovery opportunities in Timber Creek. The resulting report noted that the creek was important as one of nine streams in the watershed most likely “...to support significant *O. mykiss* stocks during critical low water years...” (Stoecker and Kelley 2005, p. 138).

Bear Canyon

Bear Canyon Creek consists of about three stream miles and is tributary to Sespe Creek. It flows north, entering Sespe Creek near Bear Creek Campsite.

Bear Canyon Creek was surveyed by DFG staff, probably in the 1930s, and steelhead and rainbow trout were found to be present. The survey report notes that the creek’s principal value “...is as [a] feeder for Sespe Cr.” due to low dry season flows (DFG ca 1930s).

Bear Canyon Creek was surveyed in 1979 and multiple *O. mykiss* year classes were observed. The survey report notes “abundant” *O. mykiss* and the function of Bear Canyon Creek as a summer nursery for juvenile trout (Moore 1980a).

As part of a genetic study, Bear Canyon Creek was sampled in 1995. *Oncorhynchus mykiss* was collected at two sampling sites (USFS 1997b). A 1997 watershed analysis of Sespe Creek states, “Physical boulder or bedrock falls block fish from moving upstream into Coldwater, West Fork, Alder, and Bear Creeks. West Fork and Bear Creeks presently contain rainbow trout that are likely the descendants of fish stocked above the barriers during the 1970s” (USFS 1997a, p. 12).

Sampling was conducted in Bear Canyon Creek for an assessment of the Santa Clara River system in 2004. *Oncorhynchus mykiss* was present at seven of ten sampling sites, all of which showed multiple year classes (Stoecker and Kelley 2005). The 2005 assessment included an analysis of steelhead recovery opportunities in Bear Canyon Creek. The resulting report noted that the creek was important as one of nine streams in the watershed most likely “...to support significant *O. mykiss* stocks during critical low water years...” (Stoecker and Kelley 2005, p. 138).

Trout

Trout Creek consists of about 2.2 stream miles and is tributary to Sespe Creek. It flows south, entering Sespe Creek east of Thacher Cabin.

Trout Creek was surveyed in 1979 and multiple *O. mykiss* year classes were observed, including individuals to 12 inches in length (Moore 1980a). The survey report refers to the creek as a “spawning tributary to Sespe Creek” and states, “Small stream, good trout numbers considering stream size” (Moore 1980a).

As part of a genetic study, Trout Creek was sampled in 1995. *Oncorhynchus mykiss* was collected at five sampling sites (USFS 1997b).

Piedra Blanca

Piedra Blanca Creek consists of about nine stream miles and is tributary to Sespe Creek. It flows southeast, entering Sespe Creek near Thacher Cabin.

Piedra Blanca Creek was surveyed in 1979 and multiple *O. mykiss* year classes were observed. In the lower section, rainbow trout were “very abundant”. The survey report states, “Piedra Blanca Creek is a major tributary to Upper Sespe Creek and serves as an important trout fishery/producer to Sespe drainage” (Moore 1980a). Periodic stocking of the upper canyon was noted.

Sampling was conducted in Piedra Blanca Creek for an assessment of the Santa Clara River system in 2004. *Oncorhynchus mykiss* was present at 16 of 22 study sites and represented four year classes, and the total number of individuals observed (2,189) far exceeded the numbers in other study streams in the watershed (Stoecker and Kelley 2005). The 2005 assessment included an analysis of steelhead recovery opportunities in Piedra Blanca Creek. The report noted that the creek was important as one of nine streams in the watershed most likely “...to support significant *O. mykiss* stocks during critical low water years...” (Stoecker and Kelley 2005, p. 138).

Lion Canyon

Lion Canyon Creek consists of about 6.2 stream miles and is tributary to Sespe Creek. It flows north, entering Sespe Creek near Lion Campground.

Lion Canyon Creek was surveyed by DFG staff, probably in the 1930s, and steelhead and rainbow trout were found to be present. The survey report notes the creek’s “principal value as [a] feeder for Sespe Cr.” (DFG ca 1934a).

Lion Canyon Creek was stocked in 1973 and in subsequent years (Moore 1980a). The creek was surveyed in 1979 and multiple *O. mykiss* year classes were observed, including abundant YOY and individuals to ten inches in length. The survey report notes “good” to “excellent” spawning and nursery habitat and states, “...[Lion Canyon Creek] serves as important spawning flood escape area for Sespe Creek Rainbow Trout” (Moore 1980a).

A 1997 Sespe Creek watershed analysis notes, “The most suitable spawning areas are the riffles of the mid to upper section of the Sespe, Lion, and Tule Creek...” It adds, “The best rearing areas appear to be within the same localities as the best spawning reaches” (USFS 1997a, p. 43).

Sampling was conducted in Lion Canyon Creek for an assessment of the Santa Clara River system in 2004. *Oncorhynchus mykiss* was present at 13 of 30 study sites and represented at four year classes (Stoecker and Kelley 2005). The 2005 assessment included an analysis of steelhead recovery opportunities in Lion Canyon Creek. The report noted that the creek was important as one of nine streams in the watershed most likely “...to support significant *O. mykiss* stocks during critical low water years...” (Stoecker and Kelley 2005, p. 138). The assessment cites a “current prolific *O. mykiss* population” in the creek.

Lion Canyon Creek was sampled in 2003 as part of a study of the genetic structure of southern California *O. mykiss*. The resulting 2006 report notes, "...population samples, both above and below dams, from the...Santa Clara River formed basin-specific lineages..." (Girman and Garza 2006).

Howard

Howard Creek consists of about 3.2 stream miles and is tributary to Sespe Creek. It flows north, entering Sespe Creek northwest of Rose Valley.

A 1944 DFG report notes the presence of *O. mykiss* YOY in Howard Creek (DFG 1944).

Howard Creek was surveyed in 1979 and multiple *O. mykiss* year classes were observed, including individuals to 10 inches in length. The survey report states, "Howard Creek is an important spawning-rearing habitat for its own small resident trout population and also an important cool water tributary to upper Sespe Creek" (Moore 1980a).

Sampling was conducted in Howard Creek for an assessment of the Santa Clara River system in 2004. *Oncorhynchus mykiss* was present at five of seven study sites and represented four year classes (Stoecker and Kelley 2005). The 2005 assessment includes an analysis of steelhead recovery opportunities in Howard Creek and notes that the creek is important as one of nine streams in the watershed most likely "...to support significant *O. mykiss* stocks during critical low water years..." (Stoecker and Kelley 2005, p. 138).

Rose Valley

Rose Valley Creek consists of about 3.1 stream miles and is tributary to Howard Creek. It flows northwest, entering Howard Creek less than one half mile from the mouth of Howard Creek.

Sampling was conducted in Rose Valley Creek for an assessment of the Santa Clara River system in 2004. *Oncorhynchus mykiss* was present at five of nine study sites and represented four year classes (Stoecker and Kelley 2005). A 2005 assessment includes an analysis of steelhead recovery opportunities in Rose Valley Creek and recommends eliminating reservoirs on the creek that may produce adverse effects on the native trout population of the creek (Stoecker and Kelley 2005, pp. 139, 198).

Rock

Rock Creek consists of about 4.4 stream miles and is tributary to Sespe Creek. It flows southeast, entering Sespe Creek west of Rainbow Ranch.

Historical references were reviewed as part of a study of the Santa Clara River watershed and indicate that Rock Creek was stocked in 1948 (Stoecker and Kelley 2005). A 1980 USFS report summarized the results of sampling in 1979. The document indicates one mile of Rock Creek "fishery" on USFS land and indicates the presence of *O. mykiss* in the creek (Moore 1980a).

A 1997 watershed analysis of Sespe Creek states, "Rainbow trout extend up most of the major tributaries of the Sespe including... Rock [Creek]..." (USFS 1997a, p. 12).

Tule

Tule Creek consists of about 4.7 stream miles and is tributary to Sespe Creek. It flows east, entering Sespe Creek near Faser Cold Springs Ranch.

Tule Creek was surveyed by DFG staff, probably in the 1930s, and steelhead and rainbow trout were found to be present. The survey report states regarding Tule Creek, “Small Sespe River feeder and not of great value” (DFG ca 1934b). A 2005 assessment notes Tule Creek stocking records date back to 1942 (Stoecker and Kelley 2005).

Tule Creek was surveyed in 1979 and multiple *O. mykiss* year classes were observed, including “very abundant” YOY and individuals to 12 inches in length. The survey report deems the lower section of Tule Creek “Good – Excellent overall habitat” and states, “This portion of Tule creek is an important spawning tributary to upper Sespe Creek fish” (Moore 1980a).

A 1997 watershed analysis notes, “The most suitable spawning areas are the riffles of the mid to upper section of the Sespe, Lion, and Tule Creek...” It adds, “The best rearing areas appear to be within the same localities as the best spawning reaches” (USFS 1997a, p. 43). A snorkel survey conducted in 2000 indicated that multiple *O. mykiss* year classes were present in one reach of Tule Creek (USFS 2000).

Potrero John

Potrero John Creek consists of about 3.8 stream miles and is tributary to Sespe Creek. It flows south, entering Sespe Creek upstream from the Sespe Gorge.

A 1980 USFS report summarized the results of sampling in 1979. The document indicates two miles of Potrero John Creek “fishery” on USFS land and indicates the presence of *O. mykiss* in the creek (Moore 1980a). The stream survey report indicates that Potrero John “...serves as important spawning-nursery habitat for [the] Upper Sespe [Creek] rainbow trout population” (USFS 1979b).

A 1997 watershed analysis of Sespe Creek states, “Rainbow trout extend up most of the major tributaries of the Sespe including... Potrero John [Creek]...” (USFS 1997a, p. 12).

Munson

Munson Creek consists of about 3.3 stream miles and is tributary to Sespe Creek. It flows south, entering Sespe Creek about 1.8 miles upstream from the confluence of Potrero John Creek.

Munson Creek was surveyed in 1994-1995, when “low abundance” of juvenile *O. mykiss* was observed. Results were presented in a 1997 watershed analysis of Sespe Creek that states, “Rainbow trout extend up most of the major tributaries of the Sespe including...Munson [Creek]...” (USFS 1997a, p. 12).

Chorro Grande Canyon

Chorro Grande Canyon Creek consists of about 3.1 stream mile and is tributary to Sespe Creek. It flows south, entering Sespe Creek near Fell Ranch.

Historical references were reviewed as part of a study of the Santa Clara River watershed and indicate that Chorro Grande Canyon Creek was stocked in 1942 (Stoecker and Kelley 2005).

A watershed analysis was prepared for the Sespe Creek basin in 1997 and included a map indicating *O. mykiss* distribution. Low abundance is shown for Chorro Grande Canyon Creek based on the results of USFS surveys in 1994-1995 (Stoecker and Kelley 2005).

Ladybug

Ladybug Creek consists of about 1.4 stream miles and is tributary to Sespe Creek. It flows north, entering Sespe Creek upstream from Fell Ranch.

A 1997 watershed analysis of Sespe Creek states, "Rainbow trout extend up most of the major tributaries of the Sespe including... Ladybug [Creek]..." (USFS 1997a, p. 12).

Sampling was conducted in Ladybug Creek for an assessment of the Santa Clara River system in 2004. *Oncorhynchus mykiss* was present at two of five study sites and represented three year classes (Stoecker 2005).

Cherry

Cherry Creek consists of about 1.9 stream miles and is tributary to Sespe Creek. It flows north, entering Sespe Creek upstream from the entrance to Godwin Canyon.

Staff from USFS surveyed Cherry Creek in 1979 and observed "abundant" *O. mykiss*. The survey report states, "As the Sespe goes dry at this area, the cold, shallow perennial flow of Cherry Creek offers summering habitat for juvenile trout" (Moore 1980a). The report notes no stocking of the creek.

A 1997 watershed analysis for Sespe Creek states, "Cherry Creek is...important as the upper most tributary supporting a viable resident trout population (USFS 1997a, p. 58). As part of a larger study of streams of the Los Padres National Forest, USFS staff surveyed Cherry Creek in 1999. Multiple *O. mykiss* year classes were observed at a single sampling location (USFS 1999).

Sampling was conducted in Cherry Creek for an assessment of the Santa Clara River system in 2004. A small number of *O. mykiss* was present at two of six study sites representing two year classes (Stoecker and Kelley 2005).

Abadi

Abadi Creek consists of about 4.7 stream miles and is tributary to Sespe Creek. It flows east, entering Sespe Creek near Upper Hartman Ranch.

According to an anecdotal account, fisherman observed steelhead to 24 inches in length in pools in Abadi Creek in the early 1900s (Henke 2007). Historical references were reviewed as part of a study of the Santa Clara River watershed and indicate that Abadi Creek was stocked in 1942 and 1946 (Stoecker and Kelley 2005).

A watershed analysis was prepared for the Sespe Creek basin in 1997 and included a map indicating *O. mykiss* distribution. Low abundance is shown for Abadi Creek based on the results of USFS surveys in 1994-1995 (Stoecker and Kelley 2005).

Pole

Pole Creek consists of about 5.8 stream miles and is tributary to the Santa Clara River. It flows southwest, entering the Santa Clara southeast of the town of Fillmore.

[Is Moore 1979 anywhere?] A 1980 report indicates the author's opinion that Pole Creek "probably...served as spawning and rearing habitat for the historic steelhead run" (Moore 1980b). The opinion is based on the results of a 1979 survey.

Pole Creek was surveyed in 1992 and *O. mykiss* was not observed. The survey report notes impassable barriers downstream but states, "Trout habitat above the concrete channel is generally good. Thick riparian vegetation exists, along with abundant spawning gravel throughout Pole Creek" (DFG 1999).

A 2005 assessment of the Santa Clara system included an analysis of steelhead recovery opportunities in Pole Creek. The resulting report noted, "Pole Creek had both the lowest quality estimated habitat scores and the least habitat available of all Santa Clara mainstem tributaries measured..." (Stoecker and Kelley 2005, p. 4).

Hopper Canyon

Hopper Canyon Creek consists of about 12.2 stream miles and is tributary to the Santa Clara River. It flows south, entering the Santa Clara southeast of the town of Cavin.

A 1980 report indicates the author's opinion that Hopper Canyon Creek "probably...served as spawning and rearing habitat for the historic steelhead run" (Moore 1980b). The opinion is based on the results of a 1979 survey.

Hopper Canyon Creek was surveyed in 1992 and multiple *O. mykiss* year classes were observed. According to the survey report, "...fair to good spawning areas are located throughout the upper portions of Hopper Creek" (DFG 1999).

A 2005 assessment of the Santa Clara system included an analysis of steelhead recovery opportunities in Hopper Canyon Creek. The resulting report noted that the creek was important as one of nine streams in the watershed most likely "...to support significant *O. mykiss* stocks during critical low water years..." (Stoecker and Kelley 2005, p. 138).

Toms Canyon

Toms Canyon Creek consists of about 2.6 stream miles and is tributary to Hopper Canyon Creek. It flows southeast, entering Hopper Canyon Creek in the lower section of the canyon.

Toms Canyon Creek was surveyed in 1992 and *O. mykiss* was not observed. The survey report relays anecdotal information that the creek often goes dry in summer (DFG 1999).

Piru

Piru Creek consists of about 68 stream miles and is tributary to the Santa Clara River. It flows east in its upper section and then south in its lower. The mouth of the creek is south of the town of Piru.

Santa Felicia Dam, constructed in 1954, is located at about stream mile six and forms Lake Piru. Reservoir releases of five cubic feet per second or the natural flow of Piru Creek into Lake Piru, whichever is less, are required as part of the water district's water right. Pyramid Dam, located at about stream mile 29, forms Pyramid Lake. It was constructed in 1970.

Field notes from DFG staff from 1946 and 1947 indicate that Piru Creek's best habitat was considered to be between the Buck Creek and Lockwood Creek confluences. The notes state, "There are reports that steelhead come up Piru Creek occasionally as far as Snowy and Buck Creeks" (DFG 1951d). The notes also relay that steelhead strandings occurred in 1945 between spreading pools in the lower creek. It is unclear if the stranded fish were smolts or kelts.

Notes from 1951 indicate the presence of "...a fair number of good size trout" near the Fish Creek confluence (DFG 1951d). Piru Creek upstream from this area reportedly did not support trout. A 1951 report on several south coast watersheds notes that Piru Creek is the "principal" area supporting the *O. mykiss* population of the Santa Clara River watershed (DFG 1951c). It also states, "High summer water temperatures above the tolerance of trout also prevent trout development in otherwise suitable streams such as lower Piru Creek" (DFG 1951c).

Piru Creek was sampled in 1975 as part of a fish distribution study and *O. mykiss* was not observed at any of seven sampling stations. The investigator notes, "Rainbow trout are restricted to a few deep spots in the generally shallow Piru Creek" (Bell 1978). Another 1975 study included surveys of four Piru Creek locations. Rainbow trout between 4.9 and 7.5 inches in length were observed at the two more upstream sampling sites (Swift 1975).

A 1980 USFS report summarized the results of sampling in 1979. The document indicates 13 miles of Piru Creek "fishery" on USFS land and indicates the presence of *O. mykiss* in the creek (Moore 1980a).

Piru Creek downstream from Pyramid Lake was surveyed as part of a study of southern California streams in 1987. The survey estimated *O. mykiss* densities at between about 4,000 "naturally-reproduced" individuals per mile in this reach (DFG 1987). The population included "...large numbers of 6- and 7- in. fish" with substantially lower numbers of larger trout (DFG 1987, p. 28).

As part of a genetic study, Piru Creek was sampled in 1994. *Oncorhynchus mykiss* was collected at one sampling site (USFS 1997b). Historical references were reviewed as part of a study of the Santa Clara River watershed and indicate that DFG staff

conducted fish population surveys in Piru Creek in 1996-1997. An abundance estimate of 437 individuals per mile was produced (Stoecker and Kelley 2005).

Piru Creek was sampled in 2003 as part of a study of the genetic structure of southern California *O. mykiss*. One site was located between Santa Felicia and Pyramid dams, while the other was located upstream of both dams. The resulting 2006 report notes that the Piru populations and the Lockwood Creek population “formed a well supported cluster” (Girman and Garza 2006). Sampling also was performed as part of a Santa Clara River watershed study published in 2005. Three *O. mykiss* size classes were observed in the Piru Creek surveys (Stoecker and Kelley 2005).

A 2008 biological opinion concerning Santa Clara River water diversions discussed Piru Creek *O. mykiss*. The opinion states, “Large adult *O. mykiss* leave Piru Lake (and Pyramid Lake) and undertake migrations during winter and spring in Piru Creek and spawn in upstream tributaries” (NMFS 2008).

Agua Blanca

Agua Blanca Creek consists of about 16.8 stream miles and is tributary to Piru Creek. It flows southeast, entering Piru Creek about 1.6 miles upstream from the northern extent of Lake Piru.

Agua Blanca Creek was surveyed by DFG staff, probably in the 1930s, and steelhead and rainbow trout were found to be present. The survey report states, “The stream is not of much value on account of extreme low water in the late summer” (DFG ca 1934c).

Staff from USFS surveyed Agua Blanca Creek in 1979 and observed multiple *O. mykiss* year classes, including YOY and individuals to 14 inches in length. The survey report indicates that the trout are “abundant” but that the fishery is limited by “...poor summer holding water, high temperatures, few coldwater spring inputs, [and] flood damage susceptibility...” (Moore 1980a).

A 2005 study notes that Agua Blanca Creek contains suitable habitat for *O. mykiss* and supports an adfluvial population (Stoecker and Kelley 2005).

Fish

Fish Creek consists of about six stream miles and is tributary to Piru Creek. It flows east, entering Piru Creek about ten miles upstream from the northern extent of Lake Piru.

Fish Creek was surveyed in 1979 and multiple year classes of *O. mykiss* were observed, including “abundant” YOY and individuals to 12 inches in length. The survey report states, “Fish Creek is the only spawning tributary available to trout in Piru Creek between Pyramid Lake and Agua Blanca Creek, and appears heavily used as such” (Moore 1980a).

A 2005 study notes that Fish Creek contains suitable habitat for *O. mykiss* and supports an adfluvial population (Stoecker and Kelley 2005, p. 132; Bloom 2005).

Buck

Buck Creek consists of about 5.5 stream miles and is tributary to Piru Creek. It flows east, entering Piru Creek about 1.6 miles upstream from the northwest extent of Pyramid Lake.

A 1953 memo from DFG staff indicates that trout taken by fishermen from Buck Creek likely were from Piru Creek stocking efforts (DFG 1953). The author's opinion was that the creek would not support reproduction due to typically low flows.

Snowy

Snowy Creek consists of about 7.1 stream miles and is tributary to Piru Creek. It flows northeast, entering Piru Creek about 1.3 miles upstream from Hardluck Campsite.

Field notes from the 1940s indicate that Snowy Creek supported angling. Like Buck Creek, Snowy Creek may have supported trout stocked in Piru Creek (DFG 1951d).

Lockwood

Lockwood Creek consists of about 11.2 stream miles and is tributary to Piru Creek. It flows southeast, entering Piru Creek near Sunset Campground.

Notes from DFG staff from the 1940s indicate that Lockwood Creek was easily stocked and heavily fished (DFG 1951d). A 1946 stream survey states regarding Lockwood Creek, "An ideal little trout stream" (DFG 1946a).

A 1955 diversion protest by DFG states, "Rainbow trout are present and spawn naturally in Lockwood Creek..." (DPW 1955). As part of a study of freshwater fishes and habitat, Lockwood Creek was surveyed in 1975 and *O. mykiss* between about 4.4 and nine inches in length were observed. The resulting report notes intermittent flow and states, "[Rainbow trout] are aggregated in the few areas that provided suitable depth and cover" (Swift 1975, p. 77).

Historical references were reviewed as part of a study of the Santa Clara River watershed and indicate that DFG staff conducted fish population surveys in Lockwood Creek in 1996-1997. A total of 63 individuals were "recovered" from the creek (Stoecker and Kelley 2005).

Lockwood Creek was sampled in 2003 as part of a study of the genetic structure of southern California *O. mykiss*. The resulting 2006 report notes that the Piru populations and the Lockwood Creek population "formed a well supported cluster" (Girman and Garza 2006).

Seymour

Seymour Creek consists of about 7.5 stream miles and is tributary to Lockwood Creek. It flows southeast, entering Lockwood Creek near Snedden Ranch.

Field notes from the 1940s indicate that Seymour Creek supported some fishing (DFG 1951d). A note from 1946 expressed DFG staff's opinion that Lockwood Creek resident rainbow trout might use Seymour Creek for spawning (DFG 1946d).

Mutau

Mutau Creek consists of about 10.7 stream miles and is tributary to Piru Creek. It flows northeast from headwaters near Thorn Point, entering Piru Creek about 2.2 miles upstream from the Lockwood Creek confluence.

Anglers have observed rainbow trout in Mutau Creek in recent years. The origin of the population is uncertain.

Castaic

Castaic Creek consists of about 23.4 stream miles and is tributary to the Santa Clara River. It flows south, entering the Santa Clara east of the town of Del Valle. The dam forming Castaic Lake was constructed at stream mile 7.3 on Castaic Creek.

Castaic Creek was surveyed in 1975 as part of a fish distribution study and *O. mykiss* was not observed at one sampling station (Bell 1978).

Elizabeth Lake Canyon

Elizabeth Lake Canyon Creek has headwaters in the San Andreas Rift zone. The creek flows southwest to enter the Castaic Creek system via Castaic Lake.

Field notes from USFS staff from 1947 indicate that "some fish" were caught in Elizabeth Lake Canyon Creek in the previous season (DFG 1952). The author noted that the creek was unlikely to support fish life throughout the year, presumably due to low flow.

Fish Canyon

Fish Canyon Creek consists of about 12.3 stream miles and is tributary to Castaic Creek. It flows southwest, entering Castaic Creek about 1.2 miles upstream from the northern extent of Castaic Lake.

A 1956 DFG stream inventory for Fish Canyon Creek states, "...some native fish reported in upper reaches" (DFG 1956b). It adds, "This is definitely a marginal water..." and "Stream is mostly well shaded, especially in the upper live areas" (DFG 1956b).

San Francisquito Canyon

San Francisquito Canyon Creek consists of about twenty stream miles and is tributary to the Santa Clara River. It flows south, entering the Santa Clara west of the town of Rancho Santa Clarita.

San Francisquito Canyon Creek was sampled in 1975 as part of a fish distribution study and *O. mykiss* was not observed at the one sampling station (Bell 1978).

Bouquet Canyon

Bouquet Canyon Creek consists of about and is tributary to the Santa Clara River. It flows southwest, entering the Santa Clara near the town of Rancho Santa Clarita.

According to DFG records, rainbow trout fry from the Shasta hatchery were planted in Bouquet Canyon Creek in 1943 (DFG 1943). A 1947 stream survey indicates that *O. mykiss* including a “few fingerlings” were observed in the creek but notes, “Fishing maintained only be frequent plantings” (DFG 1947b).

Big Sycamore Canyon

Big Sycamore Canyon Creek consists of about nine stream miles. It flows southwest, entering the Pacific Ocean northwest of Bass Rock.

Big Sycamore Canyon Creek was surveyed in 1989-1990 as part of a study of six streams originating in the Santa Monta Mountains. The resulting report does not indicate the presence of steelhead and states, “Streamflow volume appears to be the greatest limiting factor...” (Keegan 1990, 3-3).

As part of a study of steelhead distribution in southern California streams, staff from NMFS surveyed Big Sycamore Canyon Creek in 2002. The resulting report lists the steelhead population as “extirpated” (NMFS 2005).

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Table 6. Distribution status of *O. mykiss* in coastal streams of Ventura County, California¹

Watershed	Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Rincon	Rincon	DF	DF	Y	N	1
Ventura River	Ventura River	DF	DF	Y	Y	3
Ventura River	Coyote	DF	UN	Y	UN	0
Ventura River	Santa Ana	DF	UN	Y	N	0
Ventura River	San Antonio	DF	DF		Y	2
Ventura River	Ojai	DF	PA		UN	0
Ventura River	Gridley Canyon	DF	DF	Y	UN	2
Ventura River	Matilija	DF	DF	Y	UN	3
Ventura River	North Fork Matilija	DF	DF	Y	UN	3
Ventura River	Bear	DF	DF		UN	2
Ventura River	Murrietta Canyon	DF	DF	Y	N	1
Ventura River	Upper North Fork Matilija	DF	DF	Y	N	3
Ventura River	Upper North Fork Matilija tributary	DF	DF	Y	N	1
Ventura River	Old Man Canyon	DF	DF	Y	N	1
Santa Clara River	Santa Clara River	DF	DF	Y	Y	3
Santa Clara River	Santa Paula	DF	DF	Y	UN	3
Santa Clara River	Sisar	DF	DF	Y	UN	3
Santa Clara River	East Fork Santa Paula	UN	UN		UN	0
Santa Clara River	Willard Canyon	UN	UN		UN	0
Santa Clara River	Sespe	DF	DF	Y	Y	3
Santa Clara River	Coldwater Canyon	DF	PA	Y	UN	0
Santa Clara River	West Fork Sespe	DF	DF		UN	3
Santa Clara River	Alder	DF	DF		UN	2
Santa Clara River	Park	DF	DF		UN	3
Santa Clara River	Timber	DF	DF		UN	3
Santa Clara River	Bear Canyon	DF	DF		UN	3
Santa Clara River	Trout	DF	DF		UN	3
Santa Clara River	Piedra Blanca	DF	DF		UN	3
Santa Clara River	Lion Canyon	DF	DF		UN	3

¹Please see Methods section for an explanation of titles and values used in this table.

Table 6. Distribution status of *O. mykiss* in coastal streams of Ventura County, California¹

Watershed	Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Santa Clara River	Howard	DF	DF		UN	3
Santa Clara River	Rose Valley	DF	DF	Y	UN	3
Santa Clara River	Rock	DF	DF		UN	2
Santa Clara River	Tule	DF	DF		UN	3
Santa Clara River	Potrero John	DF	DF		UN	2
Santa Clara River	Munson	DF	DF		UN	1
Santa Clara River	Chorro Grande Canyon	DF	DF		UN	1
Santa Clara River	Ladybug	DF	DF		UN	3
Santa Clara River	Cherry	DF	DF		UN	3
Santa Clara River	Abadi	DF	DF		UN	1
Santa Clara River	Pole	PB	UN		UN	0
Santa Clara River	Hopper Canyon	DF	DF		UN	3
Santa Clara River	Toms Canyon	UN	PA		UN	0
Santa Clara River	Piru	DF	DF	Y	UN	3
Santa Clara River	Agua Blanca	DF	DF	Y	N	3
Santa Clara River	Fish	DF	DF	Y	N	3
Santa Clara River	Buck	UN	UN		N	0
Santa Clara River	Snowy	UN	UN		N	0
Santa Clara River	Lockwood	DF	DF	Y	N	3
Santa Clara River	Seymour	PB	UN		N	0
	Mutau	DF	DF	Y	N	3
Santa Clara River	Castaic	UN	UN		N	0
Santa Clara River	Elizabeth Lake Canyon	PS	UN		N	0
Santa Clara River	Fish Canyon	PB	UN		N	0
Santa Clara River	San Francisquito Canyon	UN	UN		UN	0
Santa Clara River	Bouquet Canyon	UN	UN		UN	0
Big Sycamore Canyon	Big Sycamore Canyon	UN	PA		N	0

¹Please see Methods section for an explanation of titles and values used in this table.