

Steelhead/rainbow trout resources of San Luis Obispo County

San Carpoforo (San Carpojo)

San Carpoforo Creek (San Carpojo Creek) consists of more than ten stream miles. It flows southwest, entering the Pacific Ocean at Ragged Point.

Staff from DFG surveyed San Carpoforo Creek in 1961 and observed *O. mykiss*, with highest population density in the lower one mile of the creek. The survey report relays information from local residents and DFG staff including an estimate of "...155 adult steelhead in three holes between the mouth of the stream and the mine" in the late 1950s (DFG 1961a). The creek was deemed, "...a good steelhead nursery and spawning area" (DFG 1961a). In a 1966 letter DFG states, "San Carpojo and Arroyo de la Cruz Creeks are the best steelhead waters in San Luis Obispo County" (DFG 1966a).

A 1973 draft report on the effects of potential water developments included estimates of steelhead run size in several San Luis Obispo County creeks. The estimated adult run in San Carpoforo Creek was 500 individuals (Macias 1973).

Staff from DFG surveyed San Carpoforo Creek in 1995 and observed "numerous" young of the year, age 1+ and age 2+ steelhead (DFG 1995a). The survey report indicates that the surveyed stream reach usually becomes intermittent by the end of summer. In 1999, USFS staff surveyed San Carpoforo Creek and observed "lots of trout" including fry and adults (USFS 1999a).

Staff from NMFS performed systematic surveys of south coast streams in 2002-2003 to determine steelhead presence/absence. The survey report form for San Carpoforo Creek indicates multiple *O. mykiss* year classes were observed (NMFS 2002a). The form also noted that the creek was not connected to the ocean in June 2002. Also at that time, DFG staff rescued 12 stranded adult steelhead from the lagoon and returned them to the ocean (Highland pers. comm.). According to staff from NMFS, limiting factors to steelhead are largely natural due mainly to lower intensity land ownership in the watershed (*i.e.*, Hearst Ranch and USFS) (Capelli pers. comm.).

Information concerning steelhead resources in the San Carpoforo Creek watershed was not made available to the authors of this report. "The continued use and management of the property is monitored twice a year by the California Rangeland Trust to verify that the conservation values of the property are being protected in compliance with the [2006] conservation easement and to ensure that the steelhead habitat and other conservation values are being protected" (Cepkauskas pers. comm.). About 26 adult steelhead ranging from 26 to 30 inches in length were observed returning to the ocean from the lagoon in June 2008 (Highland pers. comm.).

Estrada

Estrada Creek consists of about 3.7 stream miles and is tributary to San Carpoforo Creek. It flows west, entering San Carpoforo Creek south of Windy Point.

Staff from DFG surveyed Estrada Creek in 1961 and observed “scarce” *O. mykiss* (DFG 1961b). The survey report states, “It is doubtful this is an important spawning tributary to the San Carpojo drainage but it may produce a few fish and it may have a small resident trout population” (DFG 1961b).

Dutra

Dutra Creek consists of about 3.3 stream miles and is tributary to San Carpofo Creek. It flows southeast, entering San Carpofo Creek between the San Carpofo Campsite and Baldwin Ranch.

Staff from USFS surveyed Dutra Creek in 1999. Field notes from the survey indicate the observation of “lots of trout of various sizes” including fry and adults (USFS 1999b). Since the confluence of Dutra and San Carpofo creeks is upstream from a 30 foot waterfall on San Carpofo Creek, it appears unlikely that *O. mykiss* observed in Dutra Creek are of anadromous origin (Nelson pers. comm.).

Arroyo de los Chinos

Arroyo del los Chinos consists of about 3.7 stream miles. It flows west from headwaters on Pine Top Mountain and enters the Pacific Ocean north of Point Sierra Nevada.

A message sent to NMFS staff indicated that multiple *O. mykiss* year classes were observed in Arroyo de los Chinos surveys in 2001 (Siepel 2002). During a 2004 site visit regarding a proposed Caltrans project at the Highway 1 crossing, DFG staff observed one age 1+ *O. mykiss* upstream from the culvert (Highland pers. comm.).

Information concerning steelhead resources in the Arroyo de los Chinos watershed was not made available to the authors of this report. “The continued use and management of the [Hearst Ranch] property is monitored twice a year by the California Rangeland Trust to verify that the conservation values of the property are being protected in compliance with the [2006] conservation easement and to ensure that the steelhead habitat and other conservation values are being protected” (Cepkauskas pers. comm.).

Arroyo de la Cruz

Arroyo de la Cruz consists of about 9.6 stream miles and drains a watershed of approximately 41 square miles. It is formed by the confluence of Burnett and Marmolejo creeks and flows west to enter the Pacific Ocean south of Point Sierra Nevada.

In a 1960 field note DFG staff reported a ten foot high dam with a non-functioning fishway located about 3.25 miles upstream from Green Canyon. In a 1966 letter DFG states, “San Carpojo and Arroyo de la Cruz Creeks are the best steelhead waters in San Luis Obispo County” (DFG 1966a).

A 1973 draft report on the effects of potential water developments included estimates of steelhead run size in several San Luis Obispo County creeks. The estimated adult run in Arroyo de la Cruz was 2,200 individuals (Macias 1973). A 1978 DFG report notes, “the lagoon area provided excellent habitat for numerous silvery juvenile” (DFG 1978). The survey report summarized,

“Perennial waters and the excellent pooling characteristics of upper Arroyo de la Cruz Creek make it one of the better Coastal steelhead streams in San Luis Obispo County... [T]he upper 2 miles of Arroyo de la Cruz represent the prime nursery habitat...” (DFG 1978).

A consulting firm studied Arroyo de la Cruz steelhead in 1985. The study report summarizes steelhead resources in the watershed:

“Age 0+ fish are spawned and rear in the perennial reach, while age 1+ and older fish reside in the lagoon. Age group separation may represent an adaptation to the environmental conditions of Arroyo de la Cruz; *i.e.* limited habitat exists in both the perennial reach (during summer) and the lagoon (year-round); and a dry stream reach exist between the lagoon and perennial reach for about 5 months each year” (JSA 1986).

The study included a population estimate for the lagoon of 424 individuals, including many juveniles undergoing smoltification.

A population assessment and habitat evaluation was conducted on Arroyo de la Cruz in 1993. Trapping in the lower-most part of the creek indicated smolt production and kelt out-migration. At the time of the survey only the uppermost 1.5 miles of the arroyo was wetted, where at least four *O. mykiss* year classes were observed. An estimate of the total *O. mykiss* population in mainstem Arroyo de la Cruz was more than 2,100 individuals. According to the resulting report, “Spawning and rearing habitat in the perennial reach is abundant and in relatively good condition...” (DFG 1994a, p. 7). The resulting report recommended avoiding additional diversion in the watershed during low flow periods and using off-stream storage for diversions during high flow regimes.

A steelhead range contraction study was published by NMFS in 2005. The report cites M. Stoecker for data confirming juvenile *O. mykiss* presence in Arroyo de la Cruz downstream from Highway 1 in 1998 (NMFS 2005).

Information concerning steelhead resources in the Arroyo de la Cruz watershed was not made available to the authors of this report. “The continued use and management of the [Hearst Ranch] property is monitored twice a year by the California Rangeland Trust to verify that the conservation values of the property are being protected in compliance with the [2006] conservation easement and to ensure that the steelhead habitat and other conservation values are being protected” (Cepkauskas pers. comm.).

Green Canyon

Green Canyon Creek consists of about 3.6 stream miles and is tributary to Arroyo de la Cruz. It flows south, entering the arroyo at Chileno Camp.

A 1960 field note reported juvenile steelhead trout in Green Canyon Creek (DFG 1960a). A 1973 survey report states, “Green Creek...appeared to have an over abundance of young-of-the-year SH-RT” (DFG 1973a).

Burnett

Burnett Creek consists of about 6.3 stream miles and is the major tributary to Arroyo de la Cruz. It flows south, entering Arroyo de la Cruz north of the Hearst Castle. A weir and fishway is located at stream mile 1.3.

A 1973 survey reports a non-functioning fishway at a weir located about one mile upstream from the Arroyo de la Cruz confluence (DFG 1973a). A 1978 DFG report notes, "...the lower 3 miles of Burnett Creek represent the prime nursery habitat for the [Arroyo de la Cruz] drainage system" (DFG 1978).

As part of a study of the Arroyo de la Cruz watershed, Burnett Creek was surveyed in 1993. Staff from DFG observed fry and age 1+ steelhead throughout the survey reach as well as "numerous small spawning areas" and "abundant" rearing habitat. An estimate of the total *O. mykiss* population in the creek was over 2,3000 individuals (DFG 1994a). The resulting report recommended removing a weir in the creek, avoiding additional diversion during low flow periods, using off-stream storage for diversions during high flow regimes, and reducing the impact of cattle grazing.

Spanish Cabin

Spanish Cabin Creek consists of about 2.2 stream miles and is tributary to Burnett Creek. It flows west, entering Burnett Creek at about stream mile 1.4.

Staff from DFG surveyed Arroyo de la Cruz and its tributaries in 1973. *Oncorhynchus mykiss* was observed in Spanish Cabin Creek (DFG 1973a).

Marmolejo

Marmolejo Creek consists of about five stream miles and is tributary to Arroyo de la Cruz. It flows west to its confluence with Burnett Creek, which forms the headwaters of the arroyo.

Staff from DFG surveyed Arroyo de la Cruz and its tributaries in 1973. *Oncorhynchus mykiss* was observed in Marmolejo Creek (DFG 1973a).

As part of a study of the Arroyo de la Cruz watershed, Marmolejo Creek was surveyed in 1993. Staff from DFG observed fry and age 1+ and 2+ steelhead "and/or resident rainbow trout in the survey reach as well as "numerous spawning sites" and "abundant" rearing habitat (DFG 1994a). The resulting report recommended avoiding additional diversion during low flow periods and using off-stream storage for diversions during high flow regimes.

Oak Knoll

Oak Knoll Creek appears as an intermittent stream on USGS maps. It flows southwest to enter the Pacific Ocean about two miles northwest of San Simeon Point.

No fisheries information was found for Oak Knoll Creek. However, A tributary may have provided habitat historically.

Information concerning steelhead resources in the Oak Knoll Creek watershed was not made available to the authors of this report. "The continued use and management of the [Hearst Ranch] property is monitored twice a year by the California Rangeland Trust to verify that the conservation values of the property are being protected in compliance with the [2006]

conservation easement and to ensure that the steelhead habitat and other conservation values are being protected” (Cepkauskas pers. comm.).

Arroyo Laguna

Arroyo Laguna consists of about 2.9 stream miles and is tributary to Oak Knoll Creek. It flows southeast, entering Oak Knoll Creek at about stream mile 1.2.

A 1999 assessment of habitat and species conservation issues on USFS lands cites the presence of steelhead in Arroyo Laguna. The basis for the determination is not provided (USFS 1999c).

Arroyo del Puerto

Arroyo del Puerto consists of about four stream miles. It flows south to San Simeon Bay.

A 1999 assessment of habitat and species conservation issues on USFS lands cites the presence of steelhead in Arroyo del Puerto. The basis for the determination is not provided (USFS 1999c).

Information concerning steelhead resources in the Arroyo del Puerto watershed was not made available to the authors of this report. “The continued use and management of the [Hearst Ranch] property is monitored twice a year by the California Rangeland Trust to verify that the conservation values of the property are being protected in compliance with the [2006] conservation easement and to ensure that the steelhead habitat and other conservation values are being protected” (Cepkauskas pers. comm.).

Little Pico

Little Pico Creek consists of about 3.7 stream miles. It flows southwest, entering the Pacific Ocean southeast of the town of San Simeon.

Little Pico Creek appears on a 1982 DFG list of “known” steelhead runs (DFG 1982). The basis for inclusion is not presented in the memo.

Information concerning steelhead resources in the Little Pico Creek watershed was not made available to the authors of this report. “The continued use and management of the [Hearst Ranch] property is monitored twice a year by the California Rangeland Trust to verify that the conservation values of the property are being protected in compliance with the [2006] conservation easement and to ensure that the steelhead habitat and other conservation values are being protected” (Cepkauskas pers. comm.).

Pico

Mainstem Pico Creek is formed by the confluence of North Fork and South Fork Pico Creek about 1.1 stream miles upstream from the mouth. The creek drains a watershed of about 20 square miles and flows southwest, entering the Pacific Ocean about 3.5 southeast of the town of San Simeon.

Staff from DFG surveyed Pico Creek and its upstream forks in 1960 and did not observe *O. mykiss*. The survey report includes the following summary:

“During the summer the stream dries up below the confluence of the north and south forks. A good part of the south fork also dries up in the summer. The north fork appears to be the main part of the stream suitable for fishlife. It contains adequate spawning grounds, good cover, good pool development and enough shading to keep summer temperatures down. Mr. Junge claims that steelhead do go upstream and that at times in the spring he has seen as many as 50 to 100 fish in a single pool. These are adult fish and they have gathered there prior to their going back to the ocean” (DFG 1960b).

A DFG memo from 1960 states about Pico Creek steelhead, “The run has been estimated by Warden Needham of the Dept. of Fish and Game to be about 3,000 adult fish” (DFG 1960c).

Pico Creek was sampled in 1993 as part of a steelhead genetics study. *Oncorhynchus mykiss* was observed in the creek (USFS 1996).

Information concerning steelhead resources in the Pico Creek watershed was not made available to the authors of this report. “The continued use and management of the [Hearst Ranch] property is monitored twice a year by the California Rangeland Trust to verify that the conservation values of the property are being protected in compliance with the [2006] conservation easement and to ensure that the steelhead habitat and other conservation values are being protected” (Cepkauskas pers. comm.).

North Fork Pico

North Fork Pico Creek consists of about 8.3 stream miles. It flows southwest to its confluence with South Fork Pico Creek.

North Fork Pico Creek appears on a list of “Known Steelhead Runs, San Luis Obispo County” (DFG 1982). The basis for inclusion is not provided.

South Fork Pico

South Fork Pico Creek consists of about 5.8 stream miles. It flows southwest to its confluence with North Fork Pico Creek.

South Fork Pico Creek appears on a list of “Known Steelhead Runs, San Luis Obispo County” (DFG 1982). The basis for inclusion is not provided.

San Simeon

San Simeon Creek consists of about ten stream miles draining a watershed of about 35 square miles. The creek has two main forks, the north and south, which converge at about stream mile 6.2. The mouth of the stream is about four miles north of Cambria.

During a 1945 visit to San Simeon Creek DFG observed, “San Simeon Creek lagoon had one school of estimated 500 young steelhead” (DFG 1949). Staff from DFG surveyed San Simeon Creek in 1960 and did not observe *O. mykiss*. The survey report includes the following summary:

“Little known permanent water occurs below the junction of the north and south fork. In the north fork of the stream water may be present in most years above its confluence with the south fork. The south fork is reported to be dry beginning late in June” (DFG 1960d).

The report also notes, “...this stream provides some of the better steelhead fishing for the San Luis Obispo area...” (DFG 1960d).

Staff from DFG surveyed San Simeon Creek in 1973 and observed *O. mykiss* “...in all sections of the main stream including the lagoon...” (DFG 1973b). The survey report provides the following estimate:

“San Simeon Creek has been one of San Luis Obispo County’s best SH-RT streams. It still has great potential that cannot be fully realized until the gravel removal has ceased. The reduction of spawning habitat and addition of silt due to the work is detrimental to the production of the maximum number of SH-RT” (DFG 1973b).

A 1973 draft report on the effects of potential water developments included estimates of steelhead run size in several San Luis Obispo County creeks. The estimated adult run in San Simeon Creek was 300 individuals (Macias 1973).

Staff from DFG and volunteers conducted fish rescues in the 1990s in mainstem San Simeon Creek. Rescued fish were held in a pond on Van Gordon Creek for the summer and released in the winter when San Simeon Creek had confluence with the ocean (Highland pers. comm.).

Sampling was performed in 1993 to characterize the steelhead population and habitat of San Simeon Creek. Ten smolts between 6.7 and about eight inches in length were collected immediately upstream from the lagoon, and *O. mykiss* including YOY and individuals to about 12.2 inches in length were collected at ten sampling stations. The resulting report states, “Within the perennial reach, spawning areas were sparse, small in size and the substrate was either embedded or consisted of sand. Rearing areas were more abundant and contained adequate cover, but were shallow” (DFG 1995b).

The 1993 study also compared results to those from sampling in 1965 and concluded, “The 1993 sampling suggests a steelhead density of about 10% of that sampled in 1965” (DFG 1995b, p. 16). Staff from DFG concluded, “...lack of adequate perennial stream flow is the primary constraint on steelhead abundance in San Simeon Creek” (DFG 1995b, p. 16). Management recommendations included no additional diversion in the spring, summer, and fall low-flow periods, off-stream storage of high flow winter diversion, and cattle exclusion, re-vegetation, and other erosion control projects.

A consulting firm produced juvenile *O. mykiss* population estimates for the “perennial reach” of San Simeon Creek in multiple years. The estimates ranged between 2,430 and 5,600 individuals between 1995 and 2000 (Alley 2001a). A 2001 report by the consultants summarizes:

“...San Simeon Creek juveniles of smolt size (larger) may increase considerably after wet winters, but are still threatened with very low juvenile production during drier years... The persistence of the San Simeon Creek steelhead population remains tenuous, with the continued small production of larger juveniles...and continued sedimentation..., combined with low summer baseflow” (Alley 2000).

Staff from DFG observed adult steelhead in lower San Simeon Creek in May 2002 (DFG 2002a). The stranded fish were moved to the ocean (Highland pers. comm.).

Staff from DFG has observed *O. mykiss* upstream to the waterfall comprising the limit of anadromy. A self-sustaining population was noted upstream from the waterfall that may be descended from individuals of anadromous ancestry that were moved. According to DFG staff, instream flows, excessive sedimentation, loss of riparian vegetation, and the effects of gravel mining are limiting to the San Simeon Creek *O. mykiss* population (Nelson pers. comm.).

Van Gordon

Van Gordon Creek consists of about 4.8 stream miles and is tributary to San Simeon Creek. It flows southwest, entering San Simeon Creek in the lagoon portion of the system.

A local landowner relayed accounts of adult steelhead in Van Gordon Creek in the 1960s through the early 1970s to DFG staff (Highland pers. comm.). In the early 1990s, a local landowner installed a flashboard dam in Van Gordon Creek. The impoundment served as habitat for steelhead juveniles rescued from drying portions of San Simeon and Steiner creeks.

A consulting firm sampled the “perennial habitat in Van Gordon Creek” between 1997 and 1999 and observed multiple *O. mykiss* year classes (Alley 2001b). The resulting report states, “Densities of steelhead were in general lower in Van Gordon Creek than in [lower San Simeon and Santa Rosa creeks], which is to be expected for a smaller tributary” (Alley 2001b, p. 58).

Field notes from DFG staff indicate multiple *O. mykiss* year classes observed in Van Gordon Creek on several occasions between 1996 and 2002 (DFG 2002b). According to DFG staff, instream flows have been reduced by groundwater pumping and likely are limiting to the Van Gordon Creek *O. mykiss* population (Nelson pers. comm.). The San Simeon Road crossing of the creek may present a total passage barrier, although habitat appears to be minimal upstream from the culvert (Nelson pers. comm.).

Steiner

Steiner Creek consists of about eight stream miles and is tributary to San Simeon Creek. It flows northwest to enter San Simeon Creek at about stream mile 4.1 (Palmer Flats).

In documenting damage to Steiner Creek in 1965, DFG staff produced a juvenile *O. mykiss* population density estimate. According to the report, “At the low flow period, Steiner Creek contains 3.5 miles of flowing water supporting fishlife” (DFG 1965a). Fish counts indicated 900 fish per 100 yards of stream.

A 1995 fish rescue involved steelhead juveniles from Steiner Creek (DFG 1995c).

North Fork San Simeon

North Fork San Simeon Creek consists of about 3.5 stream miles. It flows south to its confluence with South Fork San Simeon Creek, which creates San Simeon Creek.

North Fork San Simeon Creek appears on a list of “Known Steelhead Runs, San Luis Obispo County” (DFG 1982). The basis for inclusion is not provided.

South Fork San Simeon

South Fork San Simeon Creek consists of about four stream miles. It flows west to its confluence with North Fork San Simeon Creek, thus forming San Simeon Creek.

South Fork San Simeon Creek appears on a list of “Known Steelhead Runs, San Luis Obispo County” (DFG 1982). The basis for inclusion is not provided.

Santa Rosa

Santa Rosa Creek drains the west slope of the San Simeon Mountains and enters the Pacific Ocean west of the town of Cambria. The creek consists of about 11 stream miles, and its watershed is about 47 square miles. A fishway is located at Ferrasci Road.

Staff from DFG surveyed Santa Rosa Creek in 1960 and did not observe *O. mykiss*. The survey report stated, “The lower 9 miles of this stream appeared to be rather poor for fishlife due to low flows and poor pool development” (DFG 1960e). A letter to DFG cites a Santa Rosa Creek study from 1969-1970 wherein the adult steelhead run in the creek was estimated to be 600 individuals (Seldon 1972). A 1970 DFG memo includes an estimate of 6,800 juvenile steelhead in the Santa Rosa Creek lagoon (DFG 1970).

A 1973 study found that the relative abundance of steelhead in Santa Rosa Creek were the highest among the nine watersheds sampled in Santa Cruz, Monterey, and San Luis Obispo counties (Bailey 1973). Anecdotal evidence from fishermen indicates that “...the numbers of adult fish that entered the creek from 1987 through 1991...declined significantly” (Rathbun 1991, p. 10). A 1991 status report states. “[T]he principal cause of the declines [of steelhead] is the loss of instream flow and perennial standing water in the lower portions of the arroyo, including its lagoon” (Rathbun 1991, p. 12).

Staff from DFG comprehensively studied the steelhead resources of Santa Rosa Creek in 1993. The report noted several land use activities with adverse impacts on the creek including encroachment in the riparian area, grazing, agriculture, road building, and dumping. The report states, “The most severe human impact within the drainage is water diversion by local landowners

with riparian or appropriative rights and by Cambria Community Services District” (DFG 1994b). In response, DFG staff recommended addressing water rights issues, including “provisions to protect instream flow during low water years” (DFG 1994b, p. 79).

A consulting firm again studied fishery resources of Santa Rosa Creek between 1997 and 1999. Multiple *O. mykiss* year classes were observed throughout the system (Alley 2001b). Field notes from DFG staff indicate adult steelhead observed in Santa Rosa Creek between 2000 and 2003 (DFG 2003a). “Many” adult steelhead were observed by DFG staff moving upstream in February and March 2008. About eight individuals ranging between 26 and 32 inches in length were seen returning from the lagoon to the ocean in June 2008, while eight carcasses were recovered when the lagoon dried in August (Highland pers. comm.).

Perry

Perry Creek consists of about nine stream miles and is tributary to Santa Rosa Creek. It flows northwest, entering Santa Rosa Creek just east of Cambria.

In response to reports of problems at the Ferrasci Road fishway, DFG staff visited the site in 1997. Juvenile steelhead were observed in lower Perry Creek during the visit (DFG 2003a).

Green Valley

Green Valley Creek consists of about 6.3 stream miles and is tributary to Perry Creek. It flows west, entering Perry Creek at about stream mile three.

A 1999 assessment of habitat and species conservation issues on USFS lands cites the presence of steelhead in Green Valley Creek. The basis for the determination is not provided (USFS 1999c).

Villa

Villa Creek consists of about 16 stream miles and drains a watershed of about 10-12 square miles. It flows south, entering the Pacific Ocean east of Point Estero.

Field notes from DFG staff in 1953 describe a fishkill in lower Villa Creek. According to the notes about 250 steelhead including 25 to 30 adults (to 30 inches in length) were found in the stream. The notes state, “Villa Creek has always been a comparatively good steelhead water in this vicinity” (DFG 1953).

Staff from DFG surveyed Villa Creek in 1969 and observed multiple *O. mykiss* year classes in the drainage, with only YOY in the upper three mile portion of the stream. The survey report states, “Villa Creek is a good RT/SH spawning stream because of its easy access to upstream migrants and good winter spawning gravels. However, during dry years it has a limited nursery area because much of the stream dries up...” (DFG 1969a). In a 1969 memo DFG staff writes, “The stream has approximately eight miles of suitable steelhead spawning and nursery habitat and supports one of the southernmost annual runs of steelhead along our coast” (DFG 1969b).

Staff from NMFS surveyed Villa Creek in 2002 as part of a steelhead distribution study. The survey form indicates that *O. mykiss* was observed in the creek under difficult sampling conditions (NMFS 2002b). Staff from DFG observed juvenile *O. mykiss* in the creek several miles upstream from the ocean in 2004 (Highland pers. comm.).

Ellyslly

Ellyslly Creek consists of about four stream miles and is tributary to Villa Creek. It flows southeast, entering Villa Creek at about stream mile 0.8.

A 1999 assessment of habitat and species conservation issues on USFS lands cites the presence of steelhead in Ellyslly Creek. The basis for the determination is not provided (USFS 1999c).

Cayucos

Cayucos Creek consists of about six stream miles and is tributary to the Pacific Ocean. Its mouth is located near the town of Cayucos.

According to 1962 field notes, “Cayucos Creek is thought to be of no value to fishlife from the absolute headwaters downstream to the earth dam on the Warren ranch” (DFG 1962a).

Cayucos Creek appears on a 1982 DFG list of “known” steelhead runs (DFG 1982). The basis for inclusion is not presented in the memo. In 1983, DFG protested an application to divert water from Cayucos Creek and a tributary saying, “Steelhead rainbow trout...are dependent upon the habitat supported by subject waters” (SWRCB ca 1983).

A 1999 assessment of habitat and species conservation issues on USFS lands cites the presence of steelhead in Cayucos Creek. The basis for the determination is not provided (USFS 1999c). In a steelhead range contraction study from 2005, NMFS lists the historical occurrence of steelhead in Cayucos Creek. The value in the current occurrence category is “extirpated” (NMFS 2005).

Little Cayucos

Little Cayucos Creek consists of about three stream miles and is tributary to the Pacific Ocean. Its mouth is located near the town of Cayucos.

A 1999 assessment of habitat and species conservation issues on USFS lands cites the historical presence of steelhead in Little Cayucos Creek and current status as extirpated. The basis for the determinations is not provided (USFS 1999c).

In a steelhead range contraction study from 2005, NMFS indicates that no records for the historical occurrence of steelhead were found for Little Cayucos Creek. The value in the current occurrence category is “absent” (NMFS 2005).

Old

Old Creek consists of about 11 stream miles. It flows southwest, entering the Pacific Ocean immediately south of the city of Cayucos. Whale Rock Dam, completed in 1960, is located about 0.8 miles upstream from the creek mouth.

Staff from DFG surveyed Old Creek in 1957 and observed fingerling *O. mykiss* throughout the lower six miles of the creek. The survey report states, "This stream is apparently a very good producer of steelhead each year. Spawning areas appear to be generally good along the entire creek and some sections provide fair nursery ground for the young. Although the lower and parts of the upper section go dry in early May, the midsection has running water (intermittent) all year with a good number of small pools" (DFG 1957a).

In another survey report from 1957 DFG staff relayed a local resident's account that "he had only seen 20 to 30 adult steelhead using the stream" (DFG 1957b). The report from this survey states, "This is a short, low flow, coastal steelhead stream with limited spawning area and only 3.8 mi. of main stream accessible to steelhead, except in unusually wet winters... This stream is not considered of much value as a fishery" (DFG 1957b). A 1959 memo noted that a "small" steelhead run formerly existed in Old Creek (DFG 1959a).

In a 1992 memo, DFG staff provided the following characterization of regarding steelhead resources in Old Creek:

"...a valuable steelhead trout fishery was lost on Old Creek as a result of construction of [Whale Rock] reservoir. Archive files document that a sizeable run of steelhead was present...

...terms were for the purpose of protecting the trout resources of the lake, not for maintenance of an ocean-run steelhead resource... Because of the location of the reservoir (less than one half mile from the ocean), releases to support a downstream steelhead fishery would be ineffective. The height of the spillway and the loss of stream habitat above the dam due to reservoir inundation precluded providing passage over the reservoir...

...The only use of this area by steelhead occurs on the rare years that the reservoir spills. During this time, straying steelhead trout may enter the creek mouth and migrate upstream of the base of the dam. Lack of spawning gravels prevent any successful reproduction during these events. Trout in the reservoir may spill downstream and enter the ocean, but essentially are lost from the Old Creek spawning population" (DFG 1992a).

Adult *O. mykiss* from the reservoir have been used in hatchery operations at various times between the 1970s and the early 2000s. Juveniles were returned to the reservoir for recreational fishing enhancement (Highland pers. comm.).

A 1998 NMFS letter indicated that steelhead spawned in Old Creek downstream from the dam. Recommendation was made for release of four cubic feet per second "...for the purpose of providing summer rearing space for juvenile steelhead" (NMFS 1998). Old Creek appears on a list of streams with "Resident, residualized, or stocked *O. mykiss* above barriers" (NMFS 2005).

Willow

Willow Creek consists of about three stream miles. It flows southwest, entering the Pacific Ocean at Morro Strand State Beach.

A 1959 memo regarding a water diversion application states, “Willow Creek has no fisheries value” (DFG 1959b). A small drainage basin and low creek flows were cited as the reason for the condition.

Field notes from DFG staff indicated the results of interviews with various biologists familiar with Willow Creek. The notes indicate that no steelhead use of the creek was known (DFG 1999a). A 2005 steelhead range contraction study by NMFS indicates that steelhead cannot access Willow Creek due to a passage barrier (NMFS 2005).

Toro

Toro Creek consists of about 12.5 miles of stream miles draining a watershed of about 13.4 square miles (CCC 2000a). It enters the Pacific Ocean about four miles north of the town of Morro Bay.

Staff from DFG surveyed Toro Creek in 1962 and observed *O. mykiss* in the upper portion of the stream. The survey report notes residents reports of “good steelhead runs in past years” and states, “The stream is potentially a good producer of steelhead; however, increased pumping for irrigation will tend to lower productivity” (DFG 1962b).

As part of a 1973 survey of Toro Creek, DFG staff produced a population estimate of 16,315 *O. mykiss* individuals in ten miles of the creek (DFG 1973c). The survey report states, “Toro Creek has the potential to sustain an excellent steelhead trout fishery in years of high flow” (DFG 1973c). Adult spawning steelhead were noted in that year.

A stream inventory was conducted by CCC staff in 2000 on Toro Creek to document habitat conditions. The resulting report recommends treating sources of stream bank erosion and states, “There are sections where the stream is being impacted from cattle in the riparian zone. Alternatives should be explored with the grazer and developed if possible” (CCC 2000a).

Staff from NMFS performed systematic surveys of south coast streams in 2002-2003 to determine steelhead presence/absence. The survey report form for Toro Creek indicates multiple *O. mykiss* year classes were observed (NMFS 2002c).

Morro

Morro Creek consists of about 11 stream miles draining a watershed of about ten square miles. It enters the Pacific Ocean north of Morro Rock.

A survey report, likely from the 1940s, states, “All the lower stream is pumped dry by June 1st. The stream is of doubtful value” (DFG ca 1934a). Staff from DFG surveyed Morro Creek in 1962 and did not observe *O. mykiss*. The survey report states, “The recent dry cycle and extensive pumping from the stream have greatly reduced the fishery potential of the stream. It is doubtful if the lower 4 miles will again support fishlife except for access to the upper areas” (DFG 1962c).

A 1973 survey notes a 20 foot high dam with a fishway located about two miles from the mouth of the creek. The survey also cites natural falls at stream mile seven as the upstream limit of access by steelhead, suggesting *O. mykiss* observed upstream of the falls are the descendants of planted fish (DFG 1973d). The report states, “Morro Creek could be a valuable SH-RT stream. However, the dam at Mile 2 and fluctuations in flow prevent fish from reaching upstream spawning areas and surviving through the dry periods” (DFG 1973d).

Staff from USFS surveyed Morro Creek in 1980 and observed *O. mykiss* between one and five inches in length. The survey report states, “Upper Morro Creek (East Fork) is narrow with little to no flow. The deterioration of this section from heavy use by man is very apparent” (USFS 1980a).

Staff from DFG observed *O. mykiss* YOY between 1996 and 2000 in Morro Creek (DFG ca 2000). Morro Creek near Cerro Alto Campground was surveyed by USFS staff in 1999 and 2000. Field notes state, “Along the entire stretch in most of the larger pools we found trout...” (USFS 1999d). The fish included fry and individuals to eight inches in length. Also, *O. mykiss* was found during presence/absence surveys by NMFS staff in 2002 (NMFS 2002d).

According to DFG staff a road crossing at about stream mile two constitutes a passage barrier. Efforts are underway to replace the road crossing and improve fish passage (Hill pers. comm.).

Chorro

Chorro Creek consists of about 14 stream miles draining a watershed of about 45 square miles. It enters the Pacific Ocean via Morro Bay. Chorro Creek Reservoir is located at about stream mile 12. According to a 2003 restoration study, a minimum bypass flow of one cubic foot per second is required when inflow into the reservoir is greater than two cubic feet per second (SHG 2003).

Staff from DFG surveyed Chorro Creek in 1958. The survey report states, “Chorro Creek has excellent spawning potential and of [sic] years of adequate rainfall has fair funs of steelhead” (DFG 1958a). According to a 1975 report, “Previous fishery data, collected by Dr. Lee A. Barclay in 1975, indicate that as many as 175 adult steelhead may utilize this drainage for spawning” (DFG 1976a).

In a 1976 report DFG states, “The resident rainbow trout population, found above Chorro Creek dam, is most probably the progeny from both planted fish and those steelhead which historically utilized the upper reaches of Chorro Creek prior to the construction of Chorro Creek dam” (DFG 1976a, p. 3). It adds, “Steelhead rainbow trout utilize the riffles in Chorro Creek below the dam for spawning from the late fall to early spring months” (DFG 1976a, p. 3). Habitat is characterized in the report as follows:

“Chorro Creek is an intermittent creek with many of the lower sections becoming dry in the summer and fall months. There are, however, several sections in the mid and upper reaches of Chorro Creek which contain water all year and serve as valuable nursery habitat for steelhead... Pools provide the majority of the available habitat during the dry months...” (DFG 1976a, p. 6)

Finally, the report indicates that the three-mile section of Chorro Creek downstream from the sewage treatment plant comprises “a significant percentage of summer nursery habitat in the drainage” and “approximately 60 percent of the juvenile steelhead population” (DFG 1976a). Water appropriation was noted to cause steelhead strandings and fishkills in the creek.

In a 1976 memo DFG reports studies to assess the impact of Chorro Creek Dam. The memo states, “Using stream survey information taken on both Chorro and Stenner creeks, considerations pertaining to stream flows, temperature, and habitat were made to estimate an annual adult migration of 160 fish in Chorro Creek” (DFG 1976b).

In notes from a 1978 workshop DFG staff is quoted as saying, “...there is data that the creek and its tributaries could support up to as many as 1,200 adult spawning steelhead a year” and “...today it would be lucky if from 150 to 400 adult spawning steelhead use that creek and it is a result of the type of watershed modification” (CCRWQCB 1978). The notes also indicate DFG staff’s concern that gravels were not being replenished due to the dam decreased bedload movement.

Field notes from DFG staff in 1992 indicate fish, including *O. mykiss*, were observed “when water was present” (DFG 1992b). The author also notes that the stream was degraded by sedimentation and dumping. A 1995 DFG letter states, “The Department believes that, with proper management, including the maintenance of stream flow, the Chorro Creek drainage could support a basin run of at least 450 adults” (DFG 1995d).

Chorro Creek was sampled in 2001 as part of a consultants’ study of Morro Bay tributaries and *O. mykiss* was observed. The resulting report notes that YOY were not observed and states, “[the size range] suggests that young-of-year steelhead do not rear in Chorro Creek” (Payne 2001, p. 10). A stream inventory from 2001 documented habitat conditions and recommended management options for Chorro Creek. Recommendations included identifying and treating erosion sources and undertaking riparian re-vegetation projects (CCC 2001a).

According to a 2003 restoration study, “During dryer years, releases from Chorro Reservoir may not be adequate to support downstream steelhead populations” (SHG 2003, p. 22). The report recommended establishing an unimpaired flow requirement for Chorro Reservoir from May to October. Staff from DFG observed a spawning pair of adult steelhead in lower Chorro Creek in the winter of 2006 (Highland pers. comm.).

San Bernardo

San Bernardo Creek consists of about 5.5 stream miles and is tributary to Chorro Creek. It flows southwest, entering Chorro Creek east of the town of Morro Bay.

Staff from DFG surveyed San Bernardo Creek in 1958 and observed very few *O. mykiss*. The survey report states, “A poor to fair SH stream depending on the winter rainfall. In most years becomes intermittent in flow d/s from the Caccio ranch. In a good water year may run ‘permanently’” (DFG 1958b).

Chorro Creek and several tributaries were sampled for fish in 1975. Steelhead/rainbow trout were observed in San Bernardo Creek during the survey (Unknown 1975). Field notes from DFG staff in 1992 indicate fish, including *O. mykiss*, were observed in San Bernardo Creek (DFG 1992b).

A fish passage evaluation published in 2003 included analysis of San Bernardo Creek barriers. A private road crossing was deemed a total passage barrier. A bridge replacement was suggested (RTA 2003). According to a 2003 steelhead restoration planning project, “For [San Bernardo Creek], the primary limiting factor is ultimately summer streamflow” (SHG 2003, p. 25).

San Luisito

San Luisito Creek consists of about five stream miles and is tributary to Chorro Creek. It flows southwest, entering Chorro Creek north of Hollister Peak.

Staff from DFG surveyed San Luisito Creek in 1958 but could not confirm the presence of *O. mykiss*. The survey report states, “It serves primarily as a spawning and nursery water for the steelhead run that utilizes the Chorro Creek drainage” (DFG 1958c). Chorro Creek and several tributaries were sampled for fish in 1975. Steelhead/rainbow trout were observed in San Luisito Creek during the survey (Anonymous 1975).

Field notes from DFG staff in 1992 indicate impacts from debris dumping on San Luisito Creek (DFG 1992b). Juvenile *O. mykiss* were observed down- and upstream from the Adobe Road crossing in the 1990s (Highland pers. comm.).

Additional field notes from DFG staff in 2003 indicate *O. mykiss* were observed in San Luisito Creek (DFG 2003b). A fish passage evaluation published in 2003 included analysis of San Luisito Creek barriers. The Highway 1 and the Adobe Road crossings received the third and fourth highest rank for priority in streams tributary to Morro Bay due to high quality habitat upstream and poor passage conditions at the culverts. Retrofits were suggested (RTA 2003). An adult steelhead was observed upstream from the Adobe Road crossing by county staff in winter 2006 (Highland pers. comm.).

Sampling was conducted in 2006 during an assessment of fish populations and habitat in San Luisito Creek (Payne 2007). Multiple year classes of *O. mykiss* were found in most of the pools surveyed and high quality habitat was observed. The report notes, “...because the barriers at both Highway 1 and Adobe Road were judged as impassable...it is likely that the *O. mykiss* counted in pools were resident trout derived from steelhead ancestors” (Payne 2007, p. 22).

Pennington

Pennington Creek consists of about 5.2 miles and is tributary to Chorro Creek. It flows southwest, entering Chorro Creek near Cuesta College.

A fishkill including *O. mykiss* was reported on Pennington Creek in 1982. Staff from DFG indicates that *O. mykiss* YOY and older fish have been observed throughout Pennington Creek between the 1990s and the present (Highland pers. comm.).

The creek was sampled in 2001 as part of a study of Morro Bay tributaries. Multiple *O. mykiss* year classes were observed (Payne ca 2001). A stream inventory from 2001 documented habitat conditions and recommended management options for Pennington Creek. Recommendations included identifying and treating erosion sources and undertaking riparian revegetation projects (CCC 2001b).

A fish passage evaluation published in 2003 included analysis of Pennington Creek barriers. The Highway 1 crossing received the highest rank for priority in streams tributary to Morro Bay due to high quality habitat upstream and poor performance of previous modifications to the crossing. A retrofit was suggested (RTA 2003). According to a 2003 steelhead restoration planning project, “For [Pennington Creek], the primary limiting factor is ultimately summer streamflow” (SHG 2003, p. 25).

Dairy

Dairy Creek consists of about 4.5 stream miles and is tributary to Chorro Creek. It flows southwest, entering Chorro Creek in Camp San Luis Obispo. The watershed is about four square miles.

Staff from DFG surveyed Dairy Creek in 1973 and observed *O. mykiss* in two locations. The survey report states, “Dairy Creek is relatively untouched since it has been closed to the public since the 1940’s. It has the potential to produce many more SH-RT than were seen” (DFG 1973e).

Field notes from DFG staff in 1992 indicate fish, including *O. mykiss*, were observed in Dairy Creek (DFG 1992b). Juvenile *O. mykiss* also was observed in 1999 (DFG 1999b).

Dairy creek was sampled in 2001 as part of a study of Morro Bay tributaries. Multiple *O. mykiss* year classes were observed (Payne ca 2001). A stream inventory from 2001 documented habitat conditions and recommended management options for Dairy Creek. Recommendations included identifying and treating erosion sources, including “two large [road] headcuts,” undertaking riparian revegetation projects, and excluding cattle from the riparian zone (CCC 2001c).

A fish passage evaluation published in 2003 included analysis of Dairy Creek barriers. The Highway 1 crossing received the second highest rank for priority in streams tributary to Morro Bay due to high quality habitat upstream and poor passage conditions at the culvert. A retrofit was suggested (RTA 2003). According to a 2003 steelhead restoration planning project, “For [Dairy Creek], the primary limiting factor is ultimately summer streamflow” (SHG 2003, p. 25).

Los Osos

Los Osos Creek consists of about ten stream miles and is tributary to the Pacific Ocean. It flows northwest, entering Morro Bay north of the town of Los Osos.

Field notes from DFG staff indicate *O. mykiss* YOY and older fish present in Los Osos Creek between 1998 and 2001 (DFG 2001). Los Osos Creek was sampled in 2001 as part of a consultants’ study of Morro Bay tributaries and multiple *O. mykiss* year classes were observed (Payne ca 2001). Juvenile *O. mykiss* were relocated from the upper reach of Los Osos Creek as part of a bank stabilization project in 2003 (Highland pers. comm.).

According to a 2003 steelhead restoration planning project, “For...Los Osos Creek, the primary limiting factor is ultimately summer streamflow” (SHG 2003, p. 25). According to the CCRB, water quality in the creek is impaired by low dissolved oxygen from agriculture, grazing, urban runoff, and natural sources (CCRB 2006).

Islay

Islay Creek consists of about 7.5 stream miles. It flows generally west to enter the Pacific Ocean in Montana de Oro State Park.

A 1967 letter from the Department of Parks and Recreation asks that Islay Creek be closed to fishing. The letter states, “The Steelhead of Islay Creek cannot support a sport fishery of any magnitude without seriously jeopardizing the resource” (Mott 1967).

Staff from NMFS performed systematic surveys of south coast streams in 2002-2003 to determine steelhead presence/absence. The survey report form for Islay Creek indicates multiple *O. mykiss* year classes were observed (NMFS 2002e). The form also noted that the creek was “very fishy,” likely indicating high habitat quality. Several redds were observed by DFG staff in lower Islay Creek in 2004, as well as a stranded adult steelhead (Highland pers. comm.).

Coon

Coon Creek consists of about 8.9 stream miles. It flows west, entering the Pacific Ocean north of Point Buchon.

An inventory and assessment of aquatic resources from 1990 includes discussion of Coon Creek. Multiple *O. mykiss* year classes were observed during the associated surveys. The report noted impacts from grazing (Mooch 1990).

Field notes by DFG staff indicate multiple *O. mykiss* year classes present in Coon Creek in 1994 and 1995 (DFG 1995e). Coon Creek habitat was evaluated by consultants in 2000 and multiple *O. mykiss* year classes were observed. The resulting report states, “Coon Creek was found to provide a significant amount of high quality habitat suitable for rearing steelhead” (Payne 2000, p. 21).

Staff from NMFS performed systematic surveys of south coast streams in 2002-2003 to determine steelhead presence/absence. The survey report form for Coon Creek indicates multiple *O. mykiss* year classes were observed (NMFS 2002e). A culvert replacement and channel improvement project was completed recently. Several hundred fish representing multiple *O. mykiss* year classes have been observed by DFG and city of San Luis Obispo staff since project completion (Highland pers. comm.).

Diablo Canyon

Diablo Canyon Creek consists of about 4.6 stream miles and is tributary to the Pacific Ocean. The mouth is located on the north side of the Diablo Canyon Power Plant.

An inventory and assessment of aquatic resources from 1990 includes discussion of Diablo Canyon Creek. The report noted “a population of rainbow trout in the upper section of the stream” as well as use of the lower section in spring (Mooch 1990).

Staff from NMFS performed systematic surveys of south coast streams in 2002-2003 to determine steelhead presence/absence. The survey report form for Diablo Canyon Creek indicates *O. mykiss* was observed (NMFS 2002f).

San Luis Obispo

San Luis Obispo Creek consists of about 17.4 stream miles draining a watershed of about 84 square miles. It flows south, entering the Pacific Ocean at Avila Beach.

A 1958 DFG survey report states, "...the stream may be lowered to almost intermittent flows if everybody irrigates at once – an[d] in 'normal' water year may be dried" (DFG 1958d). As part of a 1975 DFG study, the *O. mykiss* standing crop was estimated and used to determine the adult run size. According to the study report, "An estimated total of 1,005 sea-run adults are produced annually" (DFG 1975).

In notes from a 1978 workshop DFG staff is quoted as saying, "San Luis Obispo Creek itself is now merely a transportation corridor for steelhead to get to spawning tributaries [whereas] in the past, the creek itself was one of the major spawning and nursery habitats. He noted the creek has been degraded not only from erosion, but from other pollutants as well" (CCRWQCB 1978).

Field notes by DFG staff indicate various observations of *O. mykiss* YOY and juveniles in San Luis Obispo Creek between 1997 and 2002. Steelhead in-migrants also have been observed recently (DFG 2000a; DFG 2002c).

San Luis Obispo Creek was studied between 2000 and 2002 in terms of steelhead downstream migration and abundance. The resulting paper notes that wastewater discharge comprises "most, if not all, of the dry-season living space for juvenile steelhead" (Spina 2005).

In 2003, a basin-wide survey was carried out to determine the distribution and abundance of steelhead in the San Luis Obispo Creek watershed. The resulting study report estimates the number of fry and juvenile steelhead in the watershed to be on the order of 10,000 individuals (Payne 2004). The estimated density in lower San Luis Obispo Creek was similar to that determined for the years 2000 and 2001, but represented less than 50 percent of the 2002 estimate (Payne 2004). The mainstem was deemed one of the three greatest contributors to the *O. mykiss* population in the watershed.

Recent restoration projects on San Luis Obispo Creek include fish passage improvements at the Highway 101 culvert, a dam removal in the upper watershed, a bank stabilization project, and modifications to the Marre Dam for fish passage (Highland pers. comm.). Four steelhead carcasses ranging from about 25 to 31 inches in length were recovered by DFG staff from San Luis Obispo Creek in summer 2008 (Highland pers. comm.).

Harford Canyon

Harford Canyon Creek consists of about 2.7 stream miles and is tributary to San Luis Obispo Creek. It flows south, entering San Luis Obispo Creek immediately upstream from the mouth.

Staff from DFG surveyed Harford Canyon Creek in 1960 and observed *O. mykiss* between one and four inches in length. The survey report states, "The stream appears to be a fair spawning area, good nursery providing at least a few fish to San Luis Obispo Creek fishery" (DFG 1960f).

See Canyon

See Canyon Creek consists of about 4.5 stream miles and is tributary to San Luis Obispo Creek. It flows southeast, entering San Luis Obispo Creek northeast of the town of Avila Beach. See Canyon Creek was stocked in 1932 (CCSE 1994).

A 1960 DFG survey of See Canyon Creek states, “According to local residents the stream has as many as several hundred adult steelhead in wet years however only a few during dry years” (DFG 1960g). It is deemed, “...the most important spawning tributary of the San Luis Obispo Creek drainage” (DFG 1960g). Field notes from 1961 indicate that a population estimate of 750 *O. mykiss* per mile was made for the lower areas of the stream (CCSE 1994).

A 1975 study of the San Luis Obispo Creek steelhead resource notes, “See Canyon Creek possesses the greatest abundance of amenable habitat and was found to produce the greatest number of juvenile steelhead” (DFG 1975). Sampling in 1983 produced density estimates of between about 1,300 and 11,200 individuals per mile at six sampling stations (CCSE 1994).

In 2003, a basin-wide survey was carried out to determine the distribution and abundance of steelhead in the San Luis Obispo Creek watershed. The resulting report emphasizes the importance of this creek to steelhead production in the watershed based on relatively high densities of fry and juveniles (Payne 2004). The creek was deemed one of the three greatest contributors to the *O. mykiss* population in the watershed.

Davis Canyon

Davis Canyon Creek consists of about three stream miles and is tributary to See Canyon Creek. It flows southeast and its mouth is located at about stream mile 2.2 on See Canyon Creek.

A 1975 DFG draft report analyzed the effects of the flood control project being proposed at the time. A map in the report indicated that Davis Canyon Creek was considered to be “steelhead spawning and nursery habitat” (DFG 1975). Field notes and reports from DFG staff indicate multiple *O. mykiss* year classes in Davis Canyon Creek observed in 2003 to 2006 (DFG 2003c; Hill pers. comm.).

Castro Canyon

Castro Canyon Creek consists of about 1.8 stream miles and is tributary to San Luis Obispo Creek. It flows southeast, entering San Luis Obispo Creek at about stream mile 4.2.

Staff from DFG surveyed Castro Canyon Creek in 1960 and did not observe fish. However, the survey report relates steelhead observations in the creek and states, “Provides some winter flow and spawning area to San Luis Obispo Creek drainage primarily during wet years” (DFG 1958e).

Davenport

Davenport Creek consists of about 5.9 stream miles and is tributary to San Luis Obispo Creek. It flows west, entering San Luis Obispo Creek at about stream mile 5.4.

A 1976 DFG memo describes field investigations of Davenport Creek. It states, “Davenport Creek supports viable steelhead amphibian and reptile populations...” (DFG 1976c).

Froom

Froom Creek consists of about 3.5 stream miles and is tributary to San Luis Obispo Creek. It flows east, entering San Luis Obispo Creek near the city of San Luis Obispo.

A 1975 DFG draft report analyzed the effects of the flood control project being proposed at the time. A map in the report indicated that the middle portion of Froom Creek was considered to be “steelhead spawning and nursery habitat” (DFG 1975).

In 2003, a basin-wide survey was carried out to determine the distribution and abundance of steelhead in the San Luis Obispo Creek watershed. The resulting report notes that Froom Creek has a short length of wetted channel and a relatively low overall steelhead density (Payne 2004).

Prefumo

Prefumo Creek is tributary to San Luis Obispo Creek near the city of San Luis Obispo. The watershed area is about 12 square miles. In 1961, Prefumo Creek was diverted to flow into Laguna Lake. The creek is referred to as “Perfumo” in some reports. A fishway at Los Osos Valley Road is considered to be poorly designed and constructed and not operating properly.

A 1966 DFG memo states, “Perfumo Creek is an important tributary of the San Luis Obispo Creek system. It produces steelhead and contributes a significant flow to San Luis Obispo Creek” (DFG 1966b). In 1967, DFG staff noted that steelhead were moved past a migration barrier at the Laguna Lake inlet of Prefumo Creek (DFG 1967).

In 2003, a basin-wide survey was carried out to determine the distribution and abundance of steelhead in the San Luis Obispo Creek watershed. The resulting report notes that Prefumo Creek has less than 0.5 miles of wetted channel during the study, leading to relatively low steelhead density estimates (Payne 2004). Excessive groundwater pumping likely contributes to low flows in the creek (Highland pers. comm.). Staff from DFG observed juvenile *O. mykiss* in isolated pools upstream from Laguna Lake in 2004 (Highland pers. comm.).

Stenner

Stenner Creek consists of about six stream miles and is tributary to San Luis Obispo Creek. It flows south, entering San Luis Obispo Creek in downtown San Luis Obispo.

Staff from DFG surveyed Stenner Creek in 1960. The report notes “fairly good” spawning areas throughout the creek that are “best in the middle section” (DFG 1960h). A 1973 survey report states, “There are probably four miles of good steelhead habitat on the stream...” (DFG 1973f). The report adds that the creek “...provides good spawning areas for steelhead, and even in low-flow years has sustained pool-type habitat” (DFG 1973f).

In a 1976 memo DFG states, “Recent studies indicate that approximately 4,000 juvenile steelhead rainbow trout are produced per mile. Extrapolation of these data yield [sic] an annual adult migration of approximately 250 fish in Stenner Creek” (DFG 1976b).

In 2003, a basin-wide survey was carried out to determine the distribution and abundance of steelhead in the San Luis Obispo Creek watershed. The resulting report notes that the lower portion of Stenner Creek was relatively important habitat in terms of its production of fry and juvenile steelhead (Payne 2004). The creek was deemed one of the three greatest contributors to the *O. mykiss* population in the watershed.

Old Garden

Old Garden Creek is tributary to Stenner Creek and flows through urbanized northwest San Luis Obispo. It appears to consist of about two stream miles originating on the southeast flank of Bishop Peak.

Staff from DFG surveyed Old Garden Creek in 1974. Rainbow trout between five and 13 inches were observed (DFG 1974). Field notes from DFG staff indicates multiple year *O. mykiss* year classes observed in Old Garden Creek in 2000 (DFG 2000b).

Brizzolara

Brizzolara Creek consists of about three stream miles and is tributary to Stenner Creek. It flows southwest, entering Stenner Creek in the northern portion of the city of San Luis Obispo. This creek formerly was referred to as Brizzolari Creek.

Staff from DFG surveyed Brizzolara Creek in 1973. The survey report states, "This stream is intermittent in dry years, but though it does stop flowing it still sustains pool-type habitat as evidenced by the presence of 1971-1972 spawn in the stream. It will never be a major fishery but does provide good steelhead spawning habitat" (DFG 1973g).

In 1994, DFG staff observed a stranded steelhead adult several miles upstream from the Stenner Creek confluence (Highland pers. comm.). Field notes from DFG staff indicate the presence of multiple *O. mykiss* year classes and adult steelhead in Brizzolara Creek between 1998 and 2000 (DFG 2000c).

In 2003, a basin-wide survey was carried out to determine the distribution and abundance of steelhead in the San Luis Obispo Creek watershed. The resulting report notes that Brizzolara Creek was of relatively lesser importance in terms of its production of fry and juvenile steelhead (Payne 2004).

Reservoir Canyon

Reservoir Canyon Creek consists of about three stream miles and is tributary to San Luis Obispo Creek. It flows northwest, entering San Luis Obispo Creek about one mile north of the city of San Luis Obispo. A dam is located at about stream mile 1.0.

A DFG survey report, apparently from the 1940s, indicates that natural propagation in Reservoir Canyon Creek was poor due to lack of flow. The report states, "Although a small stream, it is the best part of San Luis Creek system..." (DFG ca 1934b).

Staff from DFG surveyed Reservoir Canyon Creek in 1960. The survey report states, "The lower section (1/2 mile) of stream could be a minor producer of steelhead (DFG 1960i).

A 1975 DFG draft report analyzed the effects of the flood control project being proposed for San Luis Obispo Creek at the time. A map in the report indicated that Reservoir Canyon Creek was considered to be "steelhead spawning and nursery habitat"

(DFG 1975). The report states that the creek, in combination with See Canyon, Stenner, and mainstem San Luis Obispo creeks, supported "...the majority of the juvenile fish population" in the watershed (DFG 1975).

According to DFG staff juvenile *O. mykiss* of unknown origin occur upstream from the dam on Reservoir Canyon Creek, while fish downstream from the dam are assumed to be of anadromous ancestry (Highland pers. comm.). In 2003, a basin-wide survey was carried out to determine the distribution and abundance of steelhead in the San Luis Obispo Creek watershed. The sampling results from Reservoir Canyon Creek "suggest little productivity" due largely to the small length of wetted channel (Payne 2004). The report noted, however, that the limited sample size precluded conclusive interpretation of the stream's relative importance to the watershed.

A 2006 stream restoration project required DFG staff to collect *O. mykiss* from the project site. Approximately 140 juveniles were captured from a 100-yard section of San Luis Obispo Creek (Hill pers. comm.).

Pismo

Pismo Creek consists of about five stream miles and enters the Pacific Ocean at the city of Pismo Beach. The confluence of West Corral de Piedra and East Corral de Piedra creeks near Edna form the headwaters of Pismo Creek. A fishway is located at the railroad crossing of Pismo Creek. Efforts are being made to improve passage at the site as the fishway regularly suffers from clogging by bedload and debris (Highland pers. comm.).

A 1958 DFG memo states that Pismo Creek supports "...a reasonably good run of steelhead" (DFG 1958f). Notes from a 1978 meeting indicate the opinion of DFG staff that land uses surrounding Pismo Creek "...have caused some significant additional bedload movement in the creek and have further reduced the creek's ability to carry a sustained steelhead stock" (CCRWQCB 1978).

Field notes from DFG staff indicate continuing efforts in 1996 and 2002 to clear the Pismo Creek fishway. Multiple *O. mykiss* year classes were observed during the site visits (DFG 1997; DFG 2002d). Notes on sampling by NMFS staff in 2002 indicate multiple year classes in Pismo Creek and point out high turbidity (NMFS 2002g).

Staff from DFG observed YOY and age 1+ and 2+ *O. mykiss* throughout mainstem Pismo Creek in 2005. The surveyor noted that excessive sedimentation and water withdrawals, as well as water quality issues, are limiting to the population (Nelson pers. comm.). Sampling in the Pismo Creek lagoon in May 2005 produced one "smolt-sized steelhead" (HES 2005).

West Corral de Piedra

West Corral de Piedra Creek consists of about seven stream miles and is tributary to Pismo Creek. A reservoir formed by Righetti dam is located at about stream mile 4.5. Bypass flows for the dam were stipulated in a 1958 memo (DFG 1958g).

A 1958 DFG memo notes that West Corral de Piedra Creek supports "...a reasonably good run of steelhead" (DFG 1958f). The author indicated that insufficient flow existed during the low flow period to allow for diversion without harming fishlife. A 1962 memo regarding the application for a dam on West Corral de Piedra Creek states, "...steelhead spawned in the stream near the

proposed dam site last winter, and young RT-SH are common in the permanent section of the stream this summer” (DFG 1962d).

Field notes from DFG staff indicate that multiple *O. mykiss* year classes were rescued from the channel downstream from Righetti dam in 1997. Young of the year also were observed in 1999 (DFG 1999c). According to DFG staff, current reservoir operations do not allow for adequate in-migration into downstream reaches (Highland pers. comm.).

Staff from DFG observed *O. mykiss* YOY and age 1+ individuals in wetted portions of the one-quarter mile reach of West Corral de Piedra Creek downstream from the dam in a recent survey. It did not appear that bypass flows from the reservoir were being released. Upstream from the reservoir, YOY and age 1+ *O. mykiss*, possibly of wild ancestry, were observed. (Nelson pers. comm.)

East Corral de Piedra

East Corral de Piedra consists of about 5.5 stream miles and is tributary to Pismo Creek. It flows west from headwaters on Slide Hill.

A 1985 DFG memo indicated that a fishway on East Fork Corral de Piedra was non-functional. The memo states, “This barrier to the migration of steelhead should be afforded the highest priority as it has had a serious deleterious effect on the population” (DFG 1985). According to DFG staff, the fishway in question may be located in mainstem Pismo Creek immediately downstream from the East Corral de Piedra confluence (Highland pers. comm.).

Arroyo Grande

Arroyo Grande consists of about 20 stream miles and drains a watershed of about 155 square miles. It enters the Pacific Ocean west of the town of Oceano. Lopez Dam, constructed in 1968, is located at about stream mile 13.

Since construction of Lopez Dam, an average of 2,330 acre-feet of water has been released into Arroyo Grande between April and October to recharge ground water pumped for agricultural use downstream. Reservoir releases occur at a rate of about 1 to 11 cfs. Historically, reservoir releases for fisheries have not occurred (SEI 2004).

Staff from DFG surveyed Arroyo Grande in 1960. The survey report states, “This stream ranks with the better streams of the San Luis Obispo area which enter the Pacific Ocean. Long sections of this stream contain permanent water throughout the entire year” (DFG 1960j).

In a 1960 report on the proposed Lopez dam DFG staff summarizes the effect on the steelhead fishery of the Arroyo Grande watershed:

“The proposed dam would block off approximately 17 miles of steelhead spawning grounds and approximately 14 miles of nursery grounds used by the young of this species. All three miles of spawning grounds in Arroyo Grande Creek, three miles of spawning and nursery areas in Lopez Canyon Creek, and one mile of spawning and nursery area in Wittenberg Creek would be inundated by the proposed reservoir. Thus, six out of 21 miles of spawning water and four out of 14 miles of nursery water would be lost due to inundation by the reservoir” (DFG 1960k).

The report also notes, "...it can be anticipated that winter flows which normally attract and enable steelhead to ascend on their spawning migration would be reduced by storage at this time. This can be critical in a small stream as is this one" (DFG 1960k).

A 1961 DFG letter on the proposed Lopez Dam project includes a run size estimate of "about 1,000 adult fish" (DFG 1961c). A memo from that year reported on the run size estimate produced through interviews with local residents and concluded, "1. The steelhead runs in Arroyo Grande Creek averaged at least 1000 fish annually 20 years ago. 2. Since 1940 the runs have decreased to an average of approximately 100-200 fish annually for the past 10 years" (DFG 1961d).

A 1996 consulting firm study of Arroyo Grande included a population estimate of juvenile steelhead below Lopez Dam of 7,000 individuals (Alley 1997). Habitat surveys were performed on Arroyo Grande in 1999 and 2000. A report discussing the survey results states, "Spawning gravel quality and availability...is a potential limiting factor affecting steelhead abundance and reproductive success within Arroyo Grande... Although good and excellent habitat was present within various areas of the creek, overall habitat conditions for juvenile steelhead rearing were only fair" (SEI 2004, p. 1-49).

During a 2000 DFG survey of habitat downstream from the dam, multiple *O. mykiss* year classes were observed including individuals having "the appearance of smolts" (DFG 2000d). The survey noted lack of riparian vegetation, sedimentation, and passage problems in the reach. The resulting report recommends, "Assure adequate stream flows for adult and juvenile passage, summer and fall rearing, sediment flushing during winter and spring and high water quality during the summer and fall" (DFG 2000d).

As part of a multi-year evaluation of the Arroyo Grande fishery, the most downstream one half mile reach was sampled several times between 2003 and 2005. A resulting report states, "It appears the most significant potential impact to the fishery, including sensitive species such as steelhead, relates to the seasonality of surface flow. Lagoon water quality usually degrades during closed periods, especially if inflow is low, and poor water quality and lack of access to and from the ocean can impact steelhead... In 2004, severe dewatering was likely due to local agricultural groundwater pumping that exceeded the recharge available from the creek" (Rischbieter 2004). Juvenile *O. mykiss* were abundant in one location at one sampling event in 2005, leading researchers to conclude, "...high flow events appeared to be associated with the outmigration of numerous steelhead smolts" (Rischbieter 2006).

Arroyo Grande was sampled in 2003 as part of a study of *O. mykiss* genetic structure in southern California. A resulting 2006 paper states, "...differences between above and below barrier groups were not significantly different from zero for the...Arroyo Grande [drainage]" (Girman and Garza 2006, p. 16). The population upstream from Lopez Dam is of coastal steelhead ancestry (Garza pers. comm.).

A stream inventory report for Arroyo Grande was conducted in 2004 and including documenting habitat conditions and recommending enhancement options. The resulting report states, "Suitable size spawning substrate on Arroyo Grande Creek is limited to relatively few reaches" (CCC 2004, p. 13).

A watershed management plan for Arroyo Grande, including geomorphic and hydrologic analyses, was published in 2004. The report states, "The lack of vegetated buffer strips along roads, poor stream crossings, and unmaintained ditch and culvert systems present a significant erosion hazard during peak storm events. Farm fields, roads, and agricultural ditches also lack buffering vegetation, resulting in direct, unmanaged release of fine sediment to nearby stream channels" (SHG 2004, p. 35). In 2006, a

distribution and abundance survey was conducted, incorporating 30 sampling locations in lower Arroyo Grande. *Oncorhynchus mykiss* was observed in 26 locations “in relatively low numbers” (Swanson 2006). A draft report states, “The lack of channel flushing high flows [due to capture in Lopez Reservoir] has resulted in a narrow channel that lacks complexity and the presence of silt in the substrate” (Swanson 2006).

The lower half mile of Arroyo Grande Creek, including its lagoon, was sampled during four events in 2006. The resulting report states, “High flow events appeared to be associated with downstream migration of numerous juvenile steelhead...” (DPR 2007a). A survey report from 2007 states, “...it is also apparent that both water quality and habitat area/volume are diminishing due to reduced inflow. As in recent past years, this inflow cessation seems to be caused by agricultural irrigation groundwater withdrawals from the alluvial plains near the lower miles of Arroyo Grande Creek” (DPR 2007b).

In 2007 approximately 30 fish, some of which were identified as small steelhead, were found dead in Arroyo Grande following a chemical spill from the Lopez Lake water treatment plant (Sneed 2007). Staff from DFG observed about 12 steelhead carcasses ranging from about 25 to 28 inches in length in lower Arroyo Grande after a sudden drying of the creek (Highland pers. comm.).

Los Berros

Los Berros Creek consists of about 13 stream miles and is tributary to Arroyo Grande. It flows west, entering Arroyo Grande at about stream mile 3.2 on the eastern side of the city of Oceano.

A 1999 DFG survey of Arroyo Grande refers to Los Berros Creek as “perennial” (DFG 2000d). Los Berros Creek was sampled in 2003 as part of a study of *O. mykiss* genetic structure in southern California. Staff from NMFS observed individuals between about 2.4 and 6.7 in length and tissue samples were collected from 63 individuals. A resulting 2006 paper states, “...differences between above and below barrier groups were not significantly different from zero for the...Arroyo Grande [drainage]” (Girman and Garza 2006, p. 16). Staff from DFG observed juvenile *O. mykiss* in Arroyo Grande between 2004 and 2006 (Hill pers. comm.).

Tar Spring

Tar Spring Creek consists of about 8.5 stream miles and is tributary to Arroyo Grande Creek. It flows west, entering Arroyo Grande northeast of the city of Arroyo Grande.

Staff from DFG surveyed Tar Spring Creek in 1961 and did not observe *O. mykiss*. The field note states, “In general, the drainage is a marginal spawning area; probably providing some spawning area during very wet winters and none during most years” (DFG 1961e).

Lopez Canyon

Lopez Canyon Creek consists of about seven stream miles and is tributary to Arroyo Grande. Lopez Reservoir fills the lower portion of Lopez Canyon.

The 1894-1895 bulletin of the U.S. Fish Commission called Lopez Creek, “the best-known trout stream in San Luis Obispo County” (USFC 1895). It notes that Arroyo Grande watershed resident and ocean run trout “are but forms or states of the same fish” (USFC 1895).

Staff from DFG surveyed Lopez Canyon Creek in 1961 and observed multiple *O. mykiss* year classes. The survey report states, “This stream is a valuable south coast stream due to its permanent waters and its contribution to the spawning and nursery area of Grande Creek drainage. The potential of this stream is believed by local wardens to be equal to steelhead streams further north such as Santa Rosa and San Carpoforo Creek” (DFG 1961f).

A 1976 DFG report states, “Lopez Creek supports a self-sustaining population of rainbow trout” (DFG 1976d). Staff from USFS surveyed Lopez Canyon Creek upstream from the reservoir in 1980 and observed multiple *O. mykiss* year classes. The survey report states, “Lopez Creek is a steady flowing stream...” and “The habitat is good enough to support a larger fishery” (USFS 1980b).

Staff from DFG observed YOY and age 1+ *O. mykiss* in Lopez Canyon Creek upstream from the Big Falls Canyon Creek confluence in the mid 1990s (Highland pers. comm.). Two *O. mykiss* year classes were observed in the upper portion of the creek in 2004. These fish are of unknown origin and may be a resident population (Highland pers. comm.).

Lopez Canyon Creek was sampled in 2003 as part of a study of *O. mykiss* genetic structure in southern California. A resulting 2006 paper states, “...differences between above and below barrier groups were not significantly different from zero for the Arroyo Grande” (Girman and Garza 2006, p. 16).

Vasquez

Vasquez Creek consists of about 6.2 stream miles and is tributary to Lopez Canyon Creek. The historical confluence of the creeks is under Lopez Reservoir.

Staff from DFG surveyed Vasquez Creek in 1961 and observed “very scarce” *O. mykiss*. Low natural production was attributed to past dry years. The survey report states, “The stream is probably a fair to good spawning tributary when steelhead are able to get into Lopez Canyon” (DFG 1962e). Field notes from 1962 relay reports of steelhead spawning in the creek (DFG 1962f).

Little Falls

Little Falls Creek consists of about 2.5 stream miles and is tributary to Lopez Canyon Creek. It flows south, entering Lopez Canyon Creek east of Bald Mountain. A natural falls at about stream mile 0.5 appears to be the migratory limit for steelhead.

Staff from USFS surveyed Little Falls Creek in 1999. Trout fry and adults to 11.8 inches in length were observed downstream from the first falls (USFS 1999e).

Big Falls Canyon

Big Falls Canyon Creek consists of about 2.6 stream miles and is tributary to Lopez Canyon Creek. It flows south, entering Lopez Canyon Creek northwest of Bald Mountain.

Staff from DFG visited Big Falls Canyon Creek in 1954 and observed “many young steelhead” in the lower reach. The field note states, “The flow was very small and probably dries up or nearly dries up in summer” (DFG 1954).

Staff from USFS surveyed Big Falls Canyon Creek in 1999. The survey report states, “There were numerous trout along the survey zone above and below both falls” (USFS 1999f).

Wittenberg

Wittenberg Creek consists of about six stream miles and is tributary to Arroyo Grande. The lowest mile of the historical streambed is under Lopez Reservoir.

A 1959 field note states, “This small stream contains good permanent flow throughout the lower 3/4 mile just above mouth” (DFG 1959c). The note relays an anecdotal report of resident rainbow occurring in the headwaters area. The note also relays a local resident’s report, “...steelhead used to run up the stream in large numbers in the early days and now they are seldom seen...” (DFG 1959c).

Huffs Hole

Huffs Hole Creek consists of about 4.3 stream miles and is tributary to Wittenberg Creek. The confluence is located at the high pool mark of Lopez Reservoir.

A 1959 field note states, “Huff Hole Creek likewise contains a small amount of permanent water in the extreme headwaters” (DFG 1959c). The note relays an anecdotal report of resident rainbow trout occurring in the headwaters area.

Staff from USFS surveyed Huffs Hole Creek 1980 and observed multiple *O. mykiss* year classes. The survey report states, ““Huff’s Hole Creek has a low flow but serves as an important spawning creek for rainbow trout leaving Lopez Lake” (USFS 1980c).

San Luis Obispo County Summary

As part of the 1965 state fish and wildlife plan, DFG staff prepared an inventory of anadromous salmonids. No major steelhead streams were noted for San Luis Obispo County. However, about 391 stream miles of steelhead habitat estimated to exist in the minor streams (DFG 1965b). The combined spawning population in the minor streams was estimated to be about 20,000 steelhead. The plan states, “The primary limiting factor is lack of water. Problems facing the steelhead are water projects, diversions, and siltation” (DFG 1965b, p. 411).

References

- [Alley] Alley, D.W., D.W. Alley & Associates. 1997. Assessment of Juvenile Steelhead Habitat and Fish Densities in Arroyo Grande, 1996.
- [Alley] Alley, D.W., *et al.*, 2000. Trends in Juvenile Steelhead Production in 1994-2000 for San Simeon Creek, with Habitat Analysis and an Index of Adult Returns.
- [Alley] D.W. Alley & Associates. 2001a. Results of Fish Rescues on San Simeon Creek, 1995-2001.
- [Alley] D.W. Alley & Associates. 2001b. Monitoring Results for Lower San Simeon and Santa Rosa Creeks In 1997-99; Water Quality in Lagoons, Lagoon In-flow and Fishery Resources in Lagoons, Immediately Upstream and in Van Gordon Creek. Report by D.W. Alley & Associates, *et al.*
- Anonymous, 1975. Chorro Creek Sampling Data.
- Bailey, R., California Polytechnic State University, Natural Resources Management Department. 1973. An Estimate of the Standing Crop of Steelhead Trout (*Salmo gairdneri richardsoni*), Santa Rosa Creek.
- [CCC] California Conservation Corps. 2000. Toro Creek Stream Inventory Report. Report by Karen Bromley.
- [CCC] California Conservation Corps. 2001a. Stream Inventory Report, Chorro Creek.
- [CCC] California Conservation Corps. 2001b. Stream Inventory Report, Pennington Creek. Report by Adam Howell, *et al.*
- [CCC] California Conservation Corps. 2001c. Stream Inventory Report, Dairy Creek. Report by Adam Howell, *et al.*
- [CCC] California Conservation Corps. 2004. Stream Inventory Report, Arroyo Grande, Draft. Report by Bobby Jo Close and Smith Stacy.
- [CCCRWQCB] California Central Coastal Regional Water Quality Control Board. 1978. Workshop Notes, December 8.
- [CCRB] Central Coast Regional Board. 2006. Proposed 2006 CWA Section 303(d) List of Water Quality Limited Segments.
- [CCSE] Central Coast Salmon Enhancement, Inc. 1994. See Canyon Creek - San Luis Obispo Creek Watershed, Historical Stream Survey Review. Report by Paul A. Cleveland.
- [DFG] Department of Fish and Game. 1949. Steelhead Investigation of Streams North of San Luis Obispo. Report by E.D. Beeman.
- [DFG] Department of Fish and Game. 1953. Field Notes, Villa Creek, March 31. Report by Herbert E. Pintler.
- [DFG] Department of Fish and Game. 1954. Note on Big Falls. Report by J.H. Wales.
- [DFG] Department of Fish and Game. 1957a. Old Creek Stream Survey, January 5. Report by Robert F. Elwell.
- [DFG] Department of Fish and Game. 1957b. Old Creek Stream Survey, July 18. Report by Herbert E. Pintler and Gallagher.
- [DFG] Department of Fish and Game. 1958a. Chorro Creek Stream Survey, March 14. Report by Stephen C. Smedley.
- [DFG] Department of Fish and Game. 1958b. San Bernardo Creek Stream Survey, June 19. Report by Stephen C. Smedley.
- [DFG] Department of Fish and Game. 1958c. San Luisito Creek Stream Survey, May 12. Report by Charles K. Fisher.
- [DFG] Department of Fish and Game. 1958d. San Luis Obispo Stream Survey, September 2, 3. Report by Stephen C. Smedley.
- [DFG] Department of Fish and Game. 1958e. Castro Canyon Creek Stream Survey, December 14. Report by Ralph N. Hinton.
- [DFG] Department of Fish and Game. 1958f. Water Application No. 17840. Report by Willis A. Evans.
- [DFG] Department of Fish and Game. 1958g. Application No. 17840. Report by Robert L. Jones.
- [DFG] Department of Fish and Game. 1959a. Provisions for the Continuation of the Steelhead Trout Run in Old Creek, San Luis Obispo County thru the 1959-60. Report by Max R. Schreiber.
- [DFG] Department of Fish and Game. 1959b. Water Application No. 18450. Report by Stephen C. Smedley.
- [DFG] Department of Fish and Game. 1959c. Field Note, Wittenburg Creek, June 2. Report by Willis A. Evans.
- [DFG] Department of Fish and Game. 1960a. Field Note, Arroyo de la Cruz, June 29. Report by Max R. Schreiber.

- [DFG] Department of Fish and Game. 1960b. Pico Creek Stream Survey, January 15. Report by Max R. Schreiber.
- [DFG] Department of Fish and Game. 1960c. Water Application No. 19095. Report by Max R. Schreiber.
- [DFG] Department of Fish and Game. 1960d. San Simeon Stream Survey, January 19. Report by Max R. Schreiber.
- [DFG] Department of Fish and Game. 1960e. Santa Rosa Creek Stream Survey, January 18. Report by Max R. Schreiber.
- [DFG] Department of Fish and Game. 1960f. Harford Canyon Creek Stream Survey, December 13. Report by Ralph N. Hinton.
- [DFG] Department of Fish and Game. 1960g. See Canyon Stream Survey, December 12. Report by Ralph N. Hinton.
- [DFG] Department of Fish and Game. 1960h. Stenner Creek Stream Survey, December 16. Report by Ralph N. Hinton.
- [DFG] Department of Fish and Game. 1960i. Reservoir Canyon Stream Survey, December 16. Report by Ralph N. Hinton.
- [DFG] Department of Fish and Game. 1960j. Arroyo Grande Stream Survey, May 12, 17. Report by Max R. Schreiber.
- [DFG] Department of Fish and Game. 1960k. Water Application No. 18375. Report by Willis A. Evans.
- [DFG] Department of Fish and Game. 1961a. San Carpofo Creek Stream Survey, January 24-25. Report by Ralph N. Hinton.
- [DFG] Department of Fish and Game. 1961b. Estrada Creek Stream Survey, January 25. Report by Ralph N. Hinton.
- [DFG] Department of Fish and Game. 1961c. Water Application 18375. Report by Jack C. Fraser.
- [DFG] Department of Fish and Game. 1961d. Lopez Project.
- [DFG] Department of Fish and Game. 1961e. Notes on Tar Spring Creek. Report by Ralph N. Hinton.
- [DFG] Department of Fish and Game. 1961f. Lopez Canyon Creek Stream Survey, August 10. Report by Richard L. Moore.
- [DFG] Department of Fish and Game. 1962a. Field Note, Cayucos Creek, January 16. Report by Ralph N. Hinton.
- [DFG] Department of Fish and Game. 1962b. Toro Creek Stream Survey, January 17. Report by Jim Crowdus and Ralph N. Hinton.
- [DFG] Department of Fish and Game. 1962c. Morro Creek Stream Survey, January 16. Report by Jim Crowdus and Ralph N. Hinton.
- [DFG] Department of Fish and Game. 1962d. Dam Application.
- [DFG] Department of Fish and Game. 1962e. Vasquez Creek Stream Survey, December 20, 1961. Report by Ralph N. Hinton.
- [DFG] Department of Fish and Game. 1962f. Field Notes, Vasquez Creek, January 23. Report by Ralph N. Hinton.
- [DFG] Department of Fish and Game. 1965a. Documentation of Silt Pollution Case. Report by Willis A. Evans.
- [DFG] Department of Fish and Game. 1965b. California Fish and Wildlife Plan, Vol. III, Supporting Data, Pt. B, Inventory (Salmon-Steelhead and Marine Resources).
- [DFG] Department of Fish and Game. 1966a. Comments and Recommendations for Madonna Construction Company's Application for a Use Permit to Remove Sand and Gravel. Report by Willard Greenwald.
- [DFG] Department of Fish and Game. 1966b. 1602 Application. Report by Michael L. Johnson.
- [DFG] Department of Fish and Game. 1967. Letters Re: Barrier to SH Migration. Report by Michael L. Johnson and Howard Martin.
- [DFG] Department of Fish and Game. 1969a. Villa Creek Stream Survey, August 13, 14. Report by Stephen L. Conger and William Kirk.
- [DFG] Department of Fish and Game. 1969b. W.A. 23292, Nationwide Development Company, Applicant. Report by Willard Greenwald.
- [DFG] Department of Fish and Game. 1970. Memo regarding Santa Rosa Creek lagoon by L. Puckett.
- [DFG] Department of Fish and Game. 1973a. Arroyo de la Cruz Stream Survey, August. Report by John Hamill and Jim Shuler.
- [DFG] Department of Fish and Game. 1973b. San Simeon Creek Stream Survey, August 13 and 14. Report by T. Johnston, *et al.*
- [DFG] Department of Fish and Game. 1973c. Toro Creek Stream Survey, November 27. Report by Susan Clevenger, *et al.*
- [DFG] Department of Fish and Game. 1973d. Morro Creek Stream Survey, June 5, 6, 7, 12. Report by Susan Clevenger, *et al.*
- [DFG] Department of Fish and Game. 1973e. Dairy Creek Stream Survey, April 24, 25, & 27. Report by Susan Clevenger, *et al.*

- [DFG] Department of Fish and Game. 1973f. Stenner Creek Stream Survey, May 16, 17, 18. Report by Susan Clevenger, *et al.*
- [DFG] Department of Fish and Game. 1973g. Brizziolari Creek Stream Survey, May 15. Report by Susan Clevenger, *et al.*
- [DFG] Department of Fish and Game. 1974. Memo Re: Old Garden Creek Stream Survey. Report by Mike Seefeldt.
- [DFG] Department of Fish and Game. 1975. The Effect of the Proposed Flood Control Project in the San Luis Obispo Creek Drainage upon Fish and Wildlife Resources. Report by Gene L. Gerdes and William M. Snider.
- [DFG] Department of Fish and Game. 1976a. Report to the State Water Resources Control Board Summarizing the Position of the Department of Fish and Game on Water Application 24120. Report by Paul P. Chappell, *et al.*
- [DFG] Department of Fish and Game. 1976b. Notice of Application Filed, Chorro Creek Dam, No. 1-72. Report by James B. McCormick.
- [DFG] Department of Fish and Game. 1976c. Water Application 24914. Report by Jack C. Fraser.
- [DFG] Department of Fish and Game. 1976d. Sport Fishery Regulation Plan for Lopez Creek.
- [DFG] Department of Fish and Game. 1978. Arroyo de la Cruz Stream Surveys, September 30 and October 1, 14. Report by Richard Adams, *et al.*
- [DFG] Department of Fish and Game. 1982. Known Steelhead Runs, San Luis Obispo County. Report by Cathy A. Dampier.
- [DFG] Department of Fish and Game. 1985. Steelhead Barrier. Report by Paul P. Chappell.
- [DFG] Department of Fish and Game. 1992a. Protest of Time Extension Petition for Permit 11390 (Application 17114) of City of San Luis Obispo - Whale Rock Reservoir in San Luis Obispo County. Report by Brian Hunter.
- [DFG] Department of Fish and Game. 1992b. Field Notes, Chorro Creek, November. Report by Jennifer Nelson.
- [DFG] Department of Fish and Game. 1994a. Steelhead Population and Habitat Assessment on Arroyo de la Cruz, San Luis Obispo, 1993. Report by Jennifer Nelson.
- [DFG] Department of Fish and Game. 1994b. Summary of Steelhead Population and Habitat Sampling Santa Rosa Creek, San Luis Obispo County, 1993. Report by Jennifer Nelson.
- [DFG] Department of Fish and Game. 1995a. San Carpofo Creek Stream Survey, June 5. Report by Jennifer Nelson and Eric Ogorsolka.
- [DFG] Department of Fish and Game. 1995b. Summary of Steelhead Population and Habitat Sampling San Simeon Creek, San Luis Obispo County, 1993. Report by Jennifer Nelson.
- [DFG] Department of Fish and Game. 1995c. Fish Rescue 1995. Report by Dave Highland.
- [DFG] Department of Fish and Game. 1995d. Stream Flows. Report by Chuck Marshall.
- [DFG] Department of Fish and Game. 1995e. Field Note, Coon Creek, June 20. Report by Dave Highland.
- [DFG] Department of Fish and Game. 1997. Field Notes, Pismo Creek, 1996-1997. Report by Dave Highland.
- [DFG] Department of Fish and Game. 1999a. Field Notes, Willow Creek, 1995-1999. Report by Dave Highland.
- [DFG] Department of Fish and Game. 1999b. Field Notes, Dairy Creek. Report by Dave Highland.
- [DFG] Department of Fish and Game. 1999c. Field Notes, West Corral de Piedra Creek, 1997 & 1999. Report by Dave Highland.
- [DFG] Department of Fish and Game. 2000a. Field Notes, San Luis Obispo Creek, 1995-2000. Report by Dave Highland.
- [DFG] Department of Fish and Game. 2000b. Field Notes, Old Garden Creek. Report by Dave Highland.
- [DFG] Department of Fish and Game. 2000c. Field Note, Brizziolari Creek, 1998-2000. Report by Dave Highland.
- [DFG] Department of Fish and Game. 2000d. Arroyo Grande Stream Survey, October 19 - 22, 1999.
- [DFG] Department of Fish and Game. 2001. Field Notes, Los Osos Creek, 1998, 2000 & 2001. Report by Dave Highland.
- [DFG] Department of Fish and Game. 2002a. Field Notes, San Simeon Creek, May 2002. Report by Dave Highland.
- [DFG] Department of Fish and Game. 2002b. Field Notes, Van Gordon Creek, 1996, 2000, 2001 & 2002. Report by Dave Highland.

- [DFG] Department of Fish and Game. 2002c. Field Notes, San Luis Obispo Creek, 2000-2002. Report by Dave Highland.
- [DFG] Department of Fish and Game. 2002d. Field Notes, Pismo Creek, 1997-2002. Report by Dave Highland.
- [DFG] Department of Fish and Game. 2003a. Field Notes, Santa Rosa Creek, 1997-2003. Report by Dave Highland.
- [DFG] Department of Fish and Game. 2003b. Field Note, San Luisito Creek, June 17. Report by Dave Highland.
- [DFG] Department of Fish and Game. 2003c. Field Notes, See Canyon Creek, 1995-2003. Report by Dave Highland.
- [DFG] Department of Fish and Game. ca 1934a. Morro Creek Stream Survey. Report by C.A. Bauder and P. Turner.
- [DFG] Department of Fish and Game. ca 1934b. Reservoir Canyon Stream Survey. Report by C.A. Bauder and P. Turner.
- [DFG] Department of Fish and Game. ca 2000. Morro Creek Steelhead Sightings. Report by Dave Highland.
- [DPR] Department of Parks and Recreation. 2007a. Lower Arroyo Grande Creek and Lagoon Fishery and Aquatic Resources Summary 2006 Monitoring Report. Report by Douglas Rischbieter.
- [DPR] Department of Parks and Recreation. 2007b. Aquatic Survey, Arroyo Grande Creek and Lagoon. Report by Douglas Rischbieter, *et al.*
- Girman, D. and J.C. Garza, 2006. Population structure and ancestry of *O. mykiss* populations in South-Central California based on genetic analysis of microsatellite data, Final Report for California Department of Fish and Game Project No. P0350021 and Pacific States Marine Fisheries Contract No. AWIP-S-1.
- [HES] Hagar Environmental Science. 2005. Technical Memorandum, Oceano Dunes Protected Fish Species Survey.
- [JSA] Jones & Stokes Associates, Inc. 1986. Juvenile Steelhead Trout Monitoring in Arroyo de la Cruz, 1985.
- Macias, F.G., United States Department of the Interior, Bureau of Reclamation, Santa Barbara, Ca. 1973. Fishery Mitigation.
- Mooch, S.W., 1990. Diablo Canyon Natural Resource Management and Land Stewardship Program Inventory and Assessment of Aquatic Resources.
- Mott, W.P.J., California Department of Parks and Recreation. 1967. Montana de Oro State Park Steelhead Interpretive Stream Project.
- [NMFS] National Marine Fisheries Service. 1998. Letter from William T. Hogarth, NOAA to John E. Moss, City of SLO Re: Old Creek, May 27, 1998. Report by William T. Hogarth.
- [NMFS] National Marine Fisheries Service. 2002a. Steelhead Presence/Absence Data Form for San Carpoforo Creek. Dated June 19, 2002.
- [NMFS] National Marine Fisheries Service. 2002b. Steelhead Presence/Absence Data Form for Villa Creek. Dated November 6, 2002.
- [NMFS] National Marine Fisheries Service. 2002c. Steelhead Presence/Absence Data Form for Toro Creek. Dated July 17, 2002.
- [NMFS] National Marine Fisheries Service. 2002d. Steelhead Presence/Absence Data Form for Morro Creek. Dated July 17, 2002.
- [NMFS] National Marine Fisheries Service. 2002e. Steelhead Presence/Absence Data Form for Islay Creek. Dated July 16, 2002.
- [NMFS] National Marine Fisheries Service. 2002f. Steelhead Presence/Absence Data Form for Diablo Canyon Creek. Dated July 25, 2002.
- [NMFS] National Marine Fisheries Service. 2002g. Steelhead Presence/Absence Data Form for Pismo Creek. Dated July 16, 2002.
- [NMFS] National Marine Fisheries Service. 2005. Contraction of the Southern Range Limit for Anadromous *Oncorhynchus mykiss*. Report by David A. Boughton, *et al.*
- [Payne] Thomas R. Payne & Associates. 2000. HSI Assessment of Coon Creek and San Luis Obispo Creek.
- [Payne] Thomas R. Payne & Associates. 2001. The Distribution & Abundance of Steelhead in Tributaries to Morro Bay, California.

- [Payne] Thomas R. Payne & Associates. 2004. Distribution and Abundance of Steelhead in the San Luis Obispo Creek Watershed.
- [Payne] Thomas R. Payne & Associates. 2007. Aquatic Habitat and Fish Population Assessment of San Luisito Creek, San Luis Obispo County, California. Report by Mark A. Allen.
- [Payne] Thomas R. Payne & Associates. ca 2001. Distribution and Abundance of Steelhead in Tributaries to Morro Bay.
- Rathbun, G.B., *et al.*, 1991. Status of Declining Aquatic Reptiles, Amphibians, and Fishes in the Lower Santa Rosa Creek, Cambria, California.
- Rischbieter, D., 2004. Lower Arroyo Grande Creek and Lagoon Fishery and Aquatic Resources Summary Monitoring Report.
- Rischbieter, D., 2006. Lower Arroyo Grande Creek and Lagoon Fishery and Aquatic Resources Summary 2005 Monitoring Report.
- [RTA] Ross Taylor and Associates. 2003. Final Report: Morro Bay Watershed Stream Crossing Inventory and Fish Passage Evaluation.
- [SEI] Stetson Engineering, Inc. 2004. Draft Arroyo Grande HCP. Report by Hanson Environmental Inc. and Stetson Engineering Inc.
- Seldon, M.M., Save Our Peninsula Creeks Committee. 1972. Today Decides Tomorrow.
- [SHG] Swanson Hydrology & Geomorphology. 2003. Final Report: Steelhead Restoration Planning Project for the Morro Bay Watershed. Report by John Dvorsky.
- [SHG] Swanson Hydrology & Geomorphology. 2004. Final Technical Report, Arroyo Grande Creek Watershed Management Plan, Geomorphic and Hydrologic Conditions Assessment, for Central Coast Salmon Enhancement, December 8, 2004.
- Siepel, N., 2002. Fish Passage Arroyo de los Chinos.
- Sneed, D., The San Luis Obispo Tribune. 2007. Chemical gets into Arroyo creek.
- Spina, A.P., *et al.*, 2005. Downstream Migration, Rearing Abundance, and Pool Habitat Associations of Juvenile Steelhead in the Lower Main Stem of a South-Central California Stream.
- [Swanson] Swanson Hydrology + Geomorphology. 2006. Draft Report, Arroyo Grande Creek Steelhead Distribution & Abundance Survey - 2006.
- [SWRCB] State Water Resources Control Board. ca 1983. Protest of WA 27135. Report by Department of Fish and Game and State Water Resources Control Board.
- [USFC] United States Fish Commission. 1895. The Miscellaneous Documents of the House of Representatives.
- [USFS] United States Forest Service. 1980a. Morro Creek Stream Survey, September 10. Report by Kelly Stater and Judy Tartaglia.
- [USFS] United States Forest Service. 1980b. Lopez Canyon Creek Stream Survey, October 29. Report by Kelly Stater.
- [USFS] United States Forest Service. 1980c. Huffs Hole Creek Stream Survey, September 11. Report by Kelly Stater and Judy Tartaglia.
- [USFS] United States Forest Service. 1996. Mitochondrial DNA and Nuclear Microsatellite Diversity in Hatchery and Wild *Oncorhynchus mykiss* from Freshwater Habitats in Southern California. Report by Jennifer L. Nielsen, *et al.*
- [USFS] United States Forest Service. 1999a. San Carpoforo Creek Stream Survey.
- [USFS] United States Forest Service. 1999b. Herp Day Segment Survey, Dutra Creek, August 17. Report by V. Hubbard and T. Murphey
- [USFS] United States Forest Service. 1999c. Southern California Mountains and Foothills Assessment: Habitat and Species Conservation Issues. Report by Gena M. Calcarone and John R. Stephenson.
- [USFS] United States Forest Service. 1999d. Morro Creek Stream Survey.

[USFS] United States Forest Service. 1999e. Little Falls Creek Stream Survey.

[USFS] United States Forest Service. 1999f. Big Falls Canyon Creek Stream Survey.

Personal communications

Capelli, Mark. National Marine Fisheries Service. Various communications during 2007.

Cepkauskas, Marty. Director of Real Estate, Hearst Corporation. Email in December 2007.

Garza, Carlos. National Marine Fisheries Service. Email message in January 2008.

Highland, Dave. Department of Fish and Game. Various communications in 2006 and 2007, and 2008.

Hill, Mike. Department of Fish and Game. Various communications during 2006 and 2007.

Nelson, Jennifer. Department of Fish and Game. Various communications during 2007.

Table 4. Distribution status of *O. mykiss* in coastal streams of San Luis Obispo County, California¹

Watershed	Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
San Carpoforo	San Carpoforo (San Carpojo)	DF	DF		Y	3
San Carpoforo	Estrada	DF	UN		UN	0
San Carpoforo	Dutra	DF	DF		N	3
Arroyo de los Chinos	Arroyo de los Chinos	DF	DF		Y	3
Arroyo de la Cruz	Arroyo de la Cruz	DF	DF	Y	Y	3
Arroyo de la Cruz	Green Canyon	DF	UN		UN	0
Arroyo de la Cruz	Burnett	DF	DF	Y	Y	3
Arroyo de la Cruz	Spanish Cabin	DF	UN		UN	0
Arroyo de la Cruz	Marmolejo	DF	DF	Y	Y	3
Oak Knoll	Oak Knoll	PS	UN		UN	0
Oak Knoll	Arroyo Laguna	PS	PS		UN	0
Arroyo del Puerto	Arroyo del Puerto	PS	PS		UN	0
Little Pico	Little Pico	DF	DF		Y	0
Pico	Pico	DF	DF		Y	1
Pico	North Fork Pico	DF	DF		Y	0
Pico	South Fork Pico	PS	UN		UN	0
San Simeon	San Simeon	DF	DF	Y	Y	3
San Simeon	Van Gordon	DF	DF	Y	Y	3
San Simeon	Steiner	DF	DF	Y	Y	2
San Simeon	North Fork San Simeon	PS	UN		N	0
San Simeon	South Fork San Simeon	PS	UN		N	0
Santa Rosa	Santa Rosa	DF	DF	Y	Y	3
Santa Rosa	Perry	DF	DF	Y	Y	2
Santa Rosa	Green Valley	PS	PS		UN	0
Villa	Villa	DF	DF		Y	3
Villa	Elylsly	PS	PS		UN	0
Cayucos	Cayucos	PS	PA		UN	0
Little Cayucos	Little Cayucos	PS	PA		UN	0
Old	Old	DF	DF	Y	N	2
Willow	Willow	UN	PA		N	0

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

Table 4. Distribution status of *O. mykiss* in coastal streams of San Luis Obispo County, California¹

Watershed	Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Toro	Toro	DF	DF	Y	Y	3
Morro	Morro	DF	DF	Y	Y	3
Chorro	Chorro	DF	DF	Y	Y	2
Chorro	San Bernardo	DF	DF	Y	Y	1
Chorro	San Luisito	DF	DF	Y	N	3
Chorro	Pennington	DF	DF	Y	Y	3
Chorro	Dairy	DF	DF	Y	Y	3
Los Osos	Los Osos	DF	DF	Y	Y	3
Islay	Islay	DF	DF		Y	3
Coon	Coon	DF	DF	Y	Y	3
Diablo	Diablo Canyon	DF	DF		UN	3
San Luis Obispo	San Luis Obispo	DF	DF	Y	Y	3
San Luis Obispo	Harford Canyon	DF	UN		UN	0
San Luis Obispo	See Canyon	DF	DF		Y	3
San Luis Obispo	Davis Canyon	DF	DF		Y	3
San Luis Obispo	Castro Canyon	PB	UN		UN	0
San Luis Obispo	Davenport	DF	UN		UN	0
San Luis Obispo	Froom	DF	DF		Y	2
San Luis Obispo	Prefumo	DF	DF	Y	Y	2
San Luis Obispo	Stenner	DF	DF		Y	3
San Luis Obispo	Old Garden	DF	DF		Y	3
San Luis Obispo	Brizzolara	DF	DF		Y	3
San Luis Obispo	Reservoir Canyon	DF	DF	Y	Y	2
Pismo	Pismo	DF	DF	Y	Y	3
Pismo	West Corral de Piedra	DF	DF	Y	Y	3
Pismo	East Corral de Piedra	UN	UN		UN	0
Arroyo Grande	Arroyo Grande	DF	DF	Y	Y	3
Arroyo Grande	Los Berros	DF	DF		Y	3
Arroyo Grande	Tar Spring	PS	UN		UN	0
Arroyo Grande	Lopez Canyon	DF	DF	Y	N	3
Arroyo Grande	Vasquez	DF	UN	Y	N	0

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

Table 4. Distribution status of *O. mykiss* in coastal streams of San Luis Obispo County, California¹

Watershed	Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Arroyo Grande	Little Falls	DF	DF	Y	N	3
Arroyo Grande	Big Falls Canyon	DF	DF	Y	N	3
Arroyo Grande	Wittenberg	DF	UN	Y	N	0
Arroyo Grande	Huffs Hole	DF	UN	Y	N	0

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

