

**Historical Distribution and Current Status of Steelhead/Rainbow Trout (*Oncorhynchus mykiss*)
in Streams of the San Francisco Estuary, California**

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Center for Ecosystem Management and Restoration

SOLANO COUNTY

Unnamed Creek to Cordelia Slough Watershed

This creek drains the area between American and Jameson Canyons. It flows generally east to enter Cordelia Slough about one-half mile south of the town of Cordelia.

Unnamed Creek to Cordelia Slough

In July 1996, Leidy sampled the unnamed creek where it flowed through Ridgeview Park in the Oakbrook Drive development south of Cordelia and west of Interstate 680. He sampled the creek again in October, about 650 feet further upstream.

Oncorhynchus mykiss was not found during either sampling effort (Leidy 2002).

In July 2003, *O. mykiss* were noted in an unnamed tributary to Cordelia Slough. Two *O. mykiss* (~175-200 mm) were seen in a pool east of Interstate 80, approximately 200 yards upstream of the Pacific Gas and Electric tower where a two-foot diameter pipe crossed the stream (Field biologist pers. comm.). Subsequent surveys found juvenile *O. mykiss*.

Green Valley Creek Watershed

Green Valley Creek is an intermittent to perennial stream that runs southeast where it is joined by Cook Canyon Creek, and then by Wild Horse Creek before entering the Green Valley. Green Valley Creek runs approximately 4.7 miles to Cordelia Slough.

Green Valley Creek

In 1958, DFG staff described the reach immediately above Highway 40 as having negligible function for fisheries (Elwell 1958).

In a 1962 report, Skinner indicated that Green Valley Creek was an historical migration route and habitat for steelhead (Skinner 1962).

In October 1974, DFG surveyed Green Valley Creek in relation to the Via Palo Linda Bridge project. The survey report noted several juvenile steelhead observed upstream from the site (Week 1975).

In January 1975, DFG sampled four sites on Green Valley Creek by electrofishing. The sites were pairs of 30-meter reaches in downstream and upstream locations. *Oncorhynchus mykiss* occurred in each of the sites as follows: 1,500 feet downstream of the project site, 15 steelhead; 200 feet downstream, four steelhead; 300 feet upstream, 39 steelhead; and 1,750 feet upstream, 96 steelhead (Week 1975). Based on these results, DFG calculated the average *O. mykiss* density for undisturbed sections of the creek to be about 68 fish per 30 meters (Week 1975).

In June 1976, more than 50 YOY steelhead were reported in an unnamed tributary of Green Valley Creek flowing through the Green Valley Country Club. Thirty YOY steelhead were electroshocked, collected, and moved to the Napa River (Pinkham and Johnson 1976). The incident report noted some suitable spawning and rearing habitat areas in upstream portions of this creek,

as well as YOY present in these reaches (Pinkham and Johnson 1976). One *O. mykiss* measuring 73.5 mm SL was collected from Green Valley Creek near Lake Frey in January 1979 (Courtois 1979).

According to residents living upstream of the Via Palo Alto Bridge, a steelhead run persisted in Green Valley Creek until approximately 1986 (Gray 1990). The Department of Fish and Game sampled this area by electrofishing in September 1990 and found one *O. mykiss* measuring 222 mm FL (Gray 1990).

Leidy sampled Green Valley Creek at two locations in 1994 and one location in 1996, all downstream of Interstate 80, and did not collect *O. mykiss* (Leidy 2002). However, in January 1997 he caught one *O. mykiss* (102 mm FL) approximately one mile upstream of Interstate 80 at Pavallion Court and another individual (100 mm) at a site about two miles upstream from Interstate 80 (Leidy 2002). The second site also contained one dead *O. mykiss* (~150 mm). Near Country Club Drive in Green Valley, Leidy caught one adult steelhead (480 mm) and two juveniles (92 mm, 92 mm) (Leidy 2002).

Wild Horse Valley Creek

Lake Frey and Lake Madigan were created on Wild Horse Valley Creek by construction of dams in 1894 and 1908, respectively. Fishways were not included in the dams. In 1940, DFG reported that the local warden considered both lakes to be “fine” trout lakes, but that steelhead stocking would be necessary for a continued fishery. Shapovalov cited absent or extremely limited spawning areas upstream of Lake Frey as precluding a self-sustaining steelhead population (Shapovalov 1940).

Assessment: *Oncorhynchus mykiss* has been collected in the Green Valley Creek drainage from the 1950s to the present. While the watershed is relatively small, its position adjacent to the Suisun Creek drainage provides habitat opportunities to salmonids migrating upstream from the Suisun and Cordelia Slough area.

Suisun Creek Watershed

Suisun Creek drains a 52 square mile drainage on the west side of the Vaca Mountains. The creek flows south where it is joined by Wooden Valley, Gordon Valley and Green Valley creeks. Suisun Creek enters Grizzly Bay in the northern part of the San Francisco Estuary via Cordelia Slough.

Suisun Creek

Lake Curry was formed by the construction of Gordon Valley Dam on Suisun Creek in 1926. No fishway was built as part of this project (Shapovalov 1940). In a 1940 report, DFG cited the reservoir caretaker as seeing “sea-run” steelhead running up Suisun Creek to the dam spillway.

A May 1956 DFG survey found steelhead fingerlings “abundant” in the upper portions of Suisun Creek and its tributaries, particularly in and just below the confluence of Wooden Valley Creek (Westgate 1956). Steelhead also were present, although in smaller numbers, downstream to the mouth. The survey report stated DFG’s opinion that the Suisun Creek system could not support a substantial trout fishery due to over-appropriation of water (Westgate 1956).

In a 1962 report, Skinner indicated that Suisun Creek was an historical migration route and habitat for steelhead (Skinner 1962). At that time, the creek was said to be “lightly used” as steelhead habitat (Skinner 1962).

In April 1964, DFG sampled Suisun Creek at the upper end of Suisun Valley near Mankas Corner. Several *O. mykiss* (~150 mm) were observed, and the survey report noted some spawning gravels present in the vicinity of the site (Gerstung 1964).

A 1969 DFG memorandum noted an estimated run of less than 50 steelhead in the Suisun Creek watershed (Greenwald 1969). The Department of Fish and Game stated that juvenile steelhead were observed throughout the watershed and further noted a lack of nursery habitat as the population’s limiting factor (Greenwald 1969).

In February 1975, DFG electrofished 30-meter reaches near the Rockville Road bridge construction site. Thirty-nine steelhead were found in the reach immediately upstream and 96 in the reach immediately downstream of the site (Rugg 1975). Rockville Road crosses Suisun Creek immediately upstream of Interstate 80.

In July 1980, DFG visually surveyed and electrofished Suisun Creek between the Southern Pacific Railroad Bridge, downstream of Interstate 80, and the Wooden Valley Creek confluence. No *O. mykiss* were found, but the survey report stated that the creek sustained a winter steelhead run (Cox 1980). The report noted anglers taking steelhead in the summer of 1979, as well as local residents’ claims that runs had decreased in recent years (Cox 1980). The Department of Fish and Game recommended management for steelhead by removing barriers, improving agricultural practices, and preventing dumping.

Three Suisun Creek sites downstream of Lake Curry were sampled in October 1981 as part of a fish distribution study. No *O. mykiss* were found (Leidy 1984). In a 1984 report, DFG noted that Suisun Creek had a self-sustaining, natural steelhead population (Meyer 1984).

Between March and July 2001, *O. mykiss* were observed in Suisun Creek by people performing habitat mapping and monitoring activities. In March, an adult female steelhead (673 mm FL) was found approximately 0.25 miles downstream of the Wooden Valley Creek confluence (Hanson Environmental 2001). In June and early July, three additional adult steelhead (530 to approximately 640 mm) were observed in the creek between approximately six and 11 miles downstream of Lake Curry. Juvenile *O. mykiss* also were observed downstream of the dam. These fish typically ranged from 160-170 mm in length (Hanson Environmental 2001).

Wooden Valley Creek

The Department of Fish and Game reported in 1940 that the caretaker of Lake Curry (on Suisun Creek) observed steelhead runs in Wooden Valley Creek (Shapovalov 1940). In May 1956, DFG sampled throughout the Suisun Creek drainage, and stated in a report that steelhead in the Suisun Creek system were most abundant in Wooden Valley Creek downstream from Wooden Valley (Westgate 1956).

A 1959 DFG correspondence cited Mr. Bolten Hall, the local game warden, as saying that Wooden Valley Creek supported a small run of steelhead trout every year (Jones 1959). The letter stated DFG position that Wooden Valley Creek provided a steelhead trout fishery that was worth preserving through insurance of adequate flows (Jones 1959).

In April 1964, DFG surveyed Wooden Valley Creek in the canyon downstream of Wooden Valley. Two to eight *O. mykiss* juveniles were noted in deeper pools in the reach (Gerstung 1964). Numerous *O. mykiss* juveniles to 150 mm in length were observed in the canyon below Wooden Valley. The survey report noted patches of “excellent” spawning gravels (Gerstung 1964).

A 1965 DFG letter regarding a box culvert on Wooden Valley Creek noted that the stream was important to salmonid populations. The letter contained recommendations for providing fish passage at the project (Jones 1965). A 1969 DFG memorandum identified the greatest concentrations of steelhead juveniles in the Suisun Creek system to be in Wooden Valley Creek (Greenwald 1969). A 1980 DFG stream survey report for Suisun Creek noted that juvenile *O. mykiss* were seen in surveys of Wooden Valley Creek that year (Cox 1980).

Wooden Valley Creek was sampled in October 1981 as part of a fish distribution study. No *O. mykiss* were collected in a 15-meter reach along Wooden Valley Road (Leidy 1984). An undated draft letter from DFG to the City of Vallejo Water Superintendent identified the lack of surface flows below Lake Curry as the principal element limiting the productivity of steelhead in Suisun Creek (Hunter *n.d.*).

In December 2001, a pair of spawning “salmon” were observed constructing a redd in the lower reach of Wooden Valley Creek near Wooden Valley Road (Blizard 2001). A pair of spawned out carcasses (1 male, 1 female) and possibly another male salmon also were observed (Blizard 2001).

In June 2002, a survey of Wooden Valley Creek between the mouth and the White Creek confluence was conducted. Juvenile *O. mykiss* were observed near the headwaters and at various other locations throughout the length of the survey area (L. Marcus pers. comm.). Residents in the vicinity reported adult *O. mykiss* had been present in the creek in recent years.

White Creek

White Creek is a tributary of Wooden Valley Creek and flows through the property of Wild Horse Valley Ranch. In 1980 Professor John Hopkirk of Sonoma State University identified White Creek as one of the last remaining spawning streams for steelhead trout within the Suisun Creek system (Hopkirk 1980).

Assessment: The Suisun Creek watershed formerly supported steelhead runs, although the *O. mykiss* population likely was substantially affected by the construction of Gordon Valley Dam (Lake Curry) in 1926 and subsequent water developments. *Oncorhynchus mykiss* persists in the drainage, although recent surveys have not included estimates of density. Adult *O. mykiss* believed to be wild have been noted in main stem Suisun Creek and in its major tributary, Wooden Valley Creek (L. Marcus pers. comm.). Restoration planning is now being developed for the watershed, with likely recommendations to include habitat improvements such as invasive species control and instream flow modifications to improve over-summering habitat conditions (J. Beuttler pers. comm.).

Table X-1. Distribution status of *O. mykiss* in San Francisco Estuary streams of Solano County, California^a

Watershed	Stream/ Tributary	Yrs. Surveyed/ Quant. Data	Max. Period of Record	Data Type	Life Hist. Stage/ No.Yrs. Data	Anad. Life-Cycle Possible	<i>O. mykiss</i>		Evidence of Pop. Decline	Current Pop. Status	References (Pers. Comm.)
							Hist.	Current			
Unnamed creek to Cordelia Slough	Unnamed creek to Cordelia Slough	3/0	2003	1, 2	J/1	Y	PB	DF	-	1, 2, 3	14 (2)
Green Valley Creek	Green Valley	9/4	1962- 97	0, 1, 2, 3	J/3; R/1; M/2	Y	DF	DF	Y	1, 2, 3	2, 4, 6, 14, 16, 19, 20
	Wild Horse Valley	1/0	1940	0, 1	-	UNK	DF	PS	-	0	18
Suisun Creek	Suisun	10/3	1940- 2001	0, 1	J/4; M/4	Y	DF	DF	Y	1, 2, 3	3, 5, 7, 8, 13, 15, 17- 19, 21 (1)
	Wooden Valley	7/1	1940- 2002	0, 1	J/4; M/3	Y	DF	DF	Y	1, 2, 3	1, 3, 5, 7, 10-13, 18, 21 (3)
	White	1/0	1980	0	-	UNK	DF	UNK	Y	0	9

^a Table headings and codes are defined in the Methods section of this report.

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Personal Communications

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2. Field biologist, telephone conversation with G. Becker, CEMAR, July 17, 2003, 2003, in Oakland, regarding steelhead in unnamed tributary to Cordelia Slough.
3. Marcus, L., Laurel Marcus and Associates, telephone conversation with G. Becker, CEMAR, January 2, 2003, regarding Wooden Valley Creek survey.

SOLANO COUNTY MAPS

Historical status of *Oncorhynchus mykiss* in streams of Solano County, California.

Current status of *Oncorhynchus mykiss* in streams of Solano County, California.

