Becker
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Steelhead/Rainbow Trout (*Oncorhynchus mykiss*) Resources South of the Golden Gate, California

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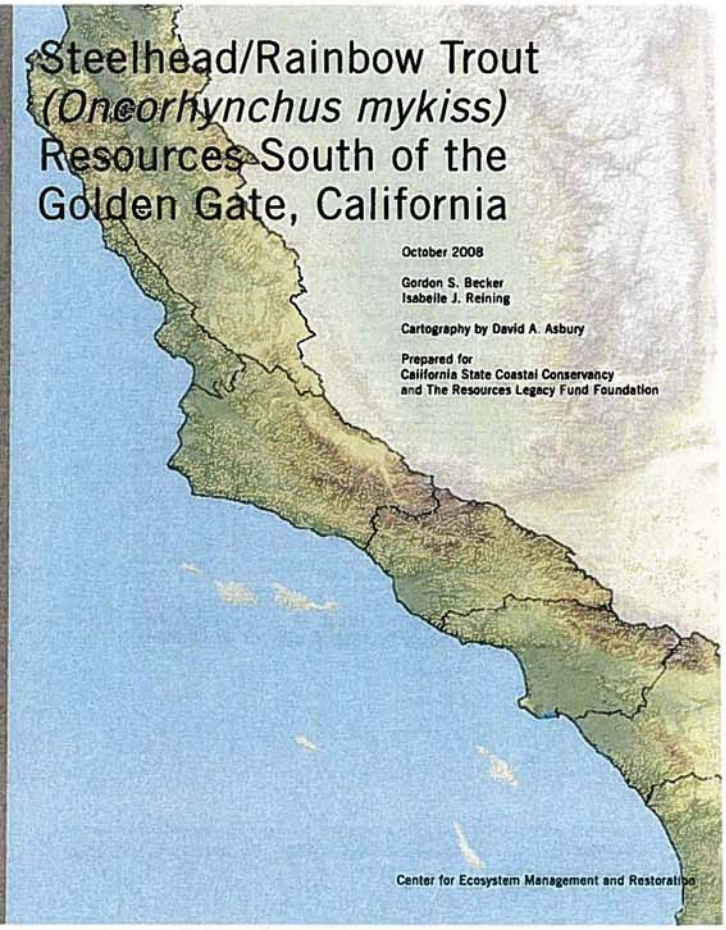

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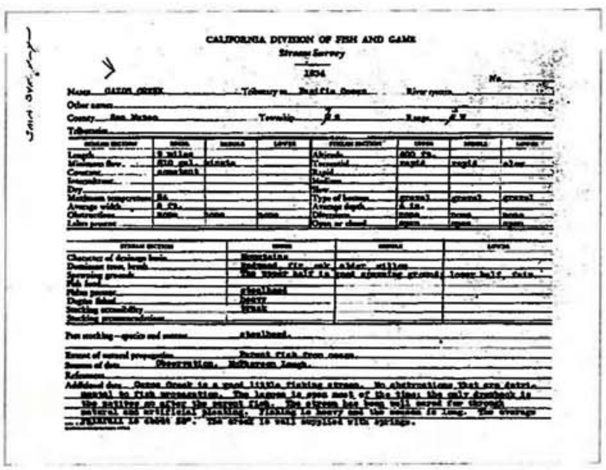
CALIFORNIA DIVISION OF FISH AND GAME
Stream Survey
1934

The cover image is a map of the watershed area of streams tributary to the Pacific Ocean south of the Golden Gate, California, by CEMAR.

The image above is a 1934 Gazos Creek stream survey report published by the California Division of Fish and Game.

Book design by Audrey Kallander.

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Center for Ecosystem Management and Restoration

INTRODUCTION

Researchers characterizing the distribution of steelhead/rainbow trout *(Oncorhynchus mykiss)* face a variety of challenges on a path to an inherently imperfect result. Indeed, a complete, accurate record of the species' historical use of streams over time cannot be assembled (Swift 1975). California's streams have not been systematically and consistently surveyed, and the historical survey record is dispersed and incomplete. There can be no doubt, however, that compiling historical references provides a valuable resource to those interested in stream and steelhead restoration. This volume represents our attempt to synthesize available information to establish an authoritative record of steelhead distribution in coast-draining streams south of the Golden Gate. These streams support the winter (ocean-maturing) steelhead ecotype as well as the non-anadromous, or resident, form of rainbow trout[1].

Several important reviews have been completed previously regarding *O. mykiss* in all or part of the study area. In particular, Titus *et al.* (in prep.), and Boughton and his colleagues (Boughton and Fish 2003; Boughton *et al.* 2005) provided valuable contributions to the understanding of the historical and current distribution of the species. Our work builds upon these previous efforts, greatly expanding the spatial and temporal coverage by accessing primary sources never previously cited. We have located and reviewed thousands of documents in public and private collections, and interviewed biologists, to bring the work of this and previous generations of fisheries scientists into on-going processes relating to conservation of stream resources. We conducted our review using the methods of Leidy *et al.* (2005), as this study (of San Francisco Estuary tributaries) has proven useful to resource agency staff, planners, consulting biologists, scientists, and interested members of the public. The method of Leidy *et al.* (2005) in turn was based on the approach of Titus *et al.* (in prep.).

In short, this report presents a distillation of a substantial amount of readily available, reliable information regarding *O. mykiss* and *O. mykiss* habitat. As such, it is intended to serve as a stream-by-stream steelhead resources reference for the community of people with interest in steelhead in coastal watersheds in central and southern California.[2] Our report incorporates information concerning presence/absence and other natural history and habitat features in specific streams to contribute to the understanding of how steelhead resources may have changed over time. We made every effort to be consistent in the types of information we cited in the text of the report and to provide the most salient resource characterizations we encountered in the references. Nevertheless, readers are encouraged to access primary sources both for context to the citations and for a more thorough understanding of steelhead resources in the study area than can be provided by this review.

An understanding of historical steelhead resources (*i.e.*, populations and occupied habitat) is pivotal to effective environmental review and resource planning processes. For example, a long-term record of *O. mykiss* observations can provide the basis for ascribing a beneficial use to a specific watershed or stream or for characterizing population structure within a large watershed. Similarly, information concerning the likely range of the number of individuals in a steelhead run prior to substantial urbanization can be used to guide the development of reasonable restoration goals. At the broadest scale, exercises in historical ecology such as

1 We follow the convention of McEwan (2001) when referring to anadromous and non-anadromous forms of rainbow trout *(O. mykiss)*. We use "steelhead" and '"resident" when referring to anadromous and non-anadromous life history forms of rainbow trout, respectively. We use "rainbow trout" for populations where we are unable to determine the life history strategy. Individuals within populations of coastal rainbow trout exhibit varying life-history strategies and a continuum of migratory behaviors from anadromy (strong migratory) to residency (non-migratory).

2 Staff of the California Department of Fish and Game (DFG) have contributed to, reviewed, and provided comment on drafts of this report. However, the report does not constitute current DFG policy or position regarding the assessment, management, or restoration of steelhead rainbow trout in California. Similarly, the report has no relationship to National Marine Fisheries Service (NMFS) recovery planning or other processes, although NMFS staff have contributed substantially to its content.

the current project can allow information developed by past observers to be used in addressing key issues such as reference conditions, changes in resource conditions over time and their mechanisms, and guidance on future management (Swetnam *et al.* 1999).

Leidy *et al.* (2005) completed a thorough investigation into the steelhead resources of San Francisco Estuary streams and documented a paucity of reliable information, particularly quantitatively estimated factors such as abundance, fish size, and density. (Such measures are used in determining the presence of a population reproducing over time, in habitat quality estimates, and in other important applications.) In general, streams of central and south coast watersheds also have been surveyed on relatively few occasions. And it may be argued that fewer fiscal resources have been dedicated to stream restoration projects in this geographic region than to projects on Central Valley or North Coast streams. By making available the existing survey record and other related information, we expect to expand understanding of steelhead use of the creeks that comprise the southern extent of the species' range and to facilitate conservation activities.

Despite strong public interest in the conservation and restoration of anadromous salmonids in streams of coastal California, and substantial efforts toward improving habitat, these populations remain in a perilous state. The federal Endangered Species Act listing status for steelhead populations south of the Golden Gate is alternately "threatened" or "endangered" (Good *et al.* 2005). That steelhead remain, albeit in small numbers, in many (even highly degraded) watersheds is both evidence of its resistance to stressors and reason for optimism that restoration actions will be fruitful.

References

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METHODS

The primary goal of this study was to document the historical distribution and current status of steelhead/rainbow trout *(Oncorhynchus mykiss)* populations in the coastal watersheds south of the Golden Gate, California. Watersheds were identified based on streams terminating in the Pacific Ocean and naming conventions were adopted from the National Geographic TOPO!™ software, with modifications as described later in this section. The study area consists of the coastal watersheds between San Pedro Creek, in northern San Mateo County, and the Tijuana River, southern San Diego County, inclusive.

We reviewed published literature and environmental reports, unpublished reports and studies, sampling data sheets, newspaper accounts, field notes, public agency memoranda, and personal correspondence, and interviewed individuals knowledgeable about *O. mykiss* distribution within particular streams, watersheds, or regions. Source materials were obtained from agency and public libraries and collections, consulting firms, telephone and email contacts, in-person interviews, Web sites, and other sources. Relevant information was copied, scanned, or downloaded and retained either in files or through electronic storage[1]. Reference information was entered for all sources.

We reviewed the available source materials and stored important information regarding distribution, life history and habitat features, and several attributes of the resources either in a customized Microsoft® Access database or in text. The text comprises the body of this report (*i.e.*, the Results section), while the database may be obtained by contacting the authors. Information that appears in the report best characterizes particular *O. mykiss* populations or habitat resources in the judgment of the authors, and provides the basis by which we determined historical presence and current status. We also summarize or quote statements that establish the relative importance to a particular population of a stream or streams within a watershed or the relationship of a watershed's population to the regional population. Every effort was made to document assumptions and provide attribution as context for readers of the report.

Also included is additional information contained in survey reports or other sources that we deemed otherwise important to the analysis or to an understanding of the resources. For example, statements representing well-grounded opinion on such issues as ancestry, life history strategy (*i.e.*, anadromy or non-anadromy), impairment factors, and appropriate management are reproduced in the text. We do not restate most habitat descriptions contained in our information sources because of the changeable nature of the resource, and the amount of variability in the habitat assessment methods applied and the quality of the analyses. Similarly, we relate information on total passage barriers and rarely on partial barriers because information concerning the former appears less subject to variation over time or to mischaracterization.

The Results section contains chapters regarding the coastal streams of the nine counties in the study area. The location, blue line stream length, and other features are provided, followed by information establishing historical and current presence/absence, and other population and habitat related material. For each watershed, information regarding the mainstem is provided first, followed by descriptions of the various tributaries ordered most downstream first to most upstream last. All tributaries a of particular stream are described before advancing to the next most upstream tributary.

1 A DVD containing source materials prepared by the California Department of Fish and Game and other agency references is included with this report. Please contact CEMAR for further information on reference materials.

In order to provide a convenient data summary for report users, tables describing *O. mykiss* historical distribution and current status in streams of each county are presented at the end of each chapter. Table headings and terms are defined as follows.

Watershed: Name of the watershed designated by the primary stream that terminates in the Pacific Ocean.

Stream/tributary: Name of the mainstem or the tributary ordered in a downstream to upstream direction.

Historical, current status. Designations indicate our judgment regarding the likelihood that a stream was occupied or is currently occupied by a spawning run or population. For purposes of this document, "historical" means before 1997, while "current" reflects status in the last ten years. The terms are defined as follows.

DF Definite run or population. Streams for which there is reliable, direct evidence for fish use, such as collections made during stream surveys, published literature, unpublished biological or archaeological reports and surveys, and museum surveys. These sources may be combined with other historical and current evidence on the existence of suitable habitat.

PB Probable run or population. Streams for which there is some reliable direct evidence for fish use, and we were able to determine that suitable habitat existed historically. This determination was made using information concerning stream habitat characteristics based on reference data, or knowledge of the current presence of suitable habitat.

PS Possible run or population. Streams for which there is minimal or no direct reliable evidence of fish use, but suitable habitat existed historically or is currently present.

PA Possibly absent. Streams for which there is no evidence of fish use and inferences from historical and current habitat conditions (*e.g.*, extreme ephemeral runoff conditions, barriers to upstream migration of fishes, lack of suitable spawning and/or rearing habitat, etc.) indicate the lack of suitable habitat.

UN Unknown/Insufficient information. Streams for which there is insufficient information on fish use and/or historical and current habitat conditions to assign a status value.

We used several sources of information to discern the status of *O. mykiss* in study area streams. Evidence of a run or the existence of a population did not require that fish be recorded every year. Rather, we used existing evidence, our best professional judgment, and the judgments of other researchers to assess the likelihood that *O. mykiss* either regularly or intermittently utilized a particular stream. Because *O. mykiss* in the region are adapted to highly variable climatic, rainfall, and stream discharge conditions, we assumed that a stream could contain suitable habitat for steelhead even if fish were not recorded in successive years.

Evidence of decline. Values indicate that there is or is not evidence of decreased *O. mykiss* abundance over time.

Y Yes. Substantial evidence exists that a significant decrease in abundance has occurred. Such evidence may include population estimates, loss of access to habitat, decreased habitat quality, or similar factors resulting in reduced carrying capacity.

\- No value. Insufficient evidence was found to ascribe decreased abundance over time.

Anadromy. Values indicate whether streams presently support the anadromous *O. mykiss* life history form.

Y Yes. Current evidence indicates natural propagation is successfully occurring in the stream, or in upstream tributaries of the stream, and no complete barrier to upstream and downstream migration exists between the area of natural propagation and the ocean.

N No. Either a complete migration barrier exists between the ocean and any naturally propagating populations, or current evidence indicates *O. mykiss* are not present or are not naturally propagating in the stream.

UN Unknown. The current status of passage conditions or *O. mykiss* populations is undetermined.

Current population status. Current status of a population in a stream is indicated by the following values: 0 = population absent or unknown, 1 = individuals observed within approximately the last ten years, 2 = some evidence of reproduction within the last ten years, and 3 = evidence of regular reproduction during the last ten years. It should be noted that values are dependent on the robustness of the supporting data. Additional detail is provided in the text description for each study area stream.

Steelhead/rainbow trout distribution maps

The maps prepared for this publication were compiled with data from several sources. We were committed to creating a data product that could be integrated easily by other users and conveniently enhanced in the future. To achieve these objectives we chose the medium resolution National Hydrography Dataset (NHD) as a framework. This comprehensive, standardized dataset produced by the United States Geological Survey (USGS) includes some error and uncertainty, but is one of the most up-to-date and reliable sources available. Another advantage is that it seamlessly covers the entire geographic extent of our study area. We modified the data to make them more accurate, as outlined below, but some uncorrected error likely remains.[2]

Occasionally a stream we referenced did not appear in the medium resolution NHD. In these cases, we manually extracted the line work from the corresponding high resolution NHD and appended the streams to the medium resolution dataset. The extracting technique used retained all of the feature's attributes as well as the NHD data schema. Streams appearing on the maps as "other streams" typically exist in the medium resolution NHD but are not associated with an *O. mykiss* status designation since we did not locate relevant information. In the southern counties, notably Los Angles, Orange and San Diego, we performed "stream thinning" (*i.e.*, eliminating intermittent streams with no available fisheries information) using the value added attributes included in NHD Plus[3]. Stream level as defined by NHD Plus was used to determine the mapped streams.

The boundary for each depicted geographic area was created by combining sub-watersheds from the Calwater 2.2.1 database and checking for consistency with USGS Hydrologic Unit Codes and a 7.5 degree Digital Elevation Model (DEM) from National Geographic TOPO!.[4,5] A custom script was written to merge watersheds (identified on the basis of convenience of viewing) into single polygons. Shading effects are products from National Geographic TOPO!, and are based on the USGS National Elevation Dataset (NED) at a resolution of one arc second (or approximately 30 meters).[6]

2 More information about the accuracy of the NHD metadata and its is available at http://nhd.usgs.gov/.
3 See http://www.horizon-systems.com/nhdplus/ for more on the NHD Plus project.
4 The Calwater database is described at http://www.ca.nrcs.usda.gov/features/calwater/.
5 TOPO! (2003). California seamless USGS topographic maps on CD-ROM.
6 See http://ned.usgs.gov/ for more information regarding the NED.

Stream names are derived from the NHD, which in turn imports names from the USGS Geographic Names Information System (GNIS).[7] However, the NHD often does not associate canyon or gulch names with the streams that run through them. To rectify this situation we created a shapefile of California's valleys, canyons and gulches using the source and outlet latitude/longitude pairs (couplets) from the GNIS database. We then associated each of the unnamed streams with the name of the appropriate physical feature. Other unnamed streams were labeled using local naming conventions. We also corrected misspellings, inaccuracies, and differences from common usage in the GNIS database. For example, the GNIS label "Frijoles, Arroyo De Los" was changed to "Arroyo de los Frijoles." Metadata included in the dataset complies with Federal Geographic Data Committee (FGDC) standards.

It should be noted that the steelhead/rainbow trout run/population designations on our maps are coincident with the "blue line" stream locations of our mapping data sources and do not indicate habitat use by *O. mykiss*. In other words, we highlight the entire length of a particular stream to show its population status rather than attempt to indicate which portions are accessed by steelhead. Reliable information concerning limits to anadromy was not available for a sufficient proportion of the streams in the study area to allow us to depict this stream attribute.

7 See http://geonames.usgs.gov/ for more information regarding the GNIS dataset.

Big Sur River

The Big Sur River consists of about 21 stream miles draining a watershed of about 60 square miles. It enters the Pacific Ocean northwest of the town of Big Sur.

In a 1957 stream survey report, DFG noted "good" spawning areas in the four mile reach between Barlow Flat and Sykes Camp (DFG 1957p). Other reaches were "poor" to "fair" in terms of spawning habitat. The survey report notes "good" *O. mykiss* populations both upstream and downstream of natural barriers and assumes that the upstream population consists of "resident trout that are propagating under natural conditions" (DFG 1957p).

As part of the 1965 state fish and wildlife plan, DFG prepared an inventory of anadromous salmonids. According to the inventory, the Big Sur River system contained about 17 miles of steelhead habitat (DFG 1965a). The annual steelhead run of the Big Sur River was estimated to consist of about 250 individuals.

A 1981 memo summarized conditions in the Big Sur watershed:

"The clean, free-flowing waters provide ideal conditions for natural steelhead trout spawning. The lower seven miles of stream from the State Park to the ocean support a substantial run of steelhead; however, fish migration above the Park is blocked by a 26-foot barrier of boulders and compacted gravel" (DFG 1981c).

The middle reach of the Big Sur River between Ventana and Barlow Flats camps) was surveyed in 1981 by USFS staff. The survey report cites a "large, thriving rainbow trout fishery" comprised of mainly smaller fish. The observed size range was about three to seven inches (USFS 1981a). The upper reach (from Barlow Camp to the confluence of the North and South forks) also had "abundant" rainbow trout (USFS 1981b)

A protected waterway management plan for the Big Sur was certified in 1986. It recommended permitting well withdrawals adjacent to the lower Big Sur, limiting dry season diversion, and adopting a Riparian Corridor Protection Ordinance (County of Monterey 1986). A 1990 resources inventory notes approximately three miles of "excellent habitat" in the lower portions of the watershed. The report states, "The majority of steelhead move upstream beyond Andrew Molera State Park to spawn... There are no barriers to migration for 8 miles " (DPR 1990c, p. 8).

Extensive sampling in the Big Sur watershed in 1993 revealed that *O. mykiss* classified as smolts occurred in the lagoon and river outlet and not in the mainstem. The 1994 report on this study noted, "The lagoon appeared to be heavily used by presmolt steelhead as rearing habitat" (DFG 1994a). Staff from DFG surveyed the Big Sur River in 1994 between the Pfeiffer Big Sur Campground and the North Fork confluence. Rainbow trout were said to be "abundant" and included individuals from one to twelve inches in length. "Numerous" spawning areas were noted throughout the survey reach. The survey report states, "The Big Sur River has excellent potential as a wild trout fishery" (DFG 1994b).

An enhancement plan was prepared for a portion of the Big Sur River watershed and published in 2003. The report notes two key limiting factors to the steelhead population of the system and states, "Where visitor use is concentrated, the visible impacts to salmonid habitat occur through trail erosion, trampling of riparian and instream habitat, and construction of rock dams and channel modifications" (Duffy 2003, p. 15). The plan noted that "reconnaissance" snorkel surveys found juvenile steelhead

in multiple sites in Andrew Molera State Park and the gorge area in Pfeifer Big Sur State Park. Adult steelhead were observed immediately upstream from the park headquarters in June 2005 and in June 2007 (Stoecker pers. comm.).

Pheneger

Pheneger Creek consists of about 1.4 stream miles and is tributary to the Big Sur River. It enters the Big Sur River at the town of Big Sur.

Staff from DFG inspected Pheneger Creek in 1978. Notes from the visit state, "...there are many natural falls blocking anadromous fish passage... The creek is silted apparently from poor road construction" (DFG 1978b). A 1979 DFG inventory of Monterey County streams indicates that steelhead and rainbow trout occur in the creek (DFG 1979b).

Juan Higuera

Juan Higuera Creek consists of about two stream miles and is tributary to the Big Sur River. It enters the Big Sur River southeast of the town of Big Sur. The creek is the largest perennial tributary to the lower Big Sur.

Staff from DFG surveyed Juan Higuera Creek in 1961. The survey report relayed anecdotal information that the creek supported a small population of trout but was valuable in contributing between 16 and 25 percent of the flow in the Big Sur River "during critical periods" (DFG 1961d).

A 1994 report on a study of the Big Sur River noted, "The [*O. mykiss*] population in lower Juan Higuera Creek was...clearly dominated by young-of-the-year... In contrast, sampling in upper Juan Higuera Creek suggested a resident rainbow trout population" (DFG 1994a).

A 2003 enhancement plan prepared for the Big Sur River watershed notes, "Post Creek in [Pfeifer-Big Sur State Park] and Juan Higuera Creek are the only two tributaries to the Big Sur known to support steelhead" (Duffy 2003, p. 1). A private road crossing of the creek approximately 50 feet upstream from the confluence is considered a passage barrier under some flow conditions (Highland pers. comm.).

Juan Higuera tributary

This creek consists of about 1.1 stream miles. It drains the north flank of Hopkins Ridge.

A 1979 DFG inventory of Monterey County streams indicates that steelhead and rainbow trout occur in the creek (DFG 1979b). The basis for the determination is not provided.

Pfeiffer-Redwood

Pfeiffer-Redwood Creek consists of about 1.6 stream miles and is tributary to the Big Sur River. It flows southwest, entering the Big Sur downstream from the park headquarters. According to notes from 1953, "there are large falls 30' to 40' high, which act as a barrier to all fishlife" (DFG 1953).

Table 3. Distribution status of *O. mykiss* in coastal streams of Monterey County, California[1]

Watershed	Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Salinas River	Salinas River	DF	DF	Y	Y	1
Salinas River	Gabilan	DF	DF		Y	3
Salinas River	Natividad	PS	PS		UN	0
Salinas River	Pilarcitos Canyon	PS	UN		UN	0
Salinas River	El Toro	PS	PA		UN	0
Salinas River	Watson	PS	PA		UN	0
Salinas River	Limekiln	PS	UN		UN	0
Salinas River	Arroyo Seco	DF	DF	Y	Y	3
Salinas River	Reliz	PB	UN		UN	0
Salinas River	Vaqueros	DF	DF		UN	2
Salinas River	Sweetwater	PS	UN		UN	0
Salinas River	Horse	PS	UN		UN	0
Salinas River	Piney	DF	DF		Y	2
Salinas River	Rocky	PS	UN		UN	0
Salinas River	Santa Lucia	DF	DF		Y	3
Salinas River	Tassajara	DF	DF		Y	3
Salinas River	Willow	DF	DF		Y	3
Salinas River	Lost Valley	DF	DF		Y	2
Salinas River	ZigZag	DF	UN		UN	0
Salinas River	Higgins	DF	DF		Y	2
Salinas River	San Antonio River	DF	DF	Y	N	3
Salinas River	Bear Canyon	DF	UN	Y	N	0
Salinas River	North Fork San Antonio River	DF	UN	Y	N	0
Salinas River	Rattlesnake	DF	UN	Y	N	0
Salinas River	Pinal	DF	UN	Y	N	0
Salinas River	Santa Lucia (Sycamore)	DF	DF	Y	N	3
Salinas River	Carrizo	DF	UN	Y	N	0
Salinas River	Wizard Gulch	PB	UN		N	0
Salinas River	Salsipuedes	DF	UN	Y	N	0

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

Table 3. Distribution status of *O. mykiss* in coastal streams of Monterey County, California[1]

Watershed	Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Salinas River	San Antonio River tributary	DF	UN	Y	N	0
Salinas River	Nacimiento River	DF	DF	Y	N	3
Salinas River	Dip	PS	UN		N	0
Salinas River	Las Tablas	DF	UN	Y	N	0
Salinas River	Little Burnett	PB	UN		N	0
Salinas River	Tobacco	PB	UN		N	0
Salinas River	Stony	PS	UN		N	0
Salinas River	San Miguel	PS	UN		N	0
Salinas River	Negro Fork Nacimiento River	DF	DF	Y	N	3
Salinas River	Huerhuero	PS	PA		N	0
Salinas River	Paso Robles	DF	DF		Y	3
Salinas River	Santa Rita	DF	DF		Y	2
Salinas River	Rocky	PB	UN		UN	0
Salinas River	Sheepcamp	PB	UN		UN	0
Salinas River	Jack	DF	UN	Y	UN	0
Salinas River	Graves	DF	PA		UN	0
Salinas River	Atascadero	DF	DF		Y	3
Salinas River	Eagle	DF	DF		UN	3
Salinas River	Hale	DF	DF	Y	UN	3
Salinas River	Kathleen Valley	DF	DF		UN	3
Salinas River	Santa Margarita	DF	DF		Y	2
Salinas River	Trout	DF	UN		UN	0
Salinas River	Tassajera	DF	DF		Y	3
Salinas River	Rinconada	DF	UN		UN	0
Carmel River	Carmel River	DF	DF	Y	Y	3
Carmel River	Potrero Canyon	DF	DF		Y	2
Carmel River	Robinson Canyon	DF	DF		Y	3
Carmel River	Las Garzas	DF	DF	Y	Y	3
Carmel River	Hitchcock Canyon	DF	DF		Y	2

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

Table 3. Distribution status of *O. mykiss* in coastal streams of Monterey County, California[1]

Watershed	Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Carmel River	Tularcitos	DF	UN		UN	0
Carmel River	Chupines	DF	UN		UN	0
Carmel River	San Clemente	DF	DF	Y	Y	3
Carmel River	Black Rock	DF	UN	Y	UN	0
Carmel River	South Fork Black Rock	DF	UN	Y	UN	0
Carmel River	Pine	DF	UN	Y	UN	0
Carmel River	Cachagua	DF	DF	Y	Y	3
Carmel River	Boronda	UN	UN			0
Carmel River	Conejo	PS	UN		UN	0
Carmel River	Finch	PB	UN		UN	0
Carmel River	Danish	DF	DF	Y	UN	2
Carmel River	Rattlesnake	PS	UN		UN	0
Carmel River	Miller Fork Carmel River	DF	DF	Y	N	3
Carmel River	Bruce Fork	PS	UN		UN	0
Carmel River	Hiding Canyon	DF	UN		UN	0
Carmel River	Carmel River tributary	DF	UN	Y	UN	0
San Jose	San Jose	DF	DF	Y	Y	3
San Jose	Seneca	DF	DF	Y	Y	3
San Jose	Williams Canyon	DF	DF	Y	Y	3
Gibson	Gibson	PS	UN		N	0
Malpaso	Malpaso	DF	DF	Y	Y	2
Garrapata	Garrapata	DF	DF	Y	Y	3
Garrapata	Joshua	DF	DF	Y	Y	2
Garrapata	Wildcat Canyon	DF	DF	Y	UN	2
Rocky	Rocky	DF	DF		Y	2
Bixby	Bixby	DF	DF	Y	Y	2
Little Sur River	Little Sur River	DF	DF	Y	Y	3
Little Sur River	South Fork Little Sur River	DF	DF		Y	3
Big Sur River	Big Sur River	DF	DF	Y	Y	3
Big Sur River	Pheneger	PB	UN		UN	0

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

Table 3. Distribution status of *O. mykiss* in coastal streams of Monterey County, California[1]

Watershed	Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Big Sur River	Juan Higuera	DF	DF	Y	Y	3
Big Sur River	Juan Higuera tributary	PB	UN		UN	0
Big Sur River	Pfeiffer-Redwood	PS	PA		UN	0
Big Sur River	Post	DF	DF	Y	Y	3
Big Sur River	Ventana	DF	UN		UN	0
Big Sur River	Terrace	PS	PA		UN	0
Big Sur River	Lion	DF	UN		UN	0
Big Sur River	North Fork Big Sur River	DF	DF		Y	3
Big Sur River	Redwood	PS	UN		UN	0
Big Sur River	South Fork Big Sur River	DF	UN		UN	0
Big Sur River	Mocho	DF	UN		UN	0
Big Sur River	Pick	UN	UN		UN	0
Partington	Partington	DF	DF	Y	UN	2
Partington	Partington tributary 1	PS	UN		N	0
Partington	Partington tributary 2	PS	UN		N	0
McWay Canyon	McWay Canyon	UN	UN		UN	0
Anderson Canyon	Anderson Canyon	UN	UN		UN	0
Burns	Burns	PS	UN		UN	0
Lime	Lime	DF	UN	Y	N	0
Big	Big	DF	DF		Y	3
Big	Devils Canyon (South Fork Big)	DF	DF		UN	3
Big	North Fork Devils Canyon	PS	UN		UN	0
Big	Middle Fork Devils Canyon	DF	UN		UN	0
Big	South Fork Devils Canyon	DF	DF		UN	3

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

Table 3. Distribution status of *O. mykiss* in coastal streams of Monterey County, California[1]

Watershed	Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Vicente	Vicente	DF	DF		UN	3
Limekiln	Limekiln	DF	DF		Y	3
Limekiln	Hare Canyon	DF	DF		Y	3
Limekiln	West Fork Limekiln	DF	DF		Y	3
Mill	Mill	DF	DF	Y	Y	3
Prewitt	Prewitt	DF	DF	Y	Y	3
Prewitt	South Fork Prewitt	DF	DF		Y	2
	Plaskett	DF	DF	Y	Y	3
Willow	Willow	DF	DF	Y	Y	3
Willow	South Fork Willow	UN	UN		UN	0
Willow	North Fork Willow	DF	UN		UN	0
Alder	Alder	DF	DF		Y	3
Villa	Villa	DF	DF		UN	3
Redwood Gulch	Redwood Gulch	PS	UN		UN	0
Salmon	Salmon	DF	DF		N	3

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