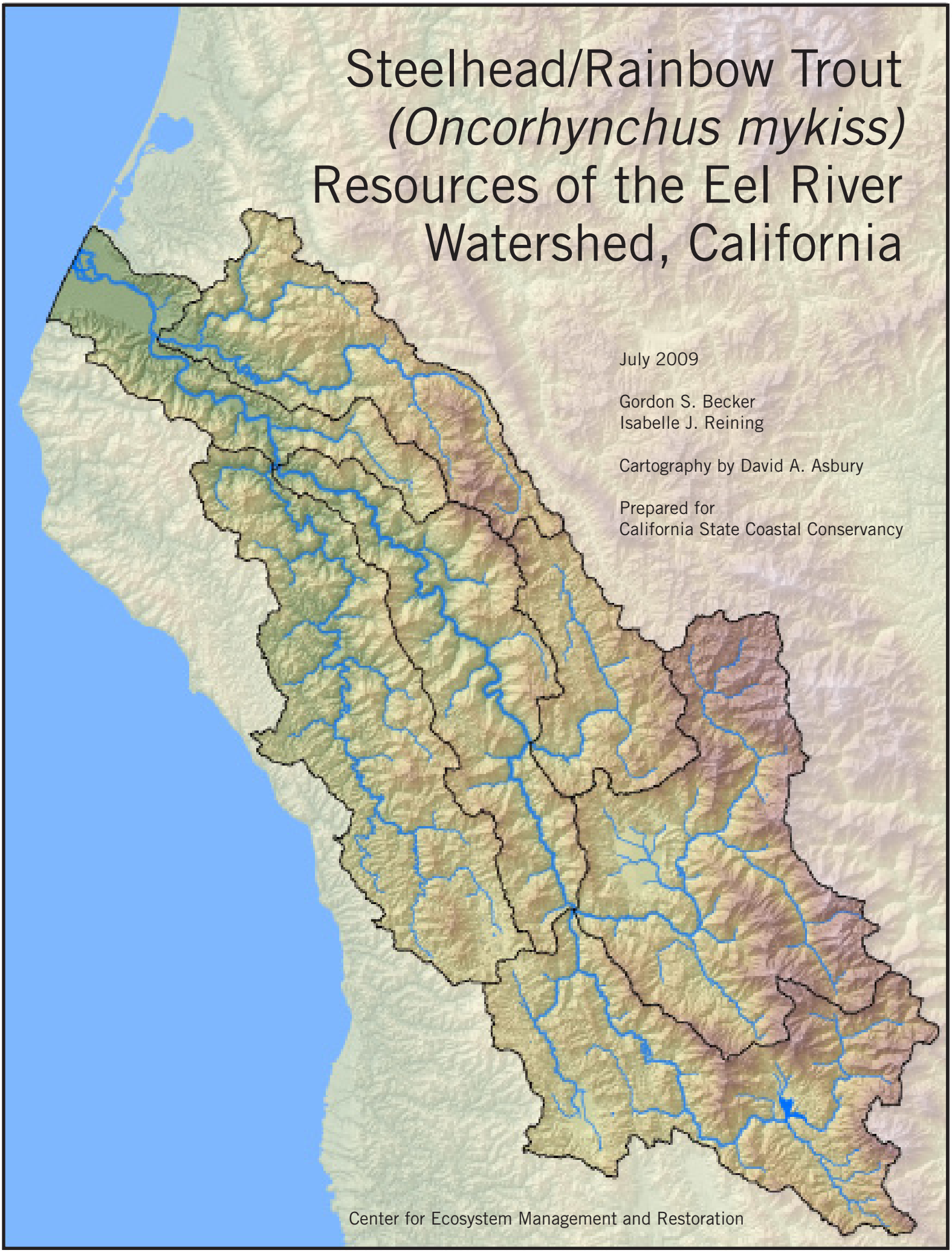
Steelhead/Rainbow Trout *(Oncorhynchus mykiss)* Resources of the Eel River Watershed, California



July 2009

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Prepared for
California State Coastal Conservancy

Center for Ecosystem Management and Restoration

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INTRODUCTION

Researchers characterizing the distribution of steelhead/rainbow trout (*Oncorhynchus mykiss*) face a variety of challenges on a path to an inherently imperfect result. Most Eel River 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 There can be no doubt, however, that compiling a comprehensive set of historical references is a valuable step in any process of stream and steelhead restoration. This volume represents our attempt to synthesize available information to establish an authoritative record of steelhead distribution in streams of the Eel River watershed. These streams support the winter (ocean-maturing) and summer (stream-maturing) steelhead ecotypes as well as the non-anadromous, or resident, form of rainbow trout[1].

We conducted our analysis 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 examining coastal streams south of San Francisco. In short, this report presents a distillation of a substantial amount of readily available, reliable information regarding steelhead and steelhead habitat. As such, it is intended to serve as a comprehensive, stream-by-stream steelhead resources reference for the community of people working with these issues in the Eel River watershed. Our analysis describes 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. Despite strong public interest in the conservation and restoration of anadromous salmonids in the Eel River, and substantial efforts toward improving habitat, these populations remain in a perilous state. The federal Endangered Species Act listing status for steelhead populations in the Northern Californian Evolutionarily Significant Unit (ESU), which includes the Eel River, is "threatened" (Good 2005).

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 the current project can allow past observers to weigh in on the key issues of reference conditions, changes in resource conditions over time and their mechanisms, and guidance on future management (Swetnam 1999).

In general, streams of the Eel River watershed have been surveyed on relatively few occasions. By making available the existing survey record and other related information, we particularly aim to expand understanding of steelhead use of the myriad medium- and small-sized creeks that comprise important steelhead resources. We have located and reviewed thousands of documents in public and private collections, and interviewed working biologists, to bring the work of this and previous generations of fisheries scientists into on-going processes relating to conservation of stream resources. That steelhead remain, albeit in small numbers, in most of the Eel watershed's streams is both evidence of its resistance to stressors and reason for optimism that restoration actions will be fruitful.

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Titus, R.G., D.C. Erman, and W.M. Snider. In preparation. History and status of steelhead in California coastal drainages south of San Francisco Bay. California Department of Fish and Game Fish Bulletin.

[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 "*O. mykiss*" 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).

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 streams of the Eel River watershed, California. Streams were identified 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 entire Eel River watershed, from the headwaters to the Pacific Ocean. For the purposes of this study, we divided the watershed into seven planning units. The units consist of three sections of the mainstem Eel River (lower, middle, and upper) and its four major tributaries (the Van Duzen River, South Fork Eel River, North Fork Eel River, and Middle Fork Eel River).

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 or watersheds. 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 analyzed 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.

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.

Every effort was made to document assumptions and provide attribution as context for readers of the report. Cited information commonly involves estimation techniques (e.g., stream miles of habitat, run size), survey methods, qualitative measures (e.g., "good"), or other procedural issues that should be reviewed from the source materials as part of any further resources assessment or comparitive analysis. Further, potentially contradictory subjective statements may be cited in related to specific steelhead resources, again suggesting that users of this report access the source materials as needed for clarification. We also provide a characterization of water year types as an appendix to this report that may aid in understanding specific statements or findings relayed in the text.

The Results section contains chapters regarding the Eel River system overall and the streams of the seven planning units 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. In order to provide a convenient data summary for report users, tables describing *O. mykiss* historical distribution and current status in streams of each planning unit are presented at the end of each chapter. Values indicate our interpretation of use of a stream by anadromous individuals, possible decline of the population over time, and the quality of information used to draw the population status. Table headings and terms are defined as follows.

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

Historical, current status. Values indicate the probability of the existence of an historical and/or current spawning run or population of *O. mykiss*. For purposes of this document, "historical" means before 1998, while "current" reflects status in approximately the last 15 years. The values 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.

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. Values indicate the current status of an *O. mykiss* population in a stream. 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. The values are defined as follows.

0 Population absent or unknown.

1 Individuals observed within approximately the last 15 years.

2 Some evidence of reproduction within the last 15 years.

3 Evidence of regular reproduction during the last 15 years.

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 updated or enhanced in the future. To achieve these objectives we chose the high resolution National Hydrography Dataset (NHD) as a framework. This comprehensive, standardized dataset produced by the United States Geological Survey (USGS) is one of the most up-to-date and reliable sources available. Another advantage of the NHD 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]

Watershed boundaries were created by combining sub-watersheds from the Calwater 2.2 database and then checked for consistency with USGS Hydrologic Unit Codes and a 7.5 degree Digital Elevation Model (DEM) from *National Geographic TOPO!*.[3,4] The generalization tool, Dissolve, in ArcMap 9.1 (ESRI, Inc.) was used to create a single polygon for each watershed.

Elevation and hillshade rasters 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).[5]

Stream names are derived from the NHD, which in turn imports names from the USGS Geographic Names Information System (GNIS).[6] However, the NHD often does not associate canyon or gulch names with the streams that run through them. To rectify this situation we used a novel approach, creating 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 and identifier of the associated physical feature. Other unnamed streams were labeled using local naming conventions where known. Absent other information streams were labeled "[next downstream creek] tributary."

Status designations are stored in a Microsoft Access database and joined to the NHD linework via a unique identifier. Most commonly, this number is the GNIS identifier, though for unnamed blue-line streams (mostly small tributaries) that lacked this descriptor we created sequential identifiers that complied with the GNIS convention.

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 occurrence or individual stream reaches utilized 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. The scope of this project did not allow for the systematic inclusion of barriers to migration. Habitat distribution and barrier impacts are areas of continued research being done by CEMAR.

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[1] A DVD is available containing virtually all source materials prepared by the California Department of Fish and Game. Please contact CEMAR for further information on reference materials.
[2] More information about the accuracy and precision of the NHD dataset is contained in its metadata, available at http://nhd.usgs.gov/.
[3] The Calwater database is described at http://www.ca.nrcs.usda.gov/features/calwater/.
[4] *TOPO!* (2003). California seamless USGS topographic maps on CD-ROM.
[5] See http://ned.usgs.gov/ for information regarding the NED.
[6] See http://geonames.usgs.gov/ for information regarding the GNIS dataset.

Steelhead/rainbow trout resources of the Eel River watershed

The Eel River flows northwesterly, entering the Pacific Ocean about 13.5 miles south of Eureka. It is the third largest river system in California and drains a watershed of about 3,684 square miles (DFG 1997). The entire watershed contains a total of about 3,488 stream miles and the mainstem Eel River consists of about 200 stream miles. In 1997, staff from DFG cited the Eel as historically the third largest producer of salmon and steelhead amongst California watersheds (DFG 1997a).

Cape Horn and Scott Dams in the upper Eel River are the main elements of the Potter Valley Project, a hydroelectric operation owned by the Pacific Gas and Electric Company (PG&E). Cape Horn Dam was completed in 1908 and Scott Dam was completed in 1922 (PG&E 1998). Cape Horn Dam is located about 156 miles upstream from the mouth of the Eel River and forms Van Arsdale Reservoir. Scott Dam is located about 12 miles further upstream and forms Lake Pillsbury. A fish ladder operates on Cape Horn Dam and enables steelhead to access the river section between the two dams. Upstream of Scott Dam the mainstem Eel River consists of about 29 stream miles which is inaccessible to anadromous fish, but supports a population of resident rainbow trout.

The Potter Valley Project involves the diversion of water through a tunnel from Van Arsdale Reservoir to the hydropower facility in Potter Valley then into the East Branch of the Russian River. The storage capacity provided by Lake Pillsbury enables year-round water diversions. The construction of the project prevented steelhead migration to the upper reaches of the Eel River and altered water flows and temperatures in the downstream reaches (PG&E 1998). The original fish ladder configuration at Cape Horn Dam created some fish passage problems and required modification in 1962 and 1987. The water diversion at Van Arsdale Reservoir also created some fish passage problems for salmonids. A horizontal travelling fish screen was put in place at the diversion in 1972 and operated into the 1980s. However, this screen "…was subject to frequent breakdowns" due to heavy sediment and organic debris loads (PG&E 1998). A new, inclined fish screen was installed in 1995. During the interim between the mid-1980s and 1995, alternative measures were used to reduce the potential for fish entrainment.

Early documentation of steelhead in the Eel River includes a 1925 article in California Fish and Game, written by John Snyder of Stanford University (DFG 1925). Snyder described a run of fish that were known locally as "half-pounders" and were "…usually present in the lower reaches of the river in considerable numbers from the first of October until about the middle of November, when high water permits them to pass up stream" (DFG 1925, p. 49). Analysis of scale samples determined that these fish were young steelhead, estimated to be about three years old, that were entering the Eel River on their first spawning run.

Staff from DFG completed the "Eel River Salmon and Steelhead Restoration Action Plan" in 1997. The authors wrote that Eel River steelhead runs had declined significantly since 1900 and attributed this decline primarily to "…land development and associated resource uses that included poor road design and construction, poor logging and grazing practices, excessive water diversions, and over-fishing" (DFG 1997, p.12). These human impacts exacerbated the effects of major flooding that took place in 1955 and 1964 and a prolonged drought that occurred from 1988 through 1994. The record flooding that occurred in December of 1964 resulted in "severe damage in river valleys throughout the Eel River Basin" due to "…an enormous volume of soil and rock [that] was stripped from the land and deposited downstream or carried to the sea" (DWR 1971, p. 25). During the flood, peak discharge near the mouth of the Eel River reached 26,500 cubic meters per second and it has been said to rank "… among some of the world's greatest recorded floods for a basin of this size" (Lisle 1990, p. 313). The 1997 action plan reports that DFG estimated an annual spawning escapement of 82,000 steelhead in the Eel River in 1964, while this number dropped to

about 20,000 fish in the late 1980s (DFG 1997).

The Department of Fish and Game operates a salmonid trapping and planting operation at the Van Arsdale Fisheries Station on the Eel River at Cape Horn Dam. Annual counts of steelhead have been conducted at the Van Arsdale Station since 1933 using an upstream migrant trap, with numbers ranging from a high of 9,528 steelhead in the 1944-45 season to a low of 31 steelhead in the 1990-91 season. Annual count results are presented in Appendix B. Some of the Eel River steelhead captured at the fisheries station were spawned and their progeny raised at the Mad River Hatchery and subsequently planted in the Eel River.

References

[DFG] Department of Fish and Game. 1925. The Half-Pounder of Eel River, A Steelhead Trout. Report by John O. Snyder

[DFG] Department of Fish and Game. 1997. Draft Eel River Salmonid and Steelhead Restoration Action Plan.

[DWR] Department of Water Resources. 1971. Sediment Transport and Turbidity in the Eel River Basin, California. Report by William M. Brown and John R. Ritter

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[PG&E] Pacific Gas & Electric. 1998. Potter Valley Project Montitoring Program (FERC No. 77, Article 39): Effects of Operations on Upper Eel River Anadromous Salmonids, Final Report. Report by Steiner Environmental Consulting.

Steelhead/rainbow trout resources of the lower Eel River

The following discussion of *O. mykiss* resources is specific to the section of the Eel River located between the mouth and the South Fork Eel River confluence. The middle and upper reaches of the mainstem are discussed in separate sections of this report.

Eel River-Lower Reach

The lower Eel River was examined in 1973 as part of a study of water temperature conditions in the Eel River system (Kubicek 1977). Fingerling and yearling salmonids up to 5 inches in length were observed scattered throughout this section of stream, and fishermen at the mouth of the Van Duzen River were observed catching juvenile salmonids up to 7 inches in length (Kubicek pers. comm.).

Steelhead of multiple age classes were consistently observed throughout the Eel River, including the lower reach, during surveys conducted between 1969 and 1986 (Jones and Thompson 1969, Puckett and Hinton 1973, Jones and Emig 1985, Jones and Baker 1986).

Habitat descriptions included in the 1997 Eel River Action Plan described the lower Eel River as "an important juvenile rearing area" for salmonids and noted that the estuary provides valuable nursery habitat where juveniles experience high growth rates (DFG 1997a). This area of the river was noted to suffer habitat impacts from elevated sedimentation, introduction of agricultural waste, and logging of riparian forests. Upstream of Rio Dell, the lower Eel River has been found to provide rearing habitat as well as some holding areas for summer steelhead and spawning habitat in some years (DFG 1997a).

Salt River

The Salt River is tributary to the Eel River and consists of about 10.2 stream miles. It flows northwesterly, entering the Eel River Estuary about 0.2 miles from the mouth of the Eel River.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report the Salt River is listed as containing eight miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

A watershed assessment of the Salt River watershed was prepared in 2005. According to the report steelhead were observed in the estuarine portion of the river in 1977 and 1995 (DFG 2005).

Cutoff Slough

Cutoff Slough is tributary to the Salt River. It flows north, entering the Salt River about 1.9 miles upstream from the Eel River confluence. No fisheries information was found for Cutoff Slough. The creek is included to provide context for fisheries information applying to a tributary.

Centerville Slough

Centerville Slough is tributary to Cutoff Slough and consists of about 1.9 stream miles. It flows north, entering Cutoff Slough at about stream mile 1.8.

A watershed assessment of the Salt River watershed was prepared in 2005. According to the report "salmonid fry" were observed in Centerville Slough in 1984 (DFG 2005).

Russ Creek

Russ Creek consists of about 4.4 stream miles and is tributary to Centerville Slough. It flows northwesterly and enters Centerville Slough at about stream mile 0.6.

A DFG report indicates that Russ Creek was stocked with steelhead trout from 1930-34 (DFG 1934a). Staff from DFG surveyed Russ Creek in 1938 and did not observe *O. mykiss* but noted that natural propagation "should be considerable" in this creek. The survey report notes the presence of "good" spawning areas and "good" pools and shelter (DFG 1938a).

In a 1990 field note, DFG staff write that the creek historically supported steelhead and salmon populations, however "None of these species have been observed for the past few years." The note mentions several limiting factors including passage barriers, bank failures, livestock damage, and sedimentation (DFG 1990).

Staff from DFG conducted a stream inventory of Russ Creek in 2004. Surveyors did not observe *O. mykiss* in Russ Creek during the survey (CCC 2004). The inventory report recommended that a box culvert at Centerville Road and a dam 496 feet upstream from the road crossing be assessed for fish passage.

Reas Creek

Reas Creek is tributary to the Salt River and consists of about 3.6 stream miles. It flows north, entering the Salt River at about stream mile 4.3. A 10,000 foot section of Reas Creek is channelized downstream of Centerville Road (DFG 2004a).

Staff from DFG surveyed Reas Creek in 1938 and did not observe any fish. The survey report noted "excellent" spawning areas, "good" pools and shelter, and "abundant" fish foods in the creek, as well as an accumulation of garbage and refuse underneath a road bridge that crosses the creek (DFG 1938b).

A description of aquatic resources in the Eel River delta states that Reas Creek was one of three streams in the Ferndale area that were regularly stocked with trout from 1953-66 (Anonymous 1973).

A watershed assessment of the Salt River watershed was prepared in 2005. According to this report, in 1972 DFG staff described Reas Creek as, "…probably the best trout stream in the Eel Delta below the Van Duzen River" (DFG 2005, p. 57).

Electrofishing was conducted in Reas Creek in 2004 and salmonids were not observed (DFG 2004a). The survey found habitat conditions to be "less than suitable for salmonids" and noted habitat impacts from cattle operations and road crossings.

Francis Creek

Francis Creek is tributary to the Salt River and consists of about 4.3 stream miles. It flows north, entering the Salt River north of the town of Ferndale. The creek is channelized through Ferndale (DFG 2003a).

Staff from DFG surveyed Francis Creek in 1938 and observed steelhead ranging from 2.0 to 2.5 inches in length. The survey report noted "good" spawning areas, "good" pools and shelter, and "abundant" fish foods but described the stream bed as "an unsightly mess of refuse and garbage in frequent places through town" (DFG 1938c).

Stocking records indicate that Francis Creek was stocked with steelhead annually from 1931 to 1935 and in 1939 (DFG 1935a, DFG 1939a). A description of aquatic resources in the Eel River delta states that Francis Creek was one of three streams in the Ferndale area that were regularly stocked with trout from 1953-66 (Anonymous 1973).

In 2003 steelhead YOY were captured in Francis Creek and relocated during a flood control project (DFG 2005). Staff from DFG surveyed Francis Creek in 2003 and observed YOY trout that could have been steelhead, rainbow trout, or cutthroat trout (DFG 2003a).

Williams Creek

Williams Creek is tributary to the Salt River and consists of about 5.8 stream miles. It flows north and enters the Salt River at about stream mile 8.3.

Stocking records indicate that Williams Creek was stocked with steelhead annually from 1930 through 1934 (DFG 1934b). Steelhead presence was noted in Williams Creek during an undated DFG stream survey, likely conducted around 1934. The survey report notes that natural propagation "should be considerable" in the creek and states "This stream is not of much value as a fishing stream but is good feeder" (DFG ca. 1934b).

A description of aquatic resources in the Eel River delta states that Williams Creek was one of three streams in the Ferndale area that were regularly stocked with trout from 1953-66 (Anonymous 1973).

Staff from DFG conducted a stream inventory of Williams Creek in 2003. Salmonids were not observed during the survey (DFG 2003b). The inventory report recommended increasing canopy and treating sources of fine sediment in the creek.

Coffee Creek

Coffee Creek is tributary to the Salt River and consists of about one mile of intermittent stream. It flows north and enters the Salt River east of the town of Ferndale.

A watershed assessment of the Salt River watershed was prepared in 2005. According to the report an adult rainbow trout was observed in Coffee Creek in 1973 (DFG 2005).

Palmer Creek

Palmer Creek is tributary to the Eel River and consists of about 1.3 stream miles. It flows south, entering the Eel River about 8.5 miles from its mouth.

During a 1997 fish passage assessment steelhead were observed in Palmer Creek downstream of the Northern Pacific Railroad culvert (HCRCD 1997). Approximately one mile of anadromous fish habitat was noted above the railroad crossing.

Staff from DFG conducted biological sampling in Palmer creek in 2000 to determine whether juvenile salmonids were present in the creek. A 160 foot section of the creek, located about one mile upstream from Highway 101, was surveyed and no salmonids were found (DFG 2000a).

Strongs Creek

Strongs Creek is tributary to the Eel River and consists of about 5.3 stream miles. It enters the Eel River in the town of Fortuna, about 9.8 miles upstream from its mouth.

An undated DFG stream survey report, likely written during the mid-1930s, mentions the construction of the Newburg Ponds on Strongs Creek. According to the survey these ponds were part of a sawmill operation and as a result of their construction "The dam prevented fish from entering and [the] run of [steelhead] dropped to nothing." The survey report states that after the mill ceased operation the ponds were stocked with *O. mykiss* and "…the run of [steelhead] is coming back" (DFG ca. 1934c). Stocking records indicate that Newburg Ponds were stocked with steelhead in 1932, 1933, and 1934 (DFG 1934c). Strongs Creek was stocked with steelhead from 1930 to 1935 (DFG 1935b).

A 1956 memo addresses the topic of a possible dam construction on Strongs Creek. Staff from DFG write, "…this stream is definitely known to be used as a steelhead spawning area" (McCormick 1956).

A survey for Coastal Cutthroat Trout was conducted in Strongs Creek during in 1984. Two small salmonids, which are described as "apparently steelhead," were captured in the creek (Franklin 1984).

Staff from DFG conducted a stream inventory of Strongs Creek in 1993. Juvenile steelhead were observed during the survey (CCC 1993a). The inventory report recommended treating sources of fine sediment, increasing canopy, and excluding cattle from the creek to avoid trampling and effects from defecation.

A watershed analysis of the Lower Eel River and Eel River Delta was prepared in 2005. This document lists Strongs Creek as one of two streams containing the majority of the potential steelhead habitat in the Eel Delta area (Adams 2006).

Rohner Creek

Rohner Creek is tributary to Strongs Creek and consists of about 3.9 stream miles. It flows south through the town of Fortuna, entering Strongs Creek east of the sewage treatment ponds (Jong 2002).

In a 1964 memo DFG staff document the effects of a fish kill that occurred in Rohner Creek that year. Dead rainbow trout were observed in the creek during the event (DFG 1964).

Staff from DFG surveyed the creek in 1972 and 1982 and did not observe fish during either survey (DFG 1972, DFG 1982a). Large amounts of sand and silt were observed during both surveys, and bank stabilization work was recommended in 1972.

Mill Creek

Mill Creek is tributary to Strongs Creek and consists of about two stream miles (DFG 2004b). It flows west, entering Strongs Creek about 1.3 miles upstream of the Eel River.

A 1973 letter addresses the potential impacts of plans to realign Mill Street in Fortuna. Regarding Mill Creek, DFG staff write that "…fish do not ascend this tributary to Strongs Creek beyond Rohnerville Road" (Rogers 1973).

Staff from DFG observed juvenile salmonids in Mill Creek in 1997 and 1999, and a redd believed to have been built by steelhead in 1998 (DFG 2004c). Notes on these observations state, "…the reaches above both Rohnerville Road and Mill Creek Road are restorable and considered to be Class One streams according to California Forest Practice Rules." Class One watercourses are characterized by, "…fish always or seasonally present onsite, includes habitat to sustain fish migration and spawning" (DFG 2007, p. 2).

Jameson Creek

Jameson Creek is tributary to Strongs Creek and consists of about 2.2 stream miles. It flows west, entering Strongs Creek about 1.7 miles upstream from the confluence with the Eel River.

Jameson Creek was surveyed by DFG staff in 1982. The field note states, "The fact that there is little, if any, spawning gravel in this creek…and that there was less than 1 cfs flow of water (after heavy rains)…probably precludes the use of this creek to anadromous fish" (DFG 1982b).

Strongs Creek tributary

An unnamed tributary to Strongs Creek consists of about 0.6 stream miles. It flows west and enters Strongs Creek near the Rohnerville Road crossing.

No fish were found during electrofishing of this creek in 1980. The field note reports that the creek is "heavily damaged by livestock" and "may not flow during the summer months" (DFG 1980a).

North Fork Strongs Creek

North Fork Strongs Creek consists of about 2.5 stream miles and is tributary to Strongs Creek. It flows southwesterly and enters Strongs Creek near the town of Newburg, at about stream mile 3.4.

Stocking records indicate that North Fork Strongs Creek was stocked with *O. mykiss* in 1931 and 1932 (DFG 1932).

Staff from DFG conducted a stream inventory of North Fork Strongs Creek in 1993. Juvenile and YOY *O. mykiss* were observed during the survey (CCC 1993b). The inventory report noted impacts of cattle trampling and defecation in the streambed and recommended increasing canopy and treating sources of fine sediment in the creek.

Van Duzen River

The Van Duzen River is tributary to the Eel River and consists of about 73 stream miles. It flows northwesterly, entering the Eel River at about stream mile 13.5. Steelhead reources of the Van Duzen and its tributaries are described in the following chapter.

Barber Creek

Barber Creek is tributary to the Eel River and consists of about 2.7 stream miles. It flows east, entering the Eel River at about stream mile 13.6.

A six-foot high concrete falls located 100 yards upstream from the mouth of Barber Creek was said to form a complete barrier to steelhead in 1973 (DFG 1973a). Staff from DFG surveyed the creek in 1973 and captured juvenile *O. mykiss* downstream of these falls. The survey report describes the stream as "small, muddy, and exposed" and noted that "good habitat for fish is lacking" (DFG 1973a).

Price Creek

Price Creek is tributary to the Eel River and consists of about eight stream miles. It flows east, entering the Eel River at Price Creek School.

A hatchery operated on Price Creek from about 1898 to 1915. During this time period both salmon and steelhead were raised at the hatchery and planted in Price Creek (Anonymous ca. 1921).

Staff from DFG surveyed Price Creek during the 1930s. Steelhead were observed during two surveys and described as "common" in 1938 (DFG 1938d). The second survey, probably conducted in 1934, notes that the stream is "…very small during summer and likely goes dry in lower part" (DFG ca. 1934a). Stocking records indicate that the creek was stocked with steelhead from 1930 through 1934 (DFG 1934d).

Staff from DFG observed an adult steelhead during a 1981 survey of Price Creek. The survey report noted that the creek "… suffers from much bank erosion and heavy siltation" (DFG 1981a).

Staff from DFG conducted a stream inventory of Price Creek in 1999. Multiple steelhead year classes were observed at three different sampling locations during the survey (DFG 1999a). The inventory report noted that several small rock dams in the creek created passage barriers at some flows and recommended modification of these structures. The report also recommended increasing canopy in the creek, treating sources of fine sediment, and excluding cattle from the creek to avoid trampling and effects from defecation.

Price Creek tributary (Adams Creek)

An unnamed tributary to Price Creek consists of about 1.1 stream miles and is known as Adams Creek. It flows east, entering Price Creek at about stream mile 2.6.

Staff from DFG surveyed Adams Creek in 1981. The survey report states, "Adams Creek probably provides marginal spawning and rearing habitat for anadromous salmonids due to its lack of spawning gravel and low summer flows" (DFG 1981b).

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Adams Creek is listed as containing 0.1 miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Sweet Creek

Sweet Creek is tributary to Price Creek and consists of about 2.3 stream miles. It flows north, entering Price Creek at about stream mile 3.9.

In a 1938 survey of Sweet Creek, steelhead YOY were described as "common." The report describes spawning areas as "good" in the lower 100 yards of the creek (DFG 1938e).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* were observed in Sweet Creek (Brown 1991).

Oil Creek

Oil Creek is tributary to the Eel River and consists of about 2.1 stream miles (DFG 2002a). It flows north, entering the Eel River just south of Price Creek School.

Juvenile *O. mykiss* were observed during a 1938 survey of Oil Creek. The report also notes the presence of "good spawning areas" (DFG 1938f).

In a 1977 survey report, Oil Creek is characterized as "…unsuitable for anadromous fishes due to heavy deposits of silt and lack of spawning gravel. During the survey *O. mykiss* fry and one larger salmonid were observed within 100 feet of the mouth of the stream (DFG 1977).
During a 1990 passage assessment of Oil Creek staff from DFG captured YOY *O. mykiss*. The report concludes that the creek, "…has good spawning and rearing habitat for adult and juvenile salmonids" (Sartori 1990).

Staff from DFG surveyed Oil Creek in 1999 and 2002. Multiple *O. mykiss* year classes were observed during both surveys (DFG 1999b, DFG 2002a).

Howe Creek

Howe Creek is tributary to the Eel River and consists of about six stream miles (DFG 1998a). It flows north, entering the Eel River about 15.4 miles upstream from its mouth.

In 1938, DFG staff surveyed Howe Creek and noted the presence of 1.5 to 4 inch steelhead. Their abundance was said to be "common" to "abundant" and natural production described as "very good" to "excellent" (DFG 1938g).

In describing the characteristics of Howe Creek, a 1980 stream survey report states, "Areas suitable for anadromous fish spawning were continuous throughout the entire drainage." The survey also reports that local residents obtained large catches of steelhead in 1979 (DFG 1980b).

Staff from DFG surveyed Howe Creek in 1998. Biological sampling was not conducted, however the surveyors observed "…what appeared to be steelhead/rainbow trout throughout the entire survey length" (DFG 1998a).

Multiple age classes of *O. mykiss* were captured during 2001 sampling in Howe Creek (Divine 2001).

Atwell Creek

Atwell Creek is tributary to Howe Creek and consists of about 3.9 stream miles. It flows north and enters Howe Creek about 1.5 miles upstream from the Eel River.

In 1938, DFG staff surveyed Atwell Creek and observed juvenile steelhead. Natural propagation was said to be "considerable" and spawning areas described as "good" (DFG 1938h).

A 1980 stream survey of Atwell Creek noted the impact of sediment flowing from a small tributary approximately 450 feet upstream from the confluence with Howe Creek. Suitable spawning areas were found to be "numerous" above this tributary and the stream was described as a "good producer of salmonids" (DFG 1980c).

Staff from DFG surveyed Atwell Creek in 1993 and 1999. Multiple *O. mykiss* year classes were observed during both surveys (CCC 1993c, DFG 1998b).

Howe Creek tributary (West Fork Howe Creek)

An unnamed tributary to Howe Creek consists of about 1.3 stream miles (DFG 1998c). It flows north and enters Howe Creek about 3.1 miles upstream from the Eel River.
Staff from DFG surveyed West Fork Howe Creek in 1998. Two electrofishing sites yielded YOY and juvenile *O. mykiss* (DFG 1998c).

Slater Creek

Slater Creek is tributary to the Eel River and consists of about 2.1 stream miles. It flows north, entering the Eel River west of the town of Belleview.

In a 2002 planning assessment of the Lower Eel River watershed, Slater Creek is listed as having a known historical population of steelhead. The basis for this determination is unknown (DFG 2002b).

Eel River tributary (Belleview Creek)

An unnamed tributary to the Eel River consists of about 0.65 miles of intermittent stream and is known locally as Belleview Creek (DFG 2004d). It flows north, entering the Eel River at about stream mile 17.6.

Staff from DFG conducted a stream inventory of Belleview Creek in 2004. Biological sampling was not conducted during the survey and fish observations are not noted in the report. The report states that the culvert under Blue Slide Road is a complete barrier to fish passage (DFG 2004d).

Nanning Creek

Nanning Creek is tributary to the Eel River and consists of about 2.4 stream miles. It flows west, entering the Eel River east of the town of Rio Dell.

In 1973 sampling was conducted twice in Nanning Creek. "Resident rainbow trout" were observed on both occasions. A 10 foot high waterfall located about 0.25 miles upstream from the mouth of the creek was believed to be a complete barrier to anadromous fish (DFG 1973b). A 1979 survey of Nanning Creek found that suitable spawning areas were "very limited." Where gravel did exist it was described as "usually cemented in sand and silt" (DFG 1979a).

Staff from DFG surveyed Nanning Creek in 1992. Surveyors observed *O. mykiss* at three sites located between 1,487 and 7,154 feet upstream from the mouth of the creek (CCC 1992a).

Dean Creek

Dean Creek is tributary to the Eel River and consists of about 2.4 stream miles. It flows northeasterly and enters the Eel River near the Murphy Memorial Bridge over highway 101 in Rio Dell.

A total of 1,954 juvenile steelhead were rescued by DFG staff from Dean Creek in 1939 and 690 steelhead were rescued in 1940 (DFG 1940, DFG 1941).

Staff from DFG conducted a stream inventory of Dean Creek in 1992 and observed YOY and juvenile *O. mykiss*. The report noted that the mouth of the creek had "poor access for migrants" and should be modified to facilitate passage (CCC 1992b, p. 9). The inventory report also recommended treating sources of fine sediment, particularly those related to the road system.

Monument Creek

Monument Creek is tributary to the Eel River and consists of about 2.1 stream miles (CCC 1990). It flows north to its confluence with the Eel River near the town of Scotia.

Staff from DFG conducted stream inventories of Monument Creek in 1990 and 1992. Electrofishing was conducted during both surveys and *O. mykiss* ranging from 1.4 to 6.3 inches were collected (CCC 1990, CCC 1992c).

The Pacific Lumber Company performed sampling in Monument Creek from 1998-2002 as part of a habitat conservation plan for the company's property. Juvenile steelhead were collected in the creek every year during that time period with numbers ranging from 2 to 125 fish captured per year (PLC 2003).

Kiler Creek

Kiler Creek is tributary to the Eel River and consists of about 2.2 stream miles (CCC 1992d). It flows north, entering the Eel River at about stream mile 23.6.

Staff from DFG conducted a stream inventory of Kiler Creek in 1992. The report indicates that YOY *O. mykiss* were captured at two electrofishing sites. Fish were observed up to about one mile upstream from the mouth of the creek at which point the stream exhibited a steep gradient and "access for migrating salmonids is an ongoing potential problem" (CCC 1992d). The inventory report recommended treating sources of fine sediment.

Dinner Creek

Dinner Creek is tributary to the Eel River and consists of about 2.3 stream miles (Holzerland 1990a). It flows north and enters the Eel River at about stream mile 24.4.

Staff from DFG rescued *O. mykiss* from Dinner Creek in 1939 and 1940 (DFG 1940, DFG 1941).

During a 1987 assessment of potential restoration projects in Dinner Creek juvenile steelhead were observed at a density of 40 individuals per 100 feet. The report describes the creek as having "good" rearing habitat and "fair" spawning habitat (CCC 1987a).

Staff from DFG conducted a stream inventory of Dinner Creek in 1990. *Oncorhynchus mykiss* was observed at two sites during the survey (Holzerland 1990a). The inventory report recommended stabilizing the sites of stream bank erosion identified during the survey, particularly at one site located about 3,900 feet upstream from the creek mouth.

In 1998, DFG staff inspected Dinner Creek following a fire that damaged portions of the watershed. Young-of-year and yearling steelhead were observed during the inspection (DFG 1999c).

Twin Creek

Twin Creek consists of about 2.4 stream miles and is tributary to the Eel River. It flows north, entering the Eel River at about stream mile 24.7.

Staff from DFG surveyed Twin Creek in 1938 and noted "good" spawning areas and "good" pools and shelter. The creek was found to be dry from the mouth to about 85 yards upstream and steelhead YOY were "abundant" about 125 yards upstream from the mouth (DFG 1938i).

Twin Creek was one of a number of streams sampled as part of a 1976 study on the distribution of fishes in the Eel River system. During this study steelhead were observed in Twin Creek (DFG 1980d).

Staff from DFG conducted stream inventories of Twin Creek in 1990 and 1993. *Oncorhynchus mykiss* ranging from 53-160 mm FL were collected during these surveys (DFG 1999d, Holzerland 1990b).

Stitz Creek

Stitz Creek is tributary to the Eel River and consists of about 3.4 stream miles (CCC 1992e). It flows south, entering the Eel River at about stream mile 26.

Staff from DFG conducted a stream inventory of Stitz Creek in 1992. Electrofishing at three sites yielded a total of four juvenile *O. mykiss* (CCC 1992e). The survey report notes the presence of several log debris accumulations that form potential barriers and states that the stream is "over-loaded in fine sediments.

Jordan Creek

Jordan Creek is tributary to the Eel River and consists of about 3.2 stream miles. It flows north and enters the Eel River at about stream mile 27.5.

Staff from DFG rescued *O. mykiss* from Jordan Creek in 1939 and 1940 (DFG 1940, DFG 1941).

Jordan Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system and "many fingerlings" were observed (Kubicek 1977).

A 1986 field note indicates that an adult steelhead was observed within 0.75 miles of the mouth of Jordan Creek that year. It states that the creek provides "good spawning and rearing habitat for anadromous fishes" (DFG 1986a).

Staff from DFG conducted a stream inventory of Jordan Creek in 1991. *Oncorhynchus mykiss* YOY were captured at four electrofishing sites between 0.2 and 1.8 miles upstream from the Eel River. The inventory report noted that spawning gravel in the creek is limited and also recommended treating sources of fine sediment (CCC 1991a).

The Pacific Lumber Company performed sampling in Jordan Creek from 2000-2002 as part of a habitat conservation plan for the company's property. Juvenile steelhead were collected in Jordan Creek in 2000, 2001, and 2002 (PLC 2003).

Greenlow Creek (Greenlaw)

Greenlow Creek, also referred to as Greenlaw Creek, is tributary to the Eel River and consists of about 2.9 stream miles. It flows north, entering the Eel River at about stream mile 27.8.

Greenlow Creek was one of a number of streams sampled as part of a 1976 study on the distribution of fishes in the Eel River system. During this study steelhead were observed in Greenlow Creek (DFG 1980d).

A 1986 field note states that Greenlow Creek provides "fair spawning and rearing habitat." No fish were observed during the survey (DFG 1986b).

Staff from DFG conducted a stream inventory of Greenlow Creek in 1991 and collected juvenile *O. mykiss* at two sites. During this survey the stream channel was dry for the first 752 feet upstream from the Eel River confluence (CCC 1991b). The inventory report recommended treating sources of fine sediment.

Darnell Creek

Darnell Creek is tributary to the Eel River and consists of about 0.9 stream miles. It flows south, entering the Eel River at about stream mile 30.5.

Staff from DFG conducted a stream inventory of Darnell Creek in 1992. Electrofishing yielded five juvenile *O. mykiss* at a site located 92 feet upstream from the mouth of the creek. The report describes a culvert under Shively Road as a barrier to fish passage in need of modification and recommended also treating sources of fine sediment (CCC 1992f).

Shively Creek

Shively Creek is tributary to the Eel River and consists of about 3.5 stream miles. It flows southwesterly, north of the town of Shively, and enters the Eel River at about stream mile 31.4.

Shively Creek was one of a number of streams sampled as part of a 1976 study on the distribution of fishes in the Eel River system. During this study steelhead were observed in Shively Creek (DFG 1980d).

In 1979 staff from DFG surveyed Shively Creek and observed an adult steelhead. The survey report describes the creek as an "active salmonid spawning stream" and found the middle and upper sections to be "excellent for all life phases of salmonids" (DFG 1979b).

Staff from DFG conducted a stream inventory of Shively Creek in 1992. Young-of-year and juvenile *O. mykiss* were observed during the survey. The report notes sedimentation and damage to the creek caused by livestock (DFG 1992a). Two culverts located about 1.1 and 1.2 miles upstream from the mouth were noted to restrict fish passage at some flows.

Panther Creek

Panther Creek is tributary to Shively Creek and consists of about 1.5 stream miles. It flows southwesterly and enters Shively Creek at about stream mile 0.6.

Panther Creek was one of a number of streams sampled as part of a 1976 study on the distribution of fishes in the Eel River system. During this study steelhead were observed in Panther Creek (DFG 1980d).

Panther Creek is mentioned in a 1979 survey of the Shively Creek watershed. The creek is described as being "of little significance to anadromous fish" (DFG 1979b).

Bear Creek

Bear Creek is tributary to the Eel River and consists of about 5.2 stream miles. It flows north, entering the Eel River at about stream mile 32.2, near the town of Shively.

Staff from DFG rescued *O. mykiss* from Bear Creek in 1939 and 1949 (DFG 1940, DFG 1950a).

Field notes indicate that staff from DFG observed adult steelhead in Bear Creek in 1984 and 1987. Fifty individuals were observed within a mile of the Eel River in 1987 and ranged in length from 18-32 inches (CCC 1987b, DFG 1984).

In a 1997 memo written by DFG staff, fish habitat conditions in Bear Creek are described in relation to a proposed timber harvest plan for the area. The memo describes a "…history of cumulative effects in the Bear Creek watershed as a result of timber harvest related activities..." (DFG 1997b, p. 3). Anadromous fish habitat in the watershed is categorized as "severely and thoroughly degraded" with issues including a lack of pools, elimination of riparian vegetation, high water temperatures, and chronic sediment input (DFG 1997b).

Staff from DFG conducted a stream inventory of Bear Creek in 1999. Multiple *O. mykiss* year classes were observed at three electrofishing sites during this survey (DFG 2000b). The inventory report recommended increasing canopy as well as treating sources of fine sediment in the creek.

The Pacific Lumber Company performed sampling in Bear Creek from 1998-2002 as part of a habitat conservation plan for the company's property. Juvenile steelhead were collected in Bear Creek every year during that time period (PLC 2003).

Chadd Creek

Chadd Creek is tributary to the Eel River and consists of about 4.5 stream miles. It flows north, entering the Eel River at about stream mile 33, south of the town of Shively.

Chadd Creek was one of a number of streams sampled as part of a 1976 study on the distribution of fishes in the Eel River system. During this study steelhead were observed in Chadd Creek (DFG 1980d).

Field notes from 1989-1993 indicate that steelhead were observed in Chadd Creek throughout this time period (DFG 1993, Moody 1988, Preston 1989). In 1992 DFG staff conducted a stream inventory of Chadd Creek and observed YOY, age 1+, and age 2+ *O. mykiss* (CCC 1992g).

Staff from DFG conducted a stream inventory of Chadd Creek in 1998. Biological sampling was not conducted during the survey, but surveyors observed "juvenile salmonids" from the stream banks at several locations (DFG 1998d). The inventory report recommended treating sources of fine sediment in the creek, including sediment sources related to the road system.

Chadd Creek tributary 1

An unnamed tributary to Chadd Creek consists of about 0.9 miles of intermittent stream. It flows north, entering Chadd Creek about 0.3 miles upstream from the Eel River.

Staff from DFG surveyed this tributary in 1939 and observed "young steelhead" about 50 feet upstream from Highway 101 (DFG 1939b).

Chadd Creek tributary 2

An unnamed tributary to Chadd Creek consists of about 1.1 stream miles. It flows east, entering Chadd Creek about 1.8 miles upstream from the Eel River.

Staff from DFG conducted a stream inventory of this tributary in 1992. Biological sampling was conducted at one site and four YOY *O. mykiss* were observed. The report recommends managing sediment sources related to the road system in order to improve habitat in this tributary (CCC 1992h).

Bridge Creek

Bridge Creek is tributary to the Eel River and consists of about 1.5 stream miles. It flows south, entering the Eel River at about stream mile 35.3.

Bridge Creek was one of a number of streams sampled as part of a 1976 study on the distribution of fishes in the Eel River system. During this study steelhead were observed in Bridge Creek (DFG 1980d).

Bridge Creek is included in a 1997 assessment of fish passage problems in relation to the Northern Pacific Railroad. The creek is described as "historically an anadromous [steelhead] stream" with "several miles of suitable habitat." However, fish access was prohibited by a complex culvert at the railroad crossing. The report recommends replacement of the culvert with a bridge and notes that the stream has "good quality coho and steelhead possibilities" (HCRCD 1997).

Larabee Creek

Larabee Creek is tributary to the Eel River, consists of about 24 stream miles, and drains a watershed of about 81.5 square miles (DFG 2000c). It flows west, entering the Eel River just north of the town of Larabee, at about stream mile 36.5.
Staff from DFG regularly rescued *O. mykiss* from Larabee Creek during the period from 1938-1952 (DFG 1938j, DFG 1940, DFG 1952, DFG 1953). Between 4,149 and 13,431 steelhead were rescued from the creek each year.

In 1938 staff from DFG surveyed Larabee Creek and observed steelhead ranging from 1.5 to 5.0 inches in length. Natural propagation of the fish was said to be "extensive" and the survey report noted "good" to "excellent" spawning areas and "good" pools and shelter (DFG 1938k).

A 1950 field note records observations of Larabee Creek made by staff from DFG. The creek was said to contain "beautiful spawning gravels" where it was examined near the mouth of Thurman Creek. The streambed of Larabee Creek was found to be dry about one mile further upstream (DFG 1950b).

Larabee Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study "several fingerlings and yearlings up to 5 inches in length" were observed in the creek (Kubicek 1977).

Staff from the Bureau of Land Management (BLM) surveyed a section of Larabee Creek in 1977 and observed juvenile *O. mykiss*. Surveyors found the surveyed section to have "excellent spawning grounds for salmon and steelhead" and noted that Larabee Creek is "…believed to be an important tributary to the fisheries of the Eel River" (BLM 1977).

In 1978 USFS estimated the economic value of anadromous fisheries in the Six Rivers National Forest (USFS 1978). At the time, the spawning escapement of steelhead in Larabee Creek was estimated to be about 2,000 fish.

Staff from DFG conducted a stream inventory of Larabee Creek in 1992. *Oncorhynchus mykiss* were observed at two locations (CCC 1992i). The inventory report recommended treating sources of fine sediment.

During a 2000 stream inventory, staff from DFG surveyed approximately 23 miles of Larabee Creek, from the confluence with the Eel River to the Cooper Creek confluence. Multiple *O. mykiss* year classes were observed at four electrofishing sites located in the reach 13 to 23 miles upstream from the Eel River confluence (DFG 2000c). The inventory report noted that water temperature may limit the fishery and recommended increasing canopy.

The Pacific Lumber Company performed sampling in Larabee Creek from 1998-2002 as part of a habitat conservation plan for the company's property. Juvenile steelhead were collected in Larabee Creek every year during that time period (PLC 2003). *Oncorhynchus mykiss* were also collected during additional sampling conducted by the Pacific Lumber Company in 2003 (Oliver 2003).

Balcom Creek

Balcom Creek is tributary to Larabee Creek and consists of about 1.3 stream miles (CCC 1992j). It flows north, entering Larabee Creek at about stream mile 2.1.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Balcom Creek is listed as containing 1.6 miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Staff from DFG conducted a stream inventory of Balcom Creek in 1992. No fish were observed during the survey and the report recommends additional assessment of a barrier located 94 feet from the confluence with Larabee Creek (CCC 1992j). Treatment of fine sediment sources was also recommended.

Carson Creek

Carson Creek is tributary to Larabee Creek and consists of about 2.3 stream miles. It flows south, entering Larabee Creek about 2.5 miles upstream from the Eel River.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Carson Creek is listed as containing 0.2 miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Staff from DFG conducted a stream inventory of Carson Creek in 1992. During the survey YOY and age 1+ *O. mykiss* were observed from the mouth of the creek to about 0.4 miles upstream (CCC 1992k). The inventory report recommended treating sources of fine sediment in the creek, included sediment sources related to the road system.

Scott Creek

Scott Creek is tributary to Larabee Creek and consists of about 2.2 stream miles. It flows north, entering Larabee Creek about four miles upstream from the Eel River.

Staff from DFG conducted a stream inventory of Scott Creek in 1992. Three sites were sampled during the survey and YOY *O. mykiss* were observed at two of the three. The report states that the stream's high gradient means that "access for migrating salmonids is an ongoing potential problem" (CCC 1992l). It also recommended treating sources of fine sediment, including those related to the road system.

Arnold Creek

Arnold Creek is tributary to Larabee Creek and consists of about 1.1 stream miles. It flows north, entering Larabee Creek about 4.7 miles upstream from the Eel River.

Staff from DFG conducted a stream inventory of Arnold Creek in 1992. No fish were found during electrofishing at two sites in the stream. The report describes fish passage as an "ongoing potential problem" due to the high gradient of the stream and the presence of a boulder cascade near the mouth (DFG 1992b).

Burr Creek

Burr Creek is tributary to Larabee Creek and consists of about 4.5 stream miles. It flows south, entering Larabee Creek at about stream mile 10.5.

Staff from DFG surveyed Burr Creek in 1938 and did not observe fish. "Fair" spawning areas were noted, along with "good" pools and shelter (DFG 1938l).

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Burr Creek is listed as containing two miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Cold Creek

Cold Creek is tributary to Burr Creek and consists of about 1.1 miles of intermittent stream. It flows west, entering Burr Creek at about stream mile 1.5.

Staff from DFG surveyed Cold Creek in 1938 and did not observe fish. The stream was described as, "Dry except for small, isolated pools" (DFG 1938m).

Little Burr Creek

Little Burr Creek is tributary to Burr Creek and consists of about 2.3 stream miles. It flows west, entering Burr Creek at about stream mile 2.4.

Staff from DFG surveyed Little Burr Creek in 1938 and wrote, "no fish seen, probably none." Spawning areas in the creek was described as "fair" (DFG 1938n).

Staff from DFG conducted a stream inventory of Little Burr Creek in 2000. One site near the confluence with Burr Creek was electrofished and 13 *O. mykiss* of multiple year classes were observed. The report noted that "access for migrating salmonids appears to be a problem" and the culvert at Alderpoint Road may be a complete barrier. It also recommended increasing canopy (DFG 2000d).

Mill Creek

Mill Creek is tributary to Larabee Creek and consists of about 3.7 stream miles. It flows south, entering Larabee Creek about 13.8 miles upstream from the Eel River.

Stocking records indicate that Mill Creek was stocked with 2,250 rainbow trout in 1933 (DFG 1933). Mill Creek is included in a 1938 study of suggested stream improvement projects. In this report, Mill Creek is described as containing an eight-foot high waterfall, "impassable to fish," located 50 feet downstream of the Alderpoint Road crossing (DFG 1938o). Staff from DFG surveyed Mill Creek in 1938 and noted the presence of YOY and seven-inch long steelhead about 50 feet upstream from the road crossing. The survey report noted "fair" spawning areas, "excellent" pools and shelter, and cited the falls downstream from the road crossing as a likely passage barrier (DFG 1938p).

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Mill Creek is listed as containing 0.2 miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Knack Creek

Knack Creek is tributary to Larabee Creek and consists of about 3.2 stream miles. It flows southwesterly, entering Larabee Creek at about stream mile 14.2.

Staff from DFG surveyed Knack Creek in 1938 and did not observe fish in the creek. A survey report notes "fair" spawning areas and "good" pools and shelter (DFG 1938q).

Staff from DFG conducted a stream inventory of Knack Creek in 2000. The survey extended from the mouth about 0.1 miles upstream and no fish were observed. The survey report noted a steep gradient and some stream bank erosion that was contributing sediment to the creek (DFG 2000e).

Martin Creek

Martin Creek is tributary to Larabee Creek and consists of about three stream miles. It flows southwesterly, entering Larabee Creek at about stream mile 15.4.

Staff from DFG surveyed Martin Creek in 1938 and observed YOY steelhead about 60 feet upstream from Blocksburg Road crossing. The survey report noted "fair" spawning areas and "good" pools and shelter (DFG 1938r).

Staff from DFG conducted a stream inventory of Martin Creek in 2000. Multiple *O. mykiss* year classes were collected at two electrofishing sites within about 0.5 miles of the mouth of the creek. Juvenile steelhead were also observed at about stream mile 0.9, below a series of 10-16 foot waterfalls (DFG 2000f). The inventory report noted limited spawning areas and several sites of stream bank erosion. It recommended increasing canopy and treating sources of fine sediment.

Bosworth Creek

Bosworth Creek is tributary to Larabee Creek and consists of about 1.5 stream miles. It flows southwesterly, entering Larabee Creek at about stream mile 16.7.
Staff from DFG surveyed Bosworth Creek in 1938 and did not observe *O. mykiss*. The survey report noted "fair" spawning areas, "excellent" pools and shelter, and boulder falls near the Blocksburg Road crossing which were said to create a possible fish passage barrier (DFG 1938s).

Larabee Creek tributary

An unnamed tributary to Larabee Creek consists of about 1.4 stream miles. It flows south, entering Larabee Creek about 19.3 miles upstream from the Eel River confluence.

Staff from DFG conducted a stream inventory of Larabee tributary in 2000. Surveyors observed juvenile salmonids, described as "probably age 1+ and 2+ steelhead," from the mouth of the creek to the culvert under Alderpoint Road. The culvert was described as, "likely impeding fish passage." The inventory report noted low flows, possibly due to water diversions, and effects from cattle trampling. It also recommended treating sources of fine sediment (DFG 2000g).

Thurman Creek

Thurman Creek is tributary to Larabee Creek and consists of about four miles of intermittent stream. It flows south from Charles Mountain, entering Larabee Creek at about stream mile 20.4.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Thurman Creek is listed as containing 1.5 miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Barn Creek

Barn Creek is tributary to Thurman Creek and consists of about 2.6 miles of intermittent stream. It flows south from Charles Mountain, entering Thurman Creek about 1.3 miles upstream from Larabee Creek.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Barn Creek is listed as containing 0.1 miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Hayfield Creek

Hayfield Creek is tributary to Larabee Creek and consists of about 3.2 stream miles. It flows southwesterly, entering Larabee Creek at about stream mile 20.9.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Hayfield Creek is listed as containing 0.5 miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Cooper Creek

Cooper Creek is tributary to Larabee Creek and consists of about 2.5 stream miles. It flows west, entering Larabee Creek at about stream mile 23.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Cooper Creek is listed as containing 0.5 miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Staff from DFG conducted a stream inventory of Cooper Creek in 2001. Biological sampling was not performed during the survey and no fish observations were recorded. The report notes several locations where bank erosion was contributing sediment to the creek. The road system was noted to be a source of sediment in some areas (DFG 2001).

Mountain Creek

Mountain Creek is tributary to Larabee Creek and consists of about 3.2 stream miles. It flows west, entering Larabee Creek at about stream mile 24.1, approximately 1.3 miles north of the town of Blocksburg.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Mountain Creek is listed as containing 0.5 miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Allen Creek

Allen Creek is tributary to the Eel River and consists of about 1.3 stream miles. It flows west, entering the Eel River at about stream mile 38.

Staff from DFG conducted a stream inventory of Allen Creek in 1992. Two sites were electrofished during the survey and no fish were found at either site. The creek's high gradient and two culverts near its mouth were noted to create access problems for migrating salmonids (CCC 1992m).

Weber Creek

Weber Creek is tributary to the Eel River and consists of about 2.4 stream miles. It flows west from Mount Baldy, entering the Eel River at about stream mile 38.8.

Weber Creek was one of a number of streams sampled as part of a study on the distribution of fishes in the Eel River system. During this study steelhead were observed in Weber Creek in 1976 (DFG 1980d).

Staff from DFG conducted a stream inventory of Weber Creek in 1992. Young-of-year and age 1+ *O. mykiss* were observed during the survey (CCC 1992n). The inventory report recommended increasing canopy and treating sources of fine sediment.

Weber Creek is included in a 1997 assessment of fish passage problems in relation to the Northern Pacific Railroad. The report states that yearling and YOY *O. mykiss* were observed above and below the railroad crossing during inspection (HCRCD 1997).

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Table 1. Distribution status and population features of *O. mykiss* in streams of the lower Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Eel River	DF	DF	Y	Y	3
Salt River	DF	PS	Y	UN	0
Cutoff Slough	DF	UN		UN	0
Centerville Slough	DF	UN		UN	0
Russ Creek	DF	PA	Y	UN	0
Reas Creek	DF	UN	Y	UN	0
Francis Creek	DF	DF		UN	2
Williams Creek	DF	UN		UN	0
Coffee Creek	DF	UN		UN	0
Palmer Creek	DF	DF		UN	1
Strongs Creek	DF	DF		UN	2
Rohner Creek	DF	UN	Y	UN	0
Mill Creek	DF	DF		UN	2
Jameson Creek	UN	PA		UN	0
Strongs Creek tributary	UN	UN	Y	UN	0
North Fork Strongs Creek	DF	DF		UN	3
Barber Creek	DF	UN		UN	0
Price Creek	DF	DF	Y	Y	3
Price Creek tributary (Adams Creek)	UN	UN		UN	0
Sweet Creek	DF	UN		UN	0
Oil Creek	DF	DF		Y	3
Howe Creek	DF	DF		Y	3
Atwell Creek	DF	DF		Y	3
Howe Creek tributary (West Fork Howe Creek)	DF	DF		Y	3
Slater Creek	UN	UN		UN	0
Eel River tributary (Belleview Creek)	UN	PA	Y	N	0
Nanning Creek	DF	DF		UN	1
Dean Creek	DF	DF		UN	3
Monument Creek	DF	DF		Y	3
Kiler Creek	DF	DF		UN	3

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

Table 1. Distribution status and population features of *O. mykiss* in streams of the lower Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Dinner Creek	DF	DF		Y	3
Twin Creek	DF	DF		UN	3
Stitz Creek	DF	DF		UN	1
Jordan Creek	DF	DF		Y	3
Greenlow Creek	DF	DF		UN	2
Darnell Creek	DF	DF	Y	UN	1
Shively Creek	DF	DF	Y	UN	3
Panther Creek	DF	UN		UN	0
Bear Creek	DF	DF	Y	Y	3
Chadd Creek	DF	DF		Y	3
Chadd Creek tributary 1	DF	UN		UN	0
Chadd Creek tributary 2	DF	DF	Y	UN	1
Bridge Creek	DF	PA	Y	N	0
Larabee Creek	DF	DF		Y	3
Balcom Creek	UN	UN		UN	0
Carson Creek	DF	DF		UN	3
Scott Creek	DF	DF		UN	2
Arnold Creek	UN	UN		UN	0
Burr Creek	PB	UN		UN	0
Cold Creek	UN	UN		UN	0
Little Burr Creek	PB	DF		UN	3
Mill Creek	DF	UN		UN	0
Knack Creek	UN	UN		UN	0
Martin Creek	DF	DF		Y	3
Bosworth Creek	UN	UN		UN	0
Larabee Creek tributary	DF	DF		UN	2
Thurman Creek	UN	UN		UN	0
Barn Creek	UN	UN		UN	0
Hayfield Creek	UN	UN		UN	0
Cooper Creek	UN	UN		UN	0
Mountain Creek	UN	UN		UN	0

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

Table 1. Distribution status and population features of *O. mykiss* in streams of the lower Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Allen Creek	UN	UN		UN	0
Weber Creek	DF	DF		Y	3

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

Steelhead/rainbow trout resources of the Van Duzen River

Van Duzen River

The Van Duzen River is tributary to the Eel River and consists of about 73 stream miles. It flows northwesterly from headwaters in the Six Rivers National Forest, entering the Eel River at about stream mile 13.5, near the town of Alton. The Van Duzen River drains an area of about 429 square miles (DFG 1997a).

Staff from DFG surveyed the Van Duzen River in the early 1930s. Dates are lacking from survey reports, however the surveys likely were conducted around 1934. One report from this period describes the Van Duzen River as, "One of the best spawning streams tributary to Eel River" (DFG ca. 1934a). Another report notes that the river is stocked with steelhead and describes natural propagation as "very successful throughout entire stream" (DFG ca. 1934a). Both reports note that the river is heavily fished.

The Van Duzen River has been regularly stocked with steelhead. Records from DFG indicate that the river was stocked from 1930 to 1938, and during the 1970s, 80s, and early 90s (DFG 1936a, DFG 1938a, DFG 1993).

An inventory of anadromous fish resources is included in a 1965 California Fish and Wildlife Plan. In its description of the Van Duzen River, the inventory stated that the watershed contained a total of 113 miles of steelhead habitat and supported a spawning run of 10,000 steelhead. It was also noted that spawners are sometimes blocked by logging debris and can be delayed by low flows in the fall. This report also noted that falls located about 30 miles upstream from the mouth of the Van Duzen are only passable to some summer steelhead at certain flows, and that the Eaton Roughs area another 12 miles upstream is impassable to all anadromous fish. The report stated, "The productive potential for anadromous fish could be significantly increased if passage could be provided over existing natural barriers" (DFG 1965a, p. 382).

The Van Duzen River was examined in 1973 as part of a study of water temperature conditions in the Eel River system (Kubicek 1977). During this study, fingerling and yearling salmonids were observed scattered throughout the section of stream between the mouth and the Eaton Roughs barrier. Resident rainbow trout up to nine inches in length were observed throughout the section of stream above Browns Canyon (Kubicek pers. comm.).

In a 1983 report on the status of California summer steelhead stocks the author notes that "Recent summer steelhead counts in [the Van Duzen River] have been low" (Roelofs 1983, p. 25). This decrease in population numbers since the early 1960s was attributed to damage caused by the 1964-65 floods, which created barriers to upstream migration and resulted in a "total loss of holding pools" in the Van Duzen River (DFG 1992a, Roelofs 1983).

Counts of summer steelhead in the Van Duzen River were conducted by staff from DFG in 1960 and yearly by staff from DFG and Caltrout from 1979 through 1999. Some observations of summer steelhead were also provided by local landowners. A summary table of these fish counts indicates that at least one adult summer steelhead was observed in the Van Duzen River each year that counts were made (DFG 1999a). In notes made during the 1997 summer steelhead survey, surveyors mentioned that summer fish populations were affected by high water temperatures, fishing, predation by river otters, and mass wasting which had caused many pools in the stream to fill with sediment (DFG 1997b).

In 1992 the Humboldt Chapter of the American Fisheries Society published a report identifying the risk of extinction in 49 salmon and steelhead stocks. In this report, summer steelhead in the Van Duzen River were designated as "high risk of extinction." High risk stocks were defined by populations that "showed continuing spawner declines with fewer than 200 adults" (Higgins 1992). In 1995 testimony regarding timber harvest plans in the Yager Creek watershed, fisheries biologist Patrick Higgins reported that summer steelhead runs in the Van Duzen River numbered less than 100 fish annually (Higgins 1995a).

Staff from DFG completed the "Eel River Salmon and Steelhead Restoration Action Plan" in 1997 (DFG 1997a). In this report the Van Duzen River was described as containing "…somewhat harsh summer conditions for the few juvenile salmonids and spring/summer adults that live in it, but it has many tributaries that provide hospitable conditions for salmonid stocks" (DFG 1997a, p. 20). The lower reach of the mainstem Van Duzen River, between Bridgeville and the mouth, was said to contain some spawning and rearing habitat. Fish habitat in the Van Duzen River was affected by increased sediment input, cattle grazing, logging, and introductions of non-native Sacramento squawfish (DFG 1997a).

Fish sampling in the Van Duzen River was conducted in 2001. Datasheets document the collection of steelhead at several locations in the river, including near the confluence of Grizzly Creek, near the town of Bridgeville, and near the "Jocko Arnot" bridge (Nakamoto 2003).

Barber Creek

Barber Creek is tributary to the Van Duzen River and consists of about 4.3 stream miles. It flows west, entering the Van Duzen at about stream mile 2.5.

In 1965 Barber Creek was surveyed from its mouth to the Highway 36 bridge. Juvenile salmonids, as well as "abundant" spawning areas and shelter, were observed in the creek. Habitat became less suitable for salmonids in the lower section of the creek which flows into the Van Duzen River flood plain and partially flows underground (Mongold 1965).

Barber Creek was sampled during a 1984 survey for Coastal Cutthroat Trout. Five steelhead trout were captured immediately downstream of the Highway 36 bridge during the survey (Franklin 1984).

Staff from DFG sampled a section of Barber Creek in 1988 and did not observe salmonids. A field note states that "fish habitat is available," the stream is "relatively undisturbed," and "Steelhead are known to exist to at least highway 36" (DFG 1988a).

Wolverton Gulch Creek

Wolverton Gulch Creek is tributary to Barber Creek and consists of about 3.8 stream miles. It flows south, entering Barber Creek about 0.4 miles upstream from the Van Duzen River confluence.

Salmonids were observed during a 1963 survey of Wolverton Gulch, but described as "very scarce." The creek was said to have poor spawning and nursery habitat due to a lack of water, excessive siltation, possible pollution, and few food sources (Gaumer 1963).

In an undated survey of Wolverton Gulch, probably conducted in the mid 1960s, "numerous" salmonids up to eight inches in length were observed. The creek was described as "a good nursery stream" due to the presence of these fish (DFG ca. 1965).

Wolverton Gulch was sampled during a 1984 survey for Coastal Cutthroat Trout. A total of 17 YOY and juvenile steelhead were captured in the creek (Franklin 1984).

Wolverton Gulch was inspected in 1997 in relation to a Timber Harvest Plan in the watershed. Salmonids were observed during the investigation and fish habitat was described as being "in fairly good condition" (DFFP 1997).

Staff from DFG conducted a stream inventory of Wolverton Gulch in 1997. Multiple year classes of *O. mykiss* were observed in the creek (DFG 1998a). The inventory report noted a limited spawning gravel and multiple log debris accumulations in the creek. It recommended treating sources of fine sediment and excluding cattle from the creek to avoid trampling and effects from defecation.

Yager Creek

Yager Creek is tributary to the Van Duzen River and consists of about 15.2 stream miles. It flows southwesterly, entering the Van Duzen River about five miles upstream from the Eel River confluence.

Staff from DFG rescued *O. mykiss* from Yager Creek in 1938 and 1940 (DFG 1938b, DFG 1941). Records indicate that Yager Creek was stocked with *O. mykiss* annually from 1930 to 1936 and in 1938 (DFG 1936b, DFG 1939). The creek was surveyed from the mouth to the confluence with Lawrence Creek in 1938 and steelhead ranging from 1.5 to 6.0 inches in length were said to be "common" to "abundant." The survey report noted "very extensive" natural propagation of the fish (DFG 1938c).

Yager Creek was surveyed in 1964. The survey found "abundant" salmonids, including rainbow trout ranging from 2-12 inches. "Excellent" spawning areas were also identified (Gaumer 1964).

Yager Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study fingerlings and yearling salmonids up to six inches long were observed in Yager Creek, including about 50 salmonids in one pool (Kubicek 1977).

Staff from DFG conducted a stream inventory of Yager Creek in 1991. Juvenile steelhead ranging from about three to eight inches were captured during the survey (CCC 1991a). The inventory report recommended treating sources of fine sediment. In a 1995 letter providing comments on a Timber Harvest Plan in the Yager Creek watershed Patrick Higgins describes the creek as, "…a major salmon and steelhead producing tributary of the Van Duzen River." High water temperatures and a lack of shade canopy are described as major limiting factors in Yager Creek (Higgins 1995b).

Wilson Creek

Wilson Creek is tributary to Yager Creek and consists of about 2.4 stream miles. It flows south, entering Yager Creek about 0.5 miles upstream from the Van Duzen River confluence.

Staff from DFG conducted a stream inventory of Wilson Creek in 1991. Three sites were electrofished and a total of five steelhead, ranging from about 3-12 inches in fork length, were found at one site. The lowest 0.8 miles of Wilson Creek was dry during the survey (CCC 1991b). The inventory report recommended treating sources of fine sediment.

A 2003 memo concerning a Timber Harvest Plan in the Wilson Creek watershed states that steelhead are found in the creek. The memo notes that in most years flows become subsurface in the lower reaches of Wilson Creek and these lower reaches are also impacted by channelization, livestock grazing, and water diversions (DFG 2003a).

Cooper Mill Creek

Cooper Mill Creek is tributary to Yager Creek and consists of about 3.1 stream miles. It flows south, entering Yager Creek near Yager Camp, about 3.1 miles upstream from the Van Duzen River confluence.

Staff from DFG conducted a stream inventory of Cooper Mill Creek in 1990 during which YOY and juvenile steelhead were observed at two sites (DFG 1990). The inventory report noted the presence of several log debris accumulations in the creek and recommended increasing canopy and treating sources of fine sediment. An additional stream inventory was conducted in 1996. Biological sampling was not performed during this survey, but the report notes that *O. mykiss* were observed in Cooper Mill Creek in 1993 (DFG 1996a).

The Pacific Lumber Company operated a fish trap on Cooper Mill Creek from November 2000 to January 2001 in order to collect eggs and milt for the company's fish hatchery. Steelhead were collected during this period and numerous steelhead fry were observed during downstream migrant trapping in Cooper Mill Creek in April and May of 2001 (Darby 2001).

Blanton Creek

Blanton Creek is tributary to Yager Creek and consists of about 1.4 stream miles. It flows south, entering Yager Creek about 7.7 miles upstream from the Van Duzen River confluence.

Staff from DFG conducted a stream inventory of Blanton Creek in 1991. Four sites were electrofished and all yielded YOY and/or juvenile *O. mykiss* (CCC 1991c). The inventory report noted several sites of stream bank erosion and recommended treating sources of fine sediment.

In a 1995 declaration regarding proposed timber harvest plans in the Yager Creek watershed, Patrick Higgins describes Blanton Creek as, "…one of the last high quality refuge streams in the Yager Creek basin" (Higgins 1995a, p. 3). The creek is said to have the lowest levels of fine sediment of any tributary to Yager Creek.

Lawrence Creek

Lawrence Creek is tributary to Yager Creek and consists of about 14.5 stream miles. It flows south, entering Yager Creek at about stream mile nine.

Stocking records indicate that Lawrence Creek was stocked with 25,000 steelhead in 1930 (DFG 1930a). In an undated DFG stream survey report, likely dating from the 1930s, Lawrence Creek is described as a "Good winter spawning stream and probably natural reproduction will keep stream stocked to summer capacity" (DFG ca. 1934b).

Staff from DFG surveyed Lawrence Creek in 1938 and observed steelhead ranging from 1.5 to 5.0 inches in length. The survey report noted "good" spawning areas, "good" pools and shelter, and "abundant" fish foods in the creek (DFG 1938d).

Lawrence Creek was sampled as part of a 1967-68 study of the Van Duzen and North Fork Eel Rivers. Steelhead were captured in the creek during the study (DFG 1968).

Staff from DFG conducted stream inventories of the lower, middle, and upper sections of Lawrence Creek in 1991 (CCC 1991d, CCC 1991e, CCC 1991f). Four sites were sampled and between 47-124 YOY and juvenile steelhead were captured at each site.

The steelhead population in Lawrence Creek was sampled from 1992-1995 as part of a stream monitoring study of five streams. Steelhead were consistently collected in the creek during this time period and population estimates ranged from 850 to 1,658 individuals (DFG 1997c).

The Pacific Lumber Company performed sampling in Lawrence Creek from 1998-2002 as part of a habitat conservation plan for the company's property. Juvenile steelhead were collected in the creek every year during that time period with numbers ranging from 33-198 fish captured per year (PLC 2003).

Corner Creek

Corner Creek is tributary to Lawrence Creek and consists of about 2.7 stream miles. It flows east, entering Lawrence Creek about 3.7 miles upstream from the Yager Creek confluence.

Staff from DFG conducted a stream inventory of Corner Creek in 1991. Steelhead were observed at three sampling sites, all within 0.3 miles of the confluence with Lawrence Creek. The report noted that the creek, "…offers good conditions for rearing fish" with the condition that the stream's high gradient made access for migrating fish an "ongoing potential problem" (CCC 1991g). The report recommended treating sources of fine sediment.

Shaw Creek

Shaw Creek is tributary to Lawrence Creek and consists of about 3.7 stream miles. It flows west, entering Lawrence Creek about 3.8 miles upstream from the Yager Creek confluence.

The steelhead population in Shaw Creek was sampled from 1992-1995 as part of a stream monitoring study of five streams. Steelhead were consistently collected in the creek during this time period and population estimates ranged from 157 to 238 individuals (DFG 1997c).

Staff from DFG conducted a stream inventory of Shaw Creek in 2000. Sampling at three sites produced a total of 28 steelhead comprising three year classes. The survey report notes that the Pacific Lumber Company and California Conservation Corps have installed several stream improvement structures in the creek (DFG 2000a).

Fish Creek

Fish Creek is tributary to Lawrence Creek and consists of about 1.1 stream miles. It flows south, entering Lawrence Creek about 4.8 miles upstream from the Yager Creek confluence.

Staff from DFG conducted a stream inventory of Fish Creek in 1991 and observed YOY and juvenile *O. mykiss* in the creek. The report notes that a boulder fishway was constructed in 1992 to provide access through the braided lower reach of Fish Creek (CCC 1992a). Treatment of fine sediment sources was recommended.

Staff from DFG conducted another stream inventory of Fish Creek in 1998 and performed biological sampling in 1996. Young-of-year *O. mykiss* were observed in the creek during the 1996 sampling. Results of the 1998 habitat inventory indicate that the fishway at the mouth of the creek was not functioning at that time (DFG 1998b).

Booths Run Creek

Booths Run Creek is tributary to Lawrence Creek and consists of about five stream miles. It flows west, entering Lawrence Creek about eight miles upstream from the Yager Creek confluence.

Staff from DFG conducted a stream inventory of Booths Run in 1991 and "many" YOY salmonids were observed at one location. Recommendations in the report include increasing riparian vegetation and addressing stream bank erosion (CCC 1991h).

Bell Creek

Bell Creek is tributary to Lawrence Creek and consists of about 4.2 stream miles (CCC 1991i). It flows south, entering Lawrence Creek about 9.1 miles upstream from the Yager Creek confluence.

Staff from DFG conducted a stream inventory of Bell Creek in 1991. During the survey YOY and juvenile *O. mykiss* were captured at three sites. The inventory report noted that the stream's high gradient and several log debris accumulations made fish passage "an ongoing potential problem." Recommendations for improving habitat in the stream included addressing potential migration barriers and sediment sources (CCC 1991i).

Staff from NMFS conducted sampling in several Eel River tributaries as part of a salmonid habitat restoration evaluation and monitoring project. Reports of this sampling indicate that steelhead were observed in Bell Creek in 1998 and 1999 (DFG 1999b, DFG 2000b).

Yager Creek tributary (Strawberry Creek)

An unnamed tributary to Yager Creek consists of about 1.3 stream miles and is known as Strawberry Creek. It flows south, entering Yager Creek about 10.2 miles upstream from the Van Duzen River confluence.

Staff from DFG conducted stream inventories of Strawberry Creek in 1991 and 1996 (CCC 1991j, DFG 1996b). Juvenile and YOY *O. mykiss* were observed in 1991 and YOY were observed in 1996. The 1996 report notes limited spawning gravel in Strawberry Creek.
The Pacific Lumber Company performed sampling in Strawberry Creek from 1998-2002 as part of a habitat conservation plan for the company's property. Juvenile steelhead were collected in the creek every year during that time period with numbers ranging from 25-89 fish captured per year (PLC 2003).

South Fork Yager Creek

South Fork Yager Creek is tributary to Yager Creek and consists of about 11 stream miles. It flows northwesterly, entering Yager Creek at about stream mile 14.2.

Staff from DFG surveyed South Fork Yager Creek in 1938 and noted low flows. The creek consisted of intermittent pools in some sections. No fish were observed and a survey report describes the creek as "probably barren" (DFG 1938e).

Staff from DFG conducted stream inventories of South Fork Yager Creek in 1991, 1996, and 2000. Young-of-year and age 1+ *O. mykiss* were observed in the creek during all three surveys. The 2000 report recommends increasing woody cover within pools in the creek in order to improve rearing habitat (CCC 1991k, DFG 1996c, DFG 2000c).

The Pacific Lumber Company performed sampling in South Fork Yager Creek from 1999-2002 as part of a habitat conservation plan for the company's property. Juvenile steelhead were collected in the creek every year during that time period with numbers ranging from 93-125 fish captured per year (PLC 2003).

North Fork Yager Creek

North Fork Yager Creek is tributary to Yager Creek and consists of about 12.1 stream miles (DFG 2003b). It flows southwesterly, entering Yager Creek about 15.2 miles upstream from the Van Duzen River confluence.

Staff from DFG surveyed North Fork Yager Creek in 1938 and observed "abundant" YOY steelhead. Steelhead ranging from five to seven inches in length were described as "common." Spawning areas in the creek were said to be "good" and "excellent" pools and shelter were noted (DFG 1938f).

In a 1995 declaration regarding proposed timber harvest plans in the Yager Creek watershed, Patrick Higgins notes that abundant rainbow trout were observed in North Fork Yager Creek in 1964. The document also describes the creek as lacking canopy cover (Higgins 1995a).

Staff from DFG conducted a stream inventory of North Fork Yager Creek in 1991. Young-of-year and juvenile *O. mykiss* were collected during biological sampling, including individuals to eight inches in length (CCC 1991l).

The Pacific Lumber Company performed sampling in North Fork Yager Creek from 1999-2002 as part of a habitat conservation plan for the company's property. Juvenile steelhead were collected in the creek every year during that time period with numbers ranging from 7-215 fish captured per year (PLC 2003

Staff from DFG conducted a stream inventory of North Fork Yager Creek in 2003. Sixteen sites were electrofished during the survey and numerous *O. mykiss* of three year classes observed. The report notes that the creek "…offers overall suitable habitat conditions for rearing anadromous fish like steelhead" but noted the impacts of high water temperatures, lack of shade, and some passage problems (DFG 2003b). The report recommended increasing canopy and treating sources of fine sediment.

Grouse Creek

Grouse Creek is tributary to North Fork Yager Creek and consists of about 1.6 stream miles. It flows southeasterly, entering North Fork Yager Creek about 5.1 miles upstream from the Yager Creek confluence.

Staff from DFG conducted a stream inventory of Grouse Creek in 2003. Young-of-year, age 1+, and age 2+ *O. mykiss* were observed during the survey (CCC 2003). The inventory report recommended treating sources of fine sediment.

Lone Star Creek

Lone Star Creek is tributary to Grouse Creek and consists of about 2.5 stream miles. It flows southwesterly, entering Grouse Creek about 0.1 miles upstream from the North Fork Yager Creek confluence.

Staff from DFG surveyed Lone Star Creek in the vicinity of Kneeland Road in 1938. Surveyors did not observe fish and noted that the creek is "probably barren" in the area surveyed and "should be stocked." The survey report noted "good" spawning areas, "good" pools and shelter, and "very good" fish food sources (DFG 1938g).

Salmon Creek

Salmon Creek is tributary to North Fork Yager Creek and consists of about 1.4 stream miles. It flows south, entering North Fork Yager Creek about 6.5 miles upstream from the Yager Creek confluence.

A report on fish rescue work carried out in 1938 includes discussion of activities in Salmon Creek, "tributary to the lower Van Duzen River." The creek under discussion may be the North Fork Yager Creek tributary or may be another creek not identified in current geographical references. The report states, "In 1938, 5,100 fish (95 percent steelhead; 5 percent rough fish at 89 per ounce) were rescued in Salmon Creek…, beginning June 15" (DFG 1938b).

Dairy Creek

Dairy Creek is tributary to North Fork Yager Creek and consists of about 4.9 stream miles. It flows northeasterly, entering North Fork Yager Creek about 8.1 miles upstream from the Yager Creek confluence.

Stocking records indicate that Dairy Creek was stocked with 10,000 rainbow trout in 1932 (DFG 1932). Staff from DFG surveyed Dairy Creek in the early 1930s and noted the presence of steelhead. A survey report noted that the creek was a "Small stream and not of much importance." Natural propagation of the fish was said to be "Probably slight on account of size of stream" (DFG ca. 1934c).

Middle Fork Yager Creek

Middle Fork Yager Creek is tributary to Yager Creek and consists of about five stream miles. It flows west, entering Yager Creek about 15.2 miles upstream from the Van Duzen River confluence.

Staff from DFG conducted a stream inventory of Middle Fork Yager Creek in 1991. *Oncorhynchus mykiss* YOY and juveniles were observed at two of the three sites electrofished during the survey. Recommendations listed in the report include increasing canopy and treating sources of fine sediment (CCC 1991m).

The Pacific Lumber Company performed sampling in Middle Fork Yager Creek from 1998-2002 as part of a habitat conservation plan for the company's property. Juvenile steelhead were collected in the creek every year during that time period with numbers ranging from 42-173 fish captured per year (PLC 2003).

Cuddeback Creek

Cuddeback Creek is tributary to the Van Duzen River and consists of about 1.3 stream miles. It flows south, entering the Van Duzen about seven miles upstream from the Eel River confluence.

Staff from DFG rescued *O. mykiss* from Cuddeback Creek in 1940 (DFG 1941). Cuddeback Creek was surveyed in 1963 and salmonids were observed in the upper half of the stream. "Good" spawning conditions and "abundant" nursery areas were also observed in the upper half of the stream, habitat in the lower half of the stream was described as "poor" (DFG 1963).

A DFG field note reports that local residents claim to have seen adult steelhead in Cuddeback Creek in 1987. Staff from DFG observed a large redd upon inspection of the creek (DFG 1987a). In a 1988 field note, DFG staff report an observation of "rainbow trout" in Cuddeback Creek (DFG 1988b).

A 2003 memo concerning a timber harvest plan in the Cuddeback Creek watershed states that steelhead are found in the creek. The memo notes that in most years flows become subsurface in the lower reaches of Cuddeback Creek and that the stream is impacted by high levels of fine sediment (DFG 2003a).

Cummings Creek

Cummings Creek is tributary to the Van Duzen River and consists of about 3.2 stream miles. It flows west, entering the Van Duzen River at about stream mile eight.

During a 1938 survey of Cummings Creek "many" YOY *O. mykiss* were observed and natural propagation in the stream is categorized as "very extensive." The survey report notes the presence of pollution and logging debris in the stream (DFG 1938h). Staff from DFG rescued steelhead trout from Cummings Creek in 1940 and from 1949-1951 (DFG 1941, DFG 1950, DFG 1951, DFG 1952).

Cummings Creek was surveyed in 1985 and YOY salmonids were observed in the stream. A large amount of sand and silt within the stream was cited as a significant problem, with road crossings, unstable banks, and cattle damage being the main causes (DFG 1985).

Staff from DFG conducted a stream inventory of Cummings Creek in 1991. Steelhead ranging from 1.4 to 6.7 inches FL were sampled at three electrofishing sites (CCC 1991n). The inventory report recommended treating sources of fine sediment. The Pacific Lumber Company performed sampling in Cummings Creek from 1998-2002 as part of a habitat conservation plan for the company's property. Juvenile steelhead were collected in the creek every year during that time period with numbers ranging from 54-147 fish captured per year (PLC 2003).

Fiedler Creek

Fiedler Creek is tributary to Cummings Creek and consists of about 1.8 miles of intermittent stream. It flows south and enters Cummings Creek about 0.1 miles upstream from the Van Duzen River confluence.

Field notes from 1965 indicate that small salmonids were observed in Fiedler Creek in May and July that year. The survey reports note the impact of a water diversion in the creek and state that rescue operations may be necessary as many fish die in the stream every summer (DFG 1965b, Hicks 1965).

A field note indicates that steelhead redds and one live fish were observed in Fiedler Creek in 1987. The note states that "excellent quality salmon and steelhead spawning gravel" was also observed in the creek (DFG 1987b).

Van Duzen River tributary

An unnamed tributary to the Van Duzen River consists of about one stream mile. It flows northeasterly and enters the Van Duzen River at about stream mile 9.3.

This unnamed tributary was surveyed during a 2002 evaluation of fish passage at a culvert in the stream. During this survey *O. mykiss* was observed up to the first main fork in the creek, about 0.2 miles from the mouth. Surveyors observed some "reasonable fish habitat" within the creek and numerous small debris dams including one large log that formed a complete barrier to migration (Darby 2002).

Hely Creek

Hely Creek is tributary to the Van Duzen River and consists of about three stream miles. It flows southwesterly, entering the Van Duzen River at about stream mile 14.6.

Staff from DFG surveyed Hely Creek in 1938 and found YOY steelhead to be "abundant" at a survey station located 100 yards upstream from the mouth. The survey report noted "extensive" natural propagation of the fish, "good" spawning areas, and "good" pools and shelter in the creek (DFG 1938i).

Staff from DFG conducted a stream inventory of Hely Creek in 1991. Three sites were electrofished during the survey and multiple year classes of *O. mykiss* were observed. Several erosion sites were noted and the inventory report recommended treating sources of fine sediment (CCC 1991o).

The Pacific Lumber Company performed sampling in Hely Creek from 1998-2002 as part of a habitat conservation plan for the company's property. Juvenile steelhead were collected in the creek every year during that time period with numbers ranging from 74-194 fish captured per year (PLC 2003).

Root Creek

Root Creek is tributary to the Van Duzen River and consists of about 4.5 stream miles (CCC 1992b). It flows northwesterly, entering the Van Duzen River at about steam mile 20.5.

Staff from DFG conducted a stream inventory of Root Creek in 1991. Juvenile and YOY *O. mykiss* were sampled during the survey. No fish were observed above a debris accumulation located about 2.6 miles upstream from the mouth of the creek (CCC 1992b). The inventory report recommended treating sources of fine sediment.

The Pacific Lumber Company performed sampling in Root Creek from 1998-2002 as part of a habitat conservation plan for the company's property. Juvenile steelhead were collected in the creek every year during that time period with numbers ranging from 36-91 fish captured per year (PLC 2003).

Grizzly Creek

Grizzly Creek is tributary to the Van Duzen River and consists of about 5.7 stream miles. It flows southwesterly, entering the Van Duzen River at about stream mile 23, in Grizzly Creek Redwoods State Park.

Grizzly Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study several fingerling salmonids were observed in Grizzly Creek (Kubicek 1977).

Staff from DFG conducted a stream inventory of Grizzly Creek in 1991. Three sites were electrofished during the survey and YOY, age 1+, and age 2+ *O. mykiss* were observed (CCC 1992c). The report recommended treating sources of fine sediment and increasing canopy.

A study site in Grizzly Creek was used in a 1995 study of sculpin ecology in the Eel River watershed. The paper describes the creek as "moderately disturbed" and notes that the watershed had been logged in areas upstream of Grizzly Creek Redwoods State Park (Brown 1995).

The Pacific Lumber Company performed sampling in Grizzly Creek from 1998-2002 as part of a habitat conservation plan for the company's property. Juvenile steelhead were collected in the creek every year during that time period with numbers ranging from 105-321 fish captured per year (PLC 2003).

Stevens Creek

Stevens Creek is tributary to Grizzly Creek and consists of about 2.4 stream miles. It flows south, entering Grizzly Creek about 0.5 miles upstream from the Van Duzen River.

Staff from DFG conducted a stream inventory of Stevens Creek in 1991. Juvenile and YOY *O. mykiss* were observed at two sampling sites in the creek. A 30 foot high cascade was observed about one mile upstream from the mouth of the creek and was listed as the likely limit of anadromy (CCC 1991p).

Fish Creek

Fish Creek is tributary to the Van Duzen River and consists of about 2.5 stream miles. It flows north, entering the Van Duzen River at about stream mile 27.2.

Staff from DFG conducted a stream inventory of Fish Creek in 1991. Juvenile and YOY *O. mykiss* were observed at two sampling sites in the stream. The creek was noted to have "good conditions for rearing fish" but fish passage was said to be "an ongoing potential problem" (CCC 1991q). The inventory report recommended treating sources of fine sediment.

Hoagland Creek

Hoagland Creek is tributary to the Van Duzen River and consists of about 2.7 stream miles. It flows north, entering the Van Duzen River at about stream mile 30.

Staff from DFG surveyed Hoagland Creek in 1938 and observed "abundant" YOY steelhead. The survey report noted "extensive" natural propagation of the fish, "good" spawning areas, and "good" pools and shelter in the creek (DFG 1938j).

Staff from DFG conducted a stream inventory of Hoagland Creek in 1991. Three sites were sampled during the survey and juvenile and YOY *O. mykiss* were observed at each site. The report notes impacts from cattle trampling, sediment input, and fish passage problems in the stream (CCC 1991r).

Brown Creek

Brown Creek is tributary to the Van Duzen River and consists of about 3.1 stream miles. It flows south, entering the Van Duzen River at about stream mile 30.6, east of the town of Bridgeville.

Stocking records indicate that Brown Creek was stocked with a total of 25,000 steelhead in 1930 (DFG 1930b). Staff from DFG surveyed Brown Creek in 1938 and observed steelhead ranging from 1.5 to 6.0 inches in length. The creek was said to contain "good" spawning areas and "good" pools and shelter. It was described as "semi-exposed" (DFG 1938k).

Staff from DFG conducted a stream inventory of Brown Creek in 1991. Juvenile and YOY *O. mykiss* were observed during the survey, but no fish were observed upstream of a waterfall located about 0.4 miles upstream from the mouth. A gravel bar at the mouth of the creek was noted to create a barrier to out migrant anadromous fish and construction of a fishway was recommended (CCC 1991s). The inventory report also recommended treating sources of fine sediment.

Little Larabee Creek

Little Larabee Creek is tributary to the Van Duzen River and consists of about five stream miles (DFG 1996d). It flows west, entering the Van Duzen River at about stream mile 31.5.

Staff from DFG rescued *O. mykiss* from Little Larabee Creek in 1938 (DFG 1938b). Staff from DFG surveyed Little Larabee Creek in 1938 and noted the presence of "abundant" steelhead ranging from 1.5 to 2.5 inches in length near the Van Duzen Highway bridge crossing. The survey report noted "fair" spawning areas and "good" pools and shelter in the creek (DFG 1938l).

Little Larabee Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study fingerlings were observed in the lower portion of Little Larabee Creek. The mouth of the creek was almost dry during the 1973 survey, however the report cites a 1968 description which noted that the creek "provides excellent salmonid nursery habitat" (Kubicek 1977, p.192).

Staff from DFG conducted stream inventories of Little Larabee Creek in 1991 and 1996. Juvenile and YOY *O. mykiss* were observed in the creek during both surveys (CCC 1991t, DFG 1996d).

Baker Creek

Baker Creek is tributary to the Van Duzen River and consists of about 3.6 stream miles. It flows south, entering the Van Duzen River at about stream mile 39.3.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report the Baker Creek is listed as containing 0.2 miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

The mouth of Baker Creek was observed during a 1997 survey of steelhead in the Van Duzen River. Baker Creek was noted to lack surface flows at it confluence with the Van Duzen River (DFG 1997b).

Little Van Duzen River (South Fork Van Duzen River)

The Little Van Duzen River, also known as the South Fork Van Duzen River, is tributary to the Van Duzen River and consists of about 19.8 stream miles (CCC 1992d). It flows north, entering the Van Duzen River at about stream mile 45.4.

Stocking records indicate that the Little Van Duzen River was stocked with *O. mykiss* annually from 1930 to 1936 and in 1938 (DFG 1936c, DFG 1938m). Staff from DFG surveyed the Little Van Duzen River in 1938 and observed "abundant" steelhead ranging from 1.5 to 4.0 inches in length. Natural propagation of the fish was noted to be "very extensive" and "good" spawning areas were observed (DFG 1938n).

The Little Van Duzen River is mentioned in a 1965 study of California's anadromous fish resources. The report states that the river is "inaccessible to anadromous fish because of a natural barrier on the main Van Duzen, about 11 miles downstream of the confluence" (Fry 1965, p. S-71).

The Little Van Duzen River is described in a 1983 report by researchers at Humboldt State University. The paper reports that more than 100 summer steelhead were seen in the river in the 1960s, but the 1964-65 flood created barriers to migration. Summer steelhead were not seen during surveys in 1980 and 1982. Barrier removal was recommended in order to provide access to the Little Van Duzen River and increase numbers of summer steelhead (Roelofs 1983).

The Little Van Duzen River was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study fingerling and yearling steelhead, up to six inches in length, were observed in the Little Van Duzen River (Kubicek 1977).

Staff from DFG conducted a stream inventory of the Little Van Duzen River in 1992. Juvenile *O. mykiss* were observed at multiple locations in the river, up to a debris accumulation located about 13.4 miles upstream from the confluence with the Van Duzen River. Some larger fish were also observed, including adult steelhead ranging from 16-20 inches in length (CCC 1992d). The inventory report recommended increasing canopy and treating sources of fine sediment.

Staff from DFG and USFS "…conducted an exhaustive search for summer steelhead in the Van Duzen River [basin] in July, 1997" (Preston 1997). The resulting report states, "A total of one adult summer steelhead was observed in the South Fork Van Duzen River. Trout of all age classes were common, including ten to twelve inch fish." The report also notes substantial aggradation (Preston 1997).

Butte Creek

Butte Creek is tributary to the Little Van Duzen River and consists of about 5.9 stream miles. It flows northeasterly, entering the Little Van Duzen about 2.8 miles upstream from the Van Duzen River confluence.

Stocking records indicate that Butte Creek was stocked with 5,000 rainbow trout in 1934 (DFG 1934). Staff from DFG surveyed Butte Creek in 1938 and noted that steelhead ranging from 1.25 to 7.0 inches in length were "abundant." Spawning areas were described as "good" (DFG 1938o).

Butte Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. Some salmonid fingerlings were observed in Butte Creek during this study (Kubicek 1977).

Staff from DFG conducted a stream inventory of Butte Creek in 1992. Juvenile and YOY *O. mykiss* were observed during the survey. The report noted that cattle were causing damage to some sections of the stream and recommended treating sources of fine sediment (CCC 1991u).

Horse Creek

Horse Creek is tributary to Butte Creek and consists of about 3.7 stream miles. It flows northwesterly, entering Butte Creek about 1.7 miles upstream from the Little Van Duzen River confluence.

Staff from DFG conducted a stream inventory of Horse Creek in 1992. Juvenile and YOY *O. mykiss* were observed in the stream, and all recorded observations took place within about one mile of the mouth (DFG 1992b). The inventory report recommended increasing canopy and treating sources of fine sediment.

Swift Creek

Swift Creek is tributary to Butte Creek and consists of about 2.2 stream miles. It flows northwesterly, entering Butte Creek about two miles upstream from the Little Van Duzen River confluence.

Staff from DFG conducted a stream inventory of Swift Creek in 1992. Biological sampling was not conducted during the survey, but surveyors observed YOY and age 1+ salmonids which were assumed to be *O. mykiss* (CCC 1992e). Low flows were observed during the survey and the report recommended an additional survey during a period of higher flow.

Thompson Creek

Thompson Creek is tributary to the Little Van Duzen River and consists of about 3.1 stream miles. It flows southwesterly, entering the Little Van Duzen River about six miles upstream from the Van Duzen River confluence.

Staff from DFG conducted a stream inventory of Thompson Creek in 1992. Juvenile and YOY *O. mykiss* were observed during sampling in the stream. A series of waterfalls and cascades located about 0.8 miles upstream from the mouth is believed to affect fish passage and the report recommended treating sources of fine sediment (CCC 1992f).

Dairy Creek

Dairy Creek is tributary to the Little Van Duzen River and consists of about 3.2 stream miles. It flows southwesterly, entering the Little Van Duzen River at about stream mile 7.4.

Staff from DFG conducted a stream inventory of Dairy Creek in 1992. Juvenile and YOY *O. mykiss* were observed in the stream. The report noted damage caused by cattle in "at least two sections" of the stream and recommended treating sources of fine sediment (CCC 1992g).

Panther Creek

Panther Creek is tributary to the Little Van Duzen River and consists of about 2.1 stream miles. It flows west, entering the Little Van Duzen River at about stream mile 8.3.

Staff from DFG conducted a stream inventory of Panther Creek in 1992. The Panther Creek channel was dry for the first 0.4 miles upstream of the mouth. Multiple year classes of *O. mykiss* were observed further upstream (CCC 1992h). The report recommended treating sources of fine sediment

Dolores Creek

Dolores Creek is tributary to the Little Van Duzen River and consists of about 0.7 stream miles. It flows south, entering the Little Van Duzen River at about stream mile 10.6.

Staff from DFG conducted a stream inventory of Dolores Creek in 1992. No fish were observed during the survey. Flow was intermittent at the mouth and the creek was dewatered at a point approximately 226 feet upstream (CCC 1992i).

Blanket Creek

Blanket Creek is tributary to the Little Van Duzen River and consists of about 2.6 stream miles. It flows west, entering the Little Van Duzen River at about stream mile 11.1.

Staff from DFG conducted a stream inventory of Blanket Creek in 1992. Juvenile and YOY *O. mykiss* were observed in the creek. The report notes a lack of spawning gravels and stream bank erosion among the issues impacting salmonid habitat and it recommended treating sources of fine sediment (CCC 1992j).

Bear Creek

Bear Creek is tributary to the Little Van Duzen River and consists of about 1.7 stream miles. It flows west, entering the Little Van Duzen River at about stream mile 12.2.

Staff from DFG conducted a stream inventory of Bear Creek in 1992. Juvenile and YOY *O. mykiss* were sampled during electrofishing in the creek, and notes indicate that "one large steelhead/rainbow trout" was observed about 1.1 miles upstream from the mouth (CCC 1992k). The report noted fish passage problems due to the high gradient of the stream and recommended increasing canopy and treating sources of fine sediment.

Lost Canyon

Lost Canyon Creek is tributary to the Little Van Duzen River and consists of about 1.7 stream miles. It flows north, entering the Little Van Duzen River at about stream mile 13.9.

Staff from DFG conducted a stream inventory of Lost Canyon Creek in 1992. During the survey three steelhead measuring six inches in length were observed about 0.6 miles upstream from the mouth of the creek. The report also notes that "numerous salmonids," including some YOY were observed further upstream. It recommended treating sources of fine sediment (CCC 1992l).

Browns Canyon Creek

Browns Canyon Creek is tributary to the Van Duzen River and consists of about 3.1 stream miles. It flows east, entering the Van Duzen River at about stream mile 58.3.

Field notes report observations made by forest service staff during a 1978 survey of Browns Canyon Creek. A "sizable population of resident rainbow trout" was observed upstream of the second tributary, located about 0.7 miles upstream from the mouth. Downstream of this point few fish were observed and habitat was affected by bank erosion and fine sediments (USFS 1978).

Shanty Creek

Shanty Creek is tributary to the Van Duzen River and consists of about 2.8 stream miles. It flows northeasterly, entering the Van Duzen River at about stream mile 62.

Shanty Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study many "resident rainbow trout," up to eight inches in length, were observed in Shanty Creek (Kubicek 1977).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* were observed in Shanty Creek (Brown 1991).

Black Lassic Creek

Black Lassic Creek is tributary to the Van Duzen River and consists of about 3.6 stream miles. It flows northeasterly, entering the Van Duzen River at about stream mile 63.8.

Forest service staff surveyed Black Lassic Creek in 1980. No fish were observed during the survey and the report notes that the creek "has little to offer in the way of suitable fish habitat." Low and intermittent flows were noted and the lack of habitat was attributed to a road culvert barrier, the stream gradient, and extensive boulder roughs (USFS 1980).

Staff from USFS surveyed the creek again in 1982 in response to reports of fish use. Higher flows were noted to create better habitat during this survey. Resident rainbow trout, including fry, fingerlings, and adults, were observed in a small section of the creek directly upstream of the road crossing (USFS 1982).

West Fork Van Duzen River

The West Fork Van Duzen River is tributary to the Van Duzen River and consists of about five stream miles. It flows northeasterly, entering the Van Duzen River at about stream mile 68.6

The West Fork Van Duzen River was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study many "resident rainbow trout," up to five inches in length, were observed in the West Fork Van Duzen (Kubicek 1977).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* were observed in the West Fork Van Duzen River (Brown 1991).

Big Meadow Creek

Big Meadow Creek is tributary to the West Fork Van Duzen River and consists of about 2.8 stream miles. It flows north, entering the West Fork Van Duzen about two miles upstream from the Van Duzen River confluence.

Stocking records indicate that Big Meadow Creek was stocked with 3,548 steelhead in 1930 (DFG 1930c).
A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Big Meadow Creek is listed as containing 2.8 miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

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Table 2. Distribution status and population features of *O. mykiss* in streams of the Van Duzen River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Van Duzen River	DF	DF	Y	Y	3
Barber Creek	DF	UN		UN	0
Wolverton Gulch Creek	DF	DF	Y	Y	3
Yager Creek	DF	DF	Y	Y	2
Wilson Creek	DF	DF	Y	UN	1
Cooper Mill Creek	DF	DF		Y	3
Blanton Creek	DF	DF		UN	3
Lawrence Creek	DF	DF		Y	3
Corner Creek	DF	DF		UN	1
Shaw Creek	DF	DF		Y	3
Fish Creek	DF	DF	Y	UN	3
Booths Run Creek	DF	DF		UN	3
Bell Creek	DF	DF		UN	3
Yager Creek tributary (Strawberry Creek)	DF	DF		Y	3
South Fork Yager Creek	DF	DF		Y	3
North Fork Yager Creek	DF	DF		Y	3
Grouse Creek	DF	DF		UN	2
Lone Star Creek	UN	UN		UN	0
Salmon Creek	PB	UN		UN	0
Dairy Creek	DF	UN		UN	0
Middle Fork Yager Creek	DF	DF		Y	3
Cuddeback Creek	DF	PB	Y	UN	1
Cummings Creek	DF	DF	Y	Y	3
Fiedler Creek	DF	PS	Y	UN	0
Van Duzen River tributary	DF	DF		UN	1
Hely Creek	DF	DF		Y	3
Root Creek	DF	DF		Y	3
Grizzly Creek	DF	DF	Y	Y	3
Stevens Creek	DF	DF		UN	2
Fish Creek	DF	DF		UN	2

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

Table 2. Distribution status and population features of *O. mykiss* in streams of the Van Duzen River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Hoagland Creek	DF	DF	Y	UN	3
Brown Creek	DF	DF		UN	3
Little Larabee Creek	DF	DF		Y	3
Baker Creek	UN	UN		UN	0
Little Van Duzen River	DF	DF	Y	UN	2
Butte Creek	DF	DF		UN	3
Horse Creek	DF	DF		UN	2
Swift Creek	DF	DF		UN	2
Thompson Creek	DF	DF		UN	2
Dairy Creek	DF	DF		UN	2
Panther Creek	DF	DF		UN	2
Dolores Creek	UN	UN		UN	0
Blanket Creek	DF	DF		UN	2
Bear Creek	DF	DF		UN	2
Lost Canyon	DF	DF		UN	2
Browns Canyon Creek	DF	UN		UN	0
Shanty Creek	DF	UN		UN	0
Black Lassic Creek	DF	UN	Y	UN	0
West Fork Van Duzen River	DF	UN		UN	0
Big Meadow Creek	UN	UN		UN	0

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

South Fork Eel River

The South Fork Eel River is tributary to the Eel River and consists of about 104 stream miles. It flows north from headwaters about five miles south of Laytonville, through Mendocino and Humboldt Counties, entering the Eel River about 40.5 miles upstream from the Pacific Ocean. The river drains an area of about 689 square miles (DFG 1997a). Benbow Dam is located on the South Fork Eel River near the town of Benbow, about 40 miles upstream from the Eel River confluence. A fish ladder is in operation on the dam.

Steelhead were planted in the South Fork Eel River as early as 1938. Stocking records from DFG indicate that 50,000 steelhead were stocked in the river on one date in 1938 (DFG 1938a). A hatchery that operated on Cedar Creek was responsible for several years of plantings that contributed significantly to the South Fork Eel River steelhead run. In 1958 and 1959 planted fish contributed 10.8 and 10.4 percent of the steelhead run over Benbow Dam, respectively (DWR 1974). A 1998 report on the impacts of the Potter Valley Project noted that most of the steelhead planting that took place in the Eel River drainage between 1956 and 1965 was done in the South Fork, and steelhead planting continued in the South Fork until 1995 (PG&E 1998).

Staff from DFG surveyed several areas of the South Fork Eel River from 1938 through 1941. "Good" spawning areas and "excellent" pools and shelter were noted in several areas during these surveys and juvenile steelhead were present (DFG 1938b, DFG 1938c). A 1938 DFG survey report notes logging impacts on the South Fork, "Large sections of the stream banks are caved in with gravel bars over-grown with willows forming large, silt covered still pools more favorable to catfish and sunfish than to trout and salmon. Formerly large redwoods (as judged by stumps) came right to rivers edge and held the banks firm. Now, there are greater floods, higher temperatures, poorer oxygen, and lower water in summer" (DFG 1938d).

Several large sections of the South Fork Eel River and its tributaries were surveyed in 1959. A summary of this survey describes the relative abundance of steelhead observed in the river and notes, "Juvenile and yearling production of steelhead and silver salmon appeared to be greatest in the Branscomb area where streams are narrow, better shaded and water is colder than in the lower drainage" (DFG 1959a, p. 2). Surveyors also noted substantial salmonid populations from the Branscomb area downstream to Horseshoe bend, but found that the numbers of fish decreased from this point downstream to the mouth of the South Fork. The summary found that many South Fork Eel River tributaries had been impacted by logging practices and that fish habitat was affected by erosion and log jams.

An inventory of anadromous fish resources was included in a 1965 California Fish and Wildlife Plan. In its description of the South Fork Eel River, the inventory stated that the watershed contained a total of 428 miles of steelhead habitat and supported an annual spawning run of 34,000 steelhead. (The basis for the estimate is not provided in the plan.) It was also noted that winter steelhead runs in the South Fork experienced "considerable angling pressure" and that fish populations were affected by low summer flows and high water temperatures (DFG 1965).

Salmon and steelhead runs were counted at Benbow Dam from at least 1938 through 1969. The largest numbers of steelhead were counted in the early 1940s, when over 20,000 fish were recorded for several years. Fewer fish were counted from 1964 through 1969, and annual counts ranged from 9,283 to 2,358 steelhead during that time period (Nygren 1969).

The South Fork Eel River was examined in 1973 as part of a study of water temperature conditions in the Eel River system (Kubicek 1977). During this study, many fingerling and yearling salmonids up to five inches in length were observed in the section of the South Fork Eel River located downstream of Myers Flat, several fingerling and a few juvenile salmonids up to eight inches in length were observed scattered between Myers Flat and the Ten Mile Creek confluence, and fingerling and yearling salmonids up to five inches in length were abundant upstream of Ten Mile Creek. A few 12-inch trout were observed near Elder Creek, and six trout over 20 inches in length, which may have been summer steelhead, were observed two miles below Elder Creek (Kubicek pers. comm.).

In a 1992 report on the distribution of summer steelhead, Weldon Jones describes observations of summer steelhead that took place in the South Fork Eel River from the 1930s until the 1960s. These fish were thought to spend the summer in deep pools between the Wilderness Lodge and Rattlesnake Creek; however, Jones noted that "The run was reported as never being large" (DFG 1992a, p. 4). He also stated that anecdotal reports of summer steelhead in the South Fork Eel River were still heard occasionally around the time the report was published, in 1992.

Staff from DFG conducted a stream inventory of the headwaters of the South Fork Eel River (upstream from the Mud Creek confluence) in 1996. Juvenile and YOY *O. mykiss* were sampled during the survey and surveyors noted that cattle grazing was damaging the stream banks and impacting water quality in the section surveyed (DFG 1996a).

Staff from DFG completed the "Eel River Salmon and Steelhead Restoration Action Plan" in 1997. In this report the section of the South Fork Eel River between Indian Creek and Salmon Creek is described as containing "…harsh summer conditions for the relatively few juvenile salmonids that use it" but offers "important rearing habitat for juvenile salmonids" in the mainstem upstream of the East Branch South Fork (DFG 1997a, p. 22). The section upstream of the East Branch also was said to contain spawning habitat. Fish habitat in the South Fork Eel River has been impacted by high sedimentation levels, specifically resulting from cattle grazing, logging, and the presence of Highway 101, which follows the river and is considered a source of erosion. The Action Plan stated that steelhead populations in the South Fork have declined steadily since 1900, particularly in response to the flood events of 1955 and 1964, and steelhead numbers were considered "…well below historic levels" when the plan was written in 1997 (DFG 1997a, p. 22).

Cabin Creek

Cabin Creek is tributary to the South Fork Eel River and consists of about one stream mile. It flows southeasterly, entering the South Fork about 0.9 miles upstream from the Eel River confluence.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report the Cabin Creek is listed as containing 0.5 miles of stream accessible to steelhead (DFG 1983a). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983a, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Bull Creek

Bull Creek is tributary to the South Fork Eel River and consists of about 13.6 stream miles. It flows northeasterly, entering the South Fork at about stream mile 1.9. The entire 41 square mile Bull Creek watershed is within Humboldt Redwoods State Park.

Bull Creek was surveyed in the 1930s and steelhead were noted to be present around 1934 and in 1938. One survey reports that steelhead were planted in the creek annually with undetermined success and describes natural propagation as "considerable" (DFG 1938e, DFG ca. 1934a). A 1937 memo states, "…Bull Cr. normally runs dry for 3 or 4 mi. above the mouth during the summer, so that only a few pools are left. It usually goes dry about July… many salmon and steelhead run up Bull Cr." (DFG 1937).

A 1960 DFG memo states, "Our records show that [Bull Creek] was a good anadromous fishery in 1937. It was fair in 1952, but was deteriorating in 1954, due to upstream logging erosion" (DFG 1960a).

A 1960 memo written by DFG staff describes the damage caused to Bull Creek by the combination of logging, a fire, and a large flood in 1955. The letter mentions that adult steelhead were present in 1956 but states, "The possibility of restoring a sizeable salmon and steelhead run in Bull Creek appears to be remote" (DFG 1960b).

Steelhead rescues took place in Bull Creek in 1973-74 in relation to a stream alteration project and a stream diversion. The fish rescued were YOY and juveniles (DFG 1973, DFG 1974a).

Bull Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system (Kubicek 1977). During this study, several fingerling salmonids were observed in the lower three miles of Bull Creek, and a few yearlings and two-year-old individuals up to seven inches in length, two of which were yellowish-colored (heat stressed), were observed in Bull Creek just above its mouth (Kubicek pers. comm.).

Sampling was conducted in Bull Creek in 1982 in order to estimate the salmonid population in the creek. A population of 7,710 steelhead was estimated to be present in the lower 7.65 miles of Bull Creek at that time (DFG 1982a).

A section of Bull Creek from the headwaters downstream to the Panther Creek confluence was surveyed in 1987. "Very heavy" siltation was observed in this section of the creek and spawning habitat was described as "nonexistent" (Harral 1987).

Staff from DFG conducted stream inventories of three sections of Bull Creek in 1991. Juvenile and YOY *O. mykiss* were observed throughout the creek during these surveys (CCC 1991a, CCC 1991b, CCC 1991c).

A study site in Bull Creek was used in a 1995 study of sculpin ecology in the Eel River watershed. The paper describes the creek as "highly degraded" and attributes this damage to logging activities that removed canopy cover, caused landslides, and increased sediment input to the stream (Brown 1995, p. 330).

Staff from NMFS conducted sampling in several Eel River tributaries as part of a salmonid habitat restoration evaluation and monitoring project. Reports of this sampling indicate that steelhead were observed in Bull Creek in 1998 and 1999 (DFG 1999a, DFG 2000a).

Cow Creek

Cow Creek is tributary to Bull Creek and consists of about two stream miles, much of which is intermittent. It flows south, entering Bull Creek about two miles upstream from the South Fork Eel River confluence.

Salmonids were observed in Cow Creek during DFG surveys in 1961 and 1963 (Gallagher 1961a, Huston 1963). During a 1963 survey, spawning and rearing habitat was observed, but the report noted, "This stream and its pools are not large enough to support a native population of trout" (Huston 1963).

Staff from DFG surveyed Cow Creek in 1974 and observed salmonid fry in the lower half mile of the stream. The survey report noted that the upper reaches were choked with log jams and slides (DFG 1974b).

Cow Creek was surveyed again 1984 and several adult steelhead were observed in the stream. Surveyors observed good salmonid habitat in the stream, including "excellent" spawning areas "throughout the entire drainage" (DFG 1980a).

Staff from DFG conducted a stream inventory of Cow Creek in 1991. During the survey four juvenile and YOY *O. mykiss* were sampled at a site about 0.2 miles upstream from the mouth of the creek (CCC 1991d). The inventory report recommended treating sources of fine sediment.

Staff from NMFS conducted sampling in several Eel River tributaries as part of a salmonid habitat restoration evaluation and monitoring project. Reports of this sampling indicate that steelhead were observed in Cow Creek in 1998 and 1999 (DFG 1999a, DFG 2000a).

Connick Creek

Connick Creek is tributary to Bull Creek and consists of about two miles of intermittent stream. It flows north, entering Bull Creek about 2.4 miles upstream from the South Fork Eel River confluence.

Staff from DFG conducted a stream survey of Connick Creek in 1961. "Salmonids" were observed in the stream and it was noted to have "good" nursery potential, "adequate" shelter, and "good" spawning gravel (Gallagher 1961b).

Connick Creek is mentioned in a 1980 DFG field note. The note states that, "Annual streamflow appeared to be insufficient to support anadromous fish" (DFG 1980b).

Calf Creek

Calf Creek is tributary to Bull Creek and consists of about 1.3 miles of intermittent stream. It flows south, entering Bull Creek about 2.7 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Calf Creek in 1980. At that time the creek seeped into the ground about 2,000 feet upstream from Bull Creek. The report states, "It has no mouth and is of no value to anadromous fish" (DFG 1980c).

Miller Creek

Miller Creek is tributary to Bull Creek and consists of about 1.4 stream miles. It flows north, entering Bull Creek about 2.8 miles upstream from the South Fork Eel River confluence.

Staff from DFG observed Miller Creek in 1980 at a point approximately 500 feet upstream from the mouth. A field note states, "Annual streamflow appeared to be insufficient to support anadromous fish" (DFG 1980d).

Harper Creek

Harper Creek is tributary to Bull Creek and consists of about 1.8 stream miles. It flows south, entering Bull Creek about 3.7 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Harper Creek in 1964 and observed numerous "trout" ranging from 1.5 to 4.0 inches in length. Spawning areas were noted to be "abundant" in the stream. Food and shelter were described as "plentiful" (Hyra 1963).

Staff from DFG conducted a stream inventory of Harper Creek in 1991. Juvenile and YOY *O. mykiss* were captured in the lower 0.6 miles of the stream, downstream from a series of log debris accumulations that formed suspected barriers (CCC 1991e). The report recommended treating sources of fine sediment.

Forest Service staff conducted electrofishing surveys in the Bull Creek drainage in 2001. Harper Creek was sampled and *O. mykiss* captured during these surveys (USFS 2001).

Squaw Creek

Squaw Creek is tributary to Bull Creek and consists of about 3.4 stream miles. It flows north, entering Bull Creek about four miles upstream from the South Fork Eel River confluence.

Squaw Creek is mentioned in a 1960 memo regarding anadromous fish populations in the Bull Creek watershed. In this letter, DFG biologist Eugene German reports that he observed adult steelhead and spawning redds in Squaw Creek in 1958 (DFG 1960b).

Staff from DFG surveyed Squaw Creek in 1974 and noted that, "Spawning had taken place in the entire survey area." Salmonid fry, resident trout, as well as salmon and steelhead redds were observed throughout the creek (Grunert 1974).

Squaw Creek was surveyed in 1980 and salmonid fry as well as "resident trout" were observed in the creek. The survey report also noted that local park officials have reported spawning runs of steelhead. The characteristics of Squaw Creek are described as "excellent for all phases of salmonids" (DFG 1980e).

Staff from DFG conducted a stream inventory of Squaw Creek in 1991. Four sites were electrofished during the survey and YOY and/or juvenile *O. mykiss* were collected at each site (CCC 1991f). The inventory report recommended treating sources of fine sediment.

Staff from NMFS conducted sampling in several Eel River tributaries as part of a salmonid habitat restoration evaluation and monitoring project. Reports of this sampling indicate that steelhead were observed in Squaw Creek in 1998 and 1999 (DFG 1999a, DFG 2000a).

Albee Creek

Albee Creek is tributary to Bull Creek and consists of about 1.8 stream miles. It flows south, entering Bull Creek about 5.2 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Albee Creek in 1974 and observed salmonid fry in the lower half of the creek and resident trout in the upper section. A log jam located a half mile upstream from the mouth was preventing further anadromous migration. The survey report also notes that the Albee Creek watershed had been logged and was "recovering" (DFG 1974c).

No fish observations are noted in a 1980 survey report regarding Albee Creek. The report does note "plentiful" rearing habitat and "good" spawning habitat (DFG 1980f). Stocking records reveal that Albee Creek was stocked with steelhead in 1982 (DFG 1982b).

Staff from DFG conducted a stream inventory of Albee Creek in 1991. *Oncorhynchus mykiss* was collected at two electrofishing sites during the survey, both within half a mile of the mouth of the creek (CCC 1991g). The report noted that the stream's high gradient and log debris accumulations make fish passage difficult and recommended treating sources of fine sediment.

Mill Creek

Mill Creek is tributary to Bull Creek and consists of about 1.8 stream miles. It flows south, entering Bull Creek about 6.1 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Mill Creek in 1974. Salmonid fry were observed in the lower section of the stream and resident trout in the upper section. According to the survey report, only the lower half mile of the creek is accessible to anadromous fish (DFG 1974d).

Stocking records indicate that staff from DFG planted steelhead in Mill Creek in 1982 (DFG 1982c). No fish were observed during visits to Mill Creek in 1983, 1988, and 1989 (DFG 1983b, Light 1988, McCubbrey 1989).

Staff from DFG conducted a stream inventory of Mill Creek in 1991. Juvenile and YOY *O. mykiss* were collected at two sampling sites during the survey (CCC 1991h). The inventory report recommended treating sources of fine sediment, including those related to the road system. Field notes indicate that staff from DFG visited Mill Creek in 1998 and 1999. No fish were observed during these visits (Retherford 1999, Retherford 1998).

Cuneo Creek

Cuneo Creek is tributary to Bull Creek and consists of about 2.9 stream miles. It flows east, entering Bull Creek about 7.4 miles upstream from the South Fork Eel River confluence. Upstream of the north and south forks, the mainstem of Cuneo Creek is sometimes referred to as Middle Fork Cuneo Creek.

Steelhead presence was documented in Cuneo Creek in the 1930s. One survey notes that "intermittent" stocking occurred in the creek and another describes several habitat characteristics as "good" (DFG 1938f, DFG ca. 1934b).

Staff from DFG surveyed Cuneo Creek in 1974. During this survey young salmonids were observed in the "middle fork" and the creek was said to have "good spawning grounds for a small population of fish" (DFG 1974e).

Cuneo Creek was surveyed again in 1980. Spawning and rearing habitat was found to be "very scarce" downstream of the confluence with the north and south forks, but "plentiful" upstream. Salmonid fry were observed in the upstream section (DFG 1980g).

Staff from DFG conducted a stream inventory of Cuneo Creek in 1991. Three sites were electrofished in the creek and juvenile and/or YOY *O .mykiss* were collected at the three locations (CCC 1996a). The inventory report recommended increasing canopy and treating sources of fine sediment.

Forest Service staff conducted electrofishing surveys in the Bull Creek drainage in 2001. Juvenile and YOY *O. mykiss* were sampled in Cuneo Creek during these surveys (USFS 2001).

North Fork Cuneo Creek

North Fork Cuneo Creek is tributary to Cuneo Creek and consists of about 1.8 stream miles. It flows southeasterly, entering Cuneo Creek about 0.7 miles upstream from the Bull Creek confluence.

Field notes and stream surveys documented *O. mykiss* presence in North Fork Cuneo Creek in 1974, 1980, and 1983 (DFG 1974e, DFG 1980g, DFG 1983c). A 1980 stream survey report described the creek as containing "plentiful" spawning and rearing habitat (DFG 1980g).

Staff from DFG conducted a stream inventory of North Fork Cuneo Creek in 1991. Juvenile and YOY *O. mykiss* were collected at one sampling site and observed at other locations during the survey (CCC 2002a). The inventory report recommended increasing canopy and treating sources of fine sediment.

Forest Service staff conducted electrofishing surveys in the Bull Creek drainage in 2001. Juvenile and YOY *O. mykiss* were sampled in North Fork Cuneo Creek during these surveys (USFS 2001).

South Fork Cuneo Creek

South Fork Cuneo Creek is tributary to Cuneo Creek and consists of about 1.4 stream miles. It flows northeasterly, entering Cuneo Creek about 0.9 miles upstream from the Bull Creek confluence.

Fish were not observed during a 1974 survey that included South Fork Cuneo Creek. The report stated that this creek "…has little to no suitable habitat present due to continuous cascades" (DFG 1974e).

South Fork Cuneo Creek was surveyed in 1980 and no fish were observed. The survey report noted that the stream's banks were steep and unstable and that some rearing habitat was available, although spawning habitat was "very scarce." Rehabilitation was not recommended for this stream due to the "intensive effort and time required" (DFG 1980g).

Staff from DFG conducted a stream inventory of South Fork Cuneo Creek in 1991. About 0.2 stream miles were surveyed, one site was electrofished, and no fish were observed (CCC 1991i).

Staff from USFS conducted electrofishing surveys in the Bull Creek drainage in 2001. South Fork Cuneo Creek was sampled and one juvenile *O. mykiss* was sampled during these surveys (USFS 2001).

Burns Creek

Burns Creek is tributary to Bull Creek and consists of about 1.7 stream miles. It flows northeasterly, entering Bull Creek about 8.4 miles upstream from the South Fork Eel River confluence.

A stream survey of Burns Creek was conducted in 1980. Salmonid observations are not noted in the report, which states, "Areas suitable for anadromous fish spawning were very limited" (DFG 1980h).

Sampling was conducted in Burns Creek in 1990 as part of a fish population study of the Bull Creek drainage. During this study "rainbow trout" were collected in Burns Creek (Brown 1991a).

Staff from DFG conducted a stream inventory of Burns Creek in 1998. Juvenile salmonids, including YOY *O. mykiss* were observed during the survey. The report recommended increasing riparian vegetation and addressing sources of stream bank erosion in the creek (DFG 1998a).

Slide Creek

Slide Creek is tributary to Bull Creek and consists of about 1.5 stream miles. It flows northeasterly, entering Bull Creek about 9.4 miles upstream from the South Fork Eel River confluence.

A survey of Slide Creek was conducted in 1980. The report does not describe any salmonid observations, however it notes that the "…usable stretch of stream is already being used by anadromous fish." Rearing habitat was called "plentiful" and spawning habitat was said to be available in the lower section of the creek (DFG 1980i).

Staff from DFG conducted a stream inventory of Slide Creek in 1992. Young-of-year *O. mykiss* were observed at two sampling sites within the creek. The report recommends addressing sources of stream bank erosion in the creek (CCC 1992a).

Bull Creek tributary 1 (Brians Creek)

An unnamed tributary to Bull Creek, also known as Brians Creek, consists of about 0.9 stream miles. It flows northeasterly, entering Bull Creek about 9.7 miles upstream from the South Fork Eel River confluence.

Staff from DFG conducted a stream survey of this unnamed tributary in 1980. One six inch "resident salmonid" was observed in the lower 0.25 miles of the stream during this survey. The report notes that the stream has, "Relatively low spawning and rearing habitat for anadromous fishes" and states that it should be managed for resident trout (DFG 1980j).

Datasheets indicate that staff from DFG conducted biological sampling in Brians Creek in 1992. These datasheets report a total of five YOY and juvenile *O. mykiss* were collected in Brians Creek in July 1992 (DFG 1992b).

Bull Creek tributary 2

An unnamed tributary to Bull Creek consists of about 1.8 stream miles draining a basin of about 0.6 square miles (CCC 1992b). The creek flows west, entering Bull Creek immediately upstream from the Brians Creek confluence. The watershed is owned by the State of California and managed by Humboldt Redwoods State Park.

This Bull Creek tributary was inventoried in summer 1992. The inventory report noted few pools that offered high quality habitat, and recommended controlling sediment input into the creek. Canopy cover also was found to be below desirable levels, and re-vegetation was recommended. Young-of-year *O. mykiss* were observed in several locations upstream to about stream mile 1.2 (CCC 1992b).

Panther Creek

Panther Creek is tributary to Bull Creek and consists of about 1.7 stream miles. It flows northeasterly, entering Bull Creek about 11.2 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Panther Creek in 1980 and noted that salmonid fry were "plentiful" in the lower section of the stream. Spawning and rearing habitat for salmonids also were deemed plentiful during the survey. Planting of riparian vegetation was recommended in order to lower stream temperatures (DFG 1980k).

Staff from DFG conducted a stream inventory of Panther Creek in 1992. Juvenile and YOY steelhead were sampled during electrofishing near the mouth of the creek and YOY were also observed further upstream (CCC 1991j). The inventory report recommended controlling sediment input into the creek.

Panther Creek tributary 1 (West Fork Panther Creek)

An unnamed tributary to Panther Creek consists of about 1.7 stream miles. It flows northeasterly, entering Panther Creek about 0.2 miles upstream from the Bull Creek confluence.

Staff from DFG conducted a stream inventory of West Fork Panther Creek in 1991. Three sites were electrofished and YOY and juvenile steelhead were sampled at two sites, both located within 0.2 miles of the creek mouth. Stream bank erosion at multiple locations was noted to contribute sediment to the creek (CCC 1991k).

Panther Creek tributary 2 (South Fork Panther Creek)

An unnamed tributary to Panther Creek consists of about one stream mile. It flows north, entering Panther Creek about 0.7 miles upstream from the Bull Creek confluence.

Staff from DFG conducted a stream inventory of South Fork Panther Creek in 1991. Surveyors observed YOY salmonids at several locations in the stream (CCC 1991l). The report noted that "good" water temperatures, flow regimes, and rearing habitat were present but fish passage was limited by the creek's high gradient. Treatment of fine sediment sources was recommended.

Preacher Gulch Creek

Preacher Gulch Creek is tributary to Bull Creek and consists of about 1.7 stream miles. It flows southwesterly, entering Bull Creek about 11.3 miles upstream from the South Fork Eel River confluence.

A 1980 field note reports observations of Preacher Gulch made by DFG staff that year. Observations indicated that the creek was "of little use to anadromous fish" due to poor bottom composition, poor shade canopy, and lack of pools or spawning areas (DFG 1980l).

Staff from DFG conducted a stream inventory of Preacher Gulch in 1992. Young-of-year salmonids were observed in the creek during this survey. The report recommended addressing sources of stream bank erosion (CCC 1993a).

Decker Creek

Decker Creek is tributary to the South Fork Eel River and consists of about two stream miles. It flows northeasterly, entering the South Fork at about stream mile 2.4.

Staff from DFG conducted a stream inventory of Decker Creek in 1992. Juvenile and YOY *O. mykiss* were sampled at three sites in the stream. The report notes that fish passage is a problem in this creek due to its high gradient (CCC 1992c).

Staff from USFS conducted electrofishing surveys in the Bull Creek drainage in 2001. Decker Creek was sampled and juvenile and YOY *O. mykiss* were collected during these surveys (USFS 2001).

Corner Creek

Corner Creek is tributary to the South Fork Eel River and consists of about 1.3 stream miles. It flows northeasterly, entering the South Fork at about stream mile three, just north of the town of Weott.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report the Corner Creek is listed as containing 0.5 miles of stream accessible to steelhead (DFG 1983a). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983a, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Canoe Creek

Canoe Creek is tributary to the South Fork Eel River and consists of about 4.3 stream miles. It flows northeasterly, entering the South Fork at about stream mile 6.6.

In 1938 staff from DFG surveyed Canoe Creek and observed "abundant" YOY steelhead. Spawning areas were described as "good" and "excellent" pools and shelter were observed (DFG 1938g). Staff from DFG rescued *O. mykiss* from Canoe Creek in 1940 (DFG 1941a).
Canoe Creek was surveyed in 1977 and 1980. Juvenile salmonids were observed both years, and YOY *O. mykiss* were also observed in 1977. Good spawning and rearing areas were also observed and the 1980 survey describes Canoe Creek as "an excellent salmonid producer" (DFG 1980m, Garaas 1977).

Staff from DFG conducted a stream inventory of Canoe Creek in 1992. Young-of-year salmonids and some four-inch fish were observed at several locations in the creek (CCC 1992d). Canopy cover was found to be below desirable levels and the inventory report recommended re-vegetation as well as treatment of sediment sources.

A site in Canoe Creek was used in a 1995 study of sculpin ecology in the Eel River watershed. The paper describes the creek as "a relatively pristine tributary" that flows through redwood forest and is surrounded by California State Parks land (Brown 1995).

Staff from NMFS conducted sampling in several Eel River tributaries as part of a salmonid habitat restoration evaluation and monitoring project. Reports of this sampling indicate that steelhead were observed in Canoe Creek in 1998 and 1999 (DFG 1999a, DFG 2000a).

Coon Creek

Coon Creek is tributary to the South Fork Eel River and consists of about 1.7 stream miles. It flows northeasterly, entering the South Fork at about stream mile 8.2.

Staff from DFG conducted a stream inventory of Coon Creek in 1993. Young-of-year *O. mykiss* were observed about 0.2 miles upstream of the mouth of the creek. The stream is described as containing "good conditions for rearing fish." Canopy cover was found to be below desirable levels and the report recommended re-vegetation, along with treating sources of fine sediment. A point about 0.7 miles upstream from the mouth was identified as the upstream limit to anadromy due to an increase in gradient (CCC 1993b).

Bridge Creek

Bridge Creek is tributary to the South Fork Eel River and consists of about 1.4 stream miles. It flows south, entering the South Fork at about stream mile 12.4.

In 1938 staff from DFG surveyed Bridge Creek and noted that steelhead ranging from 1.5 to 2.5 inches in length were "abundant." The creek was said to contain "excellent" spawning gravels and "good" pools and shelter (DFG 1938h). Staff from DFG rescued *O. mykiss* from Bridge Creek in 1939 (DFG 1940a).

A 1963 DFG memo states, "Shelter, gravel and nursery area seem to be adequate in [Bridge Creek]. The lower and upper portions of the drainage have been logged in past years, but the lower portion of the stream passes through a virgin stand of redwoods" (DFG 1963).

Staff from DFG conducted stream inventories of Bridge Creek in 1992 and 1993. Juvenile and YOY *O. mykiss* were observed during both surveys (CCC 1992e, CCC 1993c). During the 1993 survey, a point about one mile upstream from the mouth was identified as the limit to anadromy due to an increase in gradient.

Elk Creek

Elk Creek is tributary to the South Fork Eel River and consists of about 4.4 stream miles. It flows west, entering the South Fork at about stream mile 12.7.

In 1938 staff from DFG surveyed Elk Creek and observed steelhead ranging from 1.5 to 3.0 inches in length. The survey report notes "good" pools and shelter, "abundant" fish foods, and "good" spawning areas in the creek (DFG 1938i). Staff from DFG rescued *O. mykiss* from Elk Creek in 1939 (DFG 1940a).

Salmonids were observed in Elk Creek in 1962 during a DFG survey. Fish were said to be limited to the lower section of the creek due to barriers created by logging debris (Anonymous 1962a). A 1963 memo called Elk Creek "…a small tributary to the South Fork of the Eel River" with "…a history of heavy use…by salmon and steelhead trout…" (DFG 1963).

During a 1977 survey of Elk Creek, YOY steelhead were observed downstream of a log jam barrier and "resident rainbow trout" were observed upstream. The survey report noted "good to excellent" spawning and nursery areas in Elk Creek, with particularly good habitat in the central and upper portions (DFG 1977a).

Staff from DFG conducted a stream inventory of Elk Creek in 1992. Juvenile and YOY *O. mykiss* were observed at several locations (CCC 1992f). The report noted that spawning gravels were limited to few areas in the creek and recommended treating sources of fine sediment.

Dry Creek

Dry Creek is tributary to the South Fork Eel River and consists of about 1.2 stream miles. It flows west, entering the South Fork at about stream mile 15.5.

Staff from DFG rescued *O. mykiss* from Dry Creek in 1952 (DFG 1953).

Salmon Creek

Salmon Creek is tributary to the South Fork Eel River and consists of about 12.6 stream miles. It flows east, entering the South Fork at about stream mile 17. A waterfall on Salmon Creek, located at about stream mile 7.1, is a complete barrier to anadromous fish (DFG 1952a).

Surveys conducted in the 1930s note the presence of steelhead and rainbow trout in Salmon Creek (DFG 1938j, DFG ca. 1934c). According to one report steelhead have been stocked in the creek with "fair success" and natural propagation "should be considerable" (DFG ca. 1934c).

Field notes from 1952 describe Salmon Creek upstream of the falls. They state that "ample water" and "good spawning gravel" exist in this section of the creek, but "The stream is totally barren of fish life above the falls" (DFG 1952a).

Field notes document the presence of steelhead and "salmonids" in Salmon Creek in the late 1960s and early 70s (DFG 1969a, Hurt 1968, Miller 1971). In 1969 a total of 28 steelhead, ranging from 0.9 to 5.8 inches in length, were collected by electrofishing.

Salmon Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study, a few fingerling and yearling salmonids were observed (Kubicek 1977).

Stocking records indicate that steelhead were planted in Salmon Creek in 1983 (DFG 1983d). Staff from the Eel River Salmon Restoration Project operated a downstream migrant trap in Salmon Creek during the spring of 1986 and 1988. Steelhead YOY and age 1+ fish were collected during both years (ERSRP 1986, PCFFA 1988).

Staff from DFG conducted a stream inventory of Salmon Creek in 1992. The creek was surveyed from the mouth to the South Fork Salmon Creek confluence. Juvenile and YOY *O. mykiss* were observed in this section (CCC 1992g). The inventory report recommended increasing canopy and treating fine sediment sources.

Mill Creek

Mill Creek is tributary to Salmon Creek and consists of about 1.6 stream miles. It flows south, entering Salmon Creek at about stream mile 2.6.

Staff from DFG surveyed Mill Creek in 1938 and observed "young steelhead" near the mouth. The stream was said to be "too small" for stocking and a diversion dam was noted about 0.25 miles upstream from the mouth (DFG 1938k).

South Fork Salmon Creek

South Fork Salmon Creek is tributary to Salmon Creek and consists of about 5.8 stream miles. It flows north, entering Salmon Creek at about stream mile 5.3.

A creek referred to as "East Fork Salmon Creek" was examined in 1955 to determine the effects of logging activities. The creek described is believed to be South Fork Salmon Creek. During the investigation, staff from DFG found that the creek had not been sufficiently cleaned-up after logging operations. While fish were observed in upstream and downstream locations, water quality conditions were said to prevent fish presence in the affected area (DFG 1955).

A 1971 field note documents sampling that was conducted in South Fork Salmon Creek. *Oncorhynchus mykiss* ranging from 1.8 to 5.8 inches in length were collected and unstable stream banks were observed (DFG 1971a).

Staff from DFG conducted a stream inventory of South Fork Salmon Creek in 1996. Young-of-year salmonids were observed at several locations during the survey (DFG 1996b). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy.

Hacker Creek

Hacker Creek is tributary to South Fork Salmon Creek and consists of about 1.4 stream miles. It flows northeasterly, entering South Fork Salmon Creek at about stream mile 3.5.

Staff from DFG rescued *O. mykiss* from Hacker Creek in 1939 (DFG 1940a).

Butte Creek

Butte Creek, also known as Bear Butte Creek, is tributary to the South Fork Eel River and consists of about 2.6 stream miles. It flows north, entering the South Fork at about stream mile 18.1.

Staff from DFG rescued *O. mykiss* from Butte Creek in 1939 (DFG 1940a). Field notes indicate that *O. mykiss* was consistently observed in Butte Creek during the 1960s (DFG 1960c, DFG 1969b, Wilkins 1968). A 1962 stream survey notes that only the lower one mile of stream is accessible to anadromous fish (Gallagher 1962a).

Butte Creek was inspected in March 1974, during an evaluation of a proposed stream clearance operation. One adult steelhead and two redds were observed at that time (DFG 1974f).

In 1980, Butte Creek was surveyed by staff from DFG and "salmonids" were found in the stream. The survey report noted that, "Both spawning and rearing habitats were of excellent quality and were plentiful" (DFG 1980n).

Staff from DFG conducted a stream inventory of Butte Creek in 1993. Juvenile and YOY *O. mykiss* were collected at one of two sites electrofished during the survey. No fish were observed upstream of a 12 foot falls location about 1.7 miles upstream from the mouth (CCC 1993d). The inventory report recommended treating sources of fine sediment, including those related to the road system, and increasing canopy.

Coon Creek

Coon Creek is tributary to the Butte Creek and consists of about 1.5 stream miles. It flows north, entering Butte Creek about 0.5 miles upstream from the South Fork Eel River confluence.

In 1962, Coon Creek was surveyed and salmonids were not observed. The survey report described spawning gravel and nursery potential as "fair." It also noted that the lower half of the creek basin had been logged in the past and the upper half was being logged at the time of the survey (Gallagher 1962b).

Coon Creek was surveyed again in 1980 by staff from DFG. According to the survey report, "Spawning and rearing habitats were plentiful and of excellent quality." Salmonid fry were observed in the creek (DFG 1980o).

Fish Creek

Fish Creek is tributary to the South Fork Eel River and consists of about 2.8 stream miles. It flows southwesterly, entering the South Fork at about stream mile 19.5.

A 1938 DFG survey noted "young steelhead" in Fish Creek and deems there to be "Good [spawning] areas in main stream bed" (DFG ca. 1938). Staff from DFG rescued *O. mykiss* from Fish Creek in 1939 (DFG 1940a).

A 1969 field note reported the results of electrofishing conducted in Fish Creek. During this sampling, steelhead YOY were collected downstream of the Highway 254 culvert but not upstream, and the culvert was said to be a total passage barrier (DFG 1969c).

Staff from DFG surveyed Fish Creek in 1980. No observations of salmonids are noted in the report, which states, "…salmonid rearing habitat was not plentiful" (DFG 1980p).

Staff from DFG conducted stream inventories of Fish Creek in 1993 and 1999. Electrofishing was only conducted in 1993, when YOY and juvenile *O. mykiss*, as well as individuals to about 10 inches in length, were collected (CCC 1993e). Young-of-year salmonids were observed from the streambanks in 1999 (DFG 1999b). In these surveys the Avenue of the Giants culvert is described as a "possible" or "selective" barrier.

South Fork Eel River tributary 1 (Lloyd Creek)

An unnamed tributary to the South Fork Eel River consists of about 1.5 stream miles. It flows west, entering the South Fork at about stream miles 20.2. On the Belcher Atlas of Humboldt County, compiled in 1922, this creek is labeled as Lloyd Creek (Beltcher Abstract and Title Company Unknown).

Staff from DFG surveyed this tributary in 1938 and observed YOY steelhead. Pools and shelter in the creek were described as "fair" and it was noted to become dry in an area located about 60 yards upstream from the highway crossing (DFG 1938l).

Anderson Creek

Anderson Creek is tributary to the South Fork Eel River and consists of about 1.1 stream miles. It flows southwesterly, entering the South Fork at about stream mile 22.

Staff from DFG surveyed Anderson Creek in 2000 and did not observe salmonids. A portion of the stream was dry and an accumulation of debris at the Avenue of the Giants culvert was thought to create a barrier to migrating salmonids (DFG 2000b).

A 2002 field note, written by staff from the Pacific States Marine Fisheries Commission, describes the Avenue of the Giants culvert near the mouth of Anderson Creek and states that it is expected to be a total passage barrier except during flood events. In the surveyor's opinion, "…Anderson Creek is not an anadromous creek" (Pecharich 2002).

Ohman Creek

Ohman Creek is tributary to the South Fork Eel River and consists of about 2.6 stream miles. It flows west, entering the South Fork at about stream mile 23.

Staff from DFG surveyed Ohman Creek in 1938 and observed "abundant" young steelhead between 1.5 and 2.5 inches in length. An impassable falls was noted about 200 yards upstream from the mouth of the creek, above which trout were "planted" and had become residualized (DFG 1938m). Staff from DFG rescued *O. mykiss* from Ohman Creek in 1940 (DFG 1941a).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* were observed in Ohman Creek (Brown 1991b).

Staff from DFG conducted a stream inventory of Ohman Creek in 1992. Biological sampling was not conducted during the survey and no salmonid observations are included in the report. The report notes that a 15 foot waterfall, located about 0.3 miles upstream from the mouth of the creek, is a barrier to anadromous fish (CCC 1992h). The inventory report noted that canopy cover was below desirable levels, and re-vegetation was recommended.

Hooker Creek

Hooker Creek is tributary to the South Fork Eel River and consists of about 1.2 stream miles. It flows east, entering the South Fork at about stream mile 24.4.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report the Hooker Creek is listed as containing 0.5 miles of stream accessible to steelhead (DFG 1983a). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983a, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Dean Creek

Dean Creek is tributary to the South Fork Eel River and consists of about 7.1 stream miles. It flows west, entering the South Fork at about stream mile 27.6.

During a 1938 survey of Dean Creek, staff from DFG observed "many" YOY *O. mykiss*. The survey report notes "extensive" natural propagation, "good" pools and shelter, and "excellent" spawning areas in the creek (DFG 1938n).

Dean Creek was surveyed in 1962 and "hundreds" of steelhead ranging from one to eight inches were observed. The stream was noted to have "excellent" spawning areas, but very little shelter and few nursery areas (DFG 1962a). A 1963 DFG memo states, "Excellent and abundant spawning area exists along [Dean Creek], but streamside cover is scarce due to logging operations…" (DFG 1963).

A 1980 stream survey report described Dean Creek as "…a good producer of anadromous fish." Salmonid fry were observed and spawning areas were found throughout the creek during the survey (DFG 1980q).

Staff from DFG conducted a stream inventory of Dean Creek in 1992. During electrofishing, steelhead ranging from about 1.8 to 9.4 inches FL were sampled at a site located about 4.6 miles upstream from the mouth of the creek (CCC 1992i). The

inventory report noted that canopy cover was below desirable levels and recommended re-vegetation, along with treating fine sediment sources.

South Fork Eel River tributary 2 (Wood Creek)

An unnamed tributary to the South Fork Eel River, known as Wood Creek, consists of about 1.9 stream miles. It flows southeasterly, entering the South Fork at about stream mile 27.8.

Staff from DFG conducted a stream inventory of Wood Creek in 2002. Seventeen sites in Wood Creek were electrofished during the survey and YOY *O. mykiss* were collected at nine sites. A total of three age 2+ *O. mykiss* were collected (DFG 2002a). The inventory report recommended treating sources of fine sediment.

Leggett Creek

Leggett Creek is tributary to the South Fork Eel River and consists of about 3.5 stream miles. It flows south, entering the South Fork at about stream mile 28.8.

A 1938 DFG survey of Leggett Creek noted "common" *O. mykiss* between 1.5 and three inches in length. There was said to be "very extensive" natural propagation and "excellent" spawning areas (DFG 1938o).

A local landowner documented two decades of unsuccessful efforts to clear logs from Leggett Creek that were deposited through logging operations and through flooding. In 1975, the stream "had not seen a fish in years" due to debris jams preventing access, according to the account (Vleck 1988).

Staff from DFG conducted stream inventories of Leggett Creek in 1992 and 1995. Both reports note that 5,188 steelhead yearlings were planted in Leggett Creek in 1990 (CCC 1992j, CCC 1995a). Juvenile *O. mykiss* were sampled by electrofishing during the 1992 survey. Electrofishing was not conducted in 1995, but the stream inventory report noted observations of *O. mykiss in* that year. Both inventory reports recommended treating sources of fine sediment in the creek.

Redwood Creek (Pollock Creek)

Redwood Creek is tributary to the South Fork Eel River and consists of about 9.2 stream miles. It flows northeasterly, entering the South Fork at about stream mile 30 near the town of Redway. The section of Redwood Creek upstream from its confluence with China Creek is referred to as Pollock Creek in some documents.

A 1938 DFG Redwood Creek survey noted "common" to "abundant" steelhead between 1.5 and four inches in length. The survey report noted "extensive" natural propagation of the fish, "excellent" spawning areas, and "good" pools and shelter in the creek (DFG 1940b). Fish rescue work was conducted on multiple Eel River tributaries in 1939. A total of 510 steelhead were rescued from Redwood Creek that year (DFG 1940a).

"Abundant salmonids" were observed during an undated survey of Redwood Creek, which was likely conducted around 1962. The survey report states, "This stream should contribute significantly to the Eel River fishery" (Anonymous ca. 1962).

Redwood Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study, fingerling and yearling salmonids up to 6 inches in length were found to be abundant (Kubicek 1977).

Redwood Creek was surveyed in 1984 from the mouth to eight miles upstream and salmonids, including *O. mykiss*, were abundant throughout that section. "Good" spawning gravels were observed in some sections and bank stabilization was recommended for the lower section (DFG 1984a).

Staff from DFG conducted stream inventories of Redwood Creek in 1993 and 1998. A total of five sites were electrofished in 1993, including three sites in the "Pollock Creek" section, and YOY and juvenile *O. mykiss* were collected (CCC 1993f, CCC 1993g). Sampling was not conducted in 1998, but salmonids were observed during the survey (DFG 1998b). Inventory reports recommended treating sources of fine sediment and increasing canopy cover. Sampling was conducted in upper Redwood Creek in 1998, 1999, and 2000 as part of the North Coast California Anadromous Salmonid Project. Juvenile and YOY *O. mykiss* were collected by electrofishing in Redwood Creek during all three sampling years (DFG 1998c, DFG 2000c, DFG 2001a).

Seely Creek

Seely Creek is tributary to Redwood Creek and consists of about 1.6 stream miles. It flows south, entering Redwood Creek about 2.1 miles upstream from the South Fork Eel River.

Seely Creek was surveyed in 1961 and salmonid fry were observed throughout the creek at that time. The report notes the presence of spawning gravel and good shelter in the stream. According to local workers encountered during the survey, the stream has been "extensively used by salmon and steelhead" (Reno 1961).

Somerville Creek

Somerville Creek is tributary to Redwood Creek and consists of about 1.8 stream miles. It flows north, entering Redwood Creek about 4.5 miles upstream from the South Fork Eel River.

Staff from DFG surveyed Somerville Creek in 1938. The report states, "Steelhead fish of season common" (DFG 1938p).

Staff from DFG conducted a stream inventory of Somerville Creek in 1993. According to the report, staff from the Eel River Salmon Restoration Project observed steelhead spawners in the creek in December 1987 and January 1988. Juvenile and YOY *O. mykiss* were sampled during electrofishing in 1993 (CCC 1993h). The inventory report recommended increasing canopy cover, treating sources of fine sediment, and excluding cattle from the creek to avoid trampling and effects from defecation.

Miller Creek

Miller Creek is tributary to Redwood Creek and consists of about three stream miles. It flows south, entering Redwood Creek about 5.2 miles upstream from the South Fork Eel River.

Miller Creek was surveyed in 1961 and "abundant salmonid fry" were observed. This survey report noted that spawning gravel in the stream appeared "good," and cover and shelter were "abundant" (Anonymous 1961).

Staff from DFG surveyed Miller Creek in 1982. The presence of "adequate" spawning gravel and rearing habitat was noted in the creek. One salmonid fry was observed, along with the remains of an adult salmonid and the head of an adult coho salmon (DFG 1982d).

Staff from DFG conducted a stream inventory of Miller Creek in 1993. *Oncorhynchus mykiss* YOY were observed throughout the creek and collected at two electrofishing sites (DFG 1993a). The inventory report recommended treating sediment sources related to the road system.

China Creek

China Creek is tributary to Redwood Creek and consists of about 2.4 stream miles. It flows east, entering Redwood Creek about six miles upstream from the South Fork Eel River.

China Creek was surveyed in 1962 and numerous salmonid fry were observed, in addition to fish up to eight inches in length. According the report, "China Creek should contribute significantly to the Redwood Creek fishery" (Anonymous 1962b). A 1963 DFG memo states, "Suitable spawning gravel is abundant throughout the portion of the stream surveyed" and notes impacts from past logging operations (DFG 1963).

Sampling was conducted in China Creek during a 1993 salmonid population assessment of the Redwood Creek drainage. A total of seven juvenile steelhead were collected in the creek (DFG 1993b).

Staff from DFG conducted stream inventories of China Creek in 1993 and 1998. Biological sampling was not conducted during either survey. However, streamside observations "indicated the presence of…steelhead" during the 1993 inventory and "juvenile salmonids" were observed throughout the creek in 1998 (CCC 1993i, DFG 1998d). The 1998 inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment.

China Creek tributary (Twin Creek)

An unnamed tributary to China Creek, known as Twin Creek, consists of about one stream mile (CCC 1993j). It flows south, entering China Creek about 1.2 miles upstream from the Redwood Creek confluence.

Staff from DFG conducted a stream inventory of Twin Creek in 1993. Four YOY *O. mykiss* were collected at the single sampling site, located about 0.2 miles upstream from the mouth of the creek (CCC 1993j). The inventory report recommended treating sources of fine sediment in the creek, including those related to the road system.

Dinner Creek

Dinner Creek is tributary to China Creek and consists of about 1.1 stream miles. It flows north, entering China Creek about 1.3 miles upstream from the Redwood Creek confluence.

In 1985, eight steelhead redds and one live fish were observed in Dinner Creek by DFG staff. These observations took place within a 0.25 mile section of the creek, downstream from the county road crossing (McLeod 1985).

Staff from DFG conducted a stream inventory of Dinner Creek in 1993. Juvenile and YOY *O. mykiss* were sampled at two electrofishing sites, both within 0.4 miles of the mouth of the creek (CCC 1993k). The inventory report recommended treating sources of fine sediment. A 1995 field note documents an inspection of Dinner Creek by DFG staff. No fish were observed during the survey although one redd of undetermined origin was seen (Jahn 1995).

South Fork Eel River tributary 3

This creek consists of about 1.5 stream miles flowing west to enter the South Fork Eel River about one mile north of the town of Garberville.

A 1938 stream survey called pools and shelter "excellent" in the unnamed tributary. Steelhead YOY and one individual five inches in length were noted (DFG 1938l).

Bear Canyon Creek

Bear Canyon Creek is tributary to the South Fork Eel River and consists of about two stream miles. It flows west, entering the South Fork at about stream mile 33.3, just north of the town of Garberville.

Staff from DFG conducted stream inventories of Bear Canyon Creek in 1992 and 1999. Electrofishing was conducted in 1992 and YOY and juvenile *O. mykiss* were collected. Juvenile salmonids were observed by streambank observation in 1999 (CCC 1992k, DFG 1996c).

South Fork Bear Canyon Creek

South Fork Bear Canyon Creek is tributary to Bear Canyon Creek and consists of about 1.3 stream miles. It flows north, entering Bear Canyon about 0.7 miles upstream from the South Fork Eel River.

Staff from DFG conducted stream inventories of South Fork Bear Canyon in 1992 and 1999. Young-of-year, age 1+, and age 2+ salmonids were observed during the 1992 survey. Surveyors observed juvenile salmonids during the 1999 survey. The species of salmonid was not identified during either survey (CCC 1992k, DFG 1999c).

Connick Creek

Connick Creek is tributary to the South Fork Eel River and consists of about 2.2 stream miles. It flows east, entering the South Fork at about stream mile 34.3.

Connick Creek was surveyed in 1980 and 1981 by staff from DFG. Both survey reports noted the presence of high quality habitat for the spawning and rearing of anadromous fish and stated that the creek should receive high priority for rehabilitation work (DFG 1980r, DFG 1981a).

Staff from DFG conducted a stream inventory of Connick Creek in 1993. Juvenile and YOY *O. mykiss* were sampled during the survey (CCC 1993l). The inventory report recommended treating sources of fine sediment and increasing canopy cover.

Sproul Creek (Sprowl, Sprowel)

Sproul Creek is tributary to the South Fork Eel River and consists of about 7.8 stream miles. It flows north, entering the South Fork about 2.3 miles downstream from Benbow Dam.

A 1938 DFG survey of Sproul Creek states, "Loney Ellis of Garberville says that Sprowl Cr. was a good fishing creek several years ago, but has played out in past few years" (DFG 1940c). Steelhead YOY were observed in the lower 200 yards of the creek.

Field notes describe the conditions in Sproul Creek in 1952, noting that the creek was "literally choked with log jams, caused by logging operations." Steelhead were present in the creek at the time (DFG 1952a).

A 1967 survey report states, "…in [Sproul Creek's] upper regions are large areas of silt and mud overlying the gravel bottom due mainly to logging operation in the area which have permitted erosion of the hillsides" (Anonymous 1967). The report also noted problem with road crossings and logs jams associated with logging. According to the survey, "Numerous salmonids ranging from an inch to six inches were observed on both forks of the stream from the mouth to the upper regions."

Sproul Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study Sproul Creek was noted to be "well shaded with redwoods and streamside vegetation" and "several fingerling salmonids" were observed (Kubicek 1977).

Staff from DFG inspected Sproul Creek in 1986 in order to assess storm damage and document steelhead spawning activity. Steelhead redds were observed both upstream and downstream of the West Fork Sproul Creek confluence during the survey. Eight steelhead adults and numerous YOY were also observed (DFG 1986a).

A study of the spawning and rearing conditions in Sproul Creek was conducted by DFG biologists in 1990. The study concluded that Sproul Creek was "severely degraded by sedimentation" and noted that timber harvest and road building were likely to be the main human activities causing this problem (DFG 1990a).

A downstream migrant trapping program was conducted in Sproul Creek in 2000 by the Eel River Salmon Restoration Project. Numerous juvenile and YOY steelhead were sampled in Sproul Creek, just upstream of the West Fork Sproul Creek confluence, over 110 days of trapping. The report describes Sproul Creek as "…an excellent producer of…steelhead, arguably one of the best tributaries in the South Fork Eel River Basin" (Vaughn 2000, p. 5).

Staff from DFG conducted a stream inventory of Sproul Creek in 2004. Nine sites were electofished, ranging from 0.5 to 6.1 miles upstream from the mouth. Juveniles and YOY *O. mykiss* were noted at all sites (CCC 2004a). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment.

Staff from the Eel River Salmon Restoration Project conducted trapping in the South Fork of Sproul Creek for 21 days in April of 2007 and captured a total of 21 YOY and 317 age 1+ steelhead (Vaughn pers. comm).

Little Sproul Creek

Little Sproul Creek is tributary to Sproul Creek and consists of about 1.8 stream miles. It flows southeasterly, entering Sproul Creek about 0.5 miles upstream from the South Fork Eel River confluence.

Little Sproul Creek was surveyed in 1938. The report states, "…near mouth: steelhead fish of season common" (DFG 1940d).

A 1961 DRG survey of Little Sproul Creek states, "There are approximately 1,200 lineal yards of riffle area available to anadromous fish. The gravel appears to be very good for spawning purposes. Nursery potential seems to be good" (DFG 1961a). The report recommended removing log jams and accumulated debris.

A 1989 field note documents sampling conducted in Little Sproul Creek that year by DFG staff. A total of 126 YOY and juvenile *O. mykiss* were collected (DFG 1989a).

Staff from DFG conducted stream inventories of Little Sproul Creek in 1995 and 2004. Steelhead fry and juveniles were observed during the 1995 survey (DFG 1996d). In 2004, YOY, age 1+, and age 2+ *O. mykiss* were sampled by electrofishing (CCC 2004b). An unnamed tributary to Little Sproul Creek, located near the headwaters, was also surveyed in 2004 and YOY and juvenile *O. mykiss* were found to be using the tributary (CCC 2004c).

Warden Creek

Warden Creek is tributary to Sproul Creek and consists of about 1.8 stream miles. It flows southeasterly, entering Sproul Creek about 2.5 miles upstream from the South Fork Eel River confluence.

Staff from DFG conducted stream inventories of Warden Creek in 1992 and 2004. Juvenile and YOY *O. mykiss* were sampled in the creek in 1992 (CCC 1992l). *Oncorhynchus mykiss* identified as YOY, age 1+, and age 2+ were collected in 2004 (CCC 2004d). The 2004 report includes a recommendation to evaluate a culvert near the mouth of the creek for fish passage.

West Fork Sproul Creek

West Fork Sproul Creek is tributary to Sproul Creek and consists of about 5.1 stream miles. It flows southeasterly, entering Sproul Creek about four miles upstream from the South Fork Eel River.
Staff from DFG inspected Sproul Creek in 1986 in order to assess storm damage and document steelhead spawning activity. Forty-two steelhead redds were observed during the survey (DFG 1986a). Numerous field notes report the results of salmonid population sampling conducted by DFG staff in West Fork Sproul Creek from 1985 through 1997. These notes indicate that steelhead were consistently sampled in the creek during that time period (DFG 1989b, DFG 1997b).

West Fork Sproul Creek was sampled in 1999 and 2000 as part of a study of coho salmon in the north coast area. Steelhead were collected in West Fork Sproul Creek during both sampling years (DFG 2000d, DFG 2001b).

Staff from DFG conducted a stream inventory of West Fork Sproul Creek in 2004. Young-of-year and age 1+ *O. mykiss* were sampled at numerous locations throughout the creek during this survey (CCC 2004e). The inventory report notes that water temperature may limit the fishery and recommends treating sources of fine sediment.

Staff from the Eel River Salmon Restoration Project conducted trapping in West Fork Sproul Creek for 21 days in April of 2007 and captured a total of 116 YOY and 142 age 1+ steelhead (Vaughn pers. comm).

West Fork Sproul Creek tributary 1

An unnamed tributary to West Fork Sproul Creek consists of about 0.9 stream miles. It flows north, entering West Fork Sproul about 2.8 miles upstream from the Sproul Creek confluence.

Staff from DFG conducted a stream inventory of this tributary in 2004. Eleven sites were electrofished during the survey and YOY *O. mykiss* were collected at nine sites. Two age 1+ *O. mykiss* also were observed (CCC 2004f). The survey ended about 0.6 miles upstream from the mouth of the creek, where a log debris accumulation completely blocked the channel.

West Fork Sproul Creek tributary 2 (East Branch West Fork Sproul Creek)

An unnamed tributary to West Fork Sproul Creek, sometimes referred to as East Branch West Fork Sproul Creek, consists of about one stream mile. It flows south, entering West Fork Sproul about 3.8 miles upstream from the Sproul Creek confluence.

Staff from DFG conducted a stream inventory of the East Branch West Fork Sproul Creek in 1992. Young-of-year *O. mykiss* were collected at two of the three sites electrofished during the survey, including at one site located almost one mile upstream from the mouth of the creek (CCC 1992m). The inventory report recommended treating sources of fine sediment.

Staff from DFG conducted a stream inventory of this tributary in 2004. Five sites were electrofished and YOY *O. mykiss* were collected at three (CCC 2004g).

Sproul Creek tributary

An unnamed tributary to Sproul Creek consists of about 1.1 stream miles. It flows east, entering Sproul Creek about 5.4 miles upstream from the Sproul Creek confluence.

Staff from DFG conducted stream inventories of this unnamed tributary in 1992 and 2004. Juvenile and YOY *O. mykiss* were sampled by electrofishing in 1992 (CCC 1992n). One site, located near the mouth of the tributary, was sampled in 2004 and YOY *O. mykiss* were collected (CCC 2004h).

Cox Creek

Cox Creek is tributary to Sproul Creek and consists of about two stream miles. It flows southwesterly, entering Sproul Creek about 5.8 miles upstream from the South Fork Eel River confluence.

Staff from DFG conducted stream inventories of Cox Creek in 1993 and 2004 (CCC 1993m, CCC 2004i). Juvenile and YOY *O. mykiss* were sampled by electrofishing in 1993. Two *O. mykiss* were collected in 2004 and additional unidentified salmonids were observed, including one five-inch long fish.

Sawmill Creek

Sawmill Creek is tributary to the South Fork Eel River and consists of about 0.9 stream miles. It flows north, entering the South Fork about 1.7 miles downstream from Benbow Dam.

Sawmill Creek surveys in 1939 note the presence of "common" steelhead between 1.75 and two inches in length. Spawning areas were deemed to be "good" (DFG 1939a, DFG 1939b).

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Sawmill Creek is listed as containing one mile of stream accessible to steelhead (DFG 1983a). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983a, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

East Branch South Fork Eel River

The East Branch South Fork Eel River is tributary to the South Fork Eel River and consists of about 20 stream miles. It flows northwesterly, entering the South Fork via Benbow Lake at about stream mile 40. The river ends at the confluence of Elkhorn and Cruso Cabin creeks.

Stocking records indicate that the East Branch South Fork Eel River was regularly stocked with *O. mykiss* from 1931 to 1939 (DFG 1936, DFG 1939c). The East Branch South Fork Eel River is mentioned in a set of notes made in 1938 from talking to local residents and landowners. At the time, the foreman of a local ranch reported that "many steelhead… run up the East Branch" (Anonymous 1938).

A 1934 DFG survey report states, "East branch is one of the best trout streams in this section especially in early season it is fished heavy for about 7 miles upstream." It adds, "It is not uncommon to catch 10 to 12 inch trout in upper and middle reaches" (DFG 1934).

During a 1938 stream survey steelhead ranging from 1.5 to 5.0 inches in length were said to be "abundant" about three miles upstream from the mouth. The survey report notes "extensive" natural propagation, "good" pools and shelter, and "excellent" spawning areas in the creek (DFG 1938q).

The East Branch South Fork Eel River was sampled in 1966 as part of a study of the downstream migration of anadromous fish in the Eel River drainage. The sampling site was located three miles upstream from the mouth of the river and steelhead were regularly collected from June through August, 1966 (DFG 1976a).

The East Branch South Fork Eel River was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study "several fingerling salmonids" were observed in cool-water pockets in the creek (Kubicek 1977).

Staff from DFG conducted a stream inventory of the East Branch South Fork Eel River in 1993. Electrofishing revealed YOY and juvenile *O. mykiss* at four sites, including some fish up to about eight inches fork length (CCC 1993n). The inventory report

recommended increasing canopy, treating sources of fine sediment, and excluding cattle from the creek to avoid trampling and effects from defecation.

Buck Mountain Creek

Buck Mountain Creek is tributary to the East Branch South Fork Eel River and consists of about 3.2 stream miles. It flows south, entering the East Branch South Fork at about stream mile 3.1.

Buck Mountain Creek was surveyed in 1961 and "many salmonid fry" were observed. Fish that were caught were identified as steelhead. The survey report describes "very good" spawning and nursery conditions but notes, "Erosion is becoming a serious problem" (Kruse 1961).

A 1966 survey of Buck Mountain Creek notes the presence of *O. mykiss* ranging from two to six inches in length. It also states that a logging road has caused damage to the creek bed and reduced the creek's carrying capacity (DFG 1966).

Staff from DFG surveyed Buck Mountain Creek in 1981. Juvenile salmonids were abundant during the survey and "high quality habitat" was noted. The report recommends log jam removal to improve habitat in the creek (DFG 1981b).

Squaw Creek

Squaw Creek is tributary to the East Branch South Fork Eel River and consists of about 2.7 stream miles. It flows southwesterly, entering the East Branch South Fork at about stream mile 4.6.

Staff from DFG surveyed Squaw Creek in 1938. Steelhead are listed as a species present in the creek and spawning areas are described as "good" at a survey station at about stream mile 0.25 (DFG 1938r). Steelhead were said to congregate in pools upstream from the mouth, which was dry.

Steelhead fry were abundant in the lower portion of Squaw Creek during a 1962 survey. The report notes that spawning areas in the lower 1.5 miles of stream have been destroyed by a logging road (Gallagher ca. 1962).
Squaw Creek was surveyed again in 1981 by staff from DFG. While salmonid fry were abundant in one area, the report notes a lack of sufficient spawning or rearing habitat, and "poor condition of the drainage" (DFG 1981c).

Horse Pasture Creek

Horse Pasture Creek is tributary to the East Branch South Fork Eel River and consists of about 1.4 stream miles. It flows north, entering the East Branch South Fork at about stream mile five.

Staff from DFG surveyed Horse Pasture Creek in 1962. The report notes "little spawning area available to anadromous fish." Numerous salmonids were observed, but the species was not identified. The survey report concludes, "Leave this stream as it is, as little can be done to improve its condition due to the large amount of boulders in the streambed and channel" (Gallagher 1962c).

Rancheria Creek

Rancheria Creek is tributary to the East Branch South Fork Eel River and consists of about 1.9 stream miles. It flows southwesterly, entering the East Branch South Fork at about stream mile 5.7.

Staff from DFG surveyed Rancheria Creek in 1938 and noted "a good number of young steelhead" as well as "some trout" seven to eight inches in length. The report characterizes the pools, shelter, and spawning areas in the creek as "good" (DFG 1939d).

Rancheria Creek was surveyed again in 1962 and "An extremely large number" of salmonids ranging from one to eight inches in length were observed in the lower mile of the stream. One fish was collected and identified as a steelhead. While "good" spawning and nursery habitat was observed, the report notes that the number of fish was higher than would be expected given the size of the stream and its habitat (Kenney 1962).

Rays Creek

Rays Creek is tributary to the East Branch South Fork Eel River and consists of about 3.3 stream miles. It flows southwesterly, entering the East Branch South Fork at about stream mile 6.9.

A 1939 DFG survey noted a local landowner's account of "a relatively small number" of trout in Rays Creek. Perennial flow also was ascribed to the creek and "good" spawning areas (DFG 1939e).

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Rays Creek is listed as containing 0.2 miles of stream accessible to steelhead (DFG 1983a). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983a, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Tom Long Creek

Tom Long Creek is tributary to the East Branch South Fork Eel River and consists of about 6.8 stream miles. It flows west, entering the East Branch South Fork at about stream mile 8.9.

Tom Long Creek was inspected in 1956 and an earthen dam constructed at a mill on the creek was found to constitute a total barrier to migration. The surveyor noted that Tom Long Creek, "…would appear to be an excellent steelhead spawning stream" (DFG 1956).

Staff from the Bureau of Land Management (BLM) surveyed a section of Tom Long Creek in 1975. Rainbow trout were observed in the creek and it was noted to have sufficient spawning gravel to support fish populations (BLM 1975a).

Tom Long Creek was surveyed in 1981 by staff from DFG. Several salmonid fry were observed in the creek. The report concluded, "…Tom Long Creek be managed for resident trout only due to the lack of suitable spawning and rearing habitat for anadromous fish" (DFG 1981d).

Staff from DFG conducted a stream inventory of Tom Long Creek in 1993. Juvenile and YOY *O. mykiss* were sampled in the creek. One five-inch "steelhead" was observed about 2.9 miles upstream from the mouth (CCC 1993o). The inventory report recommended controlling sediment input into the creek. Canopy cover also was found to be below desirable levels, and re-vegetation was recommended.

Cruso Cabin Creek

Cruso Cabin Creek is tributary to East Branch South Fork Eel River and consists of about 2.3 stream miles. It flows west, entering the East Branch South Fork at about stream mile 20.

During a 1993 stream inventory, staff from DFG surveyed the East Branch South Fork Eel River up to the confluence of Cruso Cabin and Elkhorn Creeks. The report notes that YOY salmonids were observed in Cruso Cabin Creek, but the location of this observation is unclear (CCC 1993n, p. 25).

Elkhorn Creek

Elkhorn Creek is tributary to the East Branch South Fork Eel River and consists of about 2.2 stream miles. It flows north, entering the East Branch South Fork at about stream mile 20.

Staff from BLM surveyed a section of Elkhorn Creek in 1975. No fish were observed during the survey and the report noted that a large falls prevented anadromous access to the survey section. Low streamflow was said to limit available habitat for resident trout (BLM 1975b).

During a 1993 stream inventory, staff from DFG surveyed the East Branch South Fork Eel River up to the confluence of Cruso Cabin and Elkhorn Creeks. The report notes that YOY salmonids were observed in Elkhorn Creek, but the location of this observation is unclear (CCC 1993n, p. 25).

Fish Creek

Fish Creek is tributary to the South Fork Eel River and consists of about 1.5 stream miles. It flows north, entering the South Fork at the upstream end of Benbow Lake, at about stream mile 41.4.

Staff from DFG surveyed Fish Creek in 1980. No salmonid observations are noted in the survey report, which describes numerous log and debris dams. The report states that Fish Creek "…should be managed for resident trout above obstruction #10" which is a boulder roughs area located about 0.9 miles upstream from the creek mouth (DFG 1980s).

Staff from DFG conducted a stream inventory of Fish Creek in 1994. During the survey *O. mykiss* YOY were sampled at an electrofishing site located about 956 feet upstream from the mouth of the creek. Young-of-year salmonids also were observed about one mile upstream and the report notes that landowners have reported spawning salmonids in the lower reaches of the creek (CCC 1994a). The inventory report recommended controlling sediment input into the creek. Canopy cover also was found to be below desirable levels, and re-vegetation was recommended.

Durphy Creek

Durphy Creek is tributary to the South Fork Eel River and consists of about 2.4 stream miles. It flows east, entering the South Fork at about stream mile 46.6.

Staff from DFG surveyed Durphy Creek in 1938 and found YOY steelhead to be "abundant" in a "dead-end" pool located 150 feet upstream from the mouth of the creek. A warden from Richardson Grove State Park reported that "usually many" steelhead run up the lower two miles of the creek and the section downstream of Highway 101 sometimes dries up (DFG 1938s).

During a 1961 survey of Durphy Creek salmonids were observed from the mouth of the stream to a barrier located about 400 yards downstream of the first tributary. The creek was noted to have some "excellent" spawning area, but only "fair" nursery potential and a lack of shelter (Gallagher 1961c). A 1963 memo notes the need for "stream clearance work" due to logging operations in the watershed (DFG 1963).

Durphy Creek was surveyed in 1980 by staff from DFG. Unstable stream banks and numerous slides were observed in the stream and spawning habitat was noted to be limited. However, the survey report concluded that Durphy Creek "…would most likely make a good salmonid stream" if it could be rehabilitated (DFG 1980t).

Staff from DFG conducted a stream inventory of Durphy Creek in 1993. Steelhead fry were sampled during electrofishing in the creek (CCC 1993p). Canopy cover was found to be below desirable levels, and re-vegetation was recommended, along with treating sources of fine sediment.

Durphy Creek tributary

An unnamed tributary to Durphy Creek consists of about 0.8 stream miles. It flows south, entering Durphy Creek about 1.2 miles upstream from the South Fork Eel River.

Staff from DFG conducted a stream inventory of this unnamed tributary to Durphy Creek in 1993. A 13 foot waterfall located about 0.4 miles upstream from the mouth of the creek was noted to comprise a total passage barrier. No fish were observed upstream of this barrier, but YOY *O. mykiss* were sampled further downstream (CCC 1993p). The inventory report recommended treating sources of fine sediment and increasing canopy cover.

Hartsook Creek

Hartsook Creek is tributary to the South Fork Eel River and consists of about 1.5 stream miles. It flows east, entering the South Fork at about stream mile 47.5.

Staff from DFG conducted stream inventories of Hartsook Creek in 1994 and 1999. Electrofishing was conducted in 1994 and *O. mykiss* YOY and juveniles were collected at two sites. Recommendations made in the report include replacing the culvert under Highway 101 and treating sources of fine sediment (CCC 1994b). Young-of-year salmonids were observed from the streambanks during the 1999 inventory (DFG 1999d).

Milk Ranch Creek

Milk Ranch Creek is tributary to the South Fork Eel River and consists of about 2.3 stream miles. It flows west, entering the South Fork at about stream mile 49.

Fish rescue work was conducted on multiple Eel River tributaries in 1940. A total of 100 steelhead were rescued from Milk Ranch Creek that year (DFG 1941a).

Staff from DFG conducted a stream inventory of Milk Ranch Creek in 1993. Juvenile and YOY *O. mykiss* were sampled by electrofishing. No fish were observed upstream of a seven foot plunge located about 0.8 miles upstream from the mouth of the creek and this was thought to be the upstream limit of anadromy (CCC 1993q). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy.

Low Gap Creek

Low Gap Creek is tributary to the South Fork Eel River and consists of about 2.9 stream miles. It flows east, entering the South Fork at about stream mile 49.5.

Staff from DFG surveyed Low Gap Creek in 1938 and observed YOY *O. mykiss*. "Extensive" natural propagation and "good" spawning areas are noted in the report (DFG 1938t).

Low Gap Creek was surveyed in 1968 and YOY salmonids were observed. There was a lack of water in the creek during the survey, but the stream bed indicated "good potential for spawning" (DFG 1968a).

During a 1980 survey of Low Gap Creek staff from DFG observed one adult steelhead and additional juvenile salmonids. The creek was said to be "excellent for all life phases of salmonids" (DFG 1980u).

Staff from DFG conducted a stream inventory of Low Gap Creek in 1993. Juvenile and YOY *O. mykiss* were sampled. A 20 foot waterfall located about 1.9 miles upstream from the mouth was identified as a barrier to fish passage. The report notes that, "Spawning gravels on Low Gap Creek are limited to relatively few reaches." It recommended treating sources of fine sediment and increasing canopy cover (CCC 1993r

Indian Creek

Indian Creek is tributary to the South Fork Eel River and consists of about 12.8 stream miles. It flows northeasterly, entering the South Fork at about stream mile 52.

Stocking records indicate that that *O. mykiss* were stocked in Indian Creek in the 1930s. Records report 10,000 steelhead planted in 1939 and 6,100 rainbow trout planted in 1933 (DFG 1933, DFG 1939f).

Indian Creek was surveyed in 1938 and steelhead YOY observed in the lower section. Natural propagation was said to be "very extensive" and spawning areas described as "excellent" (DFG 1938u).

Staff from DFG surveyed Indian Creek in 1968 and steelhead and rainbow trout were observed. "Good" spawning and nursery conditions were observed in the lower creek, but decreased in quality further upstream (DFG 1968b).

Several barriers in Indian Creek were inspected in 1986 and the creek was noted to contain "very good spawning and rearing habitat." Barrier removal was recommended to improve access to high quality habitat (CCC 1986).

Staff from DFG conducted a stream inventory of Indian Creek in 1993. Juvenile and YOY *O. mykiss* were collected at two electrofishing sites and observed at multiple locations up to about 11 miles upstream from the mouth. In the upper reaches, fish were noted to likely be resident due to their coloration (CCC 1993s). The inventory report noted spawning gravels were limited to few reaches, and recommended controlling sediment input into the creek. Canopy cover also was found to be below desirable levels, and re-vegetation was recommended.

Jones Creek

Jones Creek is tributary to Indian Creek and consists of about 2.4 miles of intermittent stream. It flows south, entering Indian Creek about 2.2 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Jones Creek in 1968 and observed steelhead ranging from two to three inches in length. The creek was said to be "in good shape" with "good" nursery conditions and "good to excellent" spawning areas (Anonymous 1968).

Staff from DFG conducted a stream inventory of Jones Creek in 1993. Juvenile and YOY *O. mykiss* were sampled during electrofishing. The report states that spawning gravels are limited in the creek (CCC 1993t).

Parker Creek

Parker Creek is tributary to Indian Creek and consists of about 1.7 miles of intermittent stream. It flows south, entering Indian Creek about 3.1 miles upstream from the South Fork Eel River confluence.

Parker Creek was inspected in conjunction with a 1968 survey of Moody Creek. Survey notes state that only 0.5 miles of Parker Creek is accessible to anadromous fish due to a 25 foot falls. Steelhead were observed downstream of these falls in 1968 (DFG 1968c).

Moody Creek

Moody Creek is tributary to Indian Creek and consists of about one stream mile. It flows north, entering Indian Creek about 6.7 miles upstream from the South Fork Eel River confluence.

Moody Creek was surveyed in 1968 by staff from DFG. Steelhead two to four inches in length were present and "good" spawning conditions were observed in the lower mile of the creek. A large amount of logging debris was noted and the report states that the creek has "much potential but will require a great deal of work" (DFG 1968c).

During a 1979 survey of Moody Creek fingerling and mature steelhead, including a pair that may have been spawning, were observed in the stream. The survey report describes the creek as, "A fair spawning stream with severe erosion, sun cover and barrier problems, but with good potential" (Gienger 1979).

Moody Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek in 1987 with steelhead collected downstream of a barrier and rainbow trout collected upstream (DFG 1988).

Staff from DFG conducted a stream inventory of Moody Creek in 1993. Juvenile and YOY *O. mykiss* were collected during electrofishing in the creek (CCC 1993u). The report recommended treating sources of fine sediment, including those related to the road system.

Sebbas Creek

Sebbas Creek is tributary to Indian Creek and consists of about 3.1 stream miles. It flows south, entering Indian Creek about 7.3 miles upstream from the South Fork Eel River confluence.

Sebbas Creek was surveyed in 1979 and several salmonids including one 18-inch *O. mykiss* were observed. The report notes that "excellent spawning gravel and nursery potential" were present over the whole stream, but numerous log jams were limiting access by anadromous fish (Clark 1979b).

Staff from DFG conducted a stream inventory of Sebbas Creek in 1993. Juvenile and YOY *O. mykiss* were sampled by electrofishing at three sites (CCC 1993v). The inventory report recommended treating sources of fine sediment.

Sebbas Creek was inspected in 2002 in relation to a timber harvest plan in the area. A memo regarding this inspection states that yearling steelhead were observed just upstream of an unnamed tributary to Sebbas Creek, located about 1.5 miles upstream from the Indian Creek confluence. Yearling steelhead were also observed in a 300 foot reach of the unnamed tributary, downstream of a natural passage barrier (Moore 2002).

Coulborn Creek

Coulborn Creek is tributary to Indian Creek and consists of about 0.8 stream miles. It flows south, entering Indian Creek about 8.1 miles upstream from the South Fork Eel River confluence.

Staff from DFG conducted a stream inventory of Coulborn Creek in 1993. Juvenile and YOY *O. mykiss* were collected at three electrofishing sites (CCC 1993w). The inventory report noted several log debris accumulations that created possible passage barriers and recommended treating sources of fine sediment, including those related to the road system.

Anderson Creek

Anderson Creek is tributary to Indian Creek and consists of about 5.3 miles of intermittent stream. It flows west, entering Indian Creek about 9.5 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Anderson Creek in 1968 and observed steelhead from two to ten inches in length, with highest abundance in the lower two miles. Logging debris was impacting habitat in the creek and the report stated, "With the creek cleaned it could offer some very good spawning water for migratory fish" (DFG 1968d).

Steelhead fingerlings were observed during a 1979 survey of Anderson Creek. Access for anadromous fish was being limited by barriers caused by logging debris, but the stream was described as having "excellent potential" (DFG 1979).

Staff from DFG conducted a stream inventory of Anderson Creek in 1993. One site was electrofished, located about 4.6 miles upstream from the mouth, and steelhead ranging from about 2.5 to 8.0 inches in length were captured (CCC 1993x). The inventory report recommended treating sources of fine sediment.

Piercy Creek

Piercy Creek is tributary to the South Fork Eel River and consists of about 1.6 stream miles. It flows east, entering the South Fork at about stream mile 52.2.

Piercy Creek was surveyed in 1938 and the lower 250 yards of the creek was found to be dry. Steelhead YOY were observed further upstream (DFG 1938v).

Staff from DFG surveyed Piercy Creek in 1968 and observed steelhead ranging from four to six inches in length. The creek was noted to have "good" spawning and nursery areas in the lower half, and fewer spawning areas in the upper portion (DFG 1968e). During a 1977 survey of Piercy Creek only one juvenile steelhead was observed. The survey report states, "Logging in the area has limited the stream's full potential as a productive salmonid stream" (DFG 1977b).
Piercy Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek in 1985 and steelhead were collected (DFG 1988). Staff from DFG conducted a stream inventory of Piercy Creek in 1990. Juvenile and YOY *O. mykiss* were collected at five sites during electrofishing in the creek (CCC 1990a). The inventory report recommended stream bank stabilization and re-vegetation to prevent further erosion in the watershed.

Standley Creek

Standley Creek is tributary to the South Fork Eel River and consists of about 4.7 stream miles. It flows northeasterly, entering the South Fork at about stream mile 53.3.

Fish rescue work was conducted on multiple Eel River tributaries in 1940. A total of 2,095 steelhead were rescued from Standley Creek that year (DFG 1941a).

Standley creek was surveyed in 1968 by staff from DFG. The report described the creek as "…an excellent stream with great potential for migrating fish." Observations of steelhead and rainbow trout were noted (DFG 1968f).

During a 1976 DFG survey of Standley Creek YOY and yearling steelhead were sampled by electrofishing. Two adult steelhead also were observed along with several salmonid spawning redds. The creek was described as "excellent," however some damage caused by logging and road building was observed (DFG 1976b).

Standley Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek in 1985 and steelhead were collected (DFG 1988).

Staff from DFG conducted a stream inventory of Standley Creek in 1992. Juvenile and YOY *O. mykiss* were collected during electrofishing (CCC 1992o). The inventory report noted that canopy cover was below desirable levels, and re-vegetation was recommended. Treatment of fine sediment sources was also recommended.

McCoy Creek

McCoy Creek is tributary to the South Fork Eel River and consists of about 4.4 stream miles. It flows west, entering the South Fork at about stream mile 54.9.

Staff from DFG surveyed McCoy Creek in 1938. Steelhead one to two inches in length were described as "common" (DFG 1938w). Stocking records indicate that McCoy Creek was stocked with a total of 23,000 steelhead in 1938 (DFG 1938x).

Young-of-year and juvenile steelhead, some up to five inches in length, were observed in McCoy Creek in 1968. The creek was described as "in good condition," but poor nursery conditions in the upper reaches were noted to be a "major problem" (DFG 1968g).

Staff from BLM surveyed a section of McCoy Creek in 1975. Rainbow trout were observed at the mouth of North Fork McCoy Creek. Low summer water flows were observed, as well as high quantities of spawning gravel that would be available at higher flows (BLM 1975c).

McCoy Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek in 1985 and steelhead were collected (DFG 1988).

Staff from DFG conducted a stream inventory of McCoy Creek in 1995. One site, located about 244 feet from the South Fork Eel River confluence, was electrofished and seven YOY and juvenile steelhead were collected (CCC 1995b). The inventory report recommended treating fine sediment sources, including those related to the road system.

North Fork McCoy Creek

North Fork McCoy Creek is tributary to McCoy Creek and consists of about 2.2 stream miles. It flows south, entering McCoy Creek about two miles upstream from the South Fork Eel River.

Staff from DFG conducted a stream inventory of North Fork McCoy Creek in 1995. Juvenile and YOY steelhead were observed during the survey (DFG 1995a). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy.

Bear Pen Creek

Bear Pen Creek is tributary to the South Fork Eel River and consists of about 2.9 stream miles. It flows northeasterly, entering the South Fork at about stream mile 56.6.

Staff from DFG surveyed Bear Pen Creek in 1968 and observed juvenile steelhead. The survey report stated, "Bear Pen is being used strongly by migrating fish," and recommended litter clearance in the upper sections to improve habitat (DFG 1968h).

During a 1988 inspection of Bear Pen Creek "one live smolt" and two salmonid skeletons were seen, though the species of these fish was not identified. The creek was noted to have "good spawning and rearing habitat" but was limited by log debris barriers (Griffin 1988).

Staff from DFG conducted a stream inventory of Bear Pen Creek in 1992. Juvenile and YOY steelhead were collected at an electrofishing site located about 158 feet upstream from the mouth of the creek. Young-of-year fish also were observed up to three miles upstream from the mouth (CCC 1991m). Canopy cover was found to be below desirable levels, and re-vegetation was recommended, along with treatment of fine sediment sources. Staff from DFG observed juvenile steelhead in Bear Pen Creek in 1999 (Harris 1999).

Cub Creek

Cub Creek is tributary to Bear Pen Creek and consists of about 0.5 stream miles. It flows north, entering Bear Pen Creek about 1.7 miles upstream from the South Fork Eel River confluence.
Cub Creek was inspected in November 2003 and found to have no observable flow and numerous potential barriers present. No salmonids were found in the pools that contained water (DFG 2003).

Red Mountain Creek

Red Mountain Creek is tributary to the South Fork Eel River and consists of about 5.2 stream miles. It flows west, entering the South Fork at about stream mile 57.7.

Staff from DFG surveyed Red Mountain Creek in 1938 and observed "good" spawning areas and YOY and/or juvenile *O. mykiss*. Local residents reported steelhead runs in the creek (DFG 1938y).

During an undated survey of Red Mountain Creek, likely conducted during the 1960s, 14 adult steelhead were observed spawning in the creek. The creek was noted to have extensive spawning areas, but a lack of summer nursery areas (DFG 1967).

Red Mountain Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek in 1985 and steelhead were collected (DFG 1988).

Staff from DFG conducted a stream inventory of Red Mountain Creek in 1997. Juvenile and YOY *O. mykiss* were observed and captured during electrofishing. The report notes that a waterfall located about 5.5 miles upstream from the mouth represents the upstream limit of anadromy in the creek (CCC 1997). Canopy cover was found to be below desirable levels and re-vegetation was recommended, along with treatment of fine sediment sources.

Wildcat Creek

Wildcat Creek is tributary to the South Fork Eel River and consists of about two stream miles. It flows northeasterly, entering the South Fork at about stream mile 59.9.

Steelhead up to four inches in length were found to be "in good supply" in Wildcat Creek during a 1968 stream survey. The survey report states that the creek is "…used very highly by migratory fish and offers them good spawning conditions." Removal of logging debris was recommended in the upper sections (DFG 1968i).

Wildcat Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek in 1985 and 1987 and steelhead were collected both years (DFG 1988).

Staff from DFG conducted a stream inventory of Wildcat Creek in 1992. Juvenile and YOY *O. mykiss* were sampled by electrofishing (CCC 1992q). The report recommended treating fine sediment sources.

Bridges Creek

Bridges Creek is tributary to the South Fork Eel River and consists of about 2.8 stream miles. It flows west, entering the South Fork at about stream mile 61.2.

Fish rescue work was conducted on multiple Eel River tributaries in 1940. A total of 1,850 steelhead were rescued from Bridges Creek that year (DFG 1941a).

Bridges Creek was surveyed in 1968 and noted to be "in good shape where water is present." A mile-long section of creek was dry at the time. However, steelhead were "abundant" in the pools and spawning areas were "excellent" at the mouth of the creek, but decreasing in quality further upstream (DFG 1968j).

Bridges Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study, many fingerling salmonids were observed in the lower portion of the stream (Kubicek 1977).

Bridges Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek in 1985 and steelhead were collected (DFG 1988). Bridges Creek was surveyed as part of a 1990 study of salmonid resources in Mendocino County Rivers. The creek was surveyed three times during January and February of 1990 and no fish or redds were observed. The report states, "The stream was considered too steep with few deep holes to be provide quality spawning areas" (DFG 1990b).

Staff from DFG conducted a stream inventory of Bridges Creek in 1994. Juvenile and YOY steelhead were sampled during electrofishing, including 199 fish that were collected at one site, located about 0.3 miles upstream from the creek's mouth (CCC 1993y). The inventory report recommended treating fine sediment sources and increasing canopy cover.

Dora Creek

Dora Creek is tributary to the South Fork Eel River and consists of about 1.3 stream miles. It flows west, entering the South Fork at about stream mile 62.1.

During a 1968 stream survey, staff from DFG noted that "Dora Creek terminates about two hundred yards from the mouth with a thirty foot falls." Steelhead were observed in the stream "in moderate abundance" downstream of the falls (DFG 1968k).

Mill Creek

Mill Creek is tributary to the South Fork Eel River and consists of about 2.1 stream miles. It flows northeasterly, entering the South Fork at about stream mile 63.6.

Staff from DFG surveyed Mill Creek in 1968 and noted that anadromous fish only had access to about 0.3 miles of the creek due to a 30-foot falls. Two-inch steelhead were observed in "moderate abundance," presumably downstream of the falls (DFG 1968l).

Mill Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek in 1986 and steelhead were collected (DFG 1988).

Staff from DFG conducted a stream inventory of Mill Creek in 1992. Juvenile and YOY *O. mykiss* were collected at two electrofishing sites located within 0.2 miles of the mouth of the creek. Canopy cover was found to be below desirable levels, and re-vegetation was recommended (CCC 1992r). In 2000, sampling was conducted to determine salmonid distribution with land owned by Mendocino Redwood Company. During this sampling, nine YOY *O. mykiss* were collected from Mill Creek (MRC 2000).

Rock Creek

Rock Creek is tributary to the South Fork Eel River and consists of about 2.7 stream miles. It flows south, entering the South Fork at about stream mile 65.6.

Staff from DFG surveyed Rock Creek in 1968 and noted that steelhead were "present but very limited." Spawning areas were noted to be "very limited" and the creek's high gradient upstream of the lower 0.75 miles also reduced the available habitat (DFG 1968m).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* were observed in Rock Creek (Brown 1991b).

NOTE: South Fork Eel River tributaries upstream from Rock Creek are considered to be "upper" South Fork streams and are depicted on Figures 8 and 9 following this chapter.

Hollow Tree Creek

Hollow Tree Creek is tributary to the South Fork Eel River, consists of about 19.5 stream miles, and drains a watershed of about 42 square miles (CCC 2003a). It flows north, entering the South Fork at about stream mile 68.1, southwest of the town of Leggett.

Staff from DFG surveyed Hollow Tree Creek in 1940. Steelhead presence was noted, including the observation of one 25 inch adult. The surveyor, Leo Shapovalov, described the surveyed section of Hollow Tree Creek as "…the most beautiful stream I have seen in the Eel R. drainage" (DFG 1940e).

Hollow Tree Creek was surveyed again in 1968 and steelhead were observed "in abundance." At the time, the creek appeared to be "in excellent shape" with a "constant good flow of water" and "excellent" spawning areas and nursery conditions (DFG 1968n).

Hollow Tree Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek and steelhead were collected in 1983 and 1986-88 (DFG 1988).

Staff from DFG conducted stream inventories on sections of Hollow Tree Creek in 1990 and 1991. Steelhead YOY and juveniles were collected by electrofishing during both surveys (CCC 1990b, CCC 1991n). The 1990 survey took place upstream of the Huckleberry Creek confluence and, according the to the 1991 report, restoration activities were completed in that creek section according to recommendations made in 1990. The 1991 report states that "Hollow Tree Creek is an important producer of salmonids in the Eel River System."

Hollow Tree Creek was sampled during salmonid distribution studies in 1994-96 and 2000. Juvenile and YOY *O. mykiss* were collected during all sampling years (Louisana-Pacific 1997, MRC 2000).
Staff from DFG conducted stream inventories on sections of Hollow Tree Creek in 2002 and 2003. Biological sampling was not conducted during either survey, but both reports note observations of juvenile salmonids (CCC 2002b, CCC 2003a).

Mule Creek

Mule Creek is tributary to Hollow Tree Creek and consists of about 1.8 stream miles. It flows southeasterly, entering Hollow Tree Creek about 9.2 miles upstream from the South Fork Eel River confluence.

Mule Creek was surveyed by DFG staff in 1968. A 30-foot falls located about 0.3 miles upstream from the creek mouth was said to block fish passage, while steelhead were observed downstream of the falls (DFG 1968o).

Staff from DFG conducted a stream inventory of Mule Creek in 1992. Young-of-year steelhead were observed downstream of the falls. The inventory report recommended treating sources of fine sediment related to the road system (CCC 1992s). In 2000, sampling was conducted to determine salmonid distribution on land owned by Mendocino Redwood Company. During this sampling, YOY and juvenile *O. mykiss* were collected from Mule Creek (MRC 2000).

Middle Creek

Middle Creek is tributary to Hollow Tree Creek and consists of about two stream miles. It flows north, entering Hollow Tree Creek about 9.3 miles upstream from the South Fork Eel River confluence.

The lower 0.25 miles of Middle Creek was surveyed in 1968. A field note reports that many log jams were present and no fish were observed in this section (DFG 1968p).

Staff from DFG also inspected Middle Creek in 1980. At this time a 50-foot natural falls was observed about 400 feet upstream from the mouth of the creek (DFG 1980v).

Staff from DFG conducted a stream inventory of Middle Creek in 1992 and again noted the presence of a large natural falls. Young-of-year steelhead were observed downstream of the falls (CCC 1992t). The inventory report noted several sites of stream bank erosion and recommended treating sources of fine sediment, including those related to the road system.

Sampling was conducted in 1995, 1996, and 2000 in Middle Creek during fish distribution studies. *Oncorhynchus mykiss* were not found during these sampling events (Louisana-Pacific 1997, MRC 2000).

Islam John Creek

Islam John Creek is tributary to Hollow Tree Creek and consists of about 1.7 stream miles. It flows southwesterly, entering Hollow Tree Creek about 11.5 miles upstream from the South Fork Eel River confluence.

Islam John Creek was surveyed by staff from DFG in 1968 and noted to have "good spawning potential." No fish were observed and an eight-foot waterfall near the mouth was cited as possibly precluding passage. The report states, "Fish introduction might be possible with correction of falls blockage" (DFG 1968q).
Staff from DFG conducted a stream inventory of Islam John Creek in 1992. No salmonid observations are noted in the report and the falls near the mouth of the creek are described as a "probable barrier." Canopy cover was found to be below desirable levels and re-vegetation was recommended, along with treatment of fine sediment sources (CCC 1992u). Sampling was conducted in 1995, 1996, and 2000 in Islam John Creek during fish distribution studies. *Oncorhynchus mykiss* were not found during these sampling events (Louisana-Pacific 1997, MRC 2000).

Lost Man Creek

Lost Man Creek is tributary to Hollow Tree Creek and consists of about 1.3 stream miles. It flows west, entering Hollow Tree Creek about 11.7 miles upstream from the South Fork Eel River confluence.

A 1968 stream survey report for Lost Man Creek notes the presence of 20-foot falls near its mouth. A lack of water above the falls also indicated that "fish survival would be in doubt" (DFG 1968r).

Staff from DFG conducted a stream inventory of Lost Man Creek in 1992. A series of bedrock falls located about 100 feet from the mouth of the creek was considered to be a passage barrier. The inventory report noted, "Good water temperature and flow

regimes exist in the stream and it offers good conditions for rearing fish," although *O. mykiss* was not observed (CCC 1992v). Juvenile steelhead were observed 33 feet from the stream mouth in 1992 (Monroe & Cleckers, 1992). Sampling was conducted in 1994, 1995, 1996, and 2000 in Lost Man Creek during fish distribution studies. *Oncorhynchus mykiss* were not found during these sampling events (Louisana-Pacific 1997, MRC 2000).

Walters Creek

Walters Creek is tributary to Hollow Tree Creek and consists of about 1.5 stream miles. It flows west, entering Hollow Tree Creek about 12.5 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Walters Creek in 1968 and observed steelhead "in good supply." The fish were mostly two to three inches in length, with some up to five inches. These fish were also observed downstream of the Eastside Road culvert and the report concluded, "Walters Creek is a short creek that has good potential for spawning but is presently not able to be used due to the listed barriers" (DFG 1968s).

Staff from DFG conducted a stream inventory of Walters Creek in 1992. Young-of-year steelhead and some seven to eight inch fish were observed downstream of a culvert. In this report the culvert is described as being located about 0.4 miles upstream from the creek mouth, upstream from the Lost Pipe Creek confluence (CCC 1992w). The report recommended treating sources of fine sediment, including sediment sources related to the road system.

Walters Creek was sampled from 1994-96 during fish distribution studies. Young-of-year, age 1+, and age 2+ *O. mykiss* were collected during the sampling (Louisana-Pacific 1997). In 2000, sampling was conducted to determine salmonid distribution within land owned by Mendocino Redwood Company. During this sampling, one juvenile *O. mykiss* was collected from Walters Creek (MRC 2000).

Lost Pipe Creek

Lost Pipe Creek is tributary to Walters Creek and consists of about 0.6 stream miles. It flows west, entering Walters Creek about 0.2 miles upstream from the Hollow Tree Creek confluence.

Staff from DFG surveyed Lost Pipe Creek in 1968 and observed steelhead within the lower 0.25 miles of the creek. Further upstream water flows and fish presence decreased. Lost Pipe Creek was described as a "…short…usable creek for migratory fish." Spawning habitat was said to be limited by litter and debris in the creek bed (DFG 1968t).

Lost Pipe Creek was sampled during salmonid distribution studies in 1994-96 and 2000. Juvenile and YOY *O. mykiss* were collected in 1995, 1996 and 2000 (Louisana-Pacific 1997, MRC 2000).

Bear Creek

Bear Creek is tributary to Hollow Tree Creek and consists of about 1.4 stream miles. It flows east, entering Hollow Tree Creek about 13.8 miles upstream from the South Fork Eel River confluence.

Staff from DFG conducted a stream inventory of Bear Creek in 1992. Three sites were electrofished and juvenile and/or YOY *O. mykiss* were captured at each site (CCC 1992x). Bear Creek was sampled during salmonid distribution studies in 1994-96 and 2000. Juvenile and YOY *O. mykiss* were collected during all sampling years (Louisana-Pacific 1997, MRC 2000).

Redwood Creek

Redwood Creek is tributary to Hollow Tree Creek and consists of about 1.2 stream miles. It flows northeasterly, entering Hollow Tree Creek about 14.5 miles upstream from the South Fork Eel River confluence.

Redwood Creek was surveyed by DFG staff in 1968 and YOY steelhead were found to be "abundant" in the lower section of creek. The creek was said to become "slow and stagnant" upstream of the South Fork and spawning areas also decreased in quality near the South Fork confluence (DFG 1968u).

Staff from DFG inspected log jams in Redwood Creek in 1980. The lower half mile of the creek was surveyed and no salmonids were observed. "Little to no spawning gravel" was present and surveyors wrote, "This stream has only marginal value as nursery habitat for salmonids due to questionable water quality" (DFG 1980v).

Redwood Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek in 1983 and YOY steelhead were collected (DFG 1988).

Staff from DFG conducted a stream inventory of Redwood Creek in 1991. Juvenile and YOY *O. mykiss* were collected at two of the four sites electrofished in the creek. No fish were observed upstream of a bedrock cascade located about 0.6 miles upstream from the mouth and barrier modification was recommended (CCC 1991o). Redwood Creek was sampled during salmonid distribution studies in 1994-96 and 2000. Juvenile and/or YOY *O. mykiss* were collected during all sampling years (Louisana-Pacific 1997, MRC 2000).
Staff from DFG conducted a stream inventory of Redwood Creek in 2003. Four sites were surveyed for fish presence and YOY or juvenile *O. mykiss* were observed at each site. Sampling sites ranged from 225 feet to about 2.8 miles upstream from the mouth (CCC 2003b). The inventory report recommended treating sources of fine sediment related to the road system.

South Fork Redwood Creek

South Fork Redwood Creek is tributary to Redwood Creek and consists of about 1.8 stream miles. It flows north, entering Redwood Creek about 0.6 miles upstream from the Hollow Tree Creek confluence.

Staff from DFG conducted a stream inventory of South Fork Redwood Creek in 1991. Electrofishing was not conducted in the creek and no salmonids were observed during the survey. A bedrock chute on the mainstem of Redwood Creek, located about 300 feet downstream of the South Fork Redwood Creek confluence, was thought to be preventing anadromous fish access to South Fork Redwood Creek (CCC 1991p). South Fork Redwood Creek was sampled during salmonid distribution studies in 1994-96 and 2000. Juvenile and YOY *O. mykiss* were collected during all sampling years (Louisana-Pacific 1997, MRC 2000).

Staff from DFG conducted a stream inventory of South Fork Redwood Creek in 2003. One YOY and one juvenile steelhead were observed in the creek during the survey (CCC 2003c). The inventory report recommended treating sources of fine sediment, including those related to the road system.

Bond Creek

Bond Creek is tributary to Hollow Tree Creek and consists of about 3.8 stream miles. It flows southwesterly, entering Hollow Tree Creek about 15.8 miles upstream from the South Fork Eel River confluence.

Steelhead fry and fish up to five inches in length were observed during a 1968 survey of Bond Creek. According to survey report the creek has "…good spawning and nursery conditions and good potential for use by migratory fish. "Large and intensive" log jams were present and removal was recommended (DFG 1968v).

Bond Creek was surveyed in 1980 and *O. mykiss* were "abundant." The survey report states, "Bond Creek currently provides good spawning and nursery areas for RT-SH both resident and anadromous" (DFG 1980w).

Staff from DFG conducted a stream inventory of Bond Creek in 1991. Upstream of a point about 1.8 miles from the mouth the stream dried up and consisted of stagnant pools. Juvenile and YOY *O. mykiss* were collected during electrofishing downstream of this point. Canopy cover was found to be below desirable levels, and re-vegetation was recommended (CCC 1991q). Bond Creek was sampled during salmonid distribution studies in 1994-96 and 2000. Juvenile and YOY *O. mykiss* were collected during all sampling years (Louisana-Pacific 1997, MRC 2000).

Staff from DFG conducted a stream inventory of Bond Creek in 2003. Fourteen sites were surveyed for fish presence and YOY or juvenile (age 1+ and age 2+) were observed at 12 sites (CCC 2003d). The inventory report recommended treating fine sediment sources, including those related to the road system.

Michaels Creek

Michaels Creek is tributary to Hollow Tree Creek and consists of about 2.7 stream miles. It flows west, entering Hollow Tree Creek about 17.1 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Michaels Creek in 1981 and observed limited numbers of steelhead fry. According to the report, "The creek offers good-excellent spawning areas but lack of water during summer offers poor nursery conditions" (DFG 1968w). Good habitat conditions were noted during a 1981 survey of Michaels Creek and a "large population of juvenile steelhead" was present in one section. Available habitat was limited by log and debris barriers and damage caused by feral pigs in the upper section (DFG 1981e). The survey report indicates that the creek contributes "important summer streamflow" to Hollow Tree Creek.

Michaels Creek was sampled during salmonid distribution studies in 1994-96 and 2000. Juvenile and YOY *O. mykiss* were collected during all sampling years (Louisana-Pacific 1997, MRC 2000).

Staff from DFG conducted a stream inventory of Michaels Creek in 2003. Nine sites were surveyed for fish presence and YOY steelhead, and some age 1+, were observed at all but one site (CCC 2003e). The inventory report noted the presence of several fish habitat improvement structures and recommended evaluation of their effectiveness.

Lynch Creek

Lynch Creek is tributary to Michaels Creek and consists of about 0.9 stream miles. It flows north, entering Michaels Creek about 0.3 miles upstream from the Hollow Tree Creek confluence.

Staff from DFG surveyed Lynch Creek in 1968 and steelhead were observed in the lower 0.25 miles of the creek in small numbers. Spawning areas were described as "good" but the creek suffered from a lack of water during the summer and was "extremely badly littered the entire length" (DFG 1968x).

Sampling was conducted in 1996 and 2000 in Lynch Creek during fish distribution studies. Juvenile and YOY *O. mykiss* were collected in 1996 but no fish were found in 2000 (Louisana-Pacific 1997, MRC 2000).

Doctors Creek

Doctors Creek is tributary to Lynch Creek and consists of about 0.7 stream miles. It flows west, entering Lynch Creek about 0.2 miles upstream from the Michaels Creek confluence.

Sampling was conducted in 1994, 1995, 1996, and 2000 in Doctors Creek during fish distribution studies. Juvenile and/or YOY *O. mykiss* were collected every year that sampling took place (Louisana-Pacific 1997, MRC 2000).

Staff from DFG conducted a stream inventory of Doctors Creek in 2003. The lower 0.3 miles of the creek was surveyed and salmonids were observed up to a bedrock sheet located 1,300 feet upstream from the mouth which may have been acting as a barrier (CCC 2003f).

Waldron Creek

Waldron Creek is tributary to Hollow Tree Creek and consists of about two stream miles. It flows northeasterly, entering Hollow Tree Creek about 18 miles upstream from the South Fork Eel River confluence.

Waldron Creek was surveyed in 1968 by staff from DFG and juvenile steelhead were observed. Spawning areas were "spotty" and the creek was described as "in fair condition" (DFG 1968y).

Staff from DFG conducted a stream inventory of Waldron Creek in 1991. Young-of-year steelhead were observed during the survey and the report stated that juvenile steelhead were also observed during sampling that took place in 1988 and 1989 (CCC 1991r).

Sampling was conducted in Waldron Creek in 1994, 1995, 1996, and 2000 during fish distribution studies. Juvenile and/or YOY *O. mykiss* were collected every year that sampling took place (Louisana-Pacific 1997, MRC 2000).

Staff from DFG conducted a stream inventory of Waldron Creek in 2002. Small numbers of YOY and juvenile steelhead were captured during electrofishing (CCC 2002c). The inventory report recommended treating sources of fine sediment, including those related to the road system.

Bear Pen Creek

Bear Pen Creek is tributary to Hollow Tree Creek and consists of about 0.6 stream miles. It flows east, entering Hollow Tree Creek about 19.2 miles upstream from the South Fork Eel River confluence.

Sampling was conducted in 1994, 1995, 1996, and 2000 in Bear Pen Creek during fish distribution studies. *Oncorhynchus mykiss* were not found during these sampling events (Louisana-Pacific 1997, MRC 2000).

Huckleberry Creek

Huckleberry Creek is tributary to Hollow Tree Creek and consists of about 1.8 stream miles. It flows northeasterly, entering Hollow Tree Creek about 19.7 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Huckleberry Creek in 1968 and observed juvenile steelhead. The creek was described as "in fair condition," although spawning conditions were poor in some areas due to siltation (DFG 1968z).

Huckleberry Creek was surveyed again in 1981 and *O. mykiss* ranging from one to six inches were observed. Fish were "very abundant" downstream of Little Bear Wallow Creek but absent upstream of the tributary (DFG 1981f). Staff from DFG conducted a stream inventory of Huckleberry Creek in 1990. Juvenile and YOY *O. mykiss* were found during electrofishing. The report recommended modification of a culvert located about 1.1 miles upstream from the mouth of the creek (CCC 1990c).

Sampling was conducted in 1994, 1995, 1996, and 2000 in Huckleberry Creek during fish distribution studies. Juvenile and/or YOY *O. mykiss* were collected every year that sampling took place (Louisana-Pacific 1997, MRC 2000).

Bear Wallow Creek

Bear Wallow Creek is tributary to Huckleberry Creek and consists of about 1.5 stream miles. It flows northwesterly, entering Huckleberry Creek about 0.7 miles upstream from the Hollow Tree Creek confluence.

Staff from DFG conducted a stream inventory of Bear Wallow Creek in 1990. Juvenile and YOY *O. mykiss* were found during electrofishing (Frederick 1990). The inventory report noted several log debris accumulations and recommended their removal in order to improve fish passage.

Sampling was conducted in Bear Wallow Creek in 1994, 1995, 1996, and 2000 during fish distribution studies. Juvenile and/or YOY *O. mykiss* were collected every year that sampling took place (Louisana-Pacific 1997, MRC 2000).

Staff from DFG conducted a stream inventory of Bear Wallow Creek in 2002. A few YOY and juvenile steelhead were captured during electrofishing in the creek (CCC 2002d). The report recommended treating sources of fine sediment.

Little Bear Wallow Creek

Little Bear Wallow Creek is tributary to Huckleberry Creek and consists of about 0.8 stream miles. It flows southeasterly, entering Huckleberry Creek about 0.9 miles upstream from the Hollow Tree Creek confluence.

Sampling was conducted in Bear Wallow Creek in 1994, 1995, 1996, and 2000 during fish distribution studies. Juvenile *O. mykiss* were collected in 1994 and YOY were collected in 1996 and 2000 (Louisana-Pacific 1997, MRC 2000)

Butler Creek

Butler Creek is tributary to Hollow Tree Creek and consists of about 2.8 stream miles. It flows southwesterly, entering Hollow Tree Creek about 20.5 miles upstream from the South Fork Eel River.

Staff from DFG surveyed Butler Creek in 1968 and observed steelhead and "possibly native rainbows." The stream had "generally good" spawning areas and a mostly constant flow of water (DFG 1968aa).

Butler Creek was surveyed in April and May of 1979. "Numerous fingerlings" were observed during both surveys. In the April survey report the stream is described as "in horrible shape in the lower portion," although "excellent" spawning gravel was observed throughout and the creek was deemed capable of supporting many fish after clean-up (Sprehn 1979l). Similar conclusions were reached in May and the stream survey report describes Butler Creek as "an important part of the headwaters of Hollow Tree Creek" (Clark 1979a). A stream clearance project was conducted in Butler Creek in 1978-80. The project involved the removal of log jams and planting of riparian vegetation (DFG 1981g).

Butler Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek in 1983 and steelhead were collected (DFG 1988).

Sampling was conducted in Butler Creek in 1994, 1995, 1996, and 2000 during fish distribution studies. Juvenile and/or YOY *O. mykiss* were collected every year that sampling took place (Louisana-Pacific 1997, MRC 2000).

Staff from DFG conducted a stream inventory of Butler Creek in 2002. Young-of-year and juvenile steelhead were collected during electrofishing (CCC 2002e). The inventory report recommended treating sources of fine sediment related to the road system.

Butler Creek tributary

An unnamed tributary to Butler Creek consists of about 1.2 stream miles. It flow southwesterly, entering Butler Creek about one mile upstream from the Hollow Tree Creek confluence.

Staff from DFG conducted a stream inventory of this unnamed tributary to Butler Creek in 2002. Fish described as "juvenile salmonids" were observed at several locations in the creek, although species was not identified (DFG 2002b). The report recommended treating sources of fine sediment related to the road system.

Mitchell Creek

Mitchell Creek is tributary to Hollow Tree Creek and consists of about 0.9 stream miles. It flows southwesterly, entering Hollow Tree Creek in its headwaters, about 21.5 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Mitchell Creek in 1968 noted, "Steelhead are present where the flow is maintained near the mouth, although in limited supply." The low summer flows were said to limit the *O. mykiss* population and the creek was described as "…a short (1 mile in length) creek offering good spawning areas and could greatly be improved by the clearance of the litter" (DFG 1968ab).

Cedar Creek

Cedar Creek is tributary to the South Fork Eel River and consists of about 11 stream miles. It flows southwesterly, entering the South Fork at about stream mile 70.

Stocking records indicate that Cedar Creek was stocked with 10,000 steelhead in 1938 and 5,000 in 1939 (DFG 1939g). Staff from DFG surveyed Cedar Creek in 1938 and observed steelhead from two to five inches in length. The fish were "common" and "good" spawning areas were observed in the stream (DFG 1938z).

Staff from DFG surveyed Cedar Creek in 1941. "Good" or "fair" spawning areas were observed throughout the creek and two to three-inch trout were observed in the "East Branch" of Cedar Creek (i.e. mainstem Cedar Creek upstream from the North Fork confluence) (DFG 1941b). According to a 1993 report, DFG operated a fish hatchery at the mouth of Cedar Creek from 1949 to 1964 and more than 400,000 steelhead were released during its operation (CCC 1993z).

Cedar Creek was surveyed again by staff from DFG in 1968. During the survey steelhead fry were observed in the lower section and rainbow trout were observed five miles from the mouth and further upstream. Cedar Creek was described as "…an excellent creek for migrating and/or non-migrating fish" (DFG 1968ac).

Staff from BLM surveyed Cedar Creek in 1975 and observed *O. mykiss* throughout the stream. The survey report stated, "Cedar Creek provides three miles of excellent habitat for resident rainbow trout and spawning anadromous fish." Severe stream bank erosion was seen in some areas and may have been due to logging and cattle grazing activities (BLM 1975d).

Cedar Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek in 1983 and steelhead were collected (DFG 1988).

Staff from DFG conducted a stream inventory of Cedar Creek in 1993. Juvenile and YOY *O. mykiss* were sampled at two electrofishing sites during the survey (CCC 1993z). The inventory report noted that spawning gravels were limited to few reaches and fish passage was difficult due to the stream's steep gradient. It recommended increasing canopy cover and treating sources of fine sediment.

Cedar Creek tributary

An unnamed tributary to Cedar Creek consists of about 0.5 stream miles. It flows south, entering Cedar Creek about 0.3 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed this unnamed tributary to Cedar Creek in 1941 and observed two-inch steelhead about 50 feet upstream from the mouth. It was described as "Too small to be a fishing stream" (DFG 1941c).

North Fork Cedar Creek

North Fork Cedar Creek is tributary to Cedar Creek and consists of about 0.9 stream miles. It flows south, entering Cedar Creek about 7.4 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed a small section near the mouth of North Fork Cedar Creek in 1941. Young-of-year "trout" were observed and described as "naturally propagated." Good spawning areas were present, but the creek had "insufficient flow" for stocking (DFG 1941d).

North Fork Cedar Creek was surveyed again in 1968. Steelhead fry and fish up to eight inches were found "in good supply." Good spawning and nursery conditions were found throughout the creek and "a good flow of water is maintained" (DFG 1968ac).

Little Cedar Creek

Little Cedar Creek is tributary to Cedar Creek and consists of about 0.6 stream miles. It flows north, entering Cedar Creek about 8.2 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Little Cedar Creek in 1968 and rainbow trout up to six inches long were observed. The stream was described as, "A short creek which offers no use for migratory fish but which has a fair supply of native rainbow trout." A 12-foot falls at the mouth was cited as preventing use by anadromous fish (DFG 1968ad).

Big Dann Creek

Big Dann Creek is tributary to the South Fork Eel River and consists of about 3.5 stream miles. It flows southwesterly, entering the South Fork at about stream mile 70.4.

Stocking records indicate that Big Dann Creek was stocked with 5,000 steelhead in 1939 (DFG 1939h). Big Dann Creek was surveyed in 1959. *Oncorhynchus mykiss* averaging three inches in length were "present but not abundant" in the creek. A large school of *O. mykiss* was observed in a pool at the confluence of Big Dann Creek and the South Fork Eel River (DFG 1959a).

Staff from DFG surveyed Big Dann Creek in 1968 and observed juvenile steelhead. An eight foot falls located at approximately stream mile 3.0 was identified as the upstream limit of anadromy. The survey report states, "Stream condition is fairly good for natural propagation although fish abundance is limited" (DFG 1968ae).

In 1975 staff from BLM surveyed a section of Big Dann Creek located about two miles upstream from the South Fork Eel River confluence and observed rainbow trout. The report noted that 20-foot falls located at some point downstream of the survey section blocked passage by anadromous fish. Surveyors also noted "severe erosion problems caused by poor logging practices" in the upper reaches of Big Dann Creek (BLM 1975e).

Big Dann Creek was surveyed as part of a 1990 study of salmonid resources in Mendocino County Rivers. The creek was surveyed five times from November 1989 to February 1990 and no fish were observed. Two redds were observed and were assumed to be steelhead redds. The creek was noted to contain steep terrain and low water levels (DFG 1990b).

Little Dann Creek

Little Dann Creek is tributary to Big Dann Creek and consists of about 1.2 stream miles. It flows west, entering Big Dann Creek about 0.4 miles upstream from the South Fork Eel River confluence.

Little Dann Creek is mentioned in a field note written in 1960. The note states that a warden reported "Numerous steelhead seen spawning in Big Den, Little Den and in Bridges Creeks" (DFG 1960d). The description indicates that "Little Den" is the same as "Little Dann" Creek.

Staff from DFG surveyed Little Dann Creek in 1968. The report states that the creek was "non-usable due to a 30 foot falls at the mouth" and was intermittent upstream of the falls (DFG 1968af).

Staff from BLM surveyed sections of Little Dann Creek in 1972 and 1975. The 1972 report cites the large falls near the mouth as a complete barrier although a few fish were observed upstream of the falls at that time. The stream is described as "…only a minor producer, at best, and then only for resident fishes" (BLM 1972). No fish were observed in 1972. However, the survey report states that the surveyed section (upstream of the second road crossing) could become habitable for trout if erosion problems were addressed (BLM 1975f).

Grizzly Creek

Grizzly Creek is tributary to the South Fork Eel River and consists of about 0.7 stream miles. It flows southwesterly, entering the South Fork at about stream mile 71.6.

Staff from DFG surveyed Grizzly Creek in 1968 and found it to be "…non-usable by migratory fish due to a 25' falls at the mouth." Upstream of the falls the stream had a steep gradient and was "not suitable for fish" (DFG 1968ag).

Staff from BLM surveyed Grizzly Creek in 1975. Surveyors found that, "No fish were present and little potential exists for fisheries development" (BLM 1975g).

Low Gap Creek

Low Gap Creek is tributary to the South Fork Eel River and consists of about two stream miles. It flows north, entering the South Fork at about stream mile 72.7.

Staff from DFG surveyed Low Gap Creek in 1968 and observed steelhead. Fish were "limited in abundance" but the creek was in "good condition" with spawning areas in the lower section, excellent shelter, and good nursery conditions in the lower and upper sections (DFG 1968ah).

During a 1979 survey of Low Gap Creek two fish carcasses were observed but species was not identified. Several log jam barriers were present and the creek was described as "…excellent quality for steelhead and salmon spawning grounds, if the blockages are removed" (Sprehn 1979a).

Staff from DFG conducted a stream inventory of Low Gap Creek in 1990. Steelhead YOY and juveniles were collected at all five electrofishing sites (DFG 1990c). The inventory report recommended re-vegetation in order to stabilize stream banks and provide canopy cover.

Staff from DFG surveyed Low Gap Creek in 1995. Six YOY steelhead were captured (Flosi 1995).

Little Low Gap Creek

Little Low Gap Creek is tributary to Low Gap Creek and consists of about one stream mile. It flows east, entering Low Gap Creek about 0.6 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Little Low Gap Creek in 1968 and found that the creek was "non-usable." This condition was attributed to a steep gradient and debris in the creek (DFG 1968ai).

Rattlesnake Creek

Rattlesnake Creek is tributary to the South Fork Eel River and consists of about 11 stream miles. It flows west, entering the South Fork at about stream mile 74.3.

Staff from DFG surveyed Rattlesnake Creek in 1939 and observed two dead adult steelhead as well as "infrequent" YOY steelhead. Downstream of the confluence with Mad Creek, Rattlesnake Creek was noted to have a number of steep falls and cascades which were suspected of limiting passage at low flow (DFG 1939i).

In 1953 Rattlesnake Creek was stocked with a total of 253 rescued steelhead. These fish had been rescued from an unnamed tributary to Tenmile Creek (DFG 1954).

Staff from DFG surveyed Rattlesnake Creek in 1968 and observed steelhead from two to eight inches in length. According to the survey report, "This creek offers excellent water for the migratory fish as a good flow is maintained throughout. At present no improvements are needed" (DFG 1968aj).

Rattlesnake Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. Fingerling salmonids were observed in the creek just upstream of its mouth and about 3.5 miles upstream. During the temperature study Rattlesnake Creek was found to contribute warm water to the South Fork Eel River which created potentially lethal conditions for salmonids (Kubicek 1977).

Staff from DFG conducted a stream inventory of Rattlesnake Creek in 1993. Young-of-year, age 1+, and age 2+ steelhead were electrofished and observed in the creek. The report recommended increasing canopy and treating sources of fine sediment (CCC 1993aa). Data sheets indicate that electrofishing took place in Rattlesnake Creek in 1995 with the intent of characterizing fish passage through the Highway 101 culvert at Spy Rock Road. Steelhead were captured during the sampling and the data sheet states, "This culvert does not appear to have been a barrier to steelhead during the 1994/95 winter migration." The culvert is located about eight miles upstream from the South Fork Eel River confluence (DFG 1995b). No steelhead were observed in Rattlesnake Creek during carcass surveys conducted in 1999 and 2000 by DFG staff (Harris 2000Squaw Creek

Squaw Creek

Squaw Creek is tributary to Rattlesnake Creek and consists of about 0.6 stream miles. It flows south, entering Rattlesnake Creek about 0.8 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Squaw Creek in 1968. The survey report states that the creek was "obliterated" during construction of Highway 101 and "…was probably too steep to support many fish before the fill was placed there" (DFG 1968ak).

Staff from BLM surveyed Squaw Creek in 1975 and did not observe fish. Their report notes that the creek was dry for 0.5 miles upstream of the freeway and had "poor trout habitat" (BLM 1975h).

Measly Creek

Measly Creek is tributary to Rattlesnake Creek and consists of about 1.2 miles of intermittent stream. It flows south, entering Rattlesnake Creek about 1.2 miles upstream from the South Fork Eel River confluence.
Measly Creek was surveyed by staff from DFG in 1968. At the time it was noted to be "…impassable due to steep gradient beginning at mouth and continuing to present freeway construction" (DFG 1968al).

Staff from BLM surveyed Measly Creek in 1975. Their report states, "No fish are present in the stream and little potential exists for future habitation" (BLM 1975i).

Wilson Creek

Wilson Creek is tributary to Rattlesnake Creek and consists of about 0.8 stream miles. It flows south, entering Rattlesnake Creek about 1.8 miles upstream from the South Fork Eel River confluence.

In a 1968 field note DFG staff wrote, "Wilson Creek is non-usable for migratory fish due to steep gradient" (DFG 1968am). Staff from BLM surveyed a section of Wilson Creek in 1975 and did not observe fish. The survey report noted, "Little potential for fisheries development" (BLM 1975j).

Foster Creek

Foster Creek is tributary to Rattlesnake Creek and consists of about 2.7 stream miles. It flows south, entering Rattlesnake Creek about 2.7 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Foster Creek in 1968 and observed a "good supply" of steelhead. It was described as "…a very clean and usable creek for migratory fish offering good spawning with a good flow maintained" (DFG 1968an).

Foster Creek was surveyed again in 1979 and appeared to be in "excellent condition" with "good quality and abundant" spawning gravel. No fish were observed during the survey (Sprehn 1979m).

Staff from DFG inspected Foster Creek in 1986 in relation to a proposed dam site on the creek. An observation of two adult steelhead confirmed the presence of anadromous fish in the creek (DFG 1986b).

Staff from DFG conducted a stream inventory of Foster Creek in 1993. Juvenile and YOY steelhead were captured at two electrofishing sites (CCC 1993ab). The report recommended treating sources of fine sediment, including those related to the road system, and increasing canopy cover.

Mad Creek

Mad Creek is tributary to Rattlesnake Creek and consists of about one stream mile. It flows north, entering Rattlesnake Creek about 3.2 miles upstream from the South Fork Eel River confluence.
Staff from DFG surveyed Mad Creek in 1968. They found the creek inaccessible to anadromous fish "…due to a 10 foot falls at the mouth originating from the culvert under U.S. 101" (DFG 1968ao).

Elk Creek

Elk Creek is tributary to Rattlesnake Creek and consists of about 2.3 stream miles. It flows north, entering Rattlesnake Creek about three miles upstream from the South Fork Eel River confluence.

In 1953 Elk Creek was stocked with a total of 15,384 rescued steelhead. These fish had been rescued from nearby Tenmile Creek and unnamed tributaries to Tenmile Creek (DFG 1954). A 1959 DFG memo reports that in March of that year steelhead were observed attempting to enter the fish ladder on a highway culvert in Elk Creek. It was thought unlikely that fish would be able to pass through the culvert (DFG 1959b).

Electrofishing was conducted both upstream and downstream of the Highway 101 culvert in October 1968 and *O. mykiss* were found at both locations (DFG 1968ap). During a subsequent survey of Elk Creek in November 1968 no fish were observed, but the creek had a "good flow of water and good spawning conditions" (DFG 1968aq).

Elk Creek was surveyed by DFG staff in 1971 and found to support "a fair-sized population of rainbow trout." The fish observed were thought to be resident (DFG 1971b).

Staff from DFG inspected the highway 101 culvert on Elk Creek in 1984 and noted that alterations had been made to improve fish passage. However it continued to be a barrier to some salmonids and additional alterations were recommended (DFG 1984b).

Staff from DFG conducted a stream inventory of Elk Creek in 1993. Juvenile and YOY steelhead were collected during electrofishing at two sites. The point where the creek forks about 2.4 miles upstream from the mouth is described as the upstream limit of anadromy (CCC 1993ac). The report recommended controlling fine sediment input into the creek, including treating sources of sediment related to the road system.

Cummings Creek

Cummings Creek is tributary to Rattlesnake Creek and consists of about 0.8 stream miles. It flows south, entering Rattlesnake Creek about 4.3 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Cummings Creek in 1968 and observed steelhead "in good abundance" downstream of a 30 foot falls located about one mile from the mouth. Resident fish were observed upstream of the falls and the creek had "good spawning water for migratory fish" (DFG 1968ar).

Staff from BLM surveyed a portion of Cummings Creek and an unnamed tributary in 1975. This survey report stated that "rainbow trout" were present in Cummings Creek between the Highway 101 crossing and the tributary located about one mile upstream (BLM 1975k).

Cummings Creek was surveyed as part of a 1990 study of salmonid resources in Mendocino County Rivers. No fish were observed in Cummings Creek; however local residents reported that steelhead spawned in the creek (DFG 1990b).

Staff from DFG conducted a stream inventory of Cummings Creek in 1993. One site was electrofished and one 6.7 inch (FL) steelhead was collected (CCC 1993ad). The report recommended treating sources of fine sediment.

Twin Rocks Creek

Twin Rocks Creek is tributary to Rattlesnake Creek and consists of about 1.9 stream miles. It flows southwesterly, entering Rattlesnake Creek about 4.7 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Twin Rocks Creek in 1968 and observed two to four inch steelhead "in good abundance." According to the survey report, "Twin Rock Creek offers 2 miles of good water" (DFG 1968as).

Staff from DFG conducted a stream inventory of Twin Rocks Creek in 1993. Two sites were electrofished and YOY and juvenile steelhead were collected. The report recommends treating sources of fine sediment (CCC 1993ae). Twin Rocks Creek was inspected in 1999 in relation to a proposed water diversion in the watershed. During the inspection YOY fish believed to be steelhead were observed in the creek near the confluence with Rattlesnake Creek (SWRCB 1999).

Grapewine Creek

Grapewine Creek is tributary to Rattlesnake Creek and consists of about 1.3 stream miles. It flows southwesterly, entering Rattlesnake Creek about 6.2 miles upstream from the South Fork Eel River confluence.

Staff from DFG surveyed Grapewine Creek in 1968 and observed two to four inch steelhead "in good numbers." The creek was characterized as "…a short creek with a small flow but which offers some good water for migratory fish" (DFG 1968at).

Staff from DFG surveyed Grapewine Creek in 1976 soon after the construction of an earth fill dam which formed a totall passage barrier about 0.75 miles upstream from the mouth of the creek. *Oncorhynchus mykiss* ranging from one to ten inches in length were present both upstream and downstream of the dam, which blocked anadromous access to about one mile of habitat. The creek supported "a good population of juvenile steelhead" (DFG 1976c).

Staff from DFG conducted a stream inventory of Grapewine Creek in 1993. Juvenile and YOY steelhead were captured at one electrofishing site, located 87 feet upstream from the confluence with Rattlenake Creek. The survey ended at a point about 0.8 miles upstream from the mouth, where surveyors noted, "Channel dry, steep, full of large boulders. Clearly a fish barrier" (CCC 1993af). The report recommended treating sources of fine sediment.

Surveyors Canyon Creek

Surveyors Canyon is tributary to the South Fork Eel River and consists of about 1.2 stream miles. It flows east, entering the South Fork at about stream mile 79.6.

Staff from BLM surveyed Surveyors Canyon in 1975 and did not observe fish. The survey report states, "Numerous rock and log falls prohibit steelhead use and makes the stream uninhabitable by rainbow trout" (BLM 1975l).

Tenmile Creek

Tenmile Creek is tributary to the South Fork Eel River and consists of about 22 stream miles draining a basin of about 63.5 square miles (CCC 1996b). It flows northwesterly, entering the South Fork at about stream mile 82.1.

Stocking records indicate that Tenmile Creek was stocked with 7,000 steelhead in 1939 (DFG 1939j). Staff from DFG surveyed Tenmile Creek in 1940 and noted steelhead presence, including the observation of one 25-inch adult. "Excellent" spawning areas were noted (DFG 1940f).

Steelhead were rescued from Tenmile Creek in 1951 and 1953. A total of 2,250 steelhead were rescued in 1951 and 9,221 steelhead were rescued in 1953 (DFG 1952b, DFG 1954). Tenmile Creek was surveyed in 1959. *Oncorhynchus mykiss* ranging from two to five inches were "very common" in a stream section midday between the mouth of the creek and Camp Seabow, about 2.2 miles upstream (DFG 1959a).

Tenmile Creek was sampled in 1966 as part of a study of the downstream migration of anadromous fish in the Eel River drainage. The sampling site was located about six miles north of Laytonville and steelhead were regularly collected from March through July, 1966 (DFG 1976a).

Tenmile Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study "a few fingerling salmonids" were observed just above the mouth of Tenmile Creek and about eight miles upstream (Kubicek 1977).

Staff from DFG conducted a stream inventory of Tenmile Creek in 1996. Three sites were electrofished and YOY, age 1+, and age 2+ *O. mykiss* were collected (CCC 1996b). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment.

Peterson Creek

Peterson Creek is tributary to Tenmile Creek and consists of about 1.3 stream miles. It flows north, entering Tenmile Creek at about stream mile 2.9.

Staff from DFG conducted electrofishing in Peterson Creek during a 1996 stream inventory of Tenmile Creek. Sampling was conducted about 200 feet upstream from the mouth of the creek and seven YOY *O. mykiss* were collected (CCC 1996b).

Grub Creek

Grub Creek is tributary to Tenmile Creek and consists of about 0.9 stream miles. It flows south, entering Tenmile Creek at about stream mile 4.1.

Staff from DFG surveyed Grub Creek in 1969. Steelhead fry and juveniles up to six inches were observed. According to the report, Grub Creek and its tributary (Cold Creek) "…are currently supporting a substantial fish population" (DFG 1969d).

Cold Creek

Cold Creek is tributary to Grub Creek and consists of about 1.3 stream miles. It flows east, entering Grub Creek about 0.9 miles upstream from the Tenmile Creek confluence.

Staff from DFG included observations of a tributary to Grub Creek in a 1969 survey, the tributary referred to is believed to be Cold Creek. Steelhead were observed in this tributary "in good supply." However, according to the survey report, "The tributary offers only fair spawning areas because of increased gradient and predominate size of bottom [substrate]" (DFG 1969d).

Steep Gulch Creek

Steep Gulch Creek is tributary to Tenmile Creek and consists of about 2.4 stream miles. It flows west, entering Tenmile Creek at about stream mile 6.9.

In 1968 electrofishing was conducted immediately upstream and downstream of the Highway 101 culvert on Steep Gulch Creek. Juvenile steelhead were captured at both locations and ranged from 1.5 to three inches (DFG 1968au).

Staff from DFG surveyed Steep Gulch in 1969. The entire length of the creek was dry during the survey and no fish were observed, however good spawning areas and shelter were noted. The report states, "At times when a flow is present Steep Gulch would offer at least 1.5 miles of good spawning areas" (DFG 1969e).

Streeter Creek

Streeter Creek is tributary to Tenmile Creek and consists of about 3.6 stream miles. It flows east, entering Tenmile Creek at about stream mile 8.4.

In 1961 staff from DFG inspected Streeter Creek in relation to a proposed water development on the creek. A memo states, "Streeter Creek is an important salmon-steelhead stream tributary tributary to Ten-Mile Creek." About 2,000 YOY and juvenile *O. mykiss* were observed in the creek during the July 1961 inspection (DFG 1961b).

Staff from DFG surveyed Streeter Creek in 1969 and observed steelhead "in good supply." The fish ranged from fry to six inches in length and the creek had "…3 miles of usable water for spawning purposes with excellent nursery conditions present" (DFG 1969f).

Staff from DFG conducted a stream inventory of Streeter Creek in 1994. Juvenile and YOY *O. mykiss* were captured at four electrofishing sites during the survey (DFG 1994a). The inventory report recommended increasing canopy in the lower reaches of the creek, treating sources of fine sediment, and excluding cattle from the creek to avoid trampling and effects from defecation.

Lewis Creek

Lewis Creek is tributary to Tenmile Creek and consists of about 1.8 stream miles. It flows southwesterly, entering Tenmile Creek at about stream mile 9.3.

In 1968 electrofishing was conducted immediately upstream and downstream of the Highway 101 culvert on Lewis Creek. Seventeen *O. mykiss* were found downstream of the culvert and one was found upstream. The culvert was described as a barrier to upstream migration and the fish found upstream was described as a resident rainbow trout (DFG 1968av).

Staff from DFG surveyed Lewis Creek in 1969 and observed "very few" steelhead, ranging from fry to individuals of three inches in length. Good spawning and nursery conditions were observed and log jam removal was recommended (DFG 1969g).

Staff from DFG conducted a stream inventory of Lewis Creek in 1994. Young-of-year *O. mykiss* were captured at two electrofishing sites, located 0.3 and 0.9 miles upstream from the mouth of the creek. The inventory report cites the end of the anadromous reach as a point about 1.3 miles upstream from the mouth (DFG 1994b). The report recommended increasing treating sources of fine sediment and excluding cattle from the creek to avoid trampling and effects from defecation.

Big Rock Creek

Big Rock Creek is tributary to Tenmile Creek and consists of about 4.6 stream miles. It flows northeasterly, entering Tenmile Creek at about stream mile 9.5.

Staff from DFG surveyed Big Rock Creek in 1969 and observed steelhead "in good abundance" ranging from fry to individuals of five inches in length. According to the report, "Both spawning and nursery conditions enable this creek to support a good population of fish" (DFG 1969h).

Staff from DFG conducted a stream inventory of Big Rock Creek in 1994. Juvenile and YOY *O. mykiss* were captured during electrofishing. A 15-foot waterfall at the base of Big Rock, about four miles upstream from the creek's mouth, appeared to be a natural barrier and resident rainbow trout were observed further upstream (CCC 1994c). The inventory report recommended increasing canopy in the lower reaches of the creek and treating sources of fine sediment.

Wilson Creek

Wilson Creek is tributary to Tenmile Creek and consists of about two miles of intermittent stream. It flows west, entering Tenmile Creek at about stream mile 11.2.

Staff from DFG surveyed Wilson Creek in 1961 and noted that 99 percent of the stream was dry during the survey. Young-of-year *O. mykiss* were observed, though success was described as "…poor because of the low flow conditions." The survey report stated, "This stream is of minor importance as a steelhead spawning and nursery area of the South Fork of the Eel River system" (DFG 1961c).

Wilson Creek was surveyed in 1969 and lacked water in its entire length. However, *O. mykiss* were present in some small pools near the creek mouth and the creek was said to contain about one mile of good spawning habitat when water was present (DFG 1969i).

In 1990, Wilson Creek was electrofished upstream and downstream of the Highway 101 culvert. One six-inch steelhead was captured upstream of the culvert inlet and the creek was said to contain "good upstream spawning and rearing habitat" (DFG 1990d).

Mud Springs Creek

Mud Springs Creek is tributary to Tenmile Creek and consists of about 3.2 stream miles. It flows east, entering Tenmile Creek at about stream mile 13.

Staff from DFG surveyed Mud Springs Creek in 1969 and observed steelhead "in fair numbers" ranging from fry to individuals of six inches in length. The survey report documented "…excellent nursery conditions, good cover, and a good flow." Fewer fish than expected were observed and the report stated, "There is no obvious reason for the creek not supporting a larger population of fish" (DFG 1969j).

Staff from DFG conducted a fisheries inventory in Mud Springs Creek in 1979. Steelhead were observed during the survey (Cherr and Griffin 1979).

Little Case Creek

Little Case Creek is tributary to Tenmile Creek and consists of about 3.4 stream miles. It flows east, entering Tenmile Creek at about stream mile 13.2. No fisheries information was found for Little Case Creek. The creek is included to provide context for fisheries information applying to a tributary.

Mill Creek

Mill Creek is tributary to Little Case Creek and consists of about 3.9 stream miles. It flows east, entering Little Case Creek about 0.9 miles upstream from the Tenmile Creek confluence.

Staff from BLM surveyed Mill Creek in 1975 and observed rainbow trout throughout the creek ranging from one to six inches in length. The survey report stated, "This stream provides excellent habitat for resident rainbow trout. Ample amounts of high quality gravel make Mill Creek valuable as a salmon and steelhead spawning area" (BLM 1975m).

Cahto Creek

Cahto Creek is tributary to Tenmile Creek and consists of about 5.1 stream miles. It flows northeasterly, entering Tenmile Creek at about stream mile 14.7.

Staff from DFG surveyed Cahto Creek in 1957 and did not observe fish due to muddy water, although a warden considered the creek to be "a fair steelhead stream." Good spawning and rearing habitat was noted downstream of the "Mast Mill" (DFG 1957).

Cahto Creek was surveyed in 1969 and *O. mykiss* YOY were observed "in fair numbers." According to the survey report, "Cahto Creek supplies about 3 miles of good spawning stream" (DFG 1969k).

Staff from DFG conducted a stream inventory of Cahto Creek in 1996. Juvenile and YOY *O. mykiss* were captured by electrofishing (DFG 1996e). The inventory report recommended excluding cattle from the creek to avoid trampling and effects from defecation.

Barnwell Creek

Barnwell Creek is tributary to the South Fork Eel River and consists of about 1.4 miles of intermittent stream. It flows east, entering the South Fork at about stream mile 83.7.

Staff from DFG surveyed Barnwell Creek in 1969 and observed two to four inch steelhead in "fair" abundance. "Fair to good" spawning areas were observed and the creek maintained a good flow of water. However, a steep gradient was said to limit access to the upper reaches (DFG 1969l).

Staff from DFG conducted a stream inventory of Barnwell Creek in 1992. Electrofishing was not conducted during the survey, but YOY salmonids were observed at two spots within 0.3 miles of the mouth of the creek (CCC 1992y). The inventory report recommended treating sources of fine sediment and modifying several log debris accumulations.

Fox Creek

Fox Creek is tributary to the South Fork Eel River and consists of about 1.6 stream miles. It flows west, entering the South Fork at about stream mile 84.5.

Staff from DFG surveyed an unnamed tributary to the South Fork Eel River in 1938. The creek surveyed is thought to be Fox Creek, due to the description of its location "at Wilderness Lodge." The survey report noted the presence of a dam on the creek and a water diversion that "…takes all water except leakage" (DFG 1938aa).

Fox Creek was surveyed in 1959. *Oncorhynchus mykiss* ranging from 1.5 to 2.0 inches in length were observed about 50 feet upstream from the mouth (DFG 1959a).

Staff from DFG surveyed Fox Creek in 1969 and observed two to four inch steelhead in "fair to poor" abundance. Success, condition, and natural propagation of the fish was described as "fair" and the creek was "in good shape" (DFG 1969m).

Staff from DFG conducted a stream inventory of Fox Creek in 1992. No fish observations are noted in the report and a "major sediment problem" was present at one point in the stream. About 0.7 miles upstream from the mouth the stream gradient became steep and flows became intermittent (CCC 1992z). Researchers from the University of California conducted electrofishing in Fox Creek in 1995. During the sampling three age classes of juvenile steelhead were found (DESPM 1995).

Elder Creek

Elder Creek is tributary to the South Fork Eel River and consists of about 4.4 stream miles. It flows west, entering the South Fork at about stream mile 86.4.

Staff from DFG surveyed Elder Creek in 1938 and noted that YOY steelhead were "common" at a station located 150 feet upstream from the mouth. "Fair" spawning areas were observed (DFG 1938ab).

Staff from DFG surveyed Elder Creek in 1969 and observed steelhead "in good numbers." According to the survey report, "An excellent flow is maintained and 3 miles of good spawning stream is available" (DFG 1969n).

Elder Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study, many fingerling salmonids were observed in this stream (Kubicek 1977).

Staff from BLM surveyed Elder Creek in 1975 and observed low densities of rainbow trout ranging from one to three inches in length. The report noted a lack of spawning material that appeared to be limiting the trout population (BLM 1975n).

Elder Creek was sampled in 1983 as part of a DFG report on the status of salmon and steelhead in California Wild and Scenic Rivers. Juvenile steelhead were collected and "…were found to number more than 200 fish per 30-meter (98.4 feet) station." Elder Creek was described as a "Pristine Stream" (DFG 1987).

Staff from DFG conducted a stream inventory of Elder Creek in 1992. Steelhead fry and juveniles were observed during the survey (CCC 1992aa). The inventory report noted that the stream's steep gradient made fish passage difficult and recommended treating sources of fine sediment. Researchers from the University of California conducted a snorkel survey in Elder Creek in 1995. During the survey three size classes of juvenile steelhead were observed (DESPM 1995).

Misery Creek

Misery Creek is tributary to Elder Creek and consists of about 1.2 stream miles. It flows north, entering Elder Creek about 2.3 miles upstream from the South Fork Eel River confluence.

Staff from BLM surveyed Misery Creek in 1975 and observed rainbow trout ranging from one to six inches. The creek contained "Large amounts of high quality gravel, combined with good escape cover and ample summer water flows." The lower reaches were said to be accessible to anadromous fish (BLM 1975o).

Paralyze Canyon Creek

Paralyze Canyon Creek is tributary to Elder Creek and consists of about 2.1 stream miles. It flows north, entering Elder Creek about 2.8 miles upstream from the South Fork Eel River confluence.

Staff from BLM surveyed Paralyze Canyon Creek in 1975 and did not observe fish. According to the report, "The small flow, along with the shortage of deep pools and spawning areas, make this stream uninhabitable for trout" (BLM 1975p).

Jack of Hearts Creek

Jack of Hearts Creek is tributary to the South Fork Eel River and consists of about three stream miles. It flows northeasterly, entering the South Fork at about stream mile 87.2.

Staff from DFG surveyed Jack of Hearts Creek in 1969 and observed steelhead "in good abundance." Good spawning areas were observed and the survey report stated, "Jack of Hearts Creek has excellent potential for migratory fish" (DFG 1969o).

Staff from DFG conducted a stream inventory of Jack of Hearts Creek in 1992. One YOY *O. mykiss* was observed during electrofishing at two sites in the creek (CCC 1992ab). Jack of Hearts Creek was sampled during salmonid distribution studies in 1996 and 2000. Juvenile and YOY *O. mykiss* were collected during both sampling years (Louisana-Pacific 1997, MRC 2000).

Staff from DFG conducted a stream inventory of Jack of Hearts Creek in 2005. A total of 36 YOY *O. mykiss* were observed during snorkel surveys (DFG 2005). The inventory report recommended treating sources of fine sediment.

Dark Canyon Creek

Dark Canyon Creek is tributary to Jack of Hearts Creek and consists of about 0.8 stream miles. It flows south, entering Jack of Hearts Creek about 0.8 miles upstream from the South Fork Eel River confluence.

In 2003, four pools in Dark Canyon Creek were snorkeled in order to determine the presence of coho salmon. An age 1+ *O. mykiss* was observed in a pool located about 100 feet upstream from the road crossing culvert in Dark Canyon Creek (PSMFC 2003).

Deer Creek

Deer Creek is tributary to the South Fork Eel River and consists of about 1.4 miles of intermittent stream. It flows west, entering the South Fork at about stream mile 88.6.

Staff from DFG surveyed Deer Creek in 1969 and observed steelhead ranging from two to four inches. The survey report stated, "Deer Creek is cluttered with jams the entire length. The flow is small and fish use of this creek seems limited" (DFG 1969p).

Deer Creek was surveyed as part of a 1990 study of salmonid resources in Mendocino County Rivers. No fish or evidence of spawning was observed. During the survey local residents reported that fish had not been seen in the last two years and that "…four families now pump drinking and washing water from the creek and it dries up in late summer" (DFG 1990b).

Little Charlie Creek

Little Charlie Creek is tributary to the South Fork Eel River and consists of about 0.7 stream miles. It flows southeasterly, entering the South Fork at about stream mile 89.7.

Staff from DFG surveyed Little Charlie Creek in 1969 and steelhead were observed ranging from fry to four inches in length. According to the survey report, "About 1 mile of Little Charlie Creek could be used by migratory fishes provided some of the jams were removed" (DFG 1969q).

Little Charlie Creek was surveyed again by staff from DFG in 1979. No fish were observed during the survey and the report states, "The stream supplies only small amounts of water to the South Fork Eel" (Sprehn 1979b).

Little Charlie Creek was surveyed as part of a 1990 study of salmonid resources in Mendocino County Rivers. No sign of anadromous fish use was observed (DFG 1990b).

Dutch Charlie Creek

Dutch Charlie Creek is tributary to the South Fork Eel River and consists of about 4.2 stream miles. It flows east, entering the South Fork at about stream mile 90.3.

Staff from DFG surveyed Dutch Charlie Creek in 1938 and noted the presence of YOY steelhead about 50 yards upstream from the mouth. Spawning areas were described as "excellent" (DFG 1938ac).

Dutch Charlie Creek was surveyed in 1959 and two-inch steelhead were "very abundant" in the creek. Shade and spawning areas were described as "very good" and a report noted that the drainage had been "extensively logged" (DFG 1959a).

In 1969 staff from DFG surveyed Dutch Charlie Creek and observed steelhead "in good supply" including many fry and a few fish five to seven inches in length. The report stated, "The creek is used by migratory fish and offers good spawning." Some siltation problems were noted (DFG 1969r).

Staff from DFG surveyed Dutch Charlie Creek in 1979 and observed adult salmon but no steelhead. According to the survey report the creek "…supplies large quantities of water to the South Fork of the Eel River" and "appears to be of good quality for salmon spawning grounds" (Sprehn 1979k).

Staff from DFG conducted a stream inventory of Dutch Charlie Creek in 1992. Juvenile and YOY *O. mykiss* were observed during electrofishing at three sites. No fish were observed upstream of a nine-foot bedrock waterfall located about 3.5 miles upstream from the mouth (CCC 1992ac). The inventory report recommended treating sources of fine sediment related to the road system and excluding cattle from the creek to avoid trampling and effects from defecation.

Thompson Creek

Thompson Creek is tributary to Dutch Charlie Creek and consists of about 0.5 stream miles. It flows south, entering Dutch Charlie Creek about 1.2 miles upstream from the South Fork Eel River.

The mouth of Thompson Creek was inspected by staff from DFG during a 1979 stream survey of Dutch Charlie Creek. The survey report stated, "Thompson Creek appears to be blocked to spawners at mouth" (Sprehn 1979k).

Staff from DFG surveyed Thompson Creek in 1979 and did not observe fish. According to the survey report, "This stream supplies only small amounts of water to Dutch Charlie Cr." (Sprehn 1979c).

Eagle Creek

Eagle Creek is tributary to Dutch Charlie Creek and consists of about 0.8 stream miles. It flows south, entering Dutch Charlie Creek about two miles upstream from the South Fork Eel River confluence.

The mouth of Eagle Creek was inspected by staff from DFG during a 1979 stream survey of Dutch Charlie Creek. The survey report stated, "Eagle Creek mouth is apparently open to spawners" (Sprehn 1979k).

Staff from DFG surveyed Eagle Creek in 1979 and observed one unidentified fish between six and eight inches in length. The stream appeared "…suitable as a nursery area but is sparse on spawning gravel." Eagle Creek was also described as "a main contributor of water to Dutch Charlie Cr." (Sprehn 1979d).

Redwood Creek

Redwood Creek is tributary to the South Fork Eel River and consists of about 2.5 stream miles. It flows north, entering the South Fork at about stream mile 91.

Staff from DFG surveyed Redwood Creek in 1938 and did not note any fish observations. However, "excellent" spawning areas, pools and shelter were observed (DFG 1938ad).

Redwood Creek was surveyed in 1959 and "fair numbers" of YOY steelhead were observed. Some "good" spawning areas were observed, though the survey report noted that extensive logging had taken place and "As a result, the stream is not as productive as it could be" (DFG 1959a, p. 8).

Steelhead were observed with "fair to poor abundance" in Redwood Creek during a 1969 survey. Surveyors found that "The lower section of this creek is excellent for migratory fish." Spawning areas were impacted by gradient, litter, and siltation in the upper sections (DFG 1969s).

Staff from DFG conducted a stream inventory of Redwood Creek in 1993. Juvenile and YOY steelhead were collected by electrofishing at two sites (CCC 1993g). The inventory report recommended treating sources of fine sediment and modifying several log debris accumulations. Staff from DFG observed steelhead in Redwood Creek during carcass surveys conducted in 1996 and 1997 (Harris,1997).

Rock Creek

Rock Creek is tributary to the South Fork Eel River and consists of about 3.1 stream miles. It flows southwesterly, entering the South Fork at about stream mile 91.3.

Rock Creek was surveyed in 1959 and steelhead up to six inches in length were observed. Surveyors noted that the creek was dry at the mouth and that lower potions of the basin had been clear-cut (DFG 1959a).

Staff from DFG surveyed Rock Creek in 1969 and observed steelhead fry and native rainbow trout of six to eight inch size. The survey report stated, "Rock Creek is an excellent creek for migrating fish" (DFG 1969t).

One 18-inch adult steelhead was observed about 0.5 miles upstream from the mouth of Rock Creek during a 1979 DFG survey. Surveyors noted two boulder runs located about two miles upstream from the creek mouth that were deemed total passage barriers (Clark 1979d).

Staff from DFG conducted a stream inventory of Rock Creek in 1992. Juvenile and YOY steelhead were captured at two electrofishing sites (CCC 1992ad). The inventory report recommended treating sources of fine sediment, including sediment sources related to the road system.

Muddy Gulch Creek

Muddy Gulch Creek is tributary to the South Fork Eel River and consists of about one mile of intermittent stream. It flows southwesterly, entering the South Fork at about stream mile 92.5.

Staff from DFG surveyed Muddy Gulch Creek in 1979. No fish were observed during the survey and surveyors concluded, "Barriers, intermittence, and lack of high quality spawning areas make this stream of little use for salmon spawning" (Sprehn 1979e).

Kenny Creek

Kenny Creek is tributary to the South Fork Eel River and consists of about 3.6 stream miles. It flows southwesterly, entering the South Fork at about stream mile 93.7.

Kenny Creek was surveyed in 1959 and *O. mykiss* up to five inches in length were found to be "very common." A report noted, "This appears to be a very productive stream" (DFG 1959a, p. 8).

Staff from DFG surveyed Kenny Creek in 1969 and observed steelhead fry as well as four to six inch "salmonids." According to the survey report, "Kenny Creek is in good shape and presently utilized by migratory fish" (DFG 1969u).

Kenny Creek was surveyed again in 1979 and steelhead were observed, including one female spawner. Spawning areas were described as "average for entire length" and the stream was "in excellent condition for production of fish" (Clark 1979c).

Staff from DFG conducted stream inventories of Kenny Creek in 1996 and 2005. In 1996 three age classes of steelhead were captured during electrofishing about 400 feet upstream from the mouth (DFG 1996f). In 2005 eight sites were electrofished throughout the creek and YOY *O. mykiss* were collected at seven sites (Mikus 2006). The 2005 inventory report noted that little spawning habitat was available in the creek and recommended treating sources of streambank erosion, including those related to the road system.

Buck Creek

Buck Creek is tributary to the South Fork Eel River and consists of about 0.9 stream miles. It flows south, entering the South Fork at about stream mile 94.5.

Staff from DFG surveyed Buck Creek in 1969 and found the creek "non-usable for migratory fish" due to a barrier at the Branscomb Mill pond. Lack of water and logging operations were said to limit habitat upstream of the mill pond (DFG 1969v).

Haun Creek

Haun Creek is tributary to the South Fork Eel River and consists of about 0.8 miles of intermittent stream. It flows north, entering the South Fork at about stream mile 95.4.

Staff from DFG surveyed Haun Creek in 1969 and steelhead were observed in "fair to poor" abundance. Habitat was noted to be affected by low flows, log jams, and siltation (DFG 1969w).

Mud Creek (Mud Springs Creek)

Mud Creek, sometimes referred to as Mud Springs Creek, is tributary to the South Fork Eel River and consists of about 4.4 stream miles. It flows southwesterly, entering the South Fork at about stream mile 95.8.

Staff from DFG surveyed Mud Creek in 1938 and noted that steelhead ranging from 1.5 to 2.5 inches in length were "abundant." Spawning areas were said to be "fair" and pools and shelter were characterized as "good" (DFG 1938ae).
Mud Creek was surveyed in 1959 and YOY *O. mykiss* were present "but not abundant." Some *O. mykiss* up to five inches also were observed. High levels of siltation and turbidity were noted (DFG 1959a).

A 1962 field note describes the value of Mud Creek to anadromous fisheries. It states, "Mud Springs Creek does not appear to be of any value to steelhead…at this time because of its highly natural turbid condition" (DFG 1962b).

Staff from DFG surveyed Mud Creek in 1969 and observed steelhead with "good" abundance, success, and condition. The creek was said to be "…and excellent stream for migratory fish." A "milky substance" was noted in the water and originated from the mud springs located about 2.5 miles upstream from the mouth (DFG 1969x).

Staff from BLM surveyed Mud Creek in 1975 and observed rainbow trout, mostly in sections upstream of the mud springs. "High productivity" was noted in these upper portions of the stream, although the survey report noted, "Heavy siltation from mud springs destroys much valuable fish habitat." Erosion caused by logging and fire damage also was observed (BLM 1975q).

Staff from DFG conducted a stream inventory of Mud Creek in 1996. Young-of-year *O. mykiss* were sampled by electrofishing at two sites, located 187 feet and 2.7 miles upstream from the South Fork Eel River confluence (DFG 1996g). The inventory report notes that water temperature may limit the fishery and recommends additional temperature monitoring, along with excluding cattle from the creek to avoid trampling and effects from defecation.

Grapevine Creek

Grapevine Creek is tributary to Mud Creek and consists of about 1.2 stream miles. It flows south, entering Mud Creek about 1.9 miles upstream from the South Fork Eel River confluence.

Staff from DFG conducted a stream inventory of Grapevine Creek in 1997. Juvenile and YOY steelhead were captured at one electrofishing site located about 0.6 miles upstream from the Mud Creek confluence (DFG 1997c). The report noted that spawning gravel was limited to few reaches and recommended treating sources of fine sediment related to the road system.

Taylor Creek

Taylor Creek is tributary to the South Fork Eel River and consists of about 1.3 stream miles. It flows southwesterly, entering the South Fork at about stream mile 96.8.

Taylor Creek was surveyed in 1959 and steelhead were "very numerous" in the lower 200 yards of the creek, downstream of a log jam. The report states, "Appears to have been a productive stream before logged-off. Considered to be of little value for spawning in upper sections" (DFG 1959a).

Staff from DFG surveyed Taylor Creek in 1969 and observed steelhead in the lower 0.25 miles of the creek and resident rainbow trout further upstream. The creek was described as "a minor tributary to the South Fork Eel River" (DFG 1969y).

Taylor Creek was surveyed again by DFG staff in 1979 and fish were not observed. The survey report noted that the stream lacked spawning areas, was intermittent, and had barriers that limited its value to fish production (Sprehn 1979f).

Staff from DFG conducted a stream inventory of Taylor Creek in 1997. Electrofishing revealed the presence of ten *O. mykiss* at a site about 0.4 miles upstream from the South Fork Eel River. In the report, a point about one mile upstream from the mouth is listed as the end of anadromy (DFG 1997d). The inventory report recommended treating sources of fine sediment.

Bear Creek

Bear Creek is tributary to the South Fork Eel River and consists of about 1.5 stream miles. It flows southwesterly, entering the South Fork at about stream mile 97.4.

Bear Creek was surveyed in 1959. No fish observations were recorded and a report stated, "Has been extensively logged off in past, appears to have little or no fisheries value in its present condition" (DFG 1959a).

Staff from DFG surveyed Bear Creek in 1969 and observed two to four-inch steelhead in the lower 0.5 miles of the creek. The stated, "Bear Creek is a small creek offering only ½-¾ mile usable for migratory fish" (DFG 1969z).

A 1971 DFG memo states that fish passage baffles were installed on the Branscomb Road culvert on Bear Creek in 1969. According to the memo, "Salmon and steelhead utilize the stream," although logging debris was said to have diminished the potential for fish production (DFG 1971c).

Staff from DFG surveyed Bear Creek in 1986. Juvenile steelhead were observed (Jones, 1986).

Wise Gulch Creek (McNames Creek)

Wise Gulch Creek is tributary to the South Fork Eel River and consists of about one mile of intermittent stream. It flows southwesterly, entering the South Fork at about stream mile 98.9.

Wise Gulch Creek was surveyed by DFG staff in 1969 and is referred to in the survey report as "McNames Creek." During the survey "very few fish were observed" between the mouth of the creek and the Branscomb Road crossing, but their species was not identified. The creek was said to offer 0.5 to 0.75 miles of spawning area (DFG 1969aa).

Field notes document a 1976 survey of Wise Gulch Creek. During the survey *O. mykiss* were observed near the culvert in the lower section of the stream, but poor habitat was noted further upstream. The field notes stated, "As far as anadromous fisheries value is concerned, Wise Gulch has little value" (DFG 1976d).

Little Rock Creek

Little Rock Creek is tributary to the South Fork Eel River and consists of about 1.8 stream miles. It flows south, entering the South Fork at about stream mile 99.9.

Staff from DFG surveyed Little Rock Creek in 1969 and observed YOY steelhead in the lower 0.5 miles of stream. A steep gradient was believed to limit fish passage above this section (DFG 1969ab).

Little Rock Creek was surveyed again in 1979 by staff from DFG. No fish were observed during the survey. The report noted, "Stream appears to be in good condition with the exception of the sparsity of usable spawning gravel" (Sprehn 1979g).

Staff from DFG conducted a stream inventory of Little Rock Creek in 1996. One site was electrofished and YOY *O. mykiss* were captured. A large bedrock cascade was observed about 0.8 miles upstream from the mouth and described as the "end of anadromy" (DFG 1996h). The report recommended treating sources of fine sediments.

Section Four Creek

Section Four Creek is tributary to the South Fork Eel River and consists of about 4.2 stream miles. It flows northwesterly, entering the South Fork at about stream mile 101.4.

Staff from DFG surveyed Section Four Creek in 1969 and observed YOY steelhead "below the forks." The creek was described as "Generally a very poor summer stream." It was said to contain about two miles of suitable spawning areas but to have poor nursery conditions and low flows (DFG 1969ac).
No fish were observed during a 1979 DFG survey of Section Four Creek. The stream was noted to be "… in excellent condition for spawning except for the absolute barrier boulder run close to the mouth" (Sprehn 1979h).

Windem Creek

Windem Creek is tributary to the South Fork Eel River and consists of about 1.5 stream miles. It flows south, entering the South Fork at about stream mile 101.8.

Staff from DFG surveyed Windem Creek in 1969 and two to four-inch steelhead were observed "in fair numbers." The lower 0.75 to one mile of stream was noted as accessible to anadromous fish and natural propagation was deemed "good" in this section (DFG 1969ad).

Windem Creek was surveyed again by staff from DFG in 1979 and no fish were observed; however the stream was "in good condition for steelhead spawning." Local residents reported that fish were "abundant during certain times of the year" (Sprehn 1979i).

Middleton Creek

Middleton Creek is tributary to the South Fork Eel River and consists of about 1.1 stream miles. It flows north, entering the South Fork at about stream mile 102.1.

Staff from DFG surveyed Middleton Creek in 1969 and noted that the creek had no surface flow. However, the survey report stated that it "…should have sufficient flow during the winter and spring to allow fish passage and utilization as a spawning stream" (DFG 1969ae).

Water flows were present, but no fish were observed during a 1979 DFG survey of Middleton Creek. The report describes the creek as, "…an important stream as part of the headwaters of the Eel River." At the time of the survey Middleton Creek nearly doubled the flow of the South Fork Eel River at the confluence (Sprehn 1979j).

Staff from DFG conducted a stream inventory of Middleton Creek in 1996. No salmonid observations are noted in the stream inventory report (DFG 1996i). Canopy cover was found to be below desirable levels, and re-vegetation was recommended. Treatment of sediment sources related to the road system was also recommended.

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Table 3. Distribution status and population features of *O. mykiss* in streams of the South Fork Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
South Fork Eel River	DF	DF	Y	Y	3
Cabin Creek	UN	UN		UN	0
Bull Creek	DF	DF	Y	Y	3
Cow Creek	DF	DF	Y	Y	3
Connick Creek	DF	UN		UN	0
Calf Creek	PA	UN		UN	0
Miller Creek	PA	UN		UN	0
Harper Creek	DF	DF		UN	3
Squaw Creek	DF	DF		Y	3
Albee Creek	DF	DF	Y	UN	1
Mill Creek	DF	UN		UN	0
Cuneo Creek	DF	DF		Y	3
North Fork Cuneo Creek	DF	DF		Y	3
South Fork Cuneo Creek	PA	DF		UN	1
Burns Creek	DF	DF		UN	2
Slide Creek	DF	DF		UN	2
Bull Creek tributary 1 (Brians Creek)	DF	DF		UN	1
Bull Creek tributary 2	DF	DF		UN	1
Panther Creek	DF	DF		UN	3
Panther tributary 1 (West Fork Panther Creek)	DF	DF		UN	2
Panther tributary 2 (South Fork Panther Creek)	DF	DF		UN	2
Preacher Gulch Creek	DF	DF		UN	2
Decker Creek	DF	DF		Y	3
Corner Creek	UN	UN		UN	0
Canoe Creek	DF	DF		Y	3
Coon Creek	DF	DF		UN	2
Bridge Creek	DF	DF		UN	3
Elk Creek	DF	DF	Y	UN	3
Dry Creek	DF	UN		UN	0

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

Table 3. Distribution status and population features of *O. mykiss* in streams of the South Fork Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Salmon Creek	DF	DF		UN	3
Mill Creek	DF	UN		UN	0
South Fork Salmon Creek	DF	DF	Y	Y	2
Hacker Creek	DF	UN		UN	0
Butte Creek	DF	DF		UN	3
Coon Creek	DF	UN		UN	0
Fish Creek	DF	DF		Y	3
South Fork Eel River tributary 1 (Lloyd Creek)	DF	UN		UN	0
Anderson Creek	UN	PA	Y	UN	0
Ohman Creek	DF	UN		UN	0
Hooker Creek	UN	UN		UN	0
Dean Creek	DF	DF		UN	3
South Fork Eel River tributary 2 (Wood Creek)	DF	DF		UN	2
Leggett Creek	UN	DF		Y	2
Redwood Creek (Pollock Creek)	DF	DF		Y	3
Seely Creek	DF	UN		UN	0
Somerville Creek	DF	DF		UN	3
Miller Creek	DF	DF		UN	3
China Creek	DF	DF		Y	3
China Creek tributary (Twin Creek)	DF	DF		UN	1
Dinner Creek	DF	PB		UN	2
South Fork Eel River tributary 3	DF	UN		UN	0
Bear Canyon Creek	DF	DF		Y	2
South Fork Bear Canyon Creek	DF	DF		Y	2
Connick Creek	DF	DF		UN	2
Sproul Creek	DF	DF	Y	Y	3
Little Sproul Creek	DF	DF		Y	3

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

Table 3. Distribution status and population features of *O. mykiss* in streams of the South Fork Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Warden Creek	DF	DF		Y	3
West Fork Sproul Creek	DF	DF		Y	3
West Fork Sproul Creek tributary 1	DF	DF		Y	3
West Fork Sproul Creek tributary 2 (East Branch West Fork Sproul Creek)	DF	DF		Y	3
Sproul Creek tributary	DF	DF		Y	2
Cox Creek	DF	DF		Y	3
Sawmill Creek	DF	UN		UN	0
East Branch South Fork Eel River	DF	DF		UN	3
Buck Mountain Creek	DF	UN	Y	UN	0
Squaw Creek	DF	UN	Y	UN	0
Horse Pasture Creek	DF	UN		UN	0
Rancheria Creek	DF	UN		UN	0
Rays Creek	DF	UN		UN	0
Tom Long Creek	DF	DF	Y	UN	3
Cruso Cabin Creek	DF	PS		UN	1
Elkhorn Creek	DF	PS		UN	1
Fish Creek	DF	DF		UN	2
Durphy Creek	DF	DF	Y	UN	2
Durphy Creek tributary	DF	DF		UN	2
Hartsook Creek	DF	DF	Y	Y	2
Milk Ranch Creek	DF	DF		UN	3
Low Gap Creek	DF	DF		UN	3
Indian Creek	DF	DF		UN	3
Jones Creek	DF	DF		UN	3
Parker Creek	DF	UN		UN	0
Moody Creek	DF	DF		UN	3
Sebbas Creek	DF	DF	Y	Y	2
Coulborn Creek	DF	DF		UN	2
Anderson Creek	DF	DF	Y	UN	3
Piercy Creek	DF	UN	Y	UN	0

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

Table 3. Distribution status and population features of *O. mykiss* in streams of the South Fork Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Standley Creek	DF	DF	Y	UN	3
McCoy Creek	DF	DF		Y	2
North Fork McCoy Creek	DF	DF		Y	2
Bear Pen Creek	DF	DF		UN	3
Cub Creek	UN	PA		UN	0
Red Mountain Creek	DF	DF		Y	2
Wildcat Creek	DF	DF		UN	2
Bridges Creek	DF	DF		UN	2
Dora Creek	DF	UN		UN	0
Mill Creek	DF	DF		UN	3
Rock Creek	DF	UN		UN	0
Hollow Tree Creek	DF	DF		Y	3
Mule Creek	DF	DF		Y	3
Middle Creek	DF	UN		UN	0
Islam John Creek	PA	PA		N	0
Lost Man Creek	PA	PA		N	0
Walters Creek	DF	DF		UN	3
Lost Pipe Creek	DF	DF	Y	UN	3
Bear Creek	DF	DF		Y	3
Redwood Creek	DF	DF		Y	3
South Fork Redwood Creek	DF	DF		Y	2
Bond Creek	DF	DF	Y	Y	3
Michaels Creek	DF	DF	Y	Y	3
Lynch Creek	DF	DF	Y	Y	2
Doctors Creek	DF	DF	Y	Y	3
Waldron Creek	DF	DF		Y	3
Bear Pen Creek	UN	PA		UN	0
Huckleberry Creek	DF	DF		Y	3
Bear Wallow Creek	DF	DF		Y	3
Little Bear Wallow Creek	DF	DF		Y	3
Butler Creek	DF	DF	Y	Y	3

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

Table 3. Distribution status and population features of *O. mykiss* in streams of the South Fork Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Butler Creek tributary	PB	PB		UN	2
Mitchell Creek	DF	UN	Y	UN	0
Cedar Creek	DF	DF	Y	UN	3
Cedar Creek tributary	DF	UN		UN	0
North Fork Cedar Creek	DF	UN		UN	0
Little Cedar Creek	DF	UN		N	0
Big Dann Creek	DF	UN	Y	UN	0
Little Dann Creek	PB	UN		N	0
Grizzly Creek	PA	UN		N	0
Low Gap Creek	DF	DF		UN	2
Little Low Gap Creek	PA	UN		UN	0
Rattlesnake Creek	DF	PB	Y	UN	2
Squaw Creek	PA	UN	Y	N	0
Measly Creek	PA	UN	Y	N	0
Wilson Creek	PA	UN		UN	0
Foster Creek	DF	DF		UN	2
Mad Creek	PA	UN	Y	UN	0
Elk Creek	DF	DF	Y	UN	2
Cummings Creek	DF	PS		UN	1
Twin Rocks Creek	DF	PB		UN	2
Grapewine Creek	DF	DF	Y	UN	3
Surveyors Canyon Creek	PA	UN		UN	0
Tenmile Creek	DF	DF		Y	3
Peterson Creek	DF	DF		UN	2
Grub Creek	DF	UN		UN	0
Cold Creek	DF	UN		UN	0
Steep Gulch Creek	DF	UN		UN	0
Streeter Creek	DF	DF		UN	3
Lewis Creek	DF	DF	Y	UN	2
Big Rock Creek	DF	DF		UN	3
Wilson Creek	DF	UN		UN	0

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

Table 3. Distribution status and population features of *O. mykiss* in streams of the South Fork Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Mud Springs Creek	DF	UN		UN	0
Little Case Creek	DF	UN		UN	0
Mill Creek	DF	UN		UN	0
Cahto Creek	DF	DF		Y	3
Barnwell Creek	DF	DF		UN	2
Fox Creek	DF	DF	Y	Y	2
Elder Creek	DF	DF		Y	3
Misery Creek	DF	UN		UN	0
Paralyze Canyon Creek	PA	UN		UN	0
Jack of Hearts Creek	DF	DF		Y	3
Dark Canyon Creek	PB	DF		Y	1
Deer Creek	DF	UN	Y	UN	0
Little Charlie Creek	DF	UN	Y	UN	0
Dutch Charlie Creek	DF	DF	Y	UN	3
Thompson Creek	PA	UN		UN	0
Eagle Creek	DF	UN		UN	0
Redwood Creek	DF	DF	Y	UN	3
Rock Creek	DF	DF		UN	3
Muddy Gulch Creek	PA	UN		UN	0
Kenny Creek	DF	DF		Y	3
Buck Creek	PA	UN		UN	0
Haun Creek	DF	UN		UN	0
Mud Creek	DF	DF	Y	UN	2
Grapevine Creek	DF	DF		Y	2
Taylor Creek	DF	DF	Y	Y	2
Bear Creek	DF	UN	Y	UN	0
Wise Gulch Creek	DF	UN		UN	0
Little Rock Creek	DF	DF		UN	2
Section Four Creek	DF	UN		UN	0
Windem Creek	DF	UN		UN	0
Middleton Creek	DF	UN		UN	0

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

Steelhead/rainbow trout resources of the middle Eel River

The following discussion of *O. mykiss* resources is specific to the section of the Eel River located between the South Fork Eel River confluence and the town of Dos Rios. The lower and upper reaches of the mainstem are discussed in separate sections of this report.

Eel River-Middle Reach

The middle Eel River was examined from the South Fork Eel River confluence to the Middle Fork Eel River confluence in 1973 as part of a study of water temperature conditions in the Eel River system (Kubicek 1977). During this study, few salmonids were observed between the Middle Fork and the North Fork, and only in areas of cool spring or subsurface upwelling and near cooler tributaries; salmonids were only observed in early summer between the North Fork and Eel Rock. Several fingerling and a few yearling salmonids up to five inches in length were observed in section of stream between the South Fork confluence and Eel Rock in the early and middle summer (Kubicek pers. comm.).

The 1997 Eel River Action Plan noted that the middle reach of the mainstem Eel River, from Fort Seward to Cape Horn Dam, generally exhibited warm water temperatures and low flows during the summer which discouraged large numbers of salmonids from using the area (DFG 1997).

Poison Oak Creek

Poison Oak Creek is tributary to the Eel River and consists of about 2.2 stream miles. It flows northwesterly, entering the Eel River at about stream mile 42.4.

Staff from DFG conducted stream inventories of Poison Oak Creek in 1993 and 1998. Electrofishing was conducted in 1993 and YOY and juvenile *O. mykiss* were collected (CCC 1993). No sampling was conducted in 1998 (DFG 1998a). During both surveys the stream channel was dry at the mouth. The 1998 stream inventory report recommended treating sources of fine sediment, including those related to the road system, and planting riparian vegetation.

Poison Oak Creek is included in a 1997 assessment of fish passage problems in relation to the Northern Pacific Railroad. *Oncorhynchus mykiss* were observed both upstream and downstream of the railroad crossing in 1997. Both the railroad crossing and the county road crossing immediately downstream were retaining large amounts of sediment and clean-up was recommended (HCRCD 1997).

Newman Creek

Newman Creek is tributary to the Eel River and consists of about 2.9 miles of intermittent stream. It flows southwesterly, entering the Eel River at about stream mile 42.6.
Staff from DFG surveyed Newman Creek from its mouth to 0.5 miles upstream in 1938 and observed YOY steelhead. The

survey report noted damage caused by logging and cattle grazing in the watershed, including log jams, erosion, and elimination of riparian vegetation (DFG 1938a).

Fish rescue work was conducted on multiple Eel River tributaries in 1939 and 1940. A total of 1,312 steelhead were rescued from Newman Creek in 1939 and 1,770 steelhead were rescued in 1940 (DFG 1940a, DFG 1941).

Staff from DFG surveyed Newman Creek in 1981. No fish observations are noted in the survey report, although it states, "Newman Creek provides good quality spawning and rearing habitat for anadromous salmonids" (DFG 1981a).

The Pacific Lumber Company performed sampling in Newman Creek from 1998-2002 as part of a habitat conservation plan for the company's property. Steelhead were observed in the creek every year during that time period with numbers ranging from 23-106 fish collected per year (PLC 2003).

Pipe Line Creek

Pipe Line Creek is tributary to the Eel River and consists of about 2.6 miles of intermittent stream. It flows north, entering the Eel River at about stream mile 43.3.

Pipe Line Creek is included in a 1997 assessment of fish passage problems in relation to the Northern Pacific Railroad. The stream was described as "fish bearing" and *O. mykiss* were observed upstream of the railroad crossing in 1997. The culvert at the crossing was "95% plugged with bedload" and clean-out was recommended (HCRCD 1997).

Staff from DFG conducted a stream inventory of Pipe Line Creek in 1998. Biological sampling was not conducted, however the report noted the presence of "unidentified fish" in the stream (DFG 1998b). The inventory report noted few pools that offered high quality habitat, and recommended controlling sediment input into the creek.

Kapple Creek

Kapple Creek is tributary to the Eel River and consists of about 1.2 stream miles. It flows south, entering the Eel River at about stream mile 45.

Staff from DFG conducted a stream inventory of Kapple Creek in 1992. Two YOY steelhead were collected during electrofishing, both within 0.2 miles of the creek mouth. A sediment problem was observed in the creek, beginning about 0.5 miles upstream from the mouth and continuing further upstream (CCC 1992a).

Thompson Creek

Thompson Creek is tributary to the Eel River and consists of about two stream miles. It flows south, entering the Eel River at about stream mile 45.5.

Staff from DFG conducted a stream inventory of Thompson Creek in 1992. Young-of-year and juvenile steelhead were collected during electrofishing at three sites. Young-of-year and age 2+ steelhead were described as "numerous" at two locations in the stream (CCC 1992b). The inventory report noted that spawning gravels were limited to few reaches and recommended increasing canopy.

Thompson Creek tributary (South Fork Thompson Creek)

An unnamed tributary to Thompson Creek, known as South Fork Thompson Creek, consists of 2.1 stream miles. It flows west, entering Thompson Creek about 0.8 miles upstream from the Eel River confluence.

Staff from DFG conducted a stream inventory of South Fork Thompson Creek in 1992. Juvenile and YOY steelhead were collected at two of the three sites electrofished (CCC 1992c). The report noted that spawning gravels were limited to few reaches and the stream's high gradient limited fish passage. Treatment of fine sediment sources was recommended.

Bell Creek

Bell Creek is tributary to the Eel River and consists of about 1.8 stream miles. It flows northeasterly, entering the Eel River at about stream mile 46.3.

Staff from DFG surveyed Bell Creek in 1938 and noted that YOY steelhead were "common" at the South Fork – McCann Road crossing. The fish ranged from 1.5 to 2.75 inches in length (DFG 1938b).

Bell Creek is included in a 1997 assessment of fish passage problems in relation to the Northern Pacific Railroad. The railroad culvert was not deemed a barrier to fish passage during the 1997 inspection; however, a culvert upstream of the railroad crossing was judged only to allow fish passage during high flows. "Good" habitat conditions were present upstream of this barrier (HCRCD 1997).

Staff from DFG conducted a stream inventory of Bell Creek in 1998. The lower 1,000 feet of the stream were surveyed and no fish observations were noted. The culvert upstream of the railroad crossing was cited as a barrier to adult and juvenile salmonids (DFG 1998c).

Sonoma Creek

Sonoma Creek is tributary to the Eel River and consists of about 1.1 stream miles. It flows north, entering the Eel River at about stream mile 49.1.

Sonoma Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study "Fingerling salmonids were abundant in Sonoma Creek during all sampling periods" (Kubicek 1977).

Staff from DFG conducted a stream inventory of Sonoma Creek in 1998. One site was electrofished and 42 juvenile *O. mykiss* were found. Young-of-year *O. mykiss* also were observed from the streambanks during the survey (CCC 1998). The inventory report notes that water temperature may limit the fishery and recommends treating sources of fine sediment.

Sequoia Creek

Sequoia Creek is tributary to Sonoma Creek and consists of about one stream mile. It flows east, entering Sonoma Creek about one mile upstream from the Eel River confluence.

Staff from DFG conducted a stream inventory of Sequoia Creek in 1998. Electrofishing was not conducted during the survey, however surveyors noted YOY salmonids in the stream. The species of salmonid was not identified. (DFG 1998d). The inventory report recommended treating sources of fine sediment, including those related to the road system.

Coleman Creek

Coleman Creek is tributary to the Eel River and consists of about 2.3 stream miles. It flows southwesterly, entering the Eel River at about stream mile 54.2.

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* were observed in Coleman Creek (Brown 1991).

Staff from DFG conducted a stream inventory of Coleman Creek in 1999. Electrofishing was not conducted during the survey, but juvenile salmonids were observed from the streambanks. (DFG 1999). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment.

Brock Creek

Brock Creek is tributary to the Eel River and consists of about 2.3 stream miles. It flows north, entering the Eel River at about stream mile 58.

Brock Creek is included in a 1997 assessment of fish passage problems in relation to the Northern Pacific Railroad. The railroad crossing bridge was not deemed to be a barrier to fish passage during the 1997 inspection; however, a log debris barrier located 1,000 feet further upstream was judged to block fish passage. "Fair" habitat was observed upstream of this barrier (HCRCD 1997).

Staff from DFG conducted a stream inventory of Brock Creek in 2000. Juvenile and YOY *O. mykiss* were found at two electrofishing sites in the stream. A 12-foot waterfall located about 2.4 miles upstream from the creek mouth was listed as the probable end of andromy (DFG 2000). The inventory report noted few pools that offered high quality habitat, and recommended controlling sediment input into the creek. Canopy cover also was found to be below desirable levels, and re-vegetation was recommended.

Dobbyn Creek

Dobbyn Creek is tributary to the Eel River and consists of about four stream miles. It is formed by the confluence of North and South Dobbyn Creeks and flows west, entering the Eel River at about stream mile 62.9.

Stocking records indicate that Dobbyn Creek was stocked with *O. mykiss* regularly from 1932 through 1939 (DFG 1936, DFG 1939a). An undated DFG stream survey report, likely from the 1930s, describes steelhead planting in the creek as "heavy and successful." The report also noted that natural propagation of the fish "should be excellent" (DFG ca. 1934). Fish rescue work was conducted on multiple Eel River tributaries in 1940. A total of 1,500 steeelhead were rescued from Dobbyn Creek that year (DFG 1941).

Dobbyn Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. "A few salmonids" were observed about 1.5 miles upstream from the mouth of the creek and three year classes of salmonids (up to eight inches in length) were observed near the confluence of North and South Dobbyn Creeks (Kubicek 1977).

Staff from DFG conducted a stream inventory of Dobbyn Creek in 1995. One site was electrofished during the survey and 13 juvenile *O. mykiss* were collected (DFG 1995a). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment and excluding cattle from the creek to avoid trampling and effects from defecation.

Conley Creek

Conley Creek is tributary to Dobbyn Creek and consists of about 3.8 stream miles. It flows south, entering Dobbyn Creek about 1.5 miles upstream from the Eel River.

Stocking records indicate that Conley Creek was stocked with *O. mykiss* in 1934, 1935, 1938, and 1939 (DFG 1935, DFG 1939b). Staff from DFG surveyed Conley Creek in 1938 and observed YOY steelhead that had been planted in the creek near the Alderpoint Road bridge (DFG 1938c).

Staff from DFG conducted a stream inventory of Conley Creek in 1995. Juvenile and YOY salmonids were observed from the streambanks during the survey, but the species was not identified. About 1.7 miles upstream from the mouth, the creek was noted to be "running out of both water and fish habitat" (DFG 1995b). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy.

North Dobbyn Creek

North Dobbyn Creek is tributary to Dobbyn Creek and consists of about 6.2 stream miles. It flows southwesterly, entering Dobbyn Creek about four miles upstream from the Eel River confluence.

Stocking records indicate that North Dobbyn Creek was stocked with *O. mykiss* regularly from 1932 to 1939 (DFG 1933a, DFG 1939c). Staff from DFG surveyed North Dobbyn Creek in 1938 and found YOY steelhead to be "common." The survey reports note "good" pools and shelter, "abundant" fish foods, and "good" spawning areas in the creek (DFG 1938d, DFG 1950).

Staff from DFG conducted a stream inventory of North Dobbyn Creek in 1995. One site was electrofished during the survey and four YOY and juvenile steelhead were found about 0.6 miles upstream from the mouth (DFG 1995c). The inventory report recommended increasing canopy, treating sources of fine sediment, and excluding cattle from the creek to avoid trampling and effects from defecation.

Hoover Creek

Hoover Creek is tributary to North Dobbyn Creek and consists of about 2.5 stream miles. It flows south, entering North Dobbyn Creek about 1.7 miles upstream from the Dobbyn Creek confluence.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Hoover Creek is listed as containing 2.4 miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

South Dobbyn Creek

South Dobbyn Creek is tributary to Dobbyn Creek and consists of about 11.6 stream miles. It flows northwesterly, entering Dobbyn Creek about four miles upstream from the Eel River.

Staff from DFG surveyed South Dobbyn Creek in August 1938 and observed steelhead ranging from 1.5 to 7.0 inches in length. The survey report notes "very extensive" natural propagation, "good" pools and shelter, and "good" spawning areas in the creek (DFG 1938e). The creek was also surveyed in July 1938 and the survey report described the creek as "A beautiful looking stream" (DFG 1938f).

South Dobbyn Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study "a few salmonids up to 6 inches in length" were observed in South Dobbyn Creek, about 2.5 miles upstream from the Dobbyn Creek confluence (Kubicek 1977).

Staff from DFG conducted a stream inventory of South Dobbyn Creek in 1995. Two sites were electrofished and YOY and juvenile steelhead were found at both sites. A total of 75 steelhead were found at one site and 63 steelhead were collected at the second site. These sites were located 6.9 and 8.7 miles upstream from the Dobbyn Creek confluence, respectively (PCFWWRA 1995a). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment and excluding cattle from the creek to avoid trampling and effects from defecation

Mud Creek

Mud Creek is tributary to South Dobbyn Creek and consists of about 4.3 stream miles. It flows south, entering South Dobbyn Creek about 6.2 miles upstream from the Dobbyn Creek confluence.

Stocking records indicate that Mud Creek was stocked with 20,000 steelhead in 1938 and 1939 (DFG 1939d). Staff from DFG surveyed Mud Creek in 1938 and observed YOY steelhead, "good" spawning areas, and "excellent" pools and shelter. A survey report noted that the creek had recently been planted and some pools were "teeming with young fish" (DFG 1938g).

Staff from DFG conducted a stream inventory of Mud Creek in 1995. Fifteen YOY and juvenile steelhead were found at one electrofishing site. A 20-foot waterfall located about 1.4 miles upstream from the creek mouth is described as a fish passage barrier (DFG 1995d). The inventory report noted that the stream's high gradient makes fish passage difficult and recommended treating sources of fine sediment.

Bluford Creek

Bluford Creek is tributary to Mud Creek and consists of about 4.3 stream miles. It flows south, entering Mud Creek about 1.2 miles upstream from the South Dobbyn Creek confluence.

Staff from DFG surveyed Bluford Creek in 1938. "Young steelhead" were abundant upstream of the Zenia Bluffs Road culvert. Spawning areas were described as "good" (DFG 1938h).

Stocking records indicate that Bluford Creek was stocked with *O. mykiss* several times. The creek was stocked with rainbow trout fingerlings in 1930, 1954, and from 1965-67 (DFG 1939e, DFG 1967). It was stocked with steelhead from 1930-33 and 1938-29 (DFG 1939e).

A 1982 letter form DFG staff indicates that a small hydroelectric project was proposed on Bluford Creek. The letter includes recommendations for maintaining instream flows and stream conditions (DFG 1982).

Hembrey Creek

Hembrey Creek is tributary to South Dobbyn Creek and consists of about three stream miles. It flows west, entering South Dobbyn Creek about 7.2 miles upstream from the Dobbyn Creek confluence.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report the Hembrey Creek is listed as containing 0.2 miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Yew Wood Creek

Yew Wood Creek is tributary to Hembrey Creek and consists of about 2.9 stream miles. It flows west, entering Hembrey Creek about one mile upstream from the South Dobbyn Creek confluence.

Stocking records indicate that Yew Wood Creek was stocked with steelhead and rainbow trout in 1930 and in 1938 (DFG 1930a, DFG 1938i). Staff from DFG surveyed Yew Wood Creek in 1938 and observed "abundant" YOY steelhead, as well as a few fish ranging from five to six inches in length. "Good" spawning areas and "good" pools and shelter were observed in the creek (DFG 1938j).

Steelhead Creek

Steelhead Creek is tributary to the Eel River and consists of about 4.8 stream miles. It flows northeasterly, entering the Eel River at about stream mile 69.3.

Stocking records indicate that Steelhead Creek was stocked with 500 rainbow trout in 1933 (DFG 1933b). Staff from DFG surveyed the creek in 1938 and noted "good" spawning areas and "good" pools and shelter. Steelhead ranging from 1.5 to 4.0 inches in length were noted to be "abundant" and fish up to six inches were "common." The survey report notes that the Fort Seward Hatchery operated on this creek and the section of stream between the mouth and the hatchery was "overstocked with young steelhead" (DFG 1938k).

Staff from DFG conducted a stream inventory of Steelhead Creek in 1996. Young-of-year and juvenile *O. mykiss* were observed in the creek during the survey. An adult steelhead carcass also was observed. The end of anadromy was noted at a set of multiple waterfalls located about 2.8 miles upstream from the mouth (CCC 1996a). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy cover.

Steelhead Creek is included in a 1997 assessment of fish passage problems in relation to the Northern Pacific Railroad. The creek was noted to have a "heavily aggraded stream channel in the lower reaches," but "abundant YOY and yearling" *O. mykiss* were present throughout the creek (HCRCD 1997).

Powers Creek

Powers Creek is tributary to Steelhead Creek and consists of about 2.4 stream miles. It flows north, entering Steelhead Creek about 0.3 miles upstream from the Eel River confluence.

Staff from DFG surveyed Powers Creek in 1938 and observed "young steelhead" near the mouth of the creek, downstream of a barrier consisting of steep cascades (DFG 1938l). Surveyors received a report of *O. mykiss* presence further upstream in the creek and these fish were assumed to be "native" resident trout (DFG 1938m).

Staff from DFG conducted a stream inventory of Powers Creek in 1996. *Oncorhynchus mykiss* was observed from the streambanks during the survey, including one six-inch fish. A set of bedrock falls located less than 0.2 miles from the mouth of the creek was described as the upstream end of anadromy, and fish were observed downstream of this location (PCFWWRA 1996a).

Steelhead Creek tributary 1

An unnamed tributary to Steelhead Creek consists of about 0.75 miles of intermittent stream. It flows north, entering Steelhead Creek about 1.5 miles upstream from the Eel River confluence.

Staff from DFG conducted a stream inventory of this unnamed tributary to Steelhead Creek in 1996. Young-of-year *O. mykiss* were observed in the creek. The presence of fish habitat and access for anadromous fish ended about 327 feet upstream from the mouth (PCFWWRA 1996b). The report noted that the steep gradient of the stream limits fish passage.

Steelhead Creek tributary 2

An unnamed tributary to Steelhead Creek consists of about 1.6 stream miles. It flows east, entering Steelhead Creek about 1.7 miles upstream from the Eel River confluence.

Staff from DFG conducted a stream inventory of this unnamed tributary to Steelhead Creek in 1996. Juvenile and YOY *O. mykiss* were observed from the streambanks during the survey. A series of waterfalls located about 0.4 miles upstream from the mouth marked the upstream limit to anadromous fish (CCC 1996b).

Mill Creek

Mill Creek is tributary to the Eel River and consists of about 2.5 stream miles. It flows east, entering the Eel River at about stream mile 74.2.

Mill Creek is included in a 1997 assessment of fish passage problems in relation to the Northern Pacific Railroad. Steelhead were observed in the creek in 1997 and habitat was deemed "fair" upstream of the railroad crossing. Log debris barriers were seen to create passage problems (HCRCD 1997).

Jewett Creek

Jewett Creek is tributary to the Eel River and consists of about 5.3 stream miles. It flows northeasterly, entering the Eel River at about stream mile 75.8

Stocking records indicate that Jewett Creek was stocked with 5,000 steelhead in 1938 (DFG 1938n).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* was observed in Jewett Creek (Brown 1991).

Frenchman Creek

Frenchman Creek is tributary to Jewett Creek and consists of about 3.8 stream miles. It flows east, entering Jewett Creek about three miles upstream from the Eel River confluence.

Stocking records indicate that Frenchman Creek was stocked with 15,000 steelhead in 1938 (DFG 1938o). Staff from DFG surveyed the creek in 1938 and noted "good" spawning areas and "good" pools and shelter. The report also noted the presence of garbage in the stream bed and an impassable culvert at a road crossing in the creek (DFG 1938p).

Pipe Creek

Pipe Creek is tributary to the Eel River and consists of about 6.2 stream miles. It flows north, entering the Eel River at about stream mile 78.5.

Staff from DFG conducted a stream inventory of Pipe Creek in 1996. The lower 0.2 miles of the stream were surveyed and *O. mykiss* were observed from the streambanks. The survey ended where the stream was completely blocked by large boulders, preventing fish passage (PCFWWRA 1996c). The inventory report recommended increasing canopy and treating sources of fine sediment in the creek.

Kekawaka Creek

Kekawaka Creek is tributary to the Eel River and consists of about 13 stream miles. It flows northwesterly, entering the Eel River at about stream mile 81.6.

Stocking records indicate that 8,000 rainbow trout were planted in Kekawaka Creek in 1930 (DFG 1930b). Staff from DFG observed steelhead in Kekawaka Creek during a 1940 stream survey. Spawning grounds and natural propagation of the fish were characterized as "good" in the lower and middle sections of the creek (DFG 1940b).

Staff from DFG conducted a stream inventory of Kekawaka Creek in 1996. Two sites were electrofished in the lower 0.6 miles of the stream and YOY *O. mykiss* were found at both locations. A series of waterfalls located about one mile upstream from the mouth was deemed to be a total passage barrier (CCC 1996c). The inventory report recommended treating sources of fine sediment and increasing canopy cover in the creek.

Chamise Creek

Chamise Creek is tributary to the Eel River and consists of about 12 stream miles. It flows northeasterly, entering the Eel River at about stream mile 83.3.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report the Chamise Creek is listed as containing nine miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

North Fork Eel River

The North Fork Eel River is tributary to the Eel River and consists of about 35.5 stream miles. It flows southwesterly, entering the Eel River at about stream mile 96.4. Steelhead resources of the North Fork and its tributaries are described in another section of this report.

Bell Springs Creek

Bell Springs Creek is tributary to the Eel River and consists of about 5.5 stream miles. It flows southwesterly, entering the Eel River at about stream mile 99.7.

Bell Springs Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this survey, "several fingerlings" were observed in the creek (Kubicek 1977). Staff from BLM surveyed Bell Springs Creek in 1975 and observed rainbow trout ranging from one to nine inches in length. The report noted that "…this stream provides valuable habitat for spawning steelhead" (BLM 1975a).

Staff from DFG conducted a stream inventory of Bell Springs Creek in 1996. Juvenile and YOY *O. mykiss* were found at one electrofishing site, located about 0.4 miles upstream from the mouth. The upstream limit of anadromy was noted at a series of waterfalls about 3.4 miles upstream from the mouth (DFG 1996). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment.

Rock Creek

Rock Creek is tributary to Bell Springs Creek and consists of about two stream miles. It flows north, entering Bell Springs Creek about three miles upstream from the Eel River confluence.

Staff from DFG conducted a stream inventory of Rock Creek in 1996. Electrofishing was not conducted, but YOY salmonids were observed during the survey. According to the report, anadromous salmonids only have access to the lower 532 feet of the stream due to a 13-foot vertical drop (CCC 1996d). The report noted that spawning gravels were limited to few reaches within the creek and recommended increasing canopy cover.

Blue Rock Creek

Blue Rock Creek is tributary to the Eel River and consists of about 7.7 stream miles. It flows northeasterly, entering the Eel River at about stream mile 101.8.

Blue Rock Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study more than 100 salmonids, ranging from fingerlings to "two-year olds" up to eight inches in length, were observed in Blue Rock Creek (Kubicek 1977).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* was observed in Blue Rock Creek (Brown 1991).

Shell Rock Creek

Shell Rock Creek is tributary to the Eel River and consists of about 5.5 stream miles. It flows northeasterly, entering the Eel River at about stream mile 106.6.

Shell Rock Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. While the mouth of the creek was dry during this study, two salmonids were observed in a shaded pool further upstream and approximately 50 salmonids were observed along the edge of the river in an area of cool water upwelling (Kubicek 1977).

Staff from BLM surveyed a section of Shell Rock Creek in 1975. Rainbow trout were observed during the survey (BLM 1975b). Staff from DFG observed juvenile steelhead in Shell Rock Creek during the summer of 1981 (Jones 1981).

Woodman Creek

Woodman Creek is tributary to the Eel River and consists of about 6.9 stream miles. It flows northeasterly, entering the Eel River at about stream mile 113.8.

Woodman Creek was surveyed in 1981 by staff from DFG and *O. mykiss* were observed throughout the stream. A large rock barrier at the mouth of the creek was noted as a passage barrier. According to a local landowner, anadromous fish, including summer steelhead, used this creek prior to the formation of the barrier during the winter of 1964. "Good instream habitat" was observed during the survey and "good" spawning habitat was noted in the upper sections of the creek. Barrier removal was recommended to make this habitat available (DFG 1981b).

A 1985 memo documents rock barrier removal work that was completed in Woodman Creek that year. According to the memo, barriers were removed at five sites and the work was intended to allow access for steelhead and salmon to about 12.5 miles of spawning habitat in the watershed (Anonymous 1985).

Staff from DFG conducted stream inventories of Woodman Creek in 1995 and 1998. In 1995, *O. mykiss* were observed throughout the creek from the mouth to the confluence with White Rock Creek (DFG 1995e). In 1998, one site was electrofished about 3.5 miles upstream from the mouth and YOY and juvenile *O. mykiss* were found (DFG 1998e). The inventory report recommended increasing canopy and treating sources of fine sediment in the creek.

White Rock Creek

White Rock Creek is tributary to Woodman Creek and consists of about five stream miles. It flows east, entering Woodman Creek about 2.8 miles upstream from the Eel River confluence.

Staff from BLM surveyed White Rock Creek in 1975 and observed resident rainbow trout. The report stated that the creek had "…ample quantities of spawning gravel, sufficient food and escape cover, combined with a recent history of steelhead spawning in the drainage" (BLM 1975c). The lower section of White Rock Creek, from Woodman Creek upstream to the Iron Creek confluence, was surveyed separately by BLM staff in 1975 and referred to as "North Fork Woodman Creek." Rainbow trout were observed in this section as well. Good habitat was noted to be present but was expected to be degraded by heavy siltation caused by eroding streambanks (BLM 1975d).

Staff from DFG conducted a stream inventory of the lower 0.5 miles of White Rock Creek in 1998. Juvenile salmonids were observed during the survey, including one six-inch steelhead (DFG 1998f). The inventory report notes that water temperature may limit the fishery and recommends treating sources of fine sediment.

Woodman Creek tributary 1

An unnamed tributary to Woodman Creek consists of about 0.6 stream miles. It flows north, entering Woodman Creek about 3.3 miles upstream from the Eel River confluence.

Staff from DFG conducted a stream inventory of this unnamed tributary to Woodman Creek in 1998. Electrofishing was not conducted, but YOY of an undetermined species were observed in the creek. An 18-foot waterfall located about 0.3 miles upstream from the mouth was noted to be a fish passage barrier (DFG 1998g).

Woodman Creek tributary 2

An unnamed tributary to Woodman Creek consists of about 1.2 stream miles. It flows north, entering Woodman Creek about 3.8 miles upstream from the Eel River.

Staff from DFG conducted a stream inventory of this unnamed tributary to Woodman Creek in 1998. Electrofishing was not conducted during the survey, but *O. mykiss* was observed and included YOY and some six and ten-inch individuals. A road crossing located about 0.5 miles upstream from the mouth of this creek was deemed impassable to fish (Jezierski 1998). The inventory report notes that water temperature may limit the fishery and recommends treating sources of fine sediment, along with evaluating fish passage at road crossings.

Stoney Creek

Stoney Creek is tributary to the Eel River and consists of about 1.7 stream miles. It flows northeasterly, entering the Eel River at about stream mile 115.7.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Stoney Creek is listed as containing 2.5 miles of stream accessible to steelhead (DFG 1983). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Burger Creek

Burger Creek is tributary to the Eel River and consists of about 7.2 stream miles. It flows northeasterly, entering the Eel River at about stream mile 118.

Staff from DFG surveyed Burger Creek in 1938 and observed several five to seven-inch steelhead. The creek was "heavily fished" although the quality of fishing was described as "poor" and said to have declined from years past (DFG 1938q).

Burger Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study "a few salmonids" were observed in Burger Creek (Kubicek 1977).

Burger Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek in 1984 and steelhead were collected (DFG 1988).

Staff from DFG conducted a stream inventory of Burger Creek in 1995. Steelhead fry and juveniles up to 14 inches in length were observed during the survey (PCFWWRA 1995b). The inventory report noted that the stream's high gradient may make fish passage difficult. It recommended treating sources of fine sediment and increasing canopy in the creek.

Bear Pen Canyon Creek

Bear Pen Canyon Creek is tributary to Burger Creek and consists of about 2.9 stream miles. It flows east, entering Burger Creek about four miles upstream from the Eel River confluence.

Staff from DFG conducted a stream inventory of Bear Pen Creek in 1995. During the survey *O. mykiss* fry and juveniles were observed throughout the creek (DFG 1995f). The inventory report noted that a high gradient in the lower section of the stream may make fish passage difficult. It recommended treating sources of fine sediment, including those related to the road system.

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Table 4. Distribution status and population features of *O. mykiss* in streams of the middle Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Poison Oak Creek	DF	DF	Y	UN	2
Newman Creek	DF	DF	Y	Y	3
Pipe Line Creek	DF	DF	Y	UN	1
Kapple Creek	DF	PB		UN	1
Thompson Creek	DF	DF		UN	2
Thompson Creek tributary (South Fork Thompson Creek)	DF	UN		UN	0
Bell Creek	DF	PA	Y	N	0
Sonoma Creek	DF	DF		Y	3
Sequoia Creek	PB	PB		Y	2
Coleman Creek	DF	DF		UN	2
Brock Creek	DF	DF		Y	2
Dobbyn Creek	DF	DF		Y	3
Conley Creek	PB	PB		UN	0
North Dobbyn Creek	DF	DF		Y	2
Hoover Creek	UN	UN		UN	0
South Dobbyn Creek	DF	DF		Y	3
Mud Creek	DF	DF		Y	2
Bluford Creek	DF	UN		UN	0
Hembrey Creek	UN	UN		UN	0
Yew Wood Creek	DF	UN		UN	0
Steelhead Creek	DF	DF	Y	Y	3
Powers Creek	DF	DF		UN	1
Steelhead Creek tributary 1	DF	DF		UN	2
Steelhead Creek tributary 2	DF	DF		UN	2
Mill Creek	DF	DF		Y	1
Jewett Creek	DF	UN		UN	0
Frenchman Creek	UN	UN		UN	0
Pipe Creek	DF	DF		UN	2
Kekawaka Creek	DF	DF		UN	2
Chamise Creek	UN	UN		UN	0

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

Table 4. Distribution status and population features of *O. mykiss* in streams of the middle Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Bell Springs Creek	DF	DF		Y	2
Rock Creek	PB	PB		UN	2
Blue Rock Creek	DF	UN		UN	0
Shell Rock Creek	DF	UN		UN	0
Woodman Creek	DF	DF		UN	3
White Rock Creek	DF	DF		UN	2
Woodman Creek tributary 1	PB	PB		UN	2
Woodman Creek tributary 2	DF	DF		UN	3
Stoney Creek	UN	UN		UN	0
Burger Creek	DF	DF		Y	3
Bear Pen Canyon Creek	DF	DF		UN	2

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

North Fork Eel River

The North Fork Eel River is tributary to the Eel River and consists of about 35.5 stream miles. It flows southwesterly, entering the Eel River at about stream mile 96.4. The North Fork is formed by the confluence of two headwaters forks, the East and the West, that are discussed under separate headings in this chapter. The river drains an area of about 286 square miles (DFG 1997).

A watershed analysis of the North Fork Eel River states that the river likely supported two runs of steelhead historically, a winter and a spring run. This report estimates that the river supported a total of about 6,930 steelhead prior to 1860. This figure was derived from an estimated density of 150 fish per mile. The report states, "Numbers may have been higher historically due to better habitat conditions" (USFS 1996, p. 104).

A 32-mile section of the North Fork Eel River was surveyed during the summer of 1968. During the survey steelhead were present in the lower and upper sections of the river, but were not observed in a long stretch of river from about 0.5 miles downstream of the Asbill Creek confluence to the confluence with Salt Creek. In part of this section, between Asbill and Hulls creeks, surveyors noted "There was not suitable salmonid nursery or resident trout habitat" (DFG 1968a).

An inventory of anadromous fish resources is included in a 1965 California Fish and Wildlife Plan. In its description of the North Fork Eel River, the inventory stated that the watershed contained a total of 83 miles of steelhead habitat and supported a run of 5,000 steelhead. It was also noted that the watershed "…receives only an insignificant amount of use by…steelhead anglers" (DFG 1965). The run size estimation method is not provided.

Two sections of the North Fork Eel River were surveyed in 1973. No salmonids were observed in the lower section, which stretched from about 0.5 miles upstream of the mouth to the Mina Road bridge. However, surveyors noted that steelhead yearlings had been observed in this section earlier in the year. This stream section was noted to exhibit high water temperatures, but contained "some suitable spawning and nursery conditions." Several large boulders had entered the river due to a landslide near Split Rock and created waterfalls that were "…undoubtedly causing problems in fish migration" (DFG 1973a). In the second section surveyed in 1973 (from Hulls Creek to Salt Creek), *O. mykiss* fingerlings were "scarce." Spawning areas in this section were described as "more than adequate for the limited amount of rearing habitat" and surveyors wrote, "Due to extremely high water temperatures, the North Fork Eel has limited potential for either anadromous or resident fish" (DFG 1973b).

The North Fork Eel River was examined in 1973 as part of a study of water temperature conditions in the Eel River system. In the lower 26.5 miles of river, salmonids "were only observed in areas of cool spring upwelling or cool tributary inflow" (Kubicek pers. comm.). For example, approximately 50 salmonids up to eight inches in length, representing three age classes, were observed at the bottom of a thermally stratified pool near Mina, a few fingerlings were observed in cool bottom waters of pools between Mina and Asbill Creek, and several fingerlings and yearlings were observed in a cool stretch of river created by the inflow of Asbill Creek (Kubicek pers. comm.).

Staff from USFS surveyed a section of river from the Salt Creek confluence upstream to the confluence of the East and West Forks in 1980 and noted, "This stream appears to receive only minor utilization by anadromous fish as very few fish, 1 adult steelhead,

and no redds were observed." Good winter and spring habitat conditions were reported, but surveyors noted that a lack of riparian vegetation, high water temperatures, and low flows made the mainstem North Fork Eel River "inhospitable" during the summer and fall (USFS 1980a).

A total of 8.6 stream miles of the North Fork Eel River, located downstream of Salt Creek, were surveyed in 1982. Surveyors observed *O. mykiss* but noted, "The low numbers of trout are not indicative of the type of salmonid habitat observed during the survey" and found "numerous pool/riffle reaches that appeared to be ideal trout habitat" (Reneau 1982).

In 1984 staff from DFG inspected the waterfall barrier near Split Rock and found it to be a total barrier to fish passage, noting, "Not only was the water velocity found to be high, but a break in step (without benefit of a jump pool) contributed to the passage problem." About 20 adult steelhead were observed near the base of the falls, with some engaging in spawning activities and others attempting to jump the falls. The fish were thought to be winter-run steelhead (DFG 1984). It was speculated that the falls was formed during the major floods that occurred in 1964 (DFG 1992).

In 1991, U.C. Davis researchers completed a four-year study of the Eel River watershed. The report of this study noted that the barrier on the North Fork Eel River at Split Rock had been modified in order to improve fish passage in the river. Fish sampling also was performed during this study in 1989 and 1990, and *O. mykiss* was collected at several locations in the North Fork Eel River (Brown 1991).

A watershed analysis of the North Fork Eel River, published in 1996, states, "The winter steelhead run is the most dominant anadromous fish run in the North Fork Eel River" (USFS 1996, p. 107). This study identified high turbidity and high water temperatures as "the most critical issues for water quality in the North Fork Eel River" (USFS 1996, p. 107). It also noted that cattle grazing impacted the watershed in the past, but had been reduced greatly.

Staff from DFG completed the "Eel River Salmon and Steelhead Restoration Action Plan" in 1997. The authors noted, "The mainstem North Fork Eel River provides harsh summer conditions for the relatively few juvenile salmonids that use it" (DFG 1997, p. 24). And important spawning and rearing habitat was found to exist mainly in tributaries. Fish habitat in the watershed was said to be affected by road development, water diversions, cattle grazing, and logging practices. The Action Plan stated that steelhead populations in the North Fork had declined steadily since 1900, particularly in response to the flood events of 1955 and 1964, and steelhead numbers were considered "…well below historic levels" when the plan was written in 1997 (DFG 1997, p. 24).

Several reports indicate that while winter-run steelhead continue to use the North Fork Eel River, summer steelhead may now be extirpated from the drainage. In a 1975 report entitled "The status of spring-run steelhead (*Salmo gairdneri*) in the Eel River system" the author, Larry Puckett, wrote, "Spring-run steelhead have been observed in the past in the North Fork Eel River… however, they have not been observed there in recent years" (DFG 1975, p. 6). In 1992 the Humboldt Chapter of the American Fisheries Society published a report identifying the risk of extinction in 49 salmon and steelhead stocks. In this report, summer steelhead in the North Fork Eel River were designated as "high risk of extinction." High risk stocks were defined by populations that "showed continuing spawner declines with fewer than 200 adults" (Higgins 1992). The 1996 North Fork Eel River Watershed Analysis cites USFS data as indicating that, "Isolated sightings of summer steelhead occurred as late as 1990…but overall the run is in danger of extinction" (USFS 1996, p. 107). In 1995 testimony regarding timber harvest plans in the Yager

Creek watershed, fisheries biologist Patrick Higgins stated, "Elsewhere in the Eel River drainage, Black Butte River and North Fork Eel River summer steelhead have gone extinct" (Higgins 1995, p. 2).

Wilson Creek

Wilson Creek is tributary to the North Fork Eel River and consists of about 6.7 stream miles. It flows south, entering the North Fork Eel River about 4.1 miles upstream from the Eel River confluence.

Staff from DFG surveyed Wilson Creek in 1938 and did not observe *O. mykiss*. However a report of the survey notes, "Trout reported present below station." "Fair" spawning areas and "good" pools and shelter were observed in the creek (DFG 1938a).

Wilson Creek is mentioned in a 1973 survey report from a DFG survey of the North Fork Eel River. According to the survey report, "many steelhead yearlings" were seen in this creek in July of 1973 and "additional spawning and nursery areas may exist" in this creek (DFG 197

Horse Creek

Horse Creek is tributary to the North Fork Eel River and consists of about 1.6 stream miles. It flows north, entering the North Fork Eel River about five miles upstream from the Eel River confluence.

A DFG memo summarizes the results of salmonid sampling conducted from 1998-2002 on Round Valley Indian Reservation lands. Horse Creek was among the creeks sampled and the memo states, "Steelhead were found in all streams in all years." Sampling was only conducted on the tribal lands in the watershed (DFG 2002).

Asbill Creek

Asbill Creek is tributary to the North Fork Eel River and flows north, entering the North Fork Eel River about 5.4 miles upstream from the Eel River confluence. The creek has two forks that join about 0.5 miles upstream from the Asbill Creek/North Fork Eel River confluence. The East and West forks consist of about 3.4 and 3.2 steam miles, respectively.

Asbill Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this survey, "several fingerlings and yearlings" were observed in the creek (Kubicek 1977).

Staff from DFG conducted as stream inventory of Asbill Creek in 1996. The survey covered the lower 0.5 miles of Asbill Creek and "YOY salmonids" were observed. The species of fish was not noted in the survey report (DFG 1996a).

In 1995 DFG staff observed juvenile steelhead in West Fork Asbill Creek up to stream mile 0.5 (Jones 1995). A DFG memo summarizes the results of salmonid sampling conducted from 1998-2002 on Round Valley Indian Reservation lands. Asbill Creek was among the creeks sampled and the memo states, "Steelhead were found in all streams in all years." Sampling was conducted from the mouth upstream 0.75 miles, including 0.25 miles of one of the forks (DFG 2002).

Bear Canyon Creek

Bear Canyon Creek is tributary to the North Fork Eel River and consists of about 2.7 stream miles. It flows west, entering the North Fork Eel River about 8.6 miles upstream from the Eel River confluence.
Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* were observed in Bear Canyon Creek (Brown 1991).

Hulls Creek

Hulls Creek is tributary to the North Fork Eel River and consists of about 18 stream miles. It flows northwesterly, entering the North Fork Eel River about 15.4 miles upstream from the Eel River confluence.

Stocking records indicate that Hulls Creek was stocked with hatchery and rescued steelhead several times in 1938. The rescued steelhead came from Short Creek, a tributary to the Middle Fork Eel via Mill Creek (DFG 1938b).

Staff from DFG surveyed Hulls Creek in 1938 and noted that YOY steelhead were "common" in the vicinity of Hulls Valley Creek. "Good" spawning areas, "good" pools and shelter, and "abundant" fish foods also were noted (DFG 1938c).

The lower 1.5 miles of Hulls Creek were surveyed in 1972. Juvenile steelhead were present but "scarce" and limited spawning areas were found in the surveyed section. High water temperatures also were said to be limiting the nursery potential of the creek (DFG 1972).

A section of Hulls Creek between Horse Canyon and Lost Cabin creeks was surveyed by DFG staff in 1986. According to the report, this section of the creek supported a population of resident rainbow trout but was inaccessible to anadromous fish due to several boulder barriers. The survey states that Hulls Creek is "considered to be a major tributary to the North Fork of the Eel River" (DFG 1986).

Staff from DFG conducted a stream inventory of Hulls Creek in 1995. Juvenile and YOY *O. mykiss* were found during electrofishing at three sampling stations located between stream miles 0.1 and 6.5 (DFG 1995). The inventory report recommended increasing canopy cover and treating sources of fine sediment in the creek.

Casoose Creek

Casoose Creek is tributary to Hulls Creek and consists of about eight stream miles. It flows southwesterly, entering Hulls Creek about 2.5 miles upstream from the North Fork Eel River confluence.

Staff from BLM surveyed Casoose Creek in 1977 and observed *O. mykiss* ranging from 1.5 to 8.0 inches in length. The fish were described as "resident rainbow trout" but the report noted, "…the area down towards Hulls Creek could be used by migrating steelhead…" The report also noted the presence of a 40-foot high waterfall downstream of the Antone Creek confluence and stated, "The only section of stream in this drainage area which had enough water to sustain any fishery was the area below the falls" (BLM 1977a).

Staff from DFG conducted a stream inventory of Casoose Creek in 1995. The lower one mile of the creek was surveyed and "numerous steelhead" were observed, ranging from 2 to 12 inches in length (PCFWWRA 1995).

Antone Creek

Antone Creek is tributary to Casoose Creek and consists of about 3.6 stream miles. It flows south, entering Casoose Creek about 3.8 miles upstream from the Hulls Creek confluence.

Staff from BLM surveyed Antone Creek in 1977 and did not observe fish. The survey report stated, "This creek provides no suitable habitat for fish." A lack of water and numerous jams and falls were observed (BLM 1977b).

Lynch Creek

Lynch Creek is tributary to Casoose Creek and consists of about three stream miles. It flows south, entering Casoose Creek about 4.2 miles upstream from the Hulls Creek confluence.

Lynch Creek is mentioned in a 1977 BLM report regarding creeks in the "Big Butte" study area. The report notes a ten-foot falls at the mouth of Lynch Creek and states that the creek "offers no suitable fish habitat" (Anonymous 1977).

Red Rock Creek

Red Rock Creek is tributary to Casoose Creek and consists of about 2.6 stream miles. It flows northwesterly, entering Casoose Creek about 5.2 miles upstream from the Hulls Creek confluence.

Red Rock Creek is mentioned in a 1977 BLM report regarding creeks in the "Big Butte" study area. The report mentioned that flows in Red Rock Creek were less than 0.1 cfs and stated that the creek "offers no suitable fish habitat" (Anonymous 1977).

Peterptor Creek

Peterptor Creek is tributary to Red Rock Creek and consists of about 2.5 stream miles. It flows southwesterly, entering Red Rock Creek about 0.5 miles upstream from the Casoose Creek confluence.

Peterptor Creek is mentioned in a 1977 BLM report regarding creeks in the "Big Butte" study area. The report stated that this creek has "intermittent pools" and "no suitable fish habitat." No fish were observed in the creek (Anonymous 1977).

Horse Canyon Creek

Horse Canyon Creek is tributary to Hulls Creek and consists of about 3.8 stream miles. It flows northwesterly, entering Hulls Creek about 2.8 miles upstream from the North Fork Eel River confluence.

Staff from DFG conducted a stream inventory of Horse Canyon Creek in 1996. Juvenile and YOY *O. mykiss* were observed during the survey. A waterfall located about 0.8 miles upstream from the mouth was described as the upstream limit of anadromy and "native rainbow trout" were observed upstream of the falls (PCFWWRA 1996a).

Brin Canyon Creek

Brin Canyon Creek is tributary to Horse Canyon Creek and consists of about 3.1 stream miles. It flows west, entering Horse Canyon Creek about 0.3 miles upstream from the Hulls Creek confluence.

Staff from DFG conducted a stream inventory of Brin Canyon Creek in 1996. Young-of-year *O. mykiss* were observed during the survey. "Mature rainbow trout" also were noted in the creek. A 40-foot waterfall was located about 0.5 miles upstream from the mouth and all fish observations took place downstream from the waterfall (PCFWWRA 1996b). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy.

Who Who Creek

Who Who Creek is tributary to Hulls Creek and consists of about 0.6 stream miles. It flows east, entering Hulls Creek about 8.3 miles upstream from the North Fork Eel River confluence.

Staff from the USFS captured juvenile steelhead while sampling in the lower 0.25 miles of Who Who Creek between 1968 and 1972 (Barney 1972).

Staff from DFG conducted a stream inventory of Who Who Creek in 1996. One juvenile *O. mykiss* was observed during the survey, about 0.3 miles upstream from the mouth of the creek. This fish was described as "possibly a native fish" (PCFWWRA 1996c). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment. The report also noted that fish passage in the creek is difficult due to a steep gradient.

Hulls Valley Creek

Hulls Valley Creek is tributary to Hulls Creek and consists of about 1.6 stream miles. It flows north, entering Hulls Creek about 9.1 miles upstream from the North Fork Eel River confluence.

Staff from DFG surveyed Hulls Valley Creek in 1938. About 0.5 miles upstream from the mouth, 100 steelhead ranging from two to five inches were observed in one pool. The report noted the presence of "good" spawning areas, "good" pools and shelter, and "abundant" food for fish (DFG 1938d).

In 1995 DFG staff electrofished three sites in Hulls Valley Creek. Juvenile steelhead were collected, although the location is unclear (Mullins *et al.* 1995)

Red Mountain Creek

Red Mountain Creek is tributary to the North Fork Eel River and consists of about 6.7 stream miles. It flows west, entering the North Fork Eel River about 20.6 miles upstream from the Eel River confluence.

In 1996, staff from USFS and BLM conducted a watershed analysis of the North Fork Eel River. The report states that Red Mountain Creek and the West Fork North Fork Eel River contained the highest juvenile steelhead densities of the tributaries surveyed in 1995 (USFS 1996). Staff from DFG conducted a stream inventory of Red Mountain Creek in 1996. Juvenile and YOY salmonids (including *O. mykiss*) were observed and described as "abundant" (CCC 1996a). The inventory report recommended increasing canopy and treating fine sediment sources.

Lightfoot Creek

Lightfoot Creek is tributary to the North Fork Eel River and consists of about 2.1 stream miles. It flows west, entering the North Fork Eel River about 23.3 miles upstream from the Eel River confluence.

Staff from DFG conducted a stream inventory of Lightfoot Creek in 1996. Electrofishing was not conducted during the survey, but "The surveyors observed what appeared to be resident rainbow trout throughout the entire survey length" (PCFWWRA 1996d). The inventory report noted slope failures and aggradation, as well as intermittent flows in sections of the stream.

Rock Creek

Rock Creek is tributary to the North Fork Eel River and consists of about 3.9 stream miles. It flows southwesterly, entering the North Fork Eel River about 26.4 miles upstream from the Eel River confluence.

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* were observed in Rock Creek (Brown 1991).

Staff from DFG conducted a stream inventory of Rock Creek in 1996. No salmonid observations were noted during the survey. The report noted that bedrock falls became common and flow was almost non-existent about 0.4 miles upstream from the mouth of the creek (PCFWWRA 1996e). Treating fine sediment sources and increasing canopy cover was recommended.

Salt Creek

Salt Creek is tributary to the North Fork Eel River and consists of about 10.4 stream miles. It flows north, entering the North Fork Eel River about 28 miles upstream from the Eel River confluence.

Stocking records indicate that a total of 10,000 steelhead were stocked in Salt Creek in 1939 (DFG 1939a). In an August 1940 memo, a DFG warden reports that the lower 1.5 miles of Salt Creek was drying up and steelhead ranging from two to eight inches in length were stranded in the creek. The memo states "…between 700 and 1,000 fish could be rescued from this part of the stream" (DFG 1940).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* were observed in Salt Creek (Brown 1991).

Hoaglin Creek

Hoaglin Creek is tributary to Salt Creek and consists of about 3.6 stream miles. It flows east, entering Salt Creek about 3.1 miles upstream from the North Fork Eel River confluence.
Staff from BLM surveyed a section Hoaglin Creek near its headwaters in 1977 and did not observe fish. The creek was dry and "no suitable stream conditions" were seen, including in areas that were spot checked downstream of the surveyed section (BLM 1977c).

Staff from DFG conducted a stream inventory of Hoaglin Creek in 1996. Juvenile and YOY salmonids were observed in the creek but their species was not identified. The fish were observed downstream of a bedrock chute located about 0.6 miles upstream from the mouth, which appeared to comprise a fish passage barrier (DFG 1996b). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy. Limited amounts of spawning gravel were also noted.

Yellowjacket Creek

Yellowjacket Creek is tributary to the North Fork Eel River and consists of about 2.5 stream miles. It flows west, entering the North Fork Eel River about 28.5 miles upstream from the Eel River confluence.

Staff from DFG conducted a stream inventory of Yellowjacket Creek in 1996. Young-of-year rainbow trout were observed during the survey. No fish were observed upstream of a 20-foot waterfall located about 0.6 miles upstream from the mouth of the creek (CCC 1996b). The inventory report recommended increasing canopy in the creek.

Cox Creek

Cox Creek is tributary to the North Fork Eel River and consists of about four stream miles. It flows southwesterly, entering the North Fork Eel River about 30.3 miles upstream from the Eel River confluence.

Staff from DFG conducted a stream inventory of Cox Creek in 1996. Juvenile and YOY salmonids, including some six to ten-inch "trout," were observed during the survey. Stream flow became almost non-existent near the confluence of Tub Creek, about 1.7 miles upstream from the mouth of Cox Creek (PCFWWRA 1996f). The inventory report noted that water temperature may limit the fishery and recommended treating sources of fine sediment.

Kettenpom Creek

Kettenpom Creek is tributary to the North Fork Eel River and consists of about 5.7 stream miles. It flows northeasterly, entering the North Fork Eel River about 32 miles upstream from the Eel River confluence.

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* were observed in Kettenpom Creek (Brown 1991).

Staff from DFG conducted a stream inventory of Kettenpom Creek in 1996. Juvenile and YOY *O. mykiss* were observed during the survey. A total barrier to fish passage consisting of very large boulders and a steep gradient was present about 1.7 miles upstream from the mouth of the creek (DFG 1996c). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy.

Bluff Creek

Bluff Creek is tributary to Kettenpom Creek and consists of about 7.5 stream miles. It flows southeasterly, entering Kettenpom Creek about 1.3 miles upstream from the North Fork Eel River confluence.

Stocking records indicate that Bluff Creek was stocked with steelhead in 1930, 1939, and 1941. About 5,000 fish were planted in 1930 and 1941, and approximately 10,000 were planted in 1939 (DFG 1939b, DFG 1941).

Staff from DFG surveyed Bluff Creek in 1953. During the survey, steelhead ranging from 3 to 20 inches in length were observed throughout the creek. According to the field form, these fish were "entirely" naturally propagated and the "stream has not been planted for years." Bluff Creek was described as "An excellent spawning stream for anadromous fish" (DFG 1953).

Bluff Creek was surveyed again in 1973 by staff from DFG. The survey covered the lower 3.5 miles of the creek and fish were "abundant" throughout that section. Spawning areas also were described as "abundant" and "suitable for anadromous fish." According to the survey report, "Bluff Creek was most likely at one time a very productive stream but due to the logging practices in this area, specifically the lack of a buffer strip, it has lost much of its productivity" (DFG 1973c).

Staff from DFG conducted a stream inventory of Bluff Creek in 1996. Juvenile and YOY salmonids were observed during the survey. A vertical drop in elevation located about 0.4 miles upstream from the mouth of the creek was thought to be a complete barrier to anadromous fish. Good habitat and resident trout were observed above this barrier (CCC 1996c). The inventory report noted that fish passage is difficult due to the creek's steep gradient.

Dutchman Creek

Dutchman Creek is tributary to the North Fork Eel River and consists of about 2.7 stream miles. It flows southwesterly, entering the North Fork Eel River about 32.2 miles upstream from the Eel River confluence.

Staff from USFS surveyed Dutchman Creek in 1979. One six-inch salmonid was observed during the survey and the creek was dry at its mouth. However, the report stated, "…it is likely that steelhead and resident rainbow make use of the habitat available in Dutchman Creek during periods of higher flows" (USFS 1979a).

Soldier Creek

Soldier Creek is tributary to the North Fork Eel River and consists of about 4.7 stream miles. It flows south, entering the North Fork Eel River about 34.4 miles upstream from the Eel River confluenceStaff from DFG conducted a stream inventory of Soldier Creek in 1996. Young-of-year *O. mykiss* were observed during the survey. A point about 0.8 miles upstream from the mouth of the creek was described as the "end of anadromy" due to intermittent flows, large boulders, and a steep gradient (CCC 1996d).

The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment.

West Fork North Fork Eel River

The West Fork North Fork Eel River is tributary to the North Fork Eel River and consists of about 4.6 stream miles. It flows southeasterly, entering the North Fork Eel River about 35.5 miles upstream from the Eel River confluence.

The West Fork North Fork Eel River was surveyed in 1968 and rainbow trout ranging from 2 to 12 inches were observed. The stream was said to have "…spawning and nursery areas for a resident trout population" and moderate to heavy fishing pressure was noted (DFG 1968b).

Staff from USFS surveyed the West Fork North Fork Eel River in 1980. Only the lower 0.8 miles downstream of Bradburn Creek was surveyed and surveyors noted "few" *O. mykiss* of 18-24 inches in length. The creek was described as, "An anadromous fish stream with low productivity." It was said to have "ample spawning and rearing areas" but lacked shade canopy and instream cover (USFS 1980b).

Staff from DFG conducted a stream inventory of the West Fork North Fork Eel River in 1996. Juvenile and YOY salmonids were observed during the survey, including "large numbers" in some areas. These fish were noted to be "probably steelhead rainbow trout." (CCC 1995). The inventory report noted that water temperatures were "somewhat high" and recommended increasing canopy.

Bradburn Creek

Bradburn Creek is tributary to the West Fork North Fork Eel River and consists of about 3.5 stream miles. It flows northeasterly, entering the West Fork North Fork Eel River about 0.6 miles upstream from the North Fork Eel River confluence.

Staff from USFS surveyed Bradburn Creek in 1980 and observed a pair of adult steelhead in the lower section and low numbers of juvenile rainbow trout throughout the rest of the creek. A set of cascading falls located about 0.25 miles upstream from the mouth was said to be a barrier to migrating fish. The creek was described as a, "Small fairly inaccessible trout stream with excellent shade canopy and instream cover, ample rearing areas, however spawning areas may be a limiting factor" (USFS 1980c).

Staff from DFG conducted a stream inventory of Bradburn Creek in 1996. Young-of-year salmonids were observed at several locations during the survey. Steep waterfalls located about 2.8 miles upstream from the creek mouth were described as the "end of andromy" (DFG 1996d).

Salt Creek

Salt Creek is tributary to the West Fork North Fork Eel River and consists of about 2.9 stream miles. It flows east, entering the West Fork North Fork Eel River about 2.5 miles upstream from the North Fork Eel River confluence.

Staff from DFG conducted a stream inventory of Salt Creek in 1996. Fish were observed throughout the surveyed stream section, the lower 0.8 miles of the creek. These fish were described as "anadromous salmonids" downstream of a boulder barrier located

less than 0.1 miles from the mouth. "Native rainbow trout" were observed above the barrier (DFG 1996e). The inventory report noted several log debris accumulations and limited spawning gravels. It stated that stream's high gradient makes fish passage difficult and recommended increasing canopy.

Panther Creek

Panther Creek is tributary to the West Fork North Fork Eel River and consists of about 2.7 stream miles. It flows east, entering the West Fork North Fork Eel River about 4.6 miles upstream from the North Fork Eel River confluence.

Staff from DFG surveyed Panther Creek in 1938 and observed YOY steelhead. Spawning areas were described as "good" and fish foods were said to be "abundant" (Vestal 1938). Stocking records indicate that Panther Creek was stocked with 30,000 steelhead in 1938 and 15,000 in 1939 (DFG 1939c).

Staff from DFG conducted a stream inventory of Panther Creek in 1996. Juvenile and YOY salmonids were observed during the survey. A waterfall located about 0.3 miles upstream from the mouth was listed as a barrier and resident trout were observed upstream (CCC 1996e).

Bar Creek

Bar Creek is tributary to the West Fork North Fork Eel River and consists of about 2.7 stream miles. It flows south, entering the West Fork North Fork Eel River about 4.6 miles upstream from the North Fork Eel River confluence.

Staff from DFG surveyed Bar Creek in 1938 and observed two to three-inch steelhead. "Good" spawning areas, "good" pools and shelter, and "abundant" fish foods also were noted (Shapovalov 1938).

Staff from DFG conducted a stream inventory of Bar Creek in 1996. Juvenile and YOY *O. mykiss* were observed during the survey. "Native trout" were observed upstream from a point located at about stream mile 2.6 where the creek became "too steep for anadromous fish" (PCFWWRA 1996g). The inventory report recommended treating sources of fine sediment.

East Fork North Fork Eel River

The East Fork North Fork Eel River is tributary to the North Fork Eel River and consists of about 2.6 stream miles. It flows south, entering the North Fork Eel River about 35.5 miles upstream from the Eel River confluence.

Forest Service staff surveyed the East Fork North Fork Eel River in 1979 and 1980. Salmonids were described as "common" in the lower section of the creek in 1979 and *O. mykiss* were present in 1980 (USFS 1979b, USFS 1980d). The 1980 survey report describes the fork as a "Small anadromous trout stream with intermittent flows in summer and fall. Little shade canopy, instream cover and spawning areas."

Staff from DFG conducted a stream inventory of the East Fork North Fork Eel River in 1996. Young-of-year *O. mykiss* were observed during the survey. The fish were observed downstream of a set of large boulders located at about stream mile 0.9 (PCFWWRA 1996h). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy.

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Table 5. Distribution status and population features of *O. mykiss* in streams of the North Fork Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
North Fork Eel River	DF	DF	Y	Y	3
Wilson Creek	DF	UN		UN	0
Horse Creek	DF	DF		UN	1
Asbill Creek	DF	DF		Y	1
Bear Canyon Creek	DF	UN		UN	0
Hulls Creek	DF	DF		Y	3
Casoose Creek	DF	DF		Y	3
Antone Creek	PA	UN		UN	0
Lynch Creek	PA	UN		UN	0
Red Rock Creek	PA	UN		UN	0
Peterptor Creek	PA	UN		UN	0
Horse Canyon Creek	DF	DF		Y	2
Brin Canyon Creek	DF	DF		Y	2
Who Who Creek	DF	DF		UN	1
Hulls Valley Creek	DF	DF		UN	2
Red Mountain Creek	DF	DF		Y	3
Lightfoot Creek	DF	DF		N	3
Rock Creek	DF	UN		UN	0
Salt Creek	DF	UN		UN	0
Hoaglin Creek	PB	PB		UN	2
Yellowjacket Creek	DF	DF		UN	2
Cox Creek	DF	DF		UN	2
Kettenpom Creek	DF	DF		Y	3
Bluff Creek	DF	DF	Y	UN	3
Dutchman Creek	DF	UN		UN	0
Soldier Creek	DF	DF		Y	2
West Fork North Fork Eel River	DF	DF		UN	3
Bradburn Creek	DF	DF		Y	2
Salt Creek	DF	DF		Y	3
Panther Creek	DF	DF		Y	3
Bar Creek	DF	DF		Y	3
East Fork North Fork Eel River	DF	DF		UN	2

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

Middle Fork Eel River

The Middle Fork Eel River is tributary to the Eel River and consists of about 69.8 stream miles. It flows southeasterly, entering the Eel River at about stream mile 119.3, near the town of Dos Rios. It is the largest sub-basin in the Eel River watershed and drains an area of about 753 square miles (DFG 1997a).

Staff from DFG surveyed the Middle Fork Eel River from its mouth to the confluence with the North Fork Middle Fork Eel River in 1938. Multiple age classes of steelhead were observed throughout the Eel River during this survey. Adult steelhead were observed at Asa Bean Falls, located about 50 miles upstream from the Eel River confluence. The falls were reported to be a partial barrier to steelhead (DFG 1938a, DFG 1938b, DFG 1938c). According to a 1946 DFG memo, USFS staff blasted the falls with dynamite in August of that year in order to improve passage for anadromous steelhead (DFG 1946).

In 1957, staff from DFG and USFS surveyed a ten-mile section of the Middle Fork Eel River downstream of the Beaver Creek confluence as well as the section between the Beaver and Balm of Gilead creeks' confluences. In stream survey reports, the Middle Fork is described as, "…an important spawning and nursery area for summer and winter steelhead runs" (DFG 1957a). The section downstream of the Beaver Creek confluence was described as "an excellent nursery ground for young steelhead" (DFG 1957b). The section upstream of Beaver Creek had limited spawning areas but "…appears to support a sizeable population of SH-RT."

A 1959 report summarizes fisheries data collected in the Middle Fork Eel River during investigations of possible dam sites in the watershed. This report stated that summer steelhead were observed in the Middle Fork as early in the year as April 20, and winter-run fish were known to reach Asa Bean Falls during December and January. The river also was said to support a population of resident rainbow trout. During 1959 stream surveys, nursery habitat in the mainstem Middle Fork was found to be limited to the reaches upstream of the Eel River Ranger Station. Spawning areas were observed throughout the section surveyed, from the mouth of the river to "Haynes Delight," located upstream from the Balm of Gilead Creek confluence (Anonymous 1960).

An inventory of anadromous fish resources is included in a 1965 California Fish and Wildlife Plan. In its description of the Middle Fork Eel River, the inventory stated that the watershed contained a total of 178 miles of steelhead habitat and supported an annual run of 23,000 steelhead. (The estimation method was not provided in the plan.) It was also noted that, "The river is not supporting optimum runs of fish. The limiting factor appears to be siltation, arising largely from poor land-use programs" (DFG 1965a, p. 385).

The Middle Fork Eel River was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study, juvenile *O. mykiss* were found to be abundant from Osborn Station to Buck Creek, and 24 adult summer steelhead were observed between Osborn Station and Hellhole Canyon (Kubicek 1977). Several juvenile *O. mykiss* were observed between Buck Creek and Black Butte River, and approximately 100 juveniles were observed in a pool just above Black Butte River, concentrated in an area along the gravel bar separating the two streams (Kubicek pers. comm.).

In a 1992 report on the distribution of summer steelhead, Weldon Jones described observations of summer steelhead that took place in the Middle Fork Eel River beginning in the 1930s (DFG 1992). Fishing for summer steelhead became popular on the Middle Fork in the early 1950s. However, anglers noticed a decrease in the number of fish in 1955 and a severe flood that year caused damage to summer steelhead habitat. Following the floods in 1964, during which "summer holding areas were almost entirely obliterated" (DFG 1992, p. 7), DFG closed the Middle Fork Eel River to summer steelhead fishing.

Staff from USFS surveyed the upper 12 miles of the Middle Fork Eel River in 1979 and observed "adverse conditions." Steelhead passage was said to be limited by a falls barrier near Wrights Valley (upstream of the Balm of Gilead Creek confluence) and much of the stream upstream from the barrier consisted of dry channel with "extensive sediment deposits." However, resident rainbow trout were said to be "abundant" in these upstream sections when water was present (USFS 1980a).

Each year from 1984 through 1989 staff from DFG conducted electrofishing surveys at two stations in the Middle Fork Eel River in order to monitor juvenile steelhead populations. During this sampling juvenile steelhead, ranging from 1.6 to 8.6 inches in length, were collected each year (except 1985 when sampling was not conducted). The sampling stations were located near the mouth of Fly Creek and near the mouth of the North Fork Middle Fork Eel River (DFG 1989a). Notes from one surveyor state, "…below Fly Creek and south…higher temperatures and shallower pools [make the Middle Fork] poorly suited for summer holding grounds. The area above Fly Creek is ideal for summer steelhead, low turbidity, low temperature at pool bottoms, and many overhanging bedrock ledges" (USFS 1980b).

Staff from DFG completed the "Eel River Salmon and Steelhead Restoration Action Plan" in 1997. The authors wrote that, "The lower mainstem Middle Fork Eel River has harsh summer conditions for the relatively few juvenile salmonids that live in it" (DFG 1997a, p. 25). Steelhead populations in the Middle Fork Eel River have been impacted by increased sediment levels, cattle grazing, logging, and poaching. The Action Plan stated that steelhead populations in the Middle Fork have declined steadily since 1900, particularly in response to the flood events of 1955 and 1964, and winter steelhead numbers were considered "…well below historic levels" when the plan was written in 1997 (DFG 1997a, p. 25).

Annual surveys of summer steelhead in the Middle Fork Eel River were conducted by staff from DFG and USFS from 1966 through 1999. In a report of the survey conducted in 1999, the Middle Fork summer steelhead run was described as "The largest remaining wild run of these magnificent fish" (DFG 1999, p. 2). It was noted to be "…probably the only population that has not been touched by a hatchery program, and as such, is most likely the State's most important summer steelhead population" (DFG 1999, p. 2). Counts from the annual surveys indicated that the Middle Fork summer steelhead population has declined since 1987, with the exception of high population numbers in 1995. The numbers of adult fish fluctuated from a high of 1,601 in 1981 to a low of 198 in 1966, and 471 fish were counted in 1999.

Staff from DFG surveyed two sections of the upper Middle Fork Eel River in 2000. Multiple age classes of steelhead were observed between the North Fork Middle Fork and Balm of Gilead Creek confluences, and in the section from Uhl Creek to the river's headwaters. In 2000, the upstream limit for steelhead trout was described as a falls located about 0.75 miles downstream from the mouth of Willow Basin Creek (DFG 2000a). One stream survey report stated, "The stream section surveyed (and the Eel River as a whole) is slowly moving to a higher level of complexity since the devastating storms of 1955 and 1964" (DFG 2000b).

Goforth Creek

Goforth Creek is tributary to the Middle Fork Eel River and consists of about two stream miles. It flows south, entering the Middle Fork Eel River about 0.6 miles upstream from the Eel River confluence.

During a 1976 stream survey *O. mykiss* were observed in the lower 200 yards of Goforth Creek. The creek was said to support a small *O. mykiss* population, but had "poor spawning and nursery habitat for steelhead." Limiting factors included steep terrain and a lack of shelter (DFG 1976a).

Poonkinny Creek

Poonkinny Creek is tributary to Goforth Creek and consists of about 1.9 stream miles. It flows south, entering Goforth Creek about 0.7 miles upstream from the Middle Fork Eel River confluence.

Juvenile and YOY *O. mykiss*, ranging from one to seven inches in length, were observed throughout Poonkinny Creek during a 1976 DFG stream survey. Steelhead spawning and nursery habitat was described as "poor" or "fair." A lack of spawning gravel was listed as a major limiting factor (DFG 1976b).

Salt Creek

Salt Creek is tributary to the Middle Fork Eel River and consists of about 6.2 stream miles. It flows north, entering the Middle Fork Eel River about 5.3 miles upstream from the Eel River confluence.

Salt Creek was surveyed during a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. The report described steelhead spawning areas as "quite limited" in Salt Creek, but stated, "…steelhead reportedly do ascend to the upper reaches of the stream and spawn each year" (Anonymous 1960).

In a 1976 stream survey report, staff from DFG characterized Salt Creek as "…one of the larger tributaries to the Middle Fork of the Eel River providing good steelhead spawning and rearing habitat." Young-of-year steelhead were observed in the lower stream and rainbow trout were noted in the upper areas. Spawning areas were "heavily damaged" by siltation in the lower portion of the stream (DFG 1976c).

Staff from DFG conducted a stream inventory of Salt Creek in 1994. Steelhead were captured during electrofishing in the creek, including a total of 116 steelhead found at one site about 0.7 miles upstream from the creek mouth (Goodfield 1994). The inventory report recommends increasing canopy, along with treating sources of fine sediment including those related to the road system.

Elk Creek

Elk Creek is tributary to the Middle Fork Eel River and consists of about 17.3 stream miles. It flows northwesterly, entering the Middle Fork Eel River about 15.1 miles upstream from the Eel River confluence.

Elk Creek was surveyed during a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. During the survey "very good" spawning gravels were observed in Elk Creek from the mouth to the Sanhedrin Creek confluence. The survey report states, "Steelhead reportedly spawn a much greater distance above this point" (Anonymous 1960).

Smith and Elwell (1961), as reported in Kubicek (1977), indicated that Elk Creek (in its extreme headwaters) was only one of a few Middle Fork tributaries downstream of the Black Butte River confluence that contain salmonid nursery areas of any consequence.

Staff from USFS surveyed two miles of Elk Creek downstream from the Crocker Creek confluence in 1977, when rainbow trout were deemed "common" in the lower reach and "abundant" in the upper. The middle reach was dry (USFS 1977a). In the two miles between the confluences of Crocker and Sportsman creeks, density of *O. mykiss* was noted as "abundant," "few," and "common" in the lower, middle, and upper portions of the reach, respectively (USFS 1977b). The two mile reach upstream from the Sportsman Creek confluence also was surveyed and contained areas of "abundant" rainbow trout. The fishery in this reach was deemed "excellent" overall (USFS 1977c).

Staff from DFG conducted a stream inventory of Elk Creek in 1994. Three juvenile steelhead were found at one electrofishing site, located about 3.4 miles upstream from the creek mouth (CCC 1994). The inventory report recommends increasing canopy and with treating sources of fine sediment.

Eden Creek

Eden Creek is tributary to Elk Creek and consists of about 10.7 stream miles. It flows northeasterly, entering Elk Creek about 1.7 miles upstream from the Middle Fork Eel River confluence.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Eden Creek is listed as containing 1.2 miles of stream accessible to steelhead (DFG 1983a). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983a, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Ellis Creek

Ellis Creek is tributary to Elk Creek and consists of about 3.8 stream miles. It flows north, entering Elk Creek about 4.9 miles upstream from the Middle Fork Eel River confluence.

Staff from DFG conducted a stream inventory of Ellis Creek in 2002. Two age 2+ steelhead were observed about 0.1 miles upstream from the creek mouth. The first probable fish barrier was noted about stream mile 1.4. The inventory report notes that water temperature may limit the fishery and recommends increasing canopy (DFG 2002a).

Sanhedrin Creek

Sanhedrin Creek is tributary to Elk Creek and consists of about 6.8 stream miles. It flows north, entering Elk Creek about 5.7 miles upstream from the Middle Fork Eel River confluence.

Sanhedrin Creek was surveyed by helicopter in 1965 and the surveyors noted "possible steelhead utilization." One fish was seen but not identified. Silt and debris accumulation was observed near the mouth of the creek (Hinze 1965).

Bear Creek

Bear Creek is tributary to Elk Creek. It is formed by the confluence of headwater forks, and flows southwesterly about 3.7 miles.

Staff from USFS surveyed about three miles of Bear Creek in 1977. Only the lower section had rainbow trout, which were deemed "rare" (i.e., density of about one per 100 feet). The survey report states, "Clean up log jams on upper section, control erosion of slopes, do replanting. This area has trail access yet it is unstable at this time and highly disturbed" (USFS 1977d).

Forks Creek

Forks Creek is tributary to Elk Creek and consists of about 1.7 stream miles. It flows east, entering Elk Creek about 10.7 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed about 0.3 miles of Forks Creek in 1977. The survey report states, "Very nice and stable stream except for few jams but flow is just nonexistent." No fish were observed, and the fishery and the habitat condition were rated "poor" (USFS 1977e).

Staff from DFG conducted a stream inventory of Forks Creek in 2002. During the survey juvenile salmonids were observed from the creek mouth up to about 0.3 miles upstream. (DFG 2002b). The inventory report noted that water temperatures were "nearing the threshold stress range for juvenile salmonids."

Crocker Creek

Crocker Creek is tributary to Elk Creek and consists of about 5.8 stream miles. It flows northeasterly, entering Elk Creek about 12.2 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed about two miles of Crocker Creek in 1977. Rainbow trout were "abundant" in the lower section and "common" in the middle section. The fishery was deemed "good" while the habitat condition was "fair" (USFS 1977f).

Staff from DFG conducted a stream inventory of Crocker Creek in 2002. Juvenile salmonids, including one six-inch steelhead, and other unidentified salmonids were observed in the lower 0.4 miles of the stream. According to the inventory report, anadromous fish may only have access to the lower reach due to steep gradient, large boulders, and lack of water further upstream (CCC 2002a). The report noted that spawning gravels were limited and water temperatures were "nearing the threshold stress range for juvenile salmonids." It recommended re-vegetation.

Sulphur Springs Creek

Sulphur Springs Creek is tributary to Elk Creek and consists of about 4.9 stream miles. It flows northeasterly, entering Elk Creek about 12.5 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed about one mile of lower Sulphur Springs Creek in 1977. Rainbow trout were observed but abundance was generally low, although the lower section had an estimated density of 20 fish per 100 feet of stream. The overall fishery rating and the habitat condition were deemed "poor" (USFS 1977g).

Staff from DFG conducted a stream inventory of Sulphur Springs Creek in 2002. Juvenile salmonids were observed just upstream from the mouth of the creek but the species was not identified. The survey ended about 0.1 miles upstream from the mouth due to a "very steep, large boulder-dominated channel," which was likely the upstream limit for anadromous fish (CCC 2002b).

Mendenhall Creek

Mendenhall Creek is tributary to Elk Creek and consists of about 4.3 stream miles. It flows southwesterly, entering Elk Creek about 14 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed two miles of Mendenhall Creek in 1977 and observed multiple *O. mykiss* year classes in the middle and upper reaches. The middle reach density was estimated to be 50 fish per 100 feet, while the upper reach density was 20 fish per 100 feet (USFS 1977h).

Staff from DFG conducted a stream inventory of Mendenhall Creek in 2002. The lower 0.8 miles of the creek were surveyed and juvenile steelhead were observed. The report recommended planting riparian vegetation to improve habitat in the creek (CCC 2002c).

Sportsman Creek

Sportsman Creek is tributary to Elk Creek. It is formed by the confluence of headwater forks, and flows about 2.1 miles northeast. The confluence with Elk Creek is immediately upstream from the mouth of Mendenhall Creek.

Staff from USFS surveyed about two miles of Sportsman Creek in 1977. Rainbow trout were only observed in the middle reach and were deemed "rare." The overall fishery rating and the habitat condition were described as "poor" (USFS 1977i).

Lookout Creek

Lookout Creek is tributary to Elk Creek and consists of about three stream miles. It flows southwesterly, entering Elk Creek about 15.8 miles upstream from the Middle Fork Eel River confluence.

Staff from DFG conducted a stream inventory of Lookout Creek in 2002. Juvenile salmonids were observed throughout the section surveyed, which included the lower 0.8 miles of the creek. An unspecified barrier at the upstream end of this reach was

described as the "possible end of anadromy" (Palacios 2002). The inventory report notes that water temperature may limit the fishery and recommends treating sources of fine sediment.

Thatcher Creek

Thatcher Creek is tributary to the Middle Fork Eel River and consists of about 6.4 stream miles. It flows northwesterly, entering the Middle Fork Eel River about 16.5 miles upstream from the Eel River confluence.

Thatcher Creek was surveyed during a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. The report stated, "Steelhead have been observed spawning in the headwaters of this stream during the winter periods" and noted the presence of "good" spawning riffles from the mouth of the creek upstream to the confluence with Jack Hollow Creek (Anonymous 1960).

Smith and Elwell (1961), as reported in Kubicek (1977), indicated that Thatcher Creek (upper section) was one of only a few Middle Fork tributaries downstream of Black Butte River confluence that contain salmonid nursery areas of any consequence.

Staff from USFS surveyed Thatcher Creek in 1973 and observed "salmonids" in the creek. "A considerable quantity of very nice spawning substrate" also was noted. High water temperatures may have limited salmonid rearing habitat and planting riparian vegetation was recommended (USFS 1973a).

Thatcher Creek was surveyed again in 1977 by USFS staff and rainbow trout were observed throughout the creek. Abundance varied from "rare" to "abundant" in various sections of the creek and the fish ranged in size from one to seven inches (USFS 1977j, USFS 1977k).

Staff from DFG conducted a salmonid carcass survey in Thatcher Creek in 1988 and did not observe any fish or redds. Many slides were noted along the banks of the creek (DFG 1988a).

Hayshed Creek

Hayshed Creek is tributary to the Middle Fork Eel River and consists of about 6.3 miles of intermittent stream. It flows southwesterly, entering the Middle Fork Eel River about 17 miles upstream from the Eel River confluence.

Hayshed Creek was surveyed during a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. The creek was described as a "small drainage" and "fairly good" spawning riffles were observed in the lower section. According to the report, falls located just upstream from the mouth of the creek are only a barrier during high flows and steelhead had been seen spawning above them (Anonymous 1960).

Staff from USFS surveyed about three miles of Hayshed Creek in 1973 and observed low salmonid density in the lower reach with somehow higher density (i.e., 10-15 fish per 100 feet) in the middle reach. The survey report states, "I suspect that few anadromous salmonids spawn in this stream. A majority of the fish encountered were large two or three year old fish" (USFS 1973b). The report adds, "scarcity of deep pools and lack of riparian vegetation to provide shading may result in unfavorable stream temperatures during very hot summer days."

Mill Creek

Mill Creek is tributary to the Middle Fork Eel River and consists of about 13.1 stream miles. It flows southeasterly, entering the Middle Fork Eel River about 20.8 miles upstream from the Eel River confluence.

Mill Creek was surveyed by staff from DFG in 1938 and steelhead presence was noted. "Good" spawning areas were observed and the survey report stated, "Runs of salmon and steelhead reported to have been good during past season" (DFG 1938d).

Juvenile steelhead were rescued from Mill Creek in 1949 and 1953. A total of 45,139 steelhead were rescued in 1949 and 29,129 were rescued in 1953 (DFG 1950, DFG 1954).

Smith and Elwell (1961), as reported in Kubicek (1977), indicated that Mill Creek (in its extreme headwaters) was one of only a few Middle Fork tributaries downstream of Black Butte River confluence that contain salmonid nursery areas of any consequence.

Staff from DFG conducted a salmonid carcass survey in Mill Creek in 1989. A field note documents the collection of two carcasses in the creek, but does not mention the species of fish (DFG 1989b).

Staff from DFG conducted a stream inventory of Mill Creek in 1996. One site was electrofished, about 6.7 miles upstream from the Middle Fork Eel River confluence and YOY and juvenile *O. mykiss* were found. The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment (CCC 1996).

A DFG memo summarizes the results of salmonid sampling conducted from 1998-2002 on Round Valley Indian Reservation lands. Mill Creek was among the creeks sampled and the memo states, "Steelhead were found in all streams in all years" (DFG 2002c).

Turner Creek

Turner Creek is tributary to Mill Creek and consists of about 3.9 miles of intermittent stream. It flows northeasterly, entering Mill Creek about 3.2 miles upstream from the Middle Fork Eel River confluence.

Staff from DFG surveyed Turner Creek in 1938. No fish observations are noted in the survey report, which describes the creek as "entirely dry" (DFG 1938e).

Turner Creek was surveyed during a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. The report states that "Steelhead have been observed spawning" in Turner Creek and the creek is described as containing "good quality" spawning gravels (Anonymous 1960).

Steelhead were observed up to stream mile 4.0 in Turner Creek during spot checks at road crossings conducted between 1985 and 1997 by DFG staff (Jones 1997).

The condition of Turner Creek is described in a 2000 DFG memo concerning a restoration project in the watershed. According to the memo, flows become subsurface in Turner Creek during the summer months, but this condition did not occur historically. It

cites overgrazing by cattle as reducing channel complexity and contributing to loss of the riparian zone and excess sedimentation. Streambank stabilization projects were planned for four sites in the creek (DFG 2000c).

Grist Creek

Grist Creek is tributary to Mill Creek and consists of about 6.5 miles of intermittent stream. It flows east, entering Mill Creek about six miles upstream from the Middle Fork Eel River confluence.

Staff from DFG surveyed Grist Creek in 1938 and did not note any fish observations. The survey report stated, "Very few salmon or steelhead reported to run into this stream, and these are reported to go far up" (DFG 1938f
Grist Creek was surveyed during a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. The report states that "Steelhead have been observed spawning" in Grist Creek and the creek is described as containing "good quality" spawning gravels (Anonymous 1960).

Town Creek

Town Creek is tributary to Grist Creek and consists of about 5.8 miles of intermittent stream. It flows southeasterly, entering Grist Creek about 2.3 miles upstream from the Mill Creek confluence.

Staff from DFG surveyed Town Creek in 1938 and noted that only "a trickle of water" was flowing between pools in the creek. However, YOY steelhead and one 20-inch adult were observed in the pools and the report stated, "Runs of salmon and steelhead reported to have been good during past season" (DFG 1938g).

Fish rescues were performed in many Eel River streams in 1949. A total of 10,850 juvenile steelhead were rescued from Town Creek that year (DFG 1950).

Town Creek was surveyed during a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. The report states, "Steelhead have been observed spawning [in Town Creek]" and the creek is described as containing "good quality" spawning gravels (Anonymous 1960).

A salmonid carcass survey was conducted on a section of Town Creek from the confluence with Little Valley Creek to the Main Street bridge in 1988. No fish or redds were observed and the surveyed section was said to be "poor for spawning or rearing." However the field note stated, "Both Little Valley Creek and Town Creek above the conjunction looked as if they might have good rearing habitat with cover and pools…" (Walton 1988).

A DFG memo summarizes the results of salmonid sampling conducted from 1998-2002 on Round Valley Indian Reservation lands. Town Creek was among the creeks sampled and the memo states, "Steelhead were found in all streams in all years." Sampling was only conducted on the tribal lands in the watershed (DFG 2002c).

Little Valley Creek

Little Valley Creek is tributary to Town Creek and consists of about 2.8 miles of intermittent stream. It flows south, entering Town Creek about 2.6 miles upstream from the Grist Creek confluence.

The lower two miles of Little Valley Creek were inspected in 1965 and stream flows were intermittent throughout the area. A field note stated, "…both SS and SS were observed." It is assumed that one of those abbreviations was intended to be written as "SH," indicating the presence of steelhead. The surveyor also wrote, "Because of lack of flow and the scarcity of spawning gravels, I feel that this stream isn't too important as a salmon and steelhead stream" (DFG 1965b).

Little Valley Creek is mentioned in a 1988 field note regarding a salmonid carcass survey of Town Creek. The field note states, "Both Little Valley Creek and Town Creek above the conjunction looked as if they might have good rearing habitat with cover and pools…" (DFG 1988b).

Short Creek

Short Creek is tributary to Mill Creek and consists of about 11.5 miles of intermittent stream. It flows south, entering Mill Creek about 6.3 miles upstream from the Middle Fork Eel River confluence.

Records indicate that juvenile steelhead were rescued from Short Creek often during the period from 1938 to1966. A 1968 stream survey includes a summary of the numbers of fish rescued during many of these years. They range from 1,100 to 90,548 steelhead rescued per year (DFG 1968).

Staff from DFG surveyed Short Creek in July of 1938 and noted that YOY steelhead were "abundant." Spawning areas were "excellent" and natural propagation was "very extensive." During a visit to the same area later in the summer, much of the streambed was found to be dry and only about 150 fish remained where about 10,000 had been seen previously (DFG 1938h).

Smith and Elwell (1961), as reported in Kubicek (1977), indicated that Short Creek (in its extreme headwaters) was one of only a few Middle Fork tributaries downstream of Black Butte River confluence that contain salmonid nursery areas of any consequence.

During a 1968 stream survey of Short Creek "young" *O. mykiss* were observed throughout ten miles of the watershed, including two miles of tributary streams. In the survey report the creek is described as "…one of the longer secondary tributaries to the Middle Fork Eel River." It was said to have "extremely good spawning gravels for steelhead" but low summer flows which limited nursery habitat (DFG 1968).

Staff from DFG conducted a stream inventory of Short Creek in 1996. One site, located about 3.2 miles upstream from the creek mouth, was electrofished and two YOY *O. mykiss* were found. Young-of-year salmonids were observed at two other locations in the stream, but the species was not identified (DFG 1996a). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with excluding cattle from the creek to avoid trampling and effects from defecation.

A DFG memo summarizes the results of salmonid sampling conducted from 1998-2002 on Round Valley Indian Reservation lands. Short Creek was among the creeks sampled and the memo states, "Steelhead were found in all streams in all years" (DFG 2002c).

Tank Creek

Tank Creek is tributary to Short Creek and consists of about three miles of intermittent stream. It flows south, entering Short Creek about 5.9 miles upstream from the Mill Creek confluence.

Observations of *O. mykiss* in Tank Creek are included in a 1968 survey report from a stream survey of Short Creek. According this report, *O. mykiss* were observed in Tank Creek at an abundance of five fish per 100 feet of stream (DFG 1968).

Staff from DFG observed juvenile steelhead in Tank Creek in 1995 (Jones 1995).

Little Salt Creek

Little Salt Creek is tributary to Short Creek and consists of about 1.5 miles of intermittent stream. It flows north, entering Short Creek about 7.5 miles upstream from the Mill Creek confluence.

Observations of *O. mykiss* in Little Salt Creek are included in a 1968 survey report from a stream survey of Short Creek. According this report, *O. mykiss* were observed in Little Salt Creek at an abundance of less than five fish per 100 feet of stream (DFG 1968).

Alder Creek

Alder Creek is tributary to Mill Creek and consists of about 1.3 stream miles. It flows south, entering Mill Creek about 13.1 miles upstream from the Middle Fork Eel River confluence.

During a stream survey conducted in Alder Creek in 1995, DFG staff observed juvenile steelhead up to a 20 foot barrier falls located at stream mile 0.8 (Jones 1995).

Cold Creek

Cold Creek is tributary to Mill Creek and consists of about 5.3 stream miles. It flows south, entering Mill Creek about 13.1 miles upstream from the Middle Fork Eel River confluence.

Several thousand juvenile steelhead were collected from drying portions of Cold Creek on three occasions in 1953 and moved to other portions of the creek. More than 4,000 juveniles also were moved to Williams Creek during a rescue event that year (DFG 1954).

In 1995 DFG staff observed juvenile steelhead in Cold Creek up to a 30 foot falls located at stream mile 2.2. A resident rainbow trout population was present above the falls (Jones 1995).

Mud Creek

Mud Creek is tributary to Cold Creek and consists of about 3.8 stream miles. It flows south, entering Cold Creek about 1.1 miles upstream from the Mill Creek confluence.

In 1995 DFG staff observed juvenile steelhead in Mud Creek up to a 15 foot falls located at stream mile 0.5 (Jones 1995)

A DFG memo summarizes the results of salmonid sampling conducted from 1998-2002 on Round Valley Indian Reservation lands. Mud Creek was among the creeks sampled and the memo states, "Steelhead were found in all streams in all years." Sampling was only conducted on the tribal lands in the watershed (DFG 2002c).

Williams Creek

Williams Creek is tributary to the Middle Fork Eel River and consists of about ten stream miles. It flows south, entering the Middle Fork Eel River about 29 miles upstream from the Eel River confluence.

Staff from DFG surveyed Williams Creek in 1938 and noted the presence of YOY steelhead. "Good" spawning areas, "considerable" natural propagation, and "good" pools and shelter also were observed (DFG 1938i). Stocking records indicate that Williams Creek was stocked with steelhead in 1938 and 1939 (DFG 1939a).

Juvenile steelhead were rescued from Williams Creek in 1939 (DFG 1940). Steelhead rescued from other creeks were planted in Williams Creek in 1954 and 1962 (DFG 1954, DFG 1962a). The planted fish came from Short, Mill, and Cold creeks in 1954 and from Short Creek in 1962.

Smith and Elwell (1961), as reported in Kubicek (1977), indicated that Williams Creek (upper section) was one of only a few Middle Fork tributaries downstream of Black Butte River confluence that contain salmonid nursery areas of any consequence.

Williams Creek was surveyed in 1976 and "steelhead" and "rainbow trout" were observed. The survey report stated that steelhead had access to the lower six miles of the stream, up to a complete barrier, and that rainbow trout were present upstream of the barrier. Williams Creek was described as "...providing valuable steelhead spawning and nursery habitat" but heavy siltation was noted in some areas (DFG 1976d).

Staff from DFG conducted a stream inventory of Williams Creek in 1996. Electrofishing was conducted at three sites and YOY *O. mykiss* were found at all three locations, a few age 1+ and age 2+ also were observed (DFG 1996b). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment. Limited spawning gravels were also noted.

A DFG memo summarizes the results of salmonid sampling conducted from 1998-2002 on Round Valley Indian Reservation lands. Williams Creek was among the creeks sampled and the memo states, "Steelhead were found in all streams in all years." Sampling was conducted in the lower 0.25 miles of Williams Creek (DFG 2002c).

Murphy Creek

Murphy Creek is tributary to Williams Creek and consists of about 5.3 stream miles. It flows south, entering Williams Creek about 3.2 miles upstream from the Middle Fork Eel River confluence.

Murphy Creek is mentioned in a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. The report states, "Steelhead have been observed spawning [in Murphy Creek]" (Anonymous 1960).

A DFG memo summarizes the results of salmonid sampling conducted from 1998-2002 on Round Valley Indian Reservation lands. Murphy Creek was among the creeks sampled and the memo states, "Steelhead were found in all streams in all years." Sampling was conducted in the lower one mile of Murphy Creek (DFG 2002c).

Black Butte River

The Black Butte River is tributary to the Middle Fork Eel River and consists of about 23.7 stream miles. It flows northwesterly, entering the Middle Fork Eel River about 31.8 miles upstream from the Eel River confluence.

The historical occurrence of summer steelhead in the Black Butte River is described in a 1992 report on the distribution of summer steelhead in the Eel River system. It cites reports that hunters caught summer steelhead in the upper drainage in the late 1930s and mentions an unconfirmed report of summer steelhead migrating into the watershed in 1987 (DFG 1992).

In 1938 staff from DFG surveyed the Black Butte River. Steelhead ranging from 2.0 to 3.5 inches were "common" at a station located about 0.25 miles upstream from the mouth.
The fish were said to exhibit "extensive" natural propagation and spawning areas were described as "excellent" (DFG 1938j).

Staff from DFG surveyed the Black Butte River in 1970 and found that it "…provides some of the better spawning and rearing habitat for steelhead and king salmon in the Middle Fork Eel River drainage." Juvenile steelhead were observed throughout the entire river and no barriers were noted on the mainstem. Limiting factors cited in the survey report included low water flows, high stream temperatures, and lack of canopy cover in the lower stream (DFG 1970).

Fish population estimates for the Black Butte River and two tributaries were prepared by DFG staff in 1973. Data collected from a site in upper Black Butte River were said to indicate, "…from The Basin to the Mendocino Line could be expected to support…400 adult steelhead" (DFG 1973a). The survey report states, "Because of the presence of slip prone soils along the Black Butte River and Estell Creek and the extreme sensitivity of the stream to excessive water temperature increases following shade removal, it is recommended that roads be kept as far away from the banks of the Black Butte River and Estell, Sheep and Spanish Creeks as possible."

Black Butte River was examined in 1973 as part of a study of water temperature conditions in the Eel River system (Kubicek 1977). Several "juvenile steelhead and/or resident rainbow trout" up to seven inches in length were observed 0.5 miles above the confluence with the Middle Fork in early summer (Kubicek pers. comm.).

Staff from USFS surveyed eight miles of the Black Butte River in 1976. The resulting stream survey analysis states, "This stream is of primary importance to the spawning and rearing of steelhead. They were abundant, averaging 45 fish per 100 feet, ranging in size from 1 to 14 inches." It adds, "There were some mass slides which deposited logs and silt in the stream channel. Other than this, and the lack of shade, the stream was very productive and in good condition" (USFS 1976a).

Staff from USFS accessed Black Butte River during 2006 and noted YOY steelhead as "common to locally abundant" between the Skidmore and Spanish creek confluences. According to field notes, "1+ and 2+ steelhead were seen in low numbers, as well as a few large apparently resident rainbow trout (10 to 14 inches)." The notes add, "Fire crews reported seeing a number of 18 to 24 inch trout in large deep pools that made it sound as if summer steelhead adults were present" (USFS 2006).

Nebo Creek

Nebo Creek is tributary to the Black Butte River and consists of about 2.2 stream miles. It flows south, entering the Black Butte River about 3.4 miles upstream from the Middle Fork Eel River confluence.

Staff from DFG surveyed Nebo Creek in 1975 and found the creek to be dry throughout the lower 0.75 miles. A rock barrier was present at the mouth of the creek and the survey report stated, "Nebo Creek supports little or no suitable habitat for fish due mainly to its steepness and lack of summer flow" (DFG 1975a).

Jumpoff Creek

Jumpoff Creek is tributary to the Black Butte River and consists of about 5.9 stream miles. It flows southwesterly, entering the Black Butte River about four miles upstream from the Middle Fork Eel River confluence.

Steelhead rescued from other creeks were planted in Jumpoff Creek in 1939, 1953, and 1956 (DFG 1939b, DFG 1954, DFG 1957c). The planted fish came from Short Creek.

Jumpoff Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. Salmonids up to ten inches in length were observed to be abundant (Kubicek 1977).

Staff from DFG surveyed Jumpoff Creek in 1975 and observed both steelhead and rainbow trout. Surveyors reported that steelhead were limited to the lower 0.1 miles of the creek and a rainbow trout population was present upstream of a barrier. The creek was said to "… provide good habitat for resident rainbow trout" (DFG 1975b).

Staff from USFS surveyed the lower two miles of Jumpoff Creek in 1979 and observed "suitable trout habitat" and rainbow trout throughout the area. The survey report stated, "A self-sustaining population of rainbow trout exists relatively undisturbed due to the inaccessibility of the stream" (USFS 1980c).

A 1993 USFS Watershed Overview form indicates the presence of a rainbow trout population in Jumpoff Creek. The form states, "It is recommended that this stream remain undisturbed" (USFS 1993).

Twin Rocks Creek

Twin Rocks Creek consists of about 2.4 stream miles and is tributary to Jumpoff Creek. It flows west, entering Jumpoff Creek at about stream mile 2.2.

A 1980 USFS memo indicates that the lower 0.25 miles of Twin Rocks Creek was surveyed, only 100 yards of which "contained water." The memo states, "A self-sustaining population of rainbow trout exists, although habitat conditions are adverse" (USFS 1980d).

Sallady Creek

Sallady Creek is tributary to the Black Butte River and consists of about 2.4 stream miles. It flows north, entering the Black Butte River about 5.9 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed about 0.25 miles of Sallady Creek in 1976 and observed steelhead YOY at a density of about 24 fish per 100 feet. According to a memo, "Some of the creek was dry with a few intermittent pools." Staff also stated, "There were a few good spawning areas" and "This creek appeared to be one of the most stable tributaries of the Black Butte River system" (USFS 1976b).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* was observed in Sallady Creek (Brown 1991).

Mississippi Creek

Mississippi Creek is tributary to the Black Butte River and consists of about 2.3 stream miles. It flows north, entering the Black Butte River about 8.2 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed Mississippi Creek in 1973 and found it to be an "…intermittent stream…of limited value to anadromous fish for spawning and rearing purposes." A total passage barrier consisting of boulder-falls was observed about 350 yards upstream from the mouth and YOY steelhead were observed downstream of this barrier. Habitat upstream of the barrier was deemed unsuitable (USFS 1973c).

Blue Slide Creek

Blue Slide Creek is tributary to the Black Butte River and consists of about three stream miles. It flows southwesterly, entering the Black Butte River about 9.6 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed Blue Slide Creek in 1973 and did not observe fish. However, the resulting report stated, "This small stream apparently supplies some spawning habitat for adult steelhead. Local people indicated that steelhead are observed in the stream during the early months of the spawning runs of adult steelhead." All spawning was thought to occur in the upper reaches due to large amounts of sand deposits and unstable slides in the lower stream (USFS 1973d).

Atchison Creek

Atchison Creek is tributary to the Black Butte River and consists of about 3.2 stream miles. It flows southwesterly, entering the Black Butte River about 11.8 miles upstream from the Middle Fork Eel River confluence.

A 1973 USFS stream analysis states, "…the lower one-half of [Atchison Creek] is accessible to spawning adult salmonids… Salmonids were found in this stretch of stream in densities of 15 fish per 100 lineal feet…and increased to 30 fish…in the lower 200 yards of the stream." The analysis called the drainage "unstable" (USFS 1991a). The associated survey report notes that the *O. mykiss* population is believed to have resident and anadromous components, and that all fish were observed downstream from a barrier at about stream mile 0.5.

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* was observed in Atchison Creek (Brown 1991).

A 1991 watershed overview form by the USFS states, "The lower mile is an important steelhead spawning and rearing area during years with adequate streamflows. A 15' barrier prevents further u/s movement" (USFS 1991a).

Butte Creek

Butte Creek is tributary to the Black Butte River and consists of about 4.3 stream miles. It flows southwesterly, entering the Black Butte River about 12.7 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed Butte Creek in 1973 and estimated that only the lower 0.25 miles of stream were available to anadromous fish due to a waterfall barrier. *Oncorhynchus mykiss* was observed both upstream and downstream of the barrier and the upstream fish were assumed to be resident rainbow trout. The survey report stated, "This perennial stream is especially important because of the 2 cfs summer flow contribution to Black Butte River" (USFS 1973e).

Cold Creek

Cold Creek is tributary to the Black Butte River and consists of about 11.3 stream miles. It flows north then west, entering the Black Butte River about 15.1 miles upstream from the Middle Fork Eel River confluence.

An undated DFG stream survey report, likely dating from the 1930s, states that Cold Creek was stocked "intermittently" with rainbow trout with unknown success. The creek was described as "a fair trout stream" (DFG 1941).

In 1973, USFS staff surveyed the lower mile of Cold Creek as well as the reach between the confluences of Plaskett and Snow Basin creeks. The lower reach had an estimated 250-300 trout per 100 lineal feet of stream, consisting mostly of YOY. Density in the upper reach was estimated to be 10-15 fish per 100 feet. A stream analysis notes, "This stream has considerable importance by providing both rearing and reproductive habitat to steelhead and by providing cool, clear water to the river during summer low flow periods" (USFS 1973f). The survey report and a subsequent memo recommend protecting against the effects of logging in the basin (USFS 1973g).

Staff from USFS surveyed Cold Creek in 1976 and observed "abundant" rainbow trout throughout the creek. Surveyors described the lower section of the creek as "good trout habitat." The middle and upper reaches were said to be "accessible and well used for fishing" (USFS 1976c).

Several sections of Cold Creek were surveyed in 1997 by staff from DFG. Juvenile and YOY rainbow trout were observed throughout the creek, but abundance was low in the lower section and fish were much more common in the middle and upper reaches. Three natural barriers were present within one mile of the mouth of the creek, the upper mile of the creek was unusable due to high temperatures, and erosion caused by logging practices was observed. However, Cold Creek was described as a "Healthy trout bearing stream" (DFG 1997b, DFG ca 1997a).

Staff from USFS surveyed Cold Creek in 2004. The survey report states, "Steelhead YOY, 1+, and 2+ were seen in Cold Creek, but not in large numbers" (USFS 2004a).

Plaskett Creek

Plaskett Creek is tributary to Cold Creek and consists of about 1.8 stream miles. It flows south then west, entering Cold Creek about six miles upstream from the Black Butte River confluence. The basin area is about three square miles.

During a 1997 survey of Plaskett Creek YOY and juvenile rainbow trout were observed in the lower one mile of the stream. The creek was described as having "many positive aspects" although it was noted that the *O. mykiss* population may be impacted by non-native fish species that have been planted in Plaskett Meadows, a recreational area in the headwaters of Plaskett Creek. Steelhead do not have access to this creek due to barriers on Cold Creek (DFG 1997c).

Staff from DFG surveyed the lower 0.75 miles of Plaskett Creek and a 0.25-mile reach in the headwaters in 2002. The survey report described "adequate spawning gravel for resident trout" and recorded juvenile trout density at about five fish per 100 feet, with overall size range between 1.5 and about 8 inches in length. The creek was considered "a potential source of recruitment for the Eel River steelhead population" (DFG 2002d).

Baldy Creek

Baldy Creek is tributary to the Black Butte River and consists of about 5.4 stream miles. It flows northeasterly, entering the Black Butte River about 17.3 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed Baldy Creek in 1973 and observed YOY and juvenile steelhead downstream of a barrier located about 0.25 miles upstream from the mouth. Upstream of the barrier a section of the creek about 0.5 miles long had "excellent stream characteristics but no fish" (USFS 1973h). About 2.5 miles of Baldy Creek was surveyed in 1976, when juvenile steelhead were observed only in the lowest 1,000 feet and density was estimated to be 48 fish per 100 feet (USFS 1976d).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* was observed in Baldy Creek (Brown 1991).

Buckhorn Creek

Buckhorn Creek is tributary to the Black Butte River and consists of about 4.9 stream miles. It flows northeasterly, entering the Black Butte River about 17.7 miles upstream from the Middle Fork Eel River confluence.

During a 1973 survey of the lower two miles of Buckhorn Creek USFS staff observed *O. mykiss* throughout the area. Juvenile steelhead were present downstream of a boulder falls barrier, located about 0.75 miles upstream from the mouth, and "rainbow trout" were observed upstream of the barrier. Unstable streambanks, mass slides, and "considerable" sediment deposits also were noted (USFS 1973i).

Staff from USFS surveyed three miles of Buckhorn Creek in 1976 and observed YOY and yearling *O. mykiss*. A stream analysis states, "Buckhorn Creek's lower mile has a favorable spawning habitat (an estimated 30 fish per 100 ft.)." Density was estimated at 25 fish per 100 feet in a reach one mile upstream from the mouth (USFS 1976e).

Skidmore Creek

Skidmore Creek is tributary to the Black Butte River and consists of about 3.9 stream miles. It flows northeasterly, entering the Black Butte River about 19.8 miles upstream from the Middle Fork Eel River confluence.

Young-of-year and juvenile steelhead were present in the lower 0.25 miles of Skidmore Creek during a 1973 USFS survey. Only this section of the creek was accessible to fish due to steep gradients further upstream. The stream was said to dry up during the summer and fish from Skidmore Creek were expected to move to the Black Butte River for rearing (USFS 1973j).

Staff from USFS surveyed 1.25 miles of Skidmore Creek in 1976 and noted, "the lower ½ mile of this creek is used for spawning and rearing of steelhead." The lower area was estimated to have "approximately 30 steelhead per 100 feet" while the upper section had a "lack of fish" (USFS 1976f).

A 1991 channel analysis noted "a few fish approximately 3 inches long" in Skidmore Creek. Staff from USFS observed dry reaches and areas with "trickle flow" (USFS 1991b).

Umbrella Creek

Umbrella Creek is tributary to the Black Butte River and consists of about 3.8 stream miles. It flows northeasterly, entering the Black Butte River about 21 miles upstream from the Middle Fork Eel River confluence.

Forest Service staff surveyed Umbrella Creek in 1973 and observed "steelhead" and "rainbow trout" in the lower 0.25 to 0.75 miles of the stream. Anadromous fish did not have access further upstream due to an extensive boulder area. Sediment deposition was noted in pools in the creek and attributed to road construction in the watershed (USFS 1973k).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* was observed in Umbrella Creek (Brown 1991).

Spanish Creek

Spanish Creek is tributary to the Black Butte River and consists of about 7.4 stream miles. It flows southwesterly, entering the Black Butte River about 23 miles upstream from the Middle Fork Eel River confluence.

Stocking records indicate that Spanish Creek was stocked with 5,000 rainbow trout in 1930 (DFG 1930).

A 1972 DFG survey of Spanish Creek involved estimating the standing crop of age 1+ steelhead. Staff noted sampling in three areas totaling 300 feet that produced 60 yearling steelhead. The resulting memo states, "A standing crop of 1,000 yearlings per mile should be able to produce a return of about 50 adult steelhead per mile." Staff from DFG determined that the amount of available habitat in Spanish Creek "…probably supports a run of about 200-300 adult steelhead per year." Staff also noted "cool, high quality flows," and lack of slides and erosion in the basin that suggested "special treatment" for the creek including road building restrictions and a 200-foot riparian buffer strip (DFG 1972a).

Staff from USFS surveyed Spanish Creek in 1973 and found *O. mykiss* present in the lower six miles of the creek, downstream of a 12 foot waterfall. Another barrier was noted immediately downstream from the waterfall and led surveyors to consider some of the creek's fish "steelhead" and others "rainbow trout." The survey report states, "At least the lowermost three stream miles of Spanish Creek are of great importance to steelhead for spawning and rearing purposes" and "…excellent spawning gravels were encountered throughout the area" (USFS 1973l).

Staff from DFG conducted a stream inventory of Spanish Creek in 2002. The lower 3.5 miles of the creek was surveyed and salmonids ranging from two to eight inches were observed throughout the section. The species of salmonid was not identified (Humphrey 2002). The inventory report noted spawning gravels were limited to few reaches of the creek and recommended treating sources of fine sediment and increasing canopy.

Black Butte River tributary (Big Spring Creek)

This creek flows east from Big Spring about 1.4 miles to its confluence with the Black Butte River in "The Basin." It may be considered the uppermost tributary of the river, which is formed by the confluence of Estell and Middle creeks.

Staff from USFS surveyed Big Spring Creek in March 2004 and observed "some 1+ steelhead." The survey report states, "Big Spring Creek flows were already down to a trickle, but the stream probably offers high-water refugia for rearing juveniles. Big Spring Creek fish habitat in the stream is limited…" (USFS 2004b).

Estell Creek

Estell Creek is tributary to the Black Butte River and consists of about 3.8 stream miles. It flows west to its confluence with Middle Creek, which comprises the headwaters of the Black Butte River, about 23.7 miles upstream from the Middle Fork Eel River confluence.

In a 1972 survey report, USFS staff wrote, "[Estell Creek] is good steelhead producing stream. Juvenile SH add to RT trout fish population." The report recommends protecting the stream from logging effects (USFS 1972).

Fish population estimates for the Black Butte River and two tributaries were prepared by DFG staff in 1973. Data collected from a site in lower Estell Creek were said to indicate, "A yearling population of this size could be expected to produce an adult return of about 50 steelhead per mile" and the run assumed to supported by Estell and Sheep creeks combined was 150 individuals (DFG 1973a).

Staff from USFS surveyed Estell Creek in 1973 and wrote, "This perennial tributary to Black Butte River is of great importance to steelhead for spawning and rearing purposes." Steelhead ranging from one to eight inches were found throughout the 3.5 mile survey section and no total passage barriers were present (USFS 1973m). In 1976, USFS staff estimated juvenile abundance at 80 fish per 100 feet of stream in the lower one mile of Estell Creek (USFS 1976g).

Staff from DFG surveyed Estell Creek in 1996 and observed YOY and juvenile *O. mykiss,* as well as one adult steelhead. Fish densities were greatest in the section downstream of the Sheep Creek confluence. Several barriers were noted in the report including a barrier located about one mile upstream from the mouth, which is labeled on a map as the "End of anadromous fish access" and was recommended for modification (DFG 1996c).

Staff from USFS surveyed Estell Creek in 2004 and observed "common" steelhead YOY, as well as age 1+ and 2+ individuals "wherever cover was sufficient to provide habitat for these larger fish." The survey report cites low flows as limiting "habitat to grow steelhead to out migrant age/size" (USFS 2004b).

Sheep Creek

Sheep Creek is tributary to Estell Creek and consists of about 2.2 stream miles. It flows west, entering Estell Creek about 1.3 miles upstream from its confluence with Middle Creek.

A portion of Sheep Creek was surveyed during a 1973 USFS survey of Estell Creek. Steelhead were observed in the creek at a density of about 50 fish per 100 feet of stream. A partial boulder barrier was observed about 200 feet upstream from the mouth, above which a steep gradient was noted and few fish were observed (USFS 1973m).

Staff from USFS surveyed about 0.75 miles of Sheep Creek in 1976. A memo states, "This stream is of minimal importance to the spawning or rearing of steelhead." The author cited low juvenile densities, intermittent flow, "excessive log debris, and the lack of spawning gravel" (USFS 1976h).

Staff from USFS surveyed Sheep Creek in 2004 and observed multiple steelhead age classes at densities of about 5 per 100 feet of stream in small pools. The survey report cites flows as "marginal" but low temperature relative to Estell flows (USFS 2004b).

Middle Creek

Middle Creek is tributary to the Black Butte River and consists of about 3.6 stream miles. It flows northwesterly to its confluence with Estell Creek, which forms the headwaters of the Black Butte River, about 23.7 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed Middle Creek in 1973 and found that it had a waterfall about 150 yards upstream from the mouth which created a total passage barrier to adult steelhead. Juvenile and YOY "steelhead" were found downstream of the barrier and "rainbow trout" were observed further upstream. Stream characteristics were described as "excellent" upstream of the barrier and the report noted that barrier modification would "…no doubt enhance the runs of winter steelhead in Black Butte River" (USFS 1973n).

Staff from USFS surveyed Middle Creek in 1976 and estimated trout density at about 13 per 100 lineal feet downstream from a waterfall at stream mile 0.12 and at about 5 trout per 100 feet upstream. Fish were noted in the lower two miles of the creek, which had "many suitable spawning areas" as well as dry reaches (USFS 1976i).

Staff from USFS surveyed Middle Creek in 2004 and observed "some 1+ steelhead" and "a steelhead redd." During a second visit in 2004, YOY were observed (USFS 2004b). According to DFG staff, Middle Creek has 'erosion issues' (Harris pers. comm.).

Staff from DFG surveyed Middle Creek in 2008 and observed steelhead YOY and one steelhead redd 150 feet above the county road crossing and "numerous" juvenile fish downstream of the Basin Creek confluence (Harris pers. comm.).

Rose Creek

Rose Creek is tributary to the Middle Fork Eel River and consists of about two stream miles. It flows west, entering the Middle Fork Eel River about 33.4 miles upstream from the Eel River confluence.

Staff from DFG surveyed Rose Creek in 1997 and did not observe fish. The resulting report states, "Summer habitat is non-existent" and "Rose Creek most likely provides shelter to young salmonids during times of high flow in the Middle Fork Eel River" (DFG 1997d).

Bar Creek

Bar Creek is tributary to the Middle Fork Eel River and consists of about 4.4 stream miles. It flows west, entering the Middle Fork Eel River about 34.6 miles upstream from the Eel River confluence.

Staff from USFS surveyed the lower mile of Bar Creek in 1979. Surveyors found "suitable trout habitat" only in the upper half mile of the surveyed section due to a lack of water in the lower half mile. A "self-sustaining population of rainbow trout" was present but, "The lack of water limits any fishery improvement potential" (USFS 1980e).

Staff from DFG surveyed a 0.3 mile section of Bar Creek upstream of the M1 road crossing. The survey report is undated, but the survey likely took place in 1997. *Oncorhynchus mykiss* was observed during the survey and the report stated, "Bar Creek is a relatively small drainage but does have a good summer streamflow, canopy, ample supply of fish food organisms and supports a resident rainbow trout population" (DFG ca 1997b).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* was observed in Bar Creek (Brown 1991).

Buck Creek

Buck Creek is tributary to the Middle Fork Eel River and consists of about 3.9 stream miles. It flows west, entering the Middle Fork Eel River about 35.7 miles upstream from the Eel River confluence.

No fish were observed during a 1997 DFG survey of Buck Creek. The creek was dry at its mouth and intermittent throughout the lower mile. The creek was characterized as a "non-trout stream" and anadromous fish access was prevented by cascade barriers in the lower 0.25 miles (DFG 1997e).

Travelers Home Creek

Travelers Home Creek is tributary to the Middle Fork Eel River and consists of about 4.1 stream miles. It flows southeasterly, entering the Middle Fork Eel River about 37 miles upstream from the Eel River confluence.

Staff from DFG surveyed Travelers Home Creek in 1997 and observed YOY steelhead in the lower 400-800 feet of the stream. Upstream, the gradient was thought to be a barrier to anadromous fish and no fish were observed (DFG 1997f).

Hellhole Canyon Creek

Hellhole Canyon Creek is tributary to the Middle Fork Eel River and consists of about 1.6 stream miles. It flows west, entering the Middle Fork Eel River about 38 miles upstream from the Eel River confluence.

The Middle Fork Eel River in the vicinity of Hellhole Canyon was inspected during a 1957 survey of the area. A memo regarding this survey states that Hellhole Canyon Creek had a barrier within 100 feet of its mouth "…which would prohibit spawning fish from entering" (Heckman 1957).

Fly Creek

Fly Creek is tributary to the Middle Fork Eel River and consists of about 4.7 stream miles. It flows northwesterly, entering the Middle Fork Eel River about 39.9 miles upstream from the Eel River confluence.

No fish were observed during a 1938 DFG survey of Fly Creek. "Good" spawning areas and "good" pools and shelter were noted in the lower section (DFG 1938k).

In 1957 staff from DFG observed two to four inch *O. mykiss* in "fair quantities" in Fly Creek. The survey report noted that rescued steelhead may have been planted in this creek in 1957 and the creek "appears to offer spawning area for SH." However, it was unclear whether the fish observed had been planted (DFG 1957d).

Staff from DFG surveyed Fly Creek in 1965 and observed juvenile *O. mykiss*. A 30-foot falls was noted about 0.25 miles upstream from the mouth of the creek, which was said to be "…an excellent small tributary with apparent sustaining flows" (DFG 1965c).

In 1979, staff from USFS surveyed Fly Creek and concluded that the stream contains a "self-sustaining population of rainbow trout." Anadromous fish access was said to be prevented by a steep gradient and numerous falls in the lower mile of the creek. About 2.5 miles of suitable trout habitat were present upstream of this area (USFS 1980f).

In 1995, staff from DFG found that Fly Creek continued to have "…good flows and quality pools and a healthy and viable population of resident rainbow trout." A large number of barriers were present, but barrier removal was deemed impractical (DFG 1995a).

Howard Creek

Howard Creek is tributary to the Middle Fork Eel River and consists of about 5.1 stream miles. It flows northwesterly, entering the Middle Fork Eel River about 40.8 miles upstream from the Eel River confluence.

Howard Creek was surveyed by staff from DFG in 1938. Rainbow trout were observed during the survey (DFG 1938l).

During a 1957 survey of Howard Creek "resident rainbow trout" were observed. Surveyors noted that rescued steelhead had been planted in this creek in 1957. According to the survey report, this creek "May contribute fish of resident habit" to the Middle Fork Eel River, but "…would seem of little importance to SH except as water provider" (DFG 1957e).

A 1965 survey of Howard Creek documented the presence of a 20-foot falls immediately upstream from the creek's mouth. A lack of fish presence was attributed to effects of the 1964 flood and the creek had "…near excellent summer conditions for resident trout" (DFG 1965d).

In 1979, staff from USFS found that "A self-sustaining population of rainbow trout exists relatively undisturbed" in Howard Creek. The previously mentioned barrier near the mouth of the creek was described as "small" and the survey report noted that "…steelhead possibly use Howard Creek as a spawning stream" (USFS 1980g).

In a 1994 Watershed Analysis Report for the Middle Fork Eel River Watershed, Howard Creek is listed as a stream in "immediate need for restoration." Habitat problems mentioned in this creek include channel scouring, lack of riparian vegetation, and sedimentation (USFS 1994a).

Staff from DFG observed erosion in the lower section of Howard Creek in 1995. "Rainbow trout" were observed throughout most of the creek from the mouth upstream to the M1 road crossing. The stream was noted to be "…most likely under-utilized because of the high gradient and barriers" (DFG 1995b).

Bear Creek

Bear Creek is tributary to the Middle Fork Eel River and consists of about 3.2 stream miles. It flows northwesterly, entering the Middle Fork Eel River about 41.1 miles upstream from the Eel River confluence.

Staff from DFG included field notes regarding Bear Creek in a 1957 stream survey report for the Middle Fork Eel River. Surveyors observed low water levels in Bear Creek and wrote, "No fish and not suited for them" (DFG 1957b).

The Middle Fork Eel River in the vicinity of Bear Creek was inspected during a 1957 survey. A memo regarding this survey states that Bear Creek "…appeared to be inaccessible to adult salmonids because of steep high water falls" (Heckman 1957).

The mouth of Bear Creek was observed to be dry every summer during surveys conducted by DFG staff between 1966 and 1999 (Jones 1999). No fish were observed in Bear Creek during a survey conducted in1995 by DFG staff (Sullivan and Crand 1995).

Fishtown Creek

Fishtown Creek is tributary to the Middle Fork Eel River and consists of about 1.8 stream miles. It flows west, entering the Middle Fork Eel River about 41.8 miles upstream from the Eel River confluence.

Staff from DFG included field notes regarding Fishtown Creek in a 1957 stream survey report for the Middle Fork Eel River. Surveyors observed boulder jams in Fishtown Creek and wrote, "No fish seen or likely to be present" (DFG 1957b).

No fish were observed during a 1997 DFG survey of Fishtown Creek. Numerous barriers were noted and the stream went underground near the confluence with the Middle Fork Eel River,. However, Fishtown Creek was characterized as "…an important source of cold water to the Middle Fork Eel River during the summer months" (DFG 1995c).

Beaver Creek

Beaver Creek is tributary to the Middle Fork Eel River and consists of about 7.2 stream miles. It flows north then west, entering the Middle Fork Eel River about 42.9 miles upstream from the Eel River confluence.

Stocking records indicate that Beaver Creek was stocked with steelhead in 1938 and 1939 (DFG 1939c). During a 1938 survey of Beaver Creek "rainbow trout" were present and said to have "fair" success and "fair" natural propagation. "Good" spawning areas were also observed (DFG 1938m).

In a 1957 survey of the lower 0.75 miles of Beaver Creek, several barriers were observed about 200 yards upstream from the mouth. However, "numerous yearling steelhead" were observed upstream of these barriers, indicating that some fish were able to migrate past them. Rainbow trout were also observed in another, further upstream, section of Beaver Creek in 1957 (DFG 1957f).

Staff from USFS surveyed Beaver Creek in 1978. Rainbow trout was the only fish species noted in two sections, both upstream of the confluence with Buck Rock Creek (USFS 1978a).

In a 1994 Watershed Analysis Report for the Middle Fork Eel River Watershed, Beaver Creek is listed as a stream in "immediate need for restoration." Habitat problems mentioned in this creek include channel scouring, lack of riparian vegetation, and sedimentation (USFS 1994a).

A section of Beaver Creek downstream of the M1 road crossing was surveyed by staff from DFG in 1995. Resident rainbow trout were observed throughout this section and one adult female summer steelhead was also seen in a pool just downstream of the Buck Rock Creek confluence. Further anadromous migration was said to be prevented by a 40 foot waterfall just upstream of

Buck Rock Creek. Due to the presence of summer steelhead, this section of creek was said to be "of particular importance" (DFG 1995d).

Buck Rock Creek

Buck Rock Creek is tributary to Beaver Creek and consists of about 3.4 stream miles. It flows northwesterly, entering Beaver Creek about 0.2 miles upstream from the Middle Fork Eel River confluence.

Staff from DFG included field notes regarding Buck Rock Creek in a 1957 stream survey report for the Middle Fork Eel River. These notes report that about two dozen fish, "probably SH fingerlings," were planted in this creek in 1957 (DFG 1957b).

Staff from USFS surveyed Buck Rock Creek in 1978 and observed "few" rainbow trout in the lower section of the creek. Habitat condition in the creek was characterized as "good," but the overall fishery rating was said to be "poor" and stocking was recommended upstream of the road crossing (USFS 1978b).

No fish were observed during a 1997 survey of Buck Rock Creek and a survey report characterized the creek as "…unusable to fish due to its steep gradient and many barriers." It was said to contribute summer and winter water flows to Beaver Creek (DFG 1995e).

Smokehouse Creek

Smokehouse Creek is tributary to Beaver Creek and consists of about 3.5 stream miles. It flows south, entering Beaver Creek about 3.1 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed the lower 0.75 miles of Smokehouse Creek in 1978 and observed "abundant" rainbow trout. The creek was at a low level and flowing intermittently (USFS 1978c).

Rainbow trout were observed during a 1995 DFG survey of Smokehouse Creek and ranged from two to eight inches in length. Steelhead did not have access to this creek due to barriers downstream on Beaver Creek. Many barriers were present in Smokehouse Creek as well, but it was deemed "…in good condition, with many areas of excellent cover and deep pools" (DFG 1995f).

Hammerhorn Creek

Hammerhorn Creek is tributary to the Middle Fork Eel River and consists of about 4.3 stream miles. It flows southwesterly, entering the Middle Fork Eel River about 43.5 miles upstream from the Eel River confluence.

In 1938 staff from DFG surveyed Hammerhorn Creek and observed rainbow trout. The fish exhibited "good" success and "good" natural propagation (DFG 1938n).

During a 1957 stream survey *O. mykiss* ranging from 2.5 to 7.0 inches in length were observed in Hammerhorn Creek. No complete barriers were identified during the survey, and it was unknown whether these fish were migratory or resident. In the

survey report Hammerhorn Creek is characterized as, "A very rocky, rather steep small trout stream of considerable seasonal variation in flow" (DFG 1957g).

A 1962 DFG memo describes plans to construct a recreational lake, known as Hammerhorn Lake, near Hammerhorn Creek. The lake is described as "an off stream storage" that would be filled by water diversion from Hammerhorn Creek. The memo notes an "abundant population of rainbow trout" in the creek and expresses concern regarding the impacts of reduced flows due to the diversion (DFG 1962b).

The middle and lower sections of Hammerhorn Creek were surveyed in 1995 and 1996, respectively. The survey of the lower creek identified a steep gradient which created "an insurmountable barrier to upstream migration" beginning about 0.1 miles upstream from the mouth. Resident rainbow trout were observed upstream of this barrier during both surveys (DFG 1995g, DFG 1996d).

Pothole Creek

Pothole Creek is tributary to the Middle Fork Eel River and consists of about four stream miles. It flows northeasterly, entering the Middle Fork Eel River about 44.9 miles upstream from the Eel River confluence.

The lower 0.5 miles of Pothole Creek were surveyed in 1957 and *O. mykiss* was found to be "abundant and in good condition." The creek was characterized as a "fair spawning stream" (DFG 1957h).

In a 1973 summary of a USFS survey of Pothole Creek, a 15-foot waterfall located about 0.5 miles upstream from the mouth of the creek is described as a total passage barrier. A mix of resident and anadromous fish was observed downstream of this barrier, but very little spawning gravel was seen as available (USFS 1973o).

A 1994 USFS survey noted trout between one and four inches in length throughout the lower mile of Pothole Creek. The survey report indicates that "very unstable slopes" and active landslides led to the formation of "massive log jams" and to siltation of pools (USFS 1994b). Trout between one and seven inches in length were observed in the 1.25-mile reach immediately upstream, along with "major log and boulder jams throughout." The survey report states, "From the road could see where clear cutting had taken place within drainage of Pothole. May be contributing to siltation levels" (USFS 1994b).

Staff from DFG surveyed the creek in 1997 and wrote, "Pothole Creek is abundant with resident steelhead trout and other wildlife and should be managed accordingly." Good spawning gravel was observed throughout the creek (DFG 1997g).

Fossil Creek

Fossil Creek is tributary to the Middle Fork Eel River and consists of about 3.6 stream miles. It flows northeasterly, entering the Middle Fork Eel River about 45.3 miles upstream from the Eel River confluence.

Staff from USFS surveyed Fossil Creek in 1977 and found the stream mostly dry and noted that it "doesn't contribute flow into the Eel River." No fish were observed (USFS 1977l).

In a 1983 biological report regarding a summer steelhead survey of the Middle Fork Eel River, Fossil Creek is described as one of the two "…best tributaries for spawning below the North Fork of the Middle Fork." A table in this report characterized spawning habitat in the creek as "fair" and rearing habitat as "good" (DFG 1983b).

Staff from DFG inspected "large amounts of sand, gravel, and cobble deposits" at the mouth of Fossil Creek in 1987. The creek dried up about 50 yards upstream from the mouth, but fish were observed in a pool another 50 yards upstream. A barrier located 300 yards upstream from the mouth prevented steelhead migration (DFG 1987).

Staff from USFS surveyed Fossil Creek in 1994. A subsequent watershed overview notes, "Extensive logging on south side of creek. Abundant slash left. Heavy siltation" (USFS 1994c). During a 1997 survey staff from DFG again noted the presence of a cascade barrier within a few hundred yards of the mouth of Fossil Creek. "Substantial populations" of juvenile salmonids were observed downstream of the barrier, but no fish were observed in the rest of the creek and the area upstream of the barrier did not appear to have suitable habitat. Surveyors recommended that the lower section be managed as a steelhead spawning and rearing area (DFG 1997h).

Alder Creek

Alder Creek is tributary to the Middle Fork Eel River and consists of about 3.4 stream miles. It flows southwesterly, entering the Middle Fork Eel River about 45.7 miles upstream from the Eel River confluence.

Staff from USFS surveyed Alder Creek in 1977 and did not observe fish. The stream was intermittent and "…characterized by boulders, landslides and logjams." A 30-foot waterfall also was noted about 0.25 miles upstream from the mouth (USFS 1977m).

In a 1994 Watershed Analysis Report for the Middle Fork Eel River Watershed, Alder Creek is listed as a stream in "immediate need for restoration." Habitat problems mentioned in this creek include channel scouring, lack of riparian vegetation, and sedimentation (USFS 1994a).

No fish were present during a 1997 DFG survey of Alder Creek. "Excellent salmonid habitat" was observed upstream of the large cascade barrier near the mouth (DFG 1997i).

Maple Creek

Maple Creek is tributary to the Middle Fork Eel River and consists of about 2.5 stream miles. It flows southwesterly, entering the Middle Fork Eel River about 46 miles upstream from the Eel River confluence.

No fish were observed during a 1977 USFS survey of Maple Creek. Several 15-20 foot falls were noted in the lower stream section (USFS 1977n).

Staff from DFG surveyed Maple Creek in 1997 and did not observe fish. Surveyors noted that "…the gradient at the confluence with the Middle Fork Eel is of sufficient gradient (50 ft in 100 feet) to prevent anadromous migration into Maple Creek" (DFG 1997j).

Deer Lick Creek

Deer Lick Creek is tributary to the Middle Fork Eel River and consists of about 2.2 stream miles. It flows southwesterly, entering the Middle Fork Eel River about 46.9 miles upstream from the Eel River confluence.

No fish were observed during a 1966 DFG survey of Deer Lick Creek and the creek was said to have "no fishery value." There was no flow and the survey report indicates that a steep gradient "prevents any usage by anadromous fish" (DFG 1966a).

Similar conditions were observed in a 1977 USFS survey and a 1997 DFG survey of Deer Lick Creek when fish were not encountered. In 1977 the creek was "impassable due to a 70' falls at the base of the creek and is dry" (USFS 1977o). In 1997, DFG staff recommended managing Deer Lick Creek "as a source of cold water for the Middle Fork Eel River" (DFG 1997k).

Middle Fork Eel River tributary 1

An unnamed tributary to the Middle Fork Eel River consists of about 1.1 stream miles. It flows northeasterly and enters the Middle Fork Eel River about 47.4 miles upstream from the Eel River confluence.

Staff from DFG surveyed this stream in 1957 and observed *O. mykiss* but described the fish as "scarce above mouth." A survey report states, "Appears to contribute nothing but waterflow to Eel River SH fishery. No spawning or nursery grounds observed" (DFG 1957i).

Rattlesnake Creek

Rattlesnake Creek is tributary to the Middle Fork Eel River and consists of about 8.1 stream miles. It flows southwesterly, entering the Middle Fork Eel River about 47.6 miles upstream from the Eel River confluence.

In 1938 staff from DFG surveyed Rattlesnake Creek and did not record any observations of fish. A 20-foot waterfall barrier was observed just above the mouth of the creek during the survey (DFG 1938o).

During a 1957 survey of the lower 0.75 miles of Rattlesnake Creek staff from DFG observed a "…fairly good quantity of resident fish with fair reproductive success as judged by the number of fish of the year present." Steelhead were noted to have access to the lower 300 yards downstream of the waterfall barrier and fish were observed in this section, but thought to be resident trout (DFG 1957j).

Staff from DFG surveyed Rattlesnake Creek in 1966 and described it as a "marginal resident trout stream." The fish observed were numerous in the lower two miles of the creek and no fish were observed above a waterfall located three miles upstream from the mouth (DFG 1966b).

Rainbow trout were "common" or "abundant" in the lower sections of Rattlesnake Creek during a USFS survey in 1977. Erosion control and log jam removal were recommended as habitat management measures (USFS 1977p).

Rattlesnake Creek was sampled during the 1982 Middle Fork Eel River Patrol, conducted by staff from DFG and USFS. The study report indicates that YOY *O. mykiss* were observed in Rattlesnake Creek at a density of up to 100 fish per 100 feet of stream (DFG 1983c). A summary report of the 1983 Middle Fork Eel River Patrol states that summer steelhead in the Middle Fork Eel benefit from cool flows that emanate from Rattlesnake Creek (USFWS 1983).

In 1995 staff from DFG surveyed two sections of Rattlesnake Creek and observed a population of resident rainbow trout. The creek was described as "an important tributary to the Middle Fork Eel River." Some bank erosion was observed and surveyors recommended taking action to prevent continued siltation of the stream (DFG 1995h).

Stick Lake Canyon Creek

Stick Lake Canyon Creek is tributary to the Middle Fork Eel River and consists of about 3.5 stream miles. It flows north, entering the Middle Fork Eel River about 49.4 miles upstream from the Eel River confluence.

A series of boulder falls near the mouth of Stick Lake Creek were observed during a 1957 survey and were "considered impassable to SH." Surveyors concluded that "This tributary contributes nothing in the way of SH or resident RT spawning or nursery areas" (DFG 1957k).

One juvenile rainbow trout was observed during a 1973 survey of Stick Lake Canyon Creek conducted by staff from USFS. However, a summary of the stream survey states that "No resident population of fish was established" and "…this stream is not utilized by adult steelhead for spawning." The creek was described as "…an important stream contributing considerable cool water to the Middle Eel during critical summer low flows" (USFS 1973p).

Trout were observed near the mouth of Stick Lake Canyon Creek during a 1994 USFS survey. The size range was two to six inches in length (USFS 1994d). Staff from DFG surveyed about 0.2 miles upstream of the mouth of Stick Lake Canyon Creek in 1997. The section surveyed was downstream of a 50-foot cascade and surveyors wrote, "The entire small section…presented a barrier to fish passage due to its high gradient. It is unlikely that any fish are present higher up in this drainage" (DFG 1997l).

Line Gulch Creek

Line Gulch Creek is tributary to the Middle Fork Eel River and consists of about 3.2 stream miles. It flows northeasterly, entering the Middle Fork Eel River about 49.8 miles upstream from the Eel River confluence.

Line Gulch was surveyed in 1966 and staff from DFG observed a set of rapids beginning 50 yards upstream from the mouth that blocked upstream migration. No fish were observed and the report noted, "Winter conditions appear to be too severe for a significant resident population to become established" (DFG 1966c).

Staff from USFS surveyed Line Gulch Creek in 1977 and noted that the creek was flowing intermittently. Three juvenile rainbow trout were observed in pools located about 0.3 miles upstream from the mouth (USFS 1977q).

During a 1997 DFG survey of Line Gulch Creek a four-inch long rainbow trout was observed about 0.6 miles upstream from the mouth of the creek. Several barriers to upstream migration were present and "High gradient riffles and cascades were abundant."

Surveyors noted that, "The presence of these steep reaches rendered much of the stream unsuitable habitat for salmonids" (DFG 1997m).

Red Chert Creek

Red Chert Creek is tributary to the Middle Fork Eel River and consists of about 4.6 stream miles. It flows northeasterly, entering the Middle Fork Eel River about 51.7 miles upstream from the Eel River confluence.

Staff from USFS surveyed Red Chert Creek in 1977 and observed steelhead and rainbow trout in an area downstream of an unnamed tributary that enters the creek about 1.6 miles upstream from the mouth. The creek was also dry in part of this section and several boulder and rock wall barriers were noted (USFS 1977r).

Red Chert Creek was sampled during the 1982 Middle Fork Eel River Patrol, conducted by staff from DFG and USFS. The study report indicates that YOY *O. mykiss* were observed in Red Chert Creek at a density of about 100 fish per 100 feet of stream (DFG 1983c).

In a 1983 biological report regarding a summer steelhead survey of the Middle Fork Eel River, Red Chert Creek is described as one of the two "…best tributaries for spawning below the North Fork of the Middle Fork." A table in this report characterized spawning habitat in the creek as "fair" and rearing habitat as "good" (DFG 1983b).

Staff from DFG surveyed Red Chert Creek in 1997 and noted a barrier to anadromous migration in "survey reach 4," which began about 0.5 miles upstream from the mouth. *Oncorhynchus mykiss* was observed upstream of this barrier and was presumed to be resident rainbow trout. The lower 0.5 miles of the creek was believed to be used by steelhead and the survey report concluded that, "This stream provides steelhead and rainbow trout habitat and probably some of these fish migrate downstream to the Middle Fork Eel River and beyond" (DFG 1997n).

Middle Fork Eel River tributary 2

An unnamed tributary to the Middle Fork Eel River consists of about 1.9 stream miles. It flows east and enters the Middle Fork Eel River about 52.3 miles upstream from the Eel River confluence.

Staff from DFG surveyed this tributary in 1957 and observed *O. mykiss* ranging from four to seven inches in length. The creek was said to provide "…a fair amount of steelhead of spawning and nursery area to the main river SH run" (DFG 1957l).

Middle Fork Eel River tributary 3 (Lucky Lake Creek)

An unnamed tributary to the Middle Fork Eel River flows west from Lucky Lake and is known as Lucky Lake Creek. It consists of about 1.4 stream miles and enters the Middle Fork Eel River about 52.9 miles upstream from the Eel River confluence.

Staff from DFG surveyed Lucky Lake Creek in 1997 and found that the high gradient and steep cascades near the mouth created a barrier to anadromous fish access. The creek was said to provide cold water flows to the Middle Fork Eel River (DFG 1997o).

North Fork Middle Fork Eel River

The North Fork Middle Fork Eel River is tributary to the Middle Fork Eel River and consists of about 12.3 stream miles. It flows south, entering the Middle Fork Eel River about 54.5 miles upstream from the Eel River confluence.

The North Fork Middle Fork Eel River was surveyed during a 1959 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. According to the report, "This branch contains some of the best spawning gravels available to steelhead in the entire Middle Fork Drainage" (Anonymous 1960).

The North Fork Middle Fork Eel River was examined during a 1966 survey of the Middle Fork Eel River watershed. The stream was one of four Middle Fork tributaries thought to be accessible to steelhead and "many" juvenile *O. mykiss* were observed in the creek (DFG 1966d).

Staff from DFG surveyed the North Fork Middle Fork Eel River in 1972 and described it as, "The major steelhead spawning and rearing area of the Middle Fork Eel River above Black [Butte] River." Juvenile steelhead were observed and surveyors noted a possible migration barrier consisting of two bedrock falls located just upstream from the Willow Creek confluence (DFG 1972b). In a 1973 survey, USFS staff described the upstream limit of anadromy as a 20-foot cascade located about 1.5 miles upstream from the Water Spout Trail crossing. A resident rainbow trout population was present upstream of the barrier. Intermittent stream flows during the summer were cited as the most important limiting factor in the North Fork Middle Fork (Mower 1973).

Steelhead were sampled in the North Fork Middle Fork Eel River during a 1976 study of the distribution of fishes in the Eel River system. Regarding the North Fork Middle Fork and its tributaries the report states, "These streams are in pristine condition and are probably one of the spawning and rearing areas for spring-run steelhead that ascend the Middle Fork Eel River" (DFG 1980).

Staff from USFS surveyed about five miles of the lower North Fork Middle Fork Eel River in 1977. "Steelhead-summer, winter, resident" were found to be "common" in the lower section and "abundant" in the middle and upper sections. Size ranged from one to eight inches (USFS 1977s). In 1978, a USFS survey report noted, "There is no stream improvement need at this time with the possible exception of herding cattle away from the North Fork and tributaries" (USFS 1978d).

The North Fork Middle Fork Eel River was sampled during the 1982 Middle Fork Eel River Patrol, conducted by staff from DFG and USFS. The study report indicates that YOY *O. mykiss* were observed at a density of up to 60 fish per 100 feet of stream. This study also noted that riparian vegetation had been heavily damaged by cattle in the North Fork Middle Fork watershed between the Rock and Morrison creeks confluences. Adult summer steelhead were said to use the North Fork Middle Fork reach ending at a pool located about one mile upstream from the Morrison Creek confluence. "Good" spawning areas were noted upstream as far as the Willow Creek confluence (DFG 1983c).

Staff from DFG conducted a summer steelhead survey in the Middle Fork Eel River watershed in 1990. During this survey, three adult summer steelhead were collected in the North Fork Middle Fork Eel River, just downstream of the Morrison Creek confluence (Anonymous 1990).

A 1994 Watershed Analysis Report for the Middle Fork Eel River Watershed states that the North Fork Middle Fork has been impacted by unauthorized cattle grazing in a five-mile section upstream of the Morrison Creek confluence. Riparian vegetation

and water quality were impaired and "habitat quality for all age classes of resident fish and juvenile anadromous fish" was affected (USFS 1994a).

Staff from DFG surveyed the lower four miles of the North Fork Middle Fork Eel River in 2000 and found steelhead of multiple age classes in "medium abundance." A barrier at the mouth of Willow Creek is labeled on a map as the "upper end of anadromy" (DFG 2000d).

North Fork Middle Fork Eel River tributary (Morrison Creek)

An unnamed tributary to the North Fork Middle Fork Eel River is known as Morrison Creek and consists of about 2.8 stream miles. It flows east, past Morrison Camp, entering the North Fork Middle Fork Eel River about 1.9 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed the lower two miles of Morrison Creek in 1973 and described it as "…a valuable spawning stream for adult steelhead." Juvenile steelhead were common and many spawning areas were observed, particularly in the lower 0.75 miles miles of the creek (USFS 1973q). A 1973 USFS stream analysis states, "It appears on the basis of young of the year observed in the stream that Morrison and Rock Creeks are the two most utilized streams for steelhead reproduction on the North Fork Middle Fork Eel River" (USFS 1973r).

The juvenile steelhead population of Morrison Creek was sampled during a 1976 study of standing stocks in the North Fork of the Middle Fork Eel River. During the September 1976 sampling, 64 juvenile steelhead were collected in Morrison Creek and ranged from 1.5 to 6.7 inches in length (DFG 1976e).

Staff from USFS surveyed Morrison Creek in 1977 and noted the presence of many log jams and landslides and impacts of cattle use in the watershed. Rainbow trout were "abundant" during the survey (USFS 1977t). Regarding the upper portion of the creek, a 1978 USFS survey report notes, "Many 6-9 inch rainbow trout were seen and some of the best fish may be found in this area of the creek. The even progression of the fish sizes suggests that a strong resident population exists there, rather than migratory fish" (USFS 1978e).

In a 1983 biological report regarding a summer steelhead survey of the Middle Fork Eel River, Morrison Creek is described as having some of the best spawning habitat in the Middle Fork watershed. A table in this report characterized spawning habitat in the creek as "fair/good" and rearing habitat as "good" (DFG 1983b).

Morrison Creek was sampled during the 1982 Middle Fork Eel River Patrol, conducted by staff from DFG and USFS. The study report indicates that YOY *O. mykiss* were observed in Morrison Creek at a density of up to 50 fish per 100 feet of stream. This study also recorded the presence of a log jam barrier located about 1.2 miles upstream from the mouth of the creek and found "excellent" habitat downstream of the barrier (DFG 1983c).

In 1997 staff from DFG surveyed Morrison Creek and observed steelhead ranging from one to six inches in length. The stream was noted to contribute cool water to the North Fork of the Middle Fork Eel River throughout the year and contained spawning gravels that were "excellent for both resident and anadromous fish" in its lower section (DFG 1997p).

Rock Creek

Rock Creek is tributary to the North Fork Middle Fork Eel River and consists of about 2.6 stream miles. It flows southwesterly, entering the North Fork Middle Fork Eel River about 3.2 miles upstream from the Middle Fork Eel River confluence.

Staff from DFG surveyed Rock Creek in 1972 and described is as, "An important tributary for steelhead spawning and rearing for the North Fork of the Middle Fork Eel." Fingerling steelhead were observed at a density of about 100 fish per 100 feet of stream and yearlings were observed at about 10 fish per 100 feet (DFG 1972c).

The juvenile steelhead population of Rock Creek was sampled during a 1976 study of standing stocks in the North Fork of the Middle Fork Eel River. During the September 1976 sampling, 84 juvenile steelhead were captured in Rock Creek, ranging from 1.9 to 6.3 inches in length (DFG 1976e).

In a 1983 biological report regarding a summer steelhead survey of the Middle Fork Eel River, Rock Creek is described as having some of the best spawning habitat in the Middle Fork watershed. A table in this report characterized spawning habitat in the creek as "good" and rearing habitat as "good" (DFG 1983b).

Staff from DFG surveyed the lower mile of Rock Creek in 1997 and found it in "good condition" with "good" habitat and cover, but water levels were low and two areas were intermittent. Rainbow trout ranging from one to nine inches were observed and surveyors recommended, "This stream should continue to be managed as a steelhead trout spawning and rearing area" (DFG 1997q).

Willow Creek

Willow Creek is tributary to the North Fork Middle Fork Eel River and consists of about 2.7 stream miles. It flows southeasterly, entering the North Fork Middle Fork Eel River about 4.1 miles upstream from the Middle Fork Eel River confluence.

Staff from DFG surveyed Willow Creek in 1972 and observed six-foot falls about 75 yards upstream from the mouth and 20-foot falls 180 yards from the mouth. Fingerling *O. mykiss* were present downstream of the lower falls and adult rainbow trout were seen between the falls. Surveyors concluded, "…[the creek] contributes some flow and a minor amount of rearing area for juvenile steelhead. It is doubtful if any steelhead spawning occurs" (DFG 1972d). A 1973 USFS memo states, "This stream is of little or no value to anadromous fish but does supply some incremental flow to the North Fork" (USFS 1973s).

The juvenile steelhead population of Willow Creek was sampled during a 1976 study of standing stocks in the North Fork of the Middle Fork Eel River. During the September 1976 sampling, five juvenile steelhead were collected at the mouth of Willow Creek and ranged from 2.4 to 4.4 inches in length (DFG 1976e).

Willow Creek was sampled during the 1982 Middle Fork Eel River Patrol, conducted by staff from DFG and USFS. The study report indicates that YOY *O. mykiss* were observed in Willow Creek at a density of up to 10 fish per 100 feet of stream (DFG 1983c).

In a 1994 Watershed Analysis Report for the Middle Fork Eel River Watershed, Willow Creek is identified as an area in need of restoration. The creek was impacted by over 100 years of cattle grazing and displayed increased peak flows, decreased late season flows, and sediment problems. The report stated that, "Problems in upstream non-fishery reaches affect downstream fishery reaches" (USFS 1994a).

Staff from DFG surveyed Willow Creek in 1998 and three *O. mykiss* were observed downstream of the 20-foot waterfall near the creek mouth. These fish were about six inches in length and "comparable to those in the mainstem NFMF Eel" (DFG 1998a).

Yellowjacket Creek

Yellowjacket Creek is tributary to the North Fork Middle Fork Eel River and consists of about 3.1 stream miles. It flows southwesterly, entering the North Fork Middle Fork Eel River about 6.3 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed Yellowjacket Creek in 1973 and noted, "Considerable excellent spawning habitat exists within the survey area and is no doubt of significant importance to spawning adult steelhead." No barriers were observed and a resident rainbow trout population also was present. The survey report indicates that summer rearing habitat may be limited by low flows (USFS 1973t).

A 1973 summary of a Morrison Creek survey mentions the presence of a partial barrier on the North Fork Middle Fork downstream of Yellowjacket Creek that may be responsible for "the apparent decreased spawning activity in Yellowjacket Creek" (USFS 1973q). The creek also is mentioned in a 1973 survey report for the North Fork Middle Fork Eel River, which states that it is "…definitely utilized by steelhead for spawning and rearing" (DFG 1965e).

In August, 1979 staff from USFS surveyed Yellowjacket Creek and observed "poor habitat conditions" due to lack of water. A "self-sustaining population of rainbow trout" was present, but limited to stagnant pools (USFS 1980h).

In 1998 staff from DFG surveyed Yellowjacket Creek and observed rainbow trout ranging in age from YOY to adults. The survey report recommended that the creek be managed as a "…source of cold, clean water and as potential source of recruitment to the summer steelhead population" (DFG 1998b).

Balm of Gilead Creek

Balm of Gilead Creek is tributary to the Middle Fork Eel River and consists of about 9.1 stream miles. It flows southwesterly, entering the Middle Fork Eel River about 55.2 miles upstream from the Eel River confluence.

Balm of Gilead Creek was surveyed during a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. Steelhead were collected during fish population sampling as part of this study in 1959 and ranged from one to eight inches in fork length (Anonymous 1960).

Staff from DFG surveyed the lower 0.25 miles of Balm of Gilead Creek in 1966 and observed juvenile *O. mykiss*. Surveyors described the creek as "a small anadromous stream" and wrote, "Its main importance is for a spawning and nursery area for steelhead, in at least its lower portions and as a resident trout stream in its upper reaches" (DFG 1966e).

During a 1971 survey of Balm of Gilead Creek, DFG staff noted "massive slides" in the reach upstream from the Glade Camp Trail crossing (DFG 1971a). Staff from DFG surveyed Balm of Gilead Creek in 1973 and observed adult summer steelhead, as well as YOY and juvenile steelhead, downstream of a set of bedrock falls located at about stream mile 1.25. The creek was described as, "An important tributary of the Middle Eel." A resident trout population was noted upstream of the falls (DFG 1972e).

Summer steelhead surveys were conducted regularly in the Middle Fork Eel River watershed from 1966 to 1996. Many of these surveys included a section of Balm of Gilead Creek, downstream of the waterfall at stream mile 1.25. Survey results show consistent use of Balm of Gilead Creek by summer steelhead from 1971 through 1996. (DFG 1971b, DFG 1996e, DFG 1996f).

Staff from DFG surveyed Balm of Gilead Creek in 2000 and observed very low densities of YOY and juvenile steelhead throughout the middle and lower sections of the creek. In the survey report the density of fish in the creek is described as "alarmingly depauperate." The report noted that Balm of Gilead Creek is on the EPA list of 303(d) impaired watersheds due to pollution caused by sedimentation (DFG 2000e).

Minnie Creek

Minnie Creek is tributary to Balm of Gilead Creek and consists of about 3.4 stream miles. It flows northwesterly, entering Balm of Gilead Creek about 5.8 miles upstream from the Middle Fork Eel River confluence.

Staff from DFG surveyed Minnie Creek in 1973 and described it as "…the most important tributary of Balm of Gilead Creek, contributing about one-half the flow where they meet." According to the survey report, steelhead did not have access to this creek due to barriers on Balm of Gilead Creek, but a population of rainbow trout was present and included three size classes of fish in "good to excellent condition." The density of fish was low and the stream appeared capable of supporting a larger population (DFG 1973b).

A 1979 USFS survey of Minnie Creek concluded that a barrier at about stream mile 0.25 precluded access to about 1.5 miles of "ideal trout habitat" upstream. A self-sustaining population of rainbow trout was noted downstream from the barrier, with individuals to seven inches in length observed (USFS 1979a).

Balm of Gilead Creek tributary (Hopkins Hollow Creek)

An unnamed tributary to Balm of Gilead Creek is known as Hopkins Hollow Creek and consists of about 2.8 stream miles. It flows northwesterly, entering Balm of Gilead Creek about 7.3 miles upstream from the Middle Fork Eel River confluence.

A field note documents observations made in the lower 200 yards of Hopkins Hollow Creek in 1973. No fish observations were recorded and the field note states, "Stream appears to have little potential for fish due to very low flows" (La Faunce 1973).

Schoolmarm Creek

Schoolmarm Creek is tributary to the Middle Fork Eel River and consists of about 2.2 stream miles draining a basin of about 1.4 square miles. It flows southeasterly, entering the Middle Fork Eel River about 60.9 miles upstream from the Eel River confluence.

A 1972 DFG survey noted a waterfall impassable to fish at about stream mile 0.25. "Trout thought to be juvenile and yearling steelhead" between one and eight inches in length were observed downstream from the falls, and the reach was deemed "a minor nursery and spawning area for steelhead" (DFG 1972f).

Staff from USFS surveyed the lower 0.25 miles of Schoolmarm Creek in 1979 and observed two rainbow trout individuals. The stream was noted to have low flow and fish reproduction was categorized as "poor" (USFS 1979b).

Staff from DFG observed rainbow trout in Schoolmarm Creek downstream of the barrier falls in 2000 (Harris 2000).

Uhl Creek

Uhl Creek is tributary to the Middle Fork Eel River and consists of about 2.1 stream miles. It flows west, entering the Middle Fork Eel River about 61.3 miles upstream from the Eel River confluence. The Uhl Creek drainage is about 2.2 square miles.

A 1972 DFG survey noted a falls about 120 yards upstream from the mouth of Uhl Creek, with three *O. mykiss* size groups observed downstream. The survey report states, "A minor tributary of the Middle Eel. The falls limits use by anadromous fish. Contributes a small flow of cool water (DFG 1972g).

In 1979, staff from USFS surveyed the lower 0.5 miles of Uhl Creek and found suitable trout habitat throughout most of the section. Rainbow trout were present downstream of a waterfall barrier located about 100 yards upstream from the mouth and planting was recommended upstream of the falls in order to "reestablish a self-sustaining population of rainbow trout in Uhl Creek" (USFS 1980i).

Staff from DFG observed rainbow trout at stream mile 0.25 in Uhl Creek during a survey conducted in 2000 (Clemento 2000).

Alder Basin Creek

Alder Basin Creek is tributary to the Middle Fork Eel River and consists of about 2.1 stream miles. It flows west, entering the Middle Fork Eel River about 62.6 miles upstream from the Eel River confluence.

Staff from DFG surveyed the lower 1.5 miles of Alder Basin Creek in 1972 and observed rainbow trout throughout the area. A log jam and a slide created complete barriers in the creek, but both had occurred recently and the trout population upstream of these barriers was thought to be the offspring of adult steelhead. The creek was characterized as, "A small steelhead nursery and spawning stream that has been reduced in size by barriers in recent years" (DFG 1972h).

In August of 1979 staff from USFS surveyed Alder Basin Creek and observed only 0.25 miles of suitable trout habitat due to a lack of water. "Abundant" rainbow trout were present but limited to stagnant pools. Surveyors concluded that the creek "… contains excellent trout habitat, but dry sections hinder utilization of entire stream" (USFS 1980j).

Cutfinger Creek

Cutfinger Creek is tributary to the Middle Fork Eel River and consists of about 2.7 stream miles. It flows southeasterly, entering the Middle Fork Eel River about 65 miles upstream from the Eel River confluence.

A DFG field note states that Cutfinger Creek was completely dry during an August 1972 survey (USFS 1980k). Staff from USFS surveyed the creek in 1979 and observed four stagnant pools in the lower 0.5 miles of the creek. Surveyors noted that, "A population of rainbow trout was present in the pools, although habitat conditions appeared unsuitable" (USFS 1980k).

Staff from DFG surveyed Cutfinger Creek in April of 2002 and observed multiple age classes of resident *O. mykiss*. "Adequate" spawning gravel was present and flows of 2 to 2.5 cfs were recorded. Although it was considered inaccessible to anadromous fish in the Middle Fork Eel River, the creek was described as a "potential source of recruitment for the summer steelhead population" (DFG 2002e).

Robinson Creek

Robinson Creek is tributary to the Middle Fork Eel River and consists of about 2.9 stream miles draining an area of about 2.7 square miles. It flows south, entering the Middle Fork Eel River about 67.7 miles upstream from the Eel River confluence.

Robinson Creek was surveyed by DFG staff in 1972. Rainbow trout were said to be "mainly in two size groups—one to three inches and six to seven inches" although a "few nine to ten inch RT were seen." The survey report calls the creek "A minor spawning and nursery stream for steelhead and/or resident rainbow trout" (DFG 1972i).

Staff from USFS surveyed the lower 0.75 miles of Robinson Creek in 1979. Water and "poor to suitable" trout habitat was only observed in the lower 0.3 miles of the creek, and this lower section contained a self-sustaining population of rainbow trout 0(USFS 1980l).

Willow Basin Creek

Willow Basin Creek is tributary to the Middle Fork Eel River and consists of about 1.6 stream miles. It flows northeasterly, entering the Middle Fork Eel River about 69 miles upstream from the Eel River confluence.

Staff from USFS surveyed Willow Basin Creek in 1979 and did not observe fish. The creek lacked water except in stagnant pools and "suitable trout habitat was nonexistent" (USFS 1980m).

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Table 6. Distribution status and population features of *O. mykiss* in streams of the Middle Fork Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Middle Fork Eel River	DF	DF	Y	Y	3
Goforth Creek	DF	UN		UN	0
Poonkinny Creek	DF	UN		UN	0
Salt Creek	DF	DF	Y	Y	2
Elk Creek	DF	DF		Y	2
Eden Creek	UN	UN		UN	0
Ellis Creek	DF	DF		Y	1
Sanhedrin Creek	PB	UN		UN	0
Bear Creek	DF	UN		UN	0
Forks Creek	PB	PB		Y	1
Crocker Creek	DF	DF		Y	1
Sulphur Springs Creek	DF	PB		Y	1
Mendenhall Creek	DF	DF		Y	2
Sportsman Creek	DF	UN		UN	0
Lookout Creek	PB	PB		Y	1
Thatcher Creek	DF	UN	Y	UN	0
Hayshed Creek	DF	UN		UN	0
Mill Creek	DF	DF		Y	2
Turner Creek	DF	DF	Y	UN	1
Grist Creek	DF	UN		UN	0
Town Creek	DF	DF		Y	1
Little Valley Creek	DF	UN		UN	0
Short Creek	DF	DF		Y	3
Tank Creek	DF	DF		UN	2
Little Salt Creek	DF	UN		UN	0
Alder Creek	PB	DF			2
Cold Creek	DF	DF		UN	2
Mud Creek	DF	DF		UN	2
Williams Creek	DF	DF		Y	3
Murphy Creek	DF	DF		Y	1
Black Butte River	DF	DF	Y	Y	3

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

Table 6. Distribution status and population features of *O. mykiss* in streams of the Middle Fork Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Nebo Creek	PA	UN		UN	0
Jumpoff Creek	DF	DF		N	1
Twin Rocks Creek	DF	UN		UN	0
Sallady Creek	DF	UN		UN	0
Mississippi Creek	DF	UN		UN	0
Blue Slide Creek	DF	UN		UN	0
Atchison Creek	DF	UN		UN	0
Butte Creek	DF	UN		UN	0
Cold Creek	DF	DF	Y	Y	3
Plaskett Creek	DF	DF	Y	N	3
Baldy Creek	DF	UN		UN	0
Buckhorn Creek	DF	UN		UN	0
Skidmore Creek	DF	UN		UN	0
Umbrella Creek	DF	UN	Y	UN	0
Spanish Creek	DF	DF		Y	3
Black Butte River tributary (Big Spring Creek)	DF	DF		Y	2
Estell Creek	DF	DF		Y	3
Sheep Creek	DF	DF		Y	3
Middle Creek	DF	DF		Y	3
Rose Creek	PS	PS		UN	0
Bar Creek	DF	DF		N	3
Buck Creek	UN	PA		N	0
Travelers Home Creek	DF	DF		Y	2
Hellhole Canyon Creek	PA	UN		N	0
Fly Creek	DF	DF		N	3
Howard Creek	DF	DF	Y	N	3
Bear Creek	PA	UN		N	0
Fishtown Creek	PA	PA		N	0
Beaver Creek	DF	DF		Y	3
Buck Rock Creek	UN	PA		N	0

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

Table 6. Distribution status and population features of *O. mykiss* in streams of the Middle Fork Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Smokehouse Creek	DF	DF		N	3
Hammerhorn Creek	DF	DF		N	3
Pothole Creek	DF	DF		N	3
Fossil Creek	DF	DF		Y	2
Alder Creek	PA	PA	Y	N	0
Maple Creek	PA	PA		N	0
Deer Lick Creek	PA	PA		N	0
Middle Fork Eel River tributary 1	DF	UN		UN	0
Rattlesnake Creek	DF	DF	Y	N	3
Stick Lake Canyon Creek	PA	PA		N	0
Line Gulch Creek	DF	DF		N	1
Red Chert Creek	DF	DF		UN	3
Middle Fork Eel River tributary 2	DF	UN		UN	0
Middle Fork Eel River tributary 3 (Lucky Lake Creek)	UN	PA		N	0
North Fork Middle Fork Eel River	DF	DF	Y	Y	3
North Fork Middle Fork Eel River tributary (Morrison Creek)	DF	DF	Y	Y	3
Rock Creek	DF	DF		Y	3
Willow Creek	DF	DF	Y	Y	1
Yellowjacket Creek	DF	DF		UN	3
Balm of Gilead Creek	DF	DF	Y	Y	3
Minnie Creek	DF	UN		UN	0
Balm of Gilead Creek tributary (Hopkins Hollow Creek)	PA	UN		UN	0
Schoolmarm Creek	DF	DF		UN	1
Uhl Creek	DF	DF		UN	1
Alder Basin Creek	DF	UN		UN	0
Cutfinger Creek	DF	DF		N	3
Robinson Creek	DF	UN		UN	0
Willow Basin Creek	PA	UN		UN	0

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

Steelhead/rainbow trout resources of the upper Eel River

The following discussion of *O. mykiss* resources is specific to the section of the Eel River located upstream of the town of Dos Rios. The lower and middle reaches of the mainstem are discussed in separate sections of this report.

Eel River-Upper Reach

The upper Eel River was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study, several fingerling and yearling steelhead were observed in scattered locations between the Middle Fork Eel River confluence and the Cape Horn Dam, although none were observed downstream of Tomki Creek in late summer. Juvenile steelhead up to seven inches in length were abundant in the pool immediately below Cape Horn Dam. Fishermen were observed catching juvenile steelhead and/or resident rainbow trout from six to eight inches in length between Cape Horn and Scott Dams. Resident rainbow trout up to nine inches in length were found to be abundant in the Horse Creek area, and many resident rainbow trout up to seven inches in length were observed upstream of the Horse Creek confluence (Kubicek 1977, Kubicek pers. comm.).

The 1997 Eel River Action Plan identified the section of the upper mainstem Eel River between Scott and Cape Horn dams as containing "…some of the best spawning and rearing habitat for salmon and steelhead" in the mainstem (DFG 1997a, p. 18). The high quality habitat is reported to be a result of "near-optimal stream temperatures due to cool water releases from Lake Pillsbury" (p. 5).

Outlet Creek

Outlet Creek is tributary to the Eel River and consists of about 22.3 stream miles. It flows northeasterly, entering the Eel River at about stream mile 126.

Staff from DFG surveyed Outlet Creek in 1938 and 1942. Salmonid observations are not noted in either of these survey reports. In 1938 the creek was described as "exposed" and in 1942 water levels were said to be low and spawning gravels were described as "very limited for salmonids" (DFG 1938a, DFG 1946). Stocking records indicate that Outlet Creek was stocked with steelhead in 1939 (DFG 1939a).

A few steelhead were observed in Outlet Creek during a 1972 survey and the report notes that most spawning and nursery habitat is present in the lower and middle sections of the creek. It states, "Its real value is in terms of fish passage into the higher tributaries within the watershed." However, the meandering, steep, and heavily overgrown characteristics of tributaries within the Little Lake Valley area were noted possibly to limit steelhead use of these streams (DFG 1972a).

Outlet Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study, several fingerling salmonids were observed in early summer, but none in mid-to late summer (Kubicek 1977, Kubicek pers. comm.).
Outlet Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek in 1989 and steelhead were collected (DFG 1988a).

Staff from DFG conducted a stream inventory of Outlet Creek in 1995. Two sites were electrofished during the survey and YOY and/or juvenile *O. mykiss* were found at both sites. One 14-18 inch steelhead was also seen by surveyors and was in "poor" condition (DFG 1995a). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment.

Bloody Run Creek

Bloody Run Creek is tributary to Outlet Creek and consists of about 2.3 stream miles. It flows north, entering Outlet Creek about 1.1 miles upstream from the Eel River confluence.

Steelhead were rescued from Bloody Run Creek in 1939 and 1949. A total of 1,500 steelhead were rescued in 1939 and 972 were rescued in 1949 (DFG 1940, DFG 1950).

Staff from DFG surveyed Bloody Run Creek in 1972 and YOY steelhead were observed. The creek was said to offer "good SH spawning and nursery potential under the right conditions." The stream gradient and several boulder falls were believed to restrict fish passage under some flow conditions (DFG 1972b).

Bloody Run Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek in 1984 and steelhead were collected (DFG 1988a).

Staff from DFG conducted a stream inventory of Bloody Run Creek in 1995. Biological sampling was not conducted, but age 2+ and YOY steelhead were observed by surveyors (CCC 1995a). The inventory report recommended increasing canopy in the lower reaches of the creek, treating sources of fine sediment, and excluding cattle from the creek to avoid trampling and effects from defecation.

Bloody Run Creek tributary

An unnamed tributary to Bloody Run Creek consists of about 0.8 stream miles. It flows west, entering Bloody Run Creek about 2.3 miles upstream from the Outlet Creek confluence.

Staff from DFG conducted a stream inventory of this tributary to Bloody Run Creek in 1995. Young-of-year *O. mykiss* were observed during the survey (Darr 1995). The inventory report states, "Good water temperature and flow regimes exist in the stream and it offers good conditions for rearing fish." It notes that the stream's high gradient makes fish passage difficult and recommends excluding cattle from the creek to avoid trampling and effects from defecation.

Cherry Creek

Cherry Creek is tributary to Outlet Creek and consists of about 2.9 stream miles. It flows northeasterly, entering Outlet Creek about 2.6 miles upstream from the Eel River confluence.
During a 1972 stream survey staff from DFG observed two size classes of steelhead in Cherry Creek. Steelhead habitat and access was noted to be limited to the lower mile of the stream due to a steep gradient and boulders (DFG 1972c).

Staff from DFG conducted a stream inventory of Cherry Creek in 1995. Juvenile and YOY steelhead were observed from the mouth of the creek to a concrete dam located about 1.5 miles upstream (DFG 1995b). The inventory report recommended treating sources of fine sediment and monitoring fish passage at the dam.

Long Valley Creek (Longvale)

Long Valley Creek (alternate spelling "Longvale") is tributary to Outlet Creek and consists of about 9.2 stream miles. It flows south, entering Outlet Creek near the town of Longvale about 8.4 miles upstream from the Eel River confluence.

Staff from DFG surveyed Long Valley Creek in 1938 and observed steelhead YOY. The extent of natural propagation of the fish was categorized as "extensive" and spawning areas in the creek were said to be "good" (DFG 1938b).

Steelhead were rescued from Long Valley Creek in 1953. A total of 3,809 steelhead were rescued from the stream (DFG 1954).

Staff from DFG investigated the effects of highway construction on Long Valley Creek in 1961 and found that its ability of support fish life had been "markedly reduced." Loss of riparian vegetation, increased water temperatures, and erosion were observed. In the report, Long Valley Creek is described as "a small but important salmon and steelhead spawning and nursery stream." It was estimated to support an annual run of 100 steelhead (DFG 1962a).

Long Valley Creek was surveyed by staff from DFG in 1972. The survey report states, "Despite the presence of U.S. 101, Long Valley Creek retains good potential for SH spawning and nursery grounds with fish passage remaining open right to headwaters, except perhaps during periods of low spring flow" (DFG 1972d).

Long Valley Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study, several fingerling salmonids were observed in late summer (Kubicek 1977, Kubicek pers. comm.). Staff from DFG conducted a stream inventory of Long Valley Creek in 1995. Young-of-year steelhead were observed throughout the creek up to 10 miles upstream from the mouth. Some age 1+ and age 2+ fish also were noted (DFG 1996). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment and excluding cattle from the creek to avoid trampling and effects from defecation.

Sam Watt Creek

Sam Watt Creek is tributary to Long Valley Creek and consists of about 4.2 miles of intermittent stream. It flows east, entering Long Valley Creek about 0.8 miles upstream from the Outlet Creek confluence.

Steelhead YOY and juvenile rainbow trout were observed in Sam Watt Creek during a 1972 survey. Surveyors noted that steelhead only had access to the lower 0.5 miles of the creek due to a boulder falls barrier (DFG 1972e).

Dutch Henry Creek

Dutch Henry Creek is tributary to Long Valley Creek and consists of about 4.2 stream miles. It flows southeasterly, entering Long Valley Creek about 1.1 miles upstream from the Outlet Creek confluence.

Staff from DFG surveyed Dutch Henry Creek in 1972 and observed juvenile and YOY *O. mykiss*. Steelhead were said to be restricted to the lower 1.5 stream miles due to bedrock and boulder barriers (DFG 1972f).

Dutch Henry Creek is mentioned in a 1990 report of carcass recovery activities conducted by the Salmon Trollers Marketing Association. This report states that two live steelhead were found in Dutch Henry Creek during February of 1990 (Salmon Trollers 1990).

Wilson Gulch Creek

Wilson Gulch Creek is tributary to Long Valley Creek and consists of about 2.2 miles of intermittent stream. It flows southeasterly, entering Long Valley Creek about 3.9 miles upstream from the Outlet Creek confluence.

Wilson Gulch was surveyed in 1938 by staff from DFG and YOY steelhead were observed. Flow in the creek was likely very low, as the volume was categorized as "Isolated pools only" (DFG 1938c).

Reeves Canyon Creek

Reeves Canyon Creek is tributary to Outlet Creek and consists of about 1.9 miles of intermittent stream. It flows northwesterly, entering Outlet Creek about 13 miles upstream from the Eel River confluence.

Staff from DFG surveyed Reeves Canyon in 1965 and found that *O. mykiss* were "common to plentiful" from the mouth of the creek to the forks. It was described as, "a rather small tributary to Outlet Creek supporting a fair to good population of steelhead and/or rainbow trout." Road construction and development in the watershed were noted to be impacting fish habitat (DFG 1965a).

Sherwood Creek

Sherwood Creek is tributary to Outlet Creek and consists of about 8.8 miles of intermittent stream. It flows southeasterly, entering Outlet Creek about 15.5 miles upstream from the Eel River confluence.

Staff from DFG inspected Sherwood Creek in 1949 and did not observe fish. At the time the creek lacked surface flow where it was inspected near the mouth of Curly Cow Creek and an impassable falls was observed about one mile upstream from the mouth. The field note states, "Local resident reported fairly successful fishing along this stretch of stream during the first month or so of the season" (DFG 1949).

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Sherwood Creek is listed as containing 0.7 miles of stream accessible to steelhead (DFG 1983a). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983a, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Rowes Creek

Rowes Creek is tributary to Sherwood Creek and consists of about 3.7 miles of intermittent stream. It flows southeasterly, entering Sherwood Creek about 0.4 miles upstream from the Outlet Creek confluence.

A 1956 field note documents an observation of "a few unidentified fish" in Rowes Creek. It also states that the creek had no surface flow during the August survey and the fish were seen in an isolated pool (Anonymous 1956).

"Several trout fingerlings" were seen in Rowes Creek in 1960. A field note describes the creek as, "A possible nursery area." Another note states, "Well shaded, runs year round" (Anonymous 1960a).

A field note documents an electrofishing survey that took place in Rowes Creek in 1989. The note states, "Although no anadromous fish were seen, it is speculated by the Unit Biologist that this stream could support a salmonid population under proper conditions" (DFG 1989).

Curly Cow Creek

Curly Cow Creek is tributary to Sherwood Creek and consists of about 3.7 miles of intermittent stream. It flows east, entering Sherwood Creek about four miles upstream from the Outlet Creek confluence.

Curly Cow Creek in mentioned in a 1960 field note. The note states, "Trout are caught in the headwaters" (Anonymous 1960b).

Staff from DFG surveyed Curly Cow Creek in 1972 and no fish were observed. The stream had a mud bottom, large amounts of vegetation in the stream bed, and was impacted by cattle use. It was described as, "not a tributary of primary concern to the fisheries value of the system" (DFG 1972g).

Ryan Creek

Ryan Creek is tributary to Outlet Creek and consists of about two stream miles. It flows west, entering Outlet Creek about 16.3 miles upstream from the Eel River confluence.

In 1972 staff from DFG surveyed Ryan Creek and observed YOY and juvenile *O. mykiss*. The creek was said to contain "roughly 2 miles of stream suitable for salmonid spawning and rearing" (DFG 1972h).

A culvert on a private road upstream of the Highway 101 crossing in Ryan Creek was inspected in 1979. Juvenile steelhead were observed and the surveyor estimated that the creek supported a run of about 50 steelhead (DFG 1979).

Salmonids, including *O. mykiss*, were observed "in abundance" in Ryan Creek during a 1981 survey. The creek had good flow, good water quality, instream shelter, and canopy cover, and was said to provide "excellent habitat" for steelhead (DFG 1981a).

Ryan Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek in 1984, 1986, and 1988 and steelhead were collected each year (DFG 1988a).

Staff from DFG conducted a stream inventory of Ryan Creek in 1995. Salmonids were observed throughout the creek and the report stated that, "Good water temperature and flow regimes exist in the stream and it offers good conditions for rearing fish" (CCC 1995b). It was also noted that "Due to the three culverts present, access for migrating salmonids is an ongoing potential problem." The report recommended monitoring and improving fish passage, along with treating sources of fine sediment related to the road system.

Annual reports document electrofishing that was conducted in several streams for a salmon and steelhead stock assessment as part of the North Central District Salmon and Steelhead Management project. Ryan Creek was among the creeks sampled as part of this work and steelhead were found in the creek in 1994, 1997, and 2003 (DFG 1995c, DFG 1997a, DFG 2003).

Bull Creek

Bull Creek is tributary to Outlet Creek and consists of about 1.1 stream miles. It flows north, entering Outlet Creek about 16.4 miles upstream from the Eel River confluence.

Staff from DFG surveyed Bull Creek in 1972 and observed juvenile and YOY *O. mykiss*. The creek was said to have "good spawning and nursery potential" and "good summer flows." The gradient was noted to be steep but the report stated "with removal of the log barriers, fish could use its entire length" (DFG 1972i).

Berry Creek

Berry Creek is tributary to Outlet Creek and consists of about five stream miles. It flows west through Berry Canyon and enters Outlet Creek via drainage channels in Little Lake Valley.

Staff from DFG inspected stream damage that occurred to Berry Creek in 1965 as a result of road repair work in the watershed. Steelhead YOY were observed in the stream and the construction activities were said to have caused "considerable damage to the fishery resource" (DFG 1965b).

During a 1972 stream survey staff from DFG observed steelhead YOY in Berry Creek. Surveyors wrote, "Berry Creek does see fairly extensive use as a SH spawning and nursery stream." Habitat quality was said to be reduced by intermittent summer flows and litter in the stream (Klamt 1972a).

Berry Creek was surveyed for salmonid carcasses in 1988 and two live steelhead smolts were observed. It was described as "a small stream" with good rearing habitat in some areas but limited spawning gravel (Griffin 1988).

Berry Creek is mentioned in a 2006 survey of its tributary, Alder Creek. The author, Scott Harris, notes that he found Berry Creek completely dry during the summers of 2004 and 2005. He did not observe fish in Berry Creek during either of those years or during the 2006 survey. Water diversions were very numerous in the Alder Creek watershed and misuse or misappropriation of water in Alder and Berry Creeks were proposed as explaining the lack of water during the summer (DFG 2006).

Alder Creek

Alder Creek is tributary to Berry Creek and consists of about 1.5 stream miles. It flows south, entering Berry Creek about 3.5 miles upstream from its mouth.

Alder Creek was surveyed in 2006 and no fish were observed. However the surveyor wrote, "Until recently, steelhead had been observed in both Alder and Berry Creeks." Water diversions were very numerous in the headwaters of Alder Creek and misuse or misappropriation of water were noted as possibly causing a lack of water during the summer. The creek was said to contain one mile of habitat available for steelhead spawning and was described as "a good candidate for instream restoration efforts" (DFG 2006).

Davis Creek

Davis Creek is tributary to Outlet Creek and consists of about nine stream miles. It flows north and enters Outlet Creek via drainage channels in Little Lake Valley. Morris Dam, located about 5.5 miles upstream from the mouth of Davis Creek, at the southern end of Little Lake Valley, was built in 1927 and is a total barrier to anadromous fish passage (Week 1974).

Juvenile and YOY steelhead were observed in Davis Creek during surveys of the section downstream of Morris Dam in 1972 and 1975. Spawning and rearing habitat was present, but was said to be limited by low summer stream flows. The dam was noted as restricting normal gravel movement, reducing the available spawning areas (DFG 1975a, Klamt 1972b).

Staff from DFG inspected Davis Creek in 1974 in response to proposed PG&E plans to enlarge Morris Dam. Field notes from this investigation report that adult steelhead migrate up to the base of Morris Dam annually and a population of rainbow trout was present for at least 2.5 miles upstream of the impoundment (Week 1974). In 1974 staff from DFG surveyed the section of Davis Creek from Conklin Creek to the headwaters. A estimated population of 10,282 rainbow trout was present upstream of the dam and this section of the creek was "in very good condition with excellent potential as spawning and rearing habitat for salmonids" (DFG 1974).

Davis Creek was sampled by backpack electrofishing at six sites upstream of Morris Reservoir in 1975. The number of rainbow trout collected at these sites ranged from 7 to 144 (mostly YOY) per 100 feet of stream (Kubicek 1977).

Davis Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek both upstream and downstream of Morris Dam in 1988. Steelhead were collected downstream of the dam and rainbow trout were found upstream (DFG 1988a).

In 2004 the Eel River Watershed Improvement Group (ERWIG) completed a Watershed Assessment of Davis Creek in conjunction with DFG. According to the assessment report, Davis Creek continues to support a steelhead population and contains about six miles of anadromous habitat downstream of Morris Dam, although some parts of this section have intermittent flows during the summer and fall. Steelhead observations, including juveniles and adults, have taken place in Davis Creek as recently as 2003. The watershed analysis identified and prioritized restoration needs for Davis Creek and the highest priority recommendations included maximizing summer water flows, increasing riparian vegetation, and addressing water quality (ERWIG 2004).

Fulweiter Creek

Fulweiter Creek is tributary to Davis Creek and consists of about two stream miles. It flows west, entering Davis Creek at about stream mile 3.5.

Due to lack of access, salmonid habitat in Fulweiter Creek could not be assessed during the 2004 Davis Creek Watershed Assessment. In the report, the stream is described as "a very small seasonal stream" and local residents reported that it dries up during the summer. In April 2001 Bill Matson of ERWIG observed an adult steelhead in Fulweiter Creek in a pool just downstream of the East Side Road crossing (ERWIG 2004).

Moore Creek

Moore Creek is tributary to Davis Creek and consists of about 2.6 stream miles. It flows west, entering Davis Creek at about stream mile 4.5.

Staff from DFG surveyed Moore Creek in 1972 and observed *O. mykiss* ranging from two to eight inches in length. The creek contained "roughly ½ mile of good steelhead spawning and nursery grounds." The habitat was limited to this section by a boulder falls barrier and little habitat was thought to exist upstream of the barrier (DFG 1972j).

Due to lack of access, salmonid habitat in Moore Creek could not be assessed during the 2004 Davis Creek Watershed Assessment. Local residents reported that the creek had year-round flows prior to development of the Pine Mountain subdivision, but now had only a "trickle" of water during the summer and fall (ERWIG 2004).

Davis Creek tributary (Conklin Creek)

An unnamed tributary to Davis Creek is known as Conklin Creek and consists of about 3.7 stream miles. It flows west, entering Davis Creek at about stream mile 5.5.

Staff from DFG surveyed Conklin Creek in 1997 and observed *O. mykiss* assumed to be of both anadromous and stream-reproducing ancestry. Juvenile steelhead were present downstream of a set of three barriers beginning about 0.2 miles upstream from the mouth. Rainbow trout were observed in the reach between the barriers and upstream of them. The rainbow trout population was described as "excellent" in the middle section of the creek. The lower section's habitat was said to be limited by culvert and boulder barriers, and the headwaters experienced low flows and sediment input from new road construction (DFG 1997b).

Conklin Creek as part of the 2004 Davis Creek Watershed Assessment and was said to contain about 0.2 miles of stream available to anadromy. Juvenile steelhead were observed in two pools in this section of the creek in 2003 (ERWIG 2004).

Mill Creek

Mill Creek is tributary to Outlet Creek and consists of about 4.2 stream miles. It flows northeasterly, entering Outlet Creek north of the town of Willits, about 20.8 miles upstream from the Eel River confluence.

Stocking records indicate that Mill Creek was stocked with hatchery steelhead in 1938 and 1939. A total of 9,800 steelhead were stocked in 1938 and 8,000 were stocked in 1939 (DFG 1939b). Staff from DFG surveyed Mill Creek in 1938 and noted that steelhead two to three inches in length were common at the Highway 101 crossing. One five-inch fish was also observed (DFG 1938d).

Temperature and stream flow information was collected on Mill Creek and Willits Creek in 1969. During a survey, juvenile steelhead were observed throughout both creeks and ranged in density from about 20 to 40 fish per 100 feet of stream (DFG 1969)
In a 1997 letter, Michael Morford of the Mendocino County Fish and Game Commission refers to a spawning channel constructed in Mill Creek as a mitigation project for a subdivision in Willits. The letter expresses the opinion that substrate was limiting spawning and additional gravel would improve habitat (Morford 1997).

Electrofishing was conducted at two stations in Mill Creek in 1998 and 1999 by DFG staff. Juvenile steelhead were found at both stations (Harris 1998-1999). Steelhead were present in Mill Creek up to stream mile 4.0 during carcass surveys conducted by DFG staff in 1998 and 1999 (Harris 1998-1999).

Willits Creek

Willits Creek is tributary to Mill Creek and consists of about six stream miles. It flows southeasterly, entering Mill Creek about 2.9 miles upstream from the Outlet Creek confluence.

Staff from DFG surveyed Willits Creek in 1968 and observed YOY steelhead throughout four miles of the lower creek. Juvenile steelhead and/or rainbow trout were observed in 2.5 miles of the upper drainage. The creek was described as "one of the better tributaries to Outlet Creek providing both king salmon and steelhead spawning area." Summer stream flows may limit rearing habitat in the lower stream (DFG 1968a).

The lower 3.5 miles of Willits Creek was dry during a 1971 survey and the creek was said to contain two miles of rearing habitat in the upper section and about six miles of spawning habitat. Two size classes of steelhead were observed (DFG 1971).

A dam and reservoir on Willits Creek, known as Lake Emily, currently blocks anadromous access about 2.4 miles upstream from the mouth of the creek. It is unclear when this dam was constructed. However a status report of California Wild and Scenic Rivers states that in 1983 10,050 juvenile steelhead were planted in Willits Creek as mitigation for dam construction. Salmonid trapping also was conducted in Willits Creek in 1983 and a total of 66 juvenile steelhead were collected (DFG 1983b).

Staff from DFG conducted stream inventories of Willits Creek in 1991 and 1995. Electrofishing was conducted and YOY and juvenile steelhead were collected during both surveys (CCC 1992, CCC 1996). The 1995 stream inventory report notes that a local employee reported that in previous years steelhead had been observed attempting the get up the spillway on the dam at Lake Emily. The report recommended treating sources of fine sediment and excluding cattle from the creek to avoid trampling and effects from defecation.

A downstream migrant trap was operated on Willits Creek from March through July of 1999. Steelhead YOY and yearlings were trapped during this period and one adult steelhead was also observed (DFG 1999a).

Broaddus Creek

Broaddus Creek is tributary to Outlet Creek and consists of about 6.6 stream miles. It flows northeasterly, through the town of Willits and enters Outlet Creek about 22 miles upstream from the Eel River confluence.

Staff from DFG surveyed Broaddus Creek in 1938 and found that steelhead were common in the vicinity of the Highway 101 crossing. "Good" spawning gravels and "extensive" natural propagation also were noted (DFG 1938e).

Steelhead were not observed during a 1957 survey of Broaddus Creek, although the report cited high turbidity as limiting visibility. However, the survey report noted, "Broaddus Creek sustains a fair steelhead run although it goes dry throughout practically its entire length in the summer" (DFG 1957).

In 1968 staff from DFG investigated pollution entering Broaddus Creek from waste discharges at the Willits Redwood Products Company. Steelhead were found during electrofishing conducted as part of this investigation, but were not present downstream of the waste discharge. The pollution was noted to have lowered the available oxygen for fish and created a sewage fungus blanket in the creek (DFG 1968b).

Steelhead YOY were observed during a 1973 survey of Broaddus Creek. The upper section of the creek was found to contain good spawning habitat, but rearing habitat was limited by low summer flows. The lower section also experienced low summer flows as well as limited spawning habitat due to compacted gravels (DFG 1972k).

Broaddus Creek was sampled as part of a study of salmon and steelhead populations in Mendocino County. A summary table indicates that sampling was performed in the creek in 1989 and steelhead were collected (Anonymous 1990).

Staff from DFG conducted a stream inventory of Broaddus Creek in 1995. Steelhead YOY were found at an electrofishing site located about 120 feet upstream from the Outlet Creek confluence. (CCC 1995c). The inventory report recommended treating sources of fine sediment and excluding cattle from the creek to avoid trampling and effects from defecation.

Baechtel Creek

Baechtel Creek is tributary to Outlet Creek and consists of about 6.7 stream miles. It flows northeasterly, entering Outlet Creek about 22.3 miles upstream from the Eel River confluence.

Staff from DFG surveyed Baechtel Creek in 1938 and observed steelhead at the Highway 101 crossing. The fish were two to three inches long and considered "common to abundant" (DFG 1938f).

Steelhead were rescued from Baechtel Creek in 1949. A total of 2,560 steelhead were rescued from the stream (DFG 1950).

Juvenile and YOY *O. mykiss* were observed during a 1972 DFG survey of Baechtel Creek. The creek was thought to "offer about 10 miles of potential spawning grounds." Nursery areas in the lower section of the creek were limited by intermittent summer flows (DFG 1972l).

A stream clearance project was completed on Baechtel Creek in the spring of 1980 by staff from the Center for Education and Manpower Resources. This work involved the clearing of logs, slash, and debris in the upper 1.5 miles of the creek, an area which was considered steelhead habitat (DFG 1981b).

Baechtel Creek was surveyed again by DFG staff in 1980 and contained juvenile *O. mykiss* at a density of about 20 fish per 100 feet of stream. The creek was noted to contain good spawning gravel, riparian canopy, and spring stream flows, but habitat was characterized as limited by flows and stream temperatures in the summer (DFG 1980a).

Staff from DFG conducted a stream inventory of Baechtel Creek in 1995. Electrofishing was not conducted during the survey, but juvenile steelhead were observed (CCC 1995d). The inventory report recommended treating sources of fine sediment related to the road system and excluding cattle from the creek to avoid trampling and effects from defecation.

Haehl Creek

Haehl Creek is tributary to Outlet Creek and consists of about 4.2 stream miles. It flows northwesterly, entering Outlet Creek about 22.3 miles upstream from the Eel River confluence.

Staff from DFG surveyed Haehl Creek in 1938 and observed steelhead two to three inches in length. Some larger fish, including one seven inches long, also were seen (DFG 1938g).

No salmonids were observed during a 1972 DFG survey of Haehl Creek. Livestock use and trash were noted in the stream, which was said to "offer limited SH spawning and nursery grounds" (DFG 1972m).

A salmonid carcass survey was conducted in the lower 1.5 miles of Haehl Creek in 1987. No fish or redds were observed and the stream bed contained large amounts of fine sediments. Surveyors noted, "This stream appears to have no value to the salmon fisheries" (Walton 1987).

Staff from DFG conducted a stream inventory of Haehl Creek in 1995. Two sites were electrofished and two juvenile steelhead were found at the second site, located about 1.5 miles upstream from the mouth (CCC 1995e). The inventory report noted that spawning gravel was limited to few reaches in the creek and recommended increasing canopy and excluding cattle from the creek to avoid trampling and effects from defecation.

Brushy Creek

Brushy Creek is tributary to the Eel River and consists of about 1.3 stream miles. It flows southwesterly, entering the Eel River at about stream mile 128.

Staff from DFG surveyed this creek in 1967 but referred to it as "Indian Creek." Surveyors observed four steelhead, averaging 2.5 inches in length. The stream was said to be "currently producing an estimated 40 steelhead." A 14-foot high boulder barrier was observed 50 feet upstream from the mouth of the creek. However it is unclear whether this comprised a total passage barrier and the location of the observed fish in relation to the barrier (DFG 1967).

Indian Creek (Brushy Creek)

Indian Creek is tributary to the Eel River and consists of about 3.7 stream miles. It flows west, entering the Eel River at about stream mile 129.7. In the past this creek was referred to as "Brushy Creek" and is labeled as such on a map included with a 1965 survey report (Smith 1965).

This creek was surveyed during a 1965 survey of this section of the Eel River. It was described as having "excellent prospects as a steelhead spawning stream." Juvenile steelhead were abundant downstream of a boulder and log barrier located about 100 yards upstream from the mouth. Fish were absent upstream of the barrier (Smith 1965).

Electrofishing was conducted in a number of Eel River tributaries in 1981 as part of PG&E's Potter Valley Project Fisheries Study. Indian Creek (then referred to as "Brushy") was sampled in June 1981 and a total of 106 steelhead were collected. A map shows the sampling site near the mouth of the creek (PGE 1981).

Fish Creek

Fish Creek is tributary to the Eel River and consists of about four stream miles. It flows southwesterly, entering the Eel River at about stream mile 134.

Fish Creek was surveyed during a 1965 survey of a portion of the upper Eel River. The lower one mile of Fish Creek was surveyed and juvenile steelhead were observed throughout the area. The creek was reported to have "dependable summer flow" and was described as a source of spawning gravel for the Eel River due to a large gravel bar that was observed at the mouth of the creek (Smith 1965).

Staff from BLM surveyed Fish Creek in 1974 and observed "numerous salmonids." These fish were described as "most likely steelhead." Flow at the mouth of the creek was found to be mainly sub-surface and the mouth consisted of an alluvial fan formed by rubble and boulders (BLM 1974a).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* was observed in Fish Creek (Brown 1991).

Twin Bridges Creek

Twin Bridges Creek is tributary to the Eel River and consists of about four stream miles. It flows southwesterly, entering the Eel River at about stream mile 139.

Staff from BLM surveyed Twin Bridges Creek in 1974 and observed *O. mykiss* ranging from three to nine inches in length. The survey report states, "It would appear that a small resident trout fishery and an anadromous fishery coexist in the stream. The stream is definitely used by steelhead." Heavy siltation was observed throughout the creek (BLM 1973).

Old Woman Canyon Creek

Old Woman Canyon Creek is tributary to Twin Bridges Creek and consists of about four stream miles. It flows west, entering Twin Bridges Creek about 0.1 miles upstream from the Eel River confluence.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Old Woman Canyon Creek is listed as containing one mile of stream accessible to steelhead (DFG 1983a). The report notes that this number represents the stream miles "open to fish passage" and "is not a measure of habitat availability or habitat quality" (DFG 1983a, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Garcia Creek

Garcia Creek is tributary to the Eel River and consists of about 4.5 stream miles. It flows south, entering the Eel River at about stream mile 147.

Staff from USFS surveyed Garcia Creek and its tributaries in 1973 and observed "salmonids" at low densities in the lower creek and becoming more common in the upper reaches. The creek contained three miles of stream accessible for anadromous spawning and rearing. A summary of the stream survey states, "Reproduction by salmonids seemed to be good for the past spawning season, but the general impression was that this stream is capable of supporting greater densities of these species" (USFS 1983).

Electrofishing was conducted in a number of Eel River tributaries in 1981 as part of PG&E's Potter Valley Project Fisheries Study. Garcia Creek was sampled in June 1981 and a total of 225 steelhead were collected (PGE 1981).

Long Opening Creek

Long Opening Creek is tributary to Garcia Creek and consists of about 2.8 stream miles. It flows southwesterly, entering Garcia Creek about 0.7 miles upstream from the Eel River confluence.

Long Opening Creek was inspected during a 1973 survey of Garcia Creek and contained juvenile salmonids. The amount of stream accessible to anadromous fish was not determined (USFS 1983).

Bear Pen Creek

Bear Pen Creek is tributary to Garcia Creek and consists of about 3.9 stream miles. It flows southwesterly, entering Garcia Creek about one mile upstream from the Eel River confluence.

Bear Pen Creek was inspected during a 1973 survey of Garcia Creek and contained juvenile salmonids. The amount of stream accessible to anadromous fish was not determined (USFS 1983).

Thomas Creek

Thomas Creek is tributary to the Eel River and consists of about 3.5 stream miles. It flows west, entering the Eel River at about stream mile 149.

Staff from USFS surveyed the lower 2.5 miles of Thomas Creek in 1973 and found that "It appears to be an important stream for reproduction and rearing of juvenile anadromous salmonids." Salmonids were observed throughout the stream at densities of up to 50 fish per 100 feet of stream (USFS 1973a).

Electrofishing was conducted in a number of Eel River tributaries in 1981 as part of PG&E's Potter Valley Project Fisheries Study. Thomas Creek was sampled in June 1981, when 208 steelhead were collected (PGE 1981).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* was observed in Thomas Creek (Brown 1991).

In the 1998 final report of PG&E's Potter Valley Project Monitoring Program, Thomas Creek is included on a list of smaller tributaries to the upper mainstem Eel River. These tributaries are described as having "relatively stable habitat" that function as "good nursery streams with relatively stable populations from year to year" (PGE 1998).

Tomki Creek

Tomki Creek is tributary to the Eel River and consists of about 22.5 stream miles. It flows southeasterly, entering the Eel River at about stream mile 153.Staff from DFG surveyed Tomki Creek in 1938 and observed three-inch steelhead about 0.25 miles upstream from the mouth. Natural propagation for the fish was described as "extensive." Surveyors noted "good" spawning areas, "good" pools and shelter, and "abundant" fish food items (DFG 1938h).

Steelhead were rescued from Tomki Creek in 1939, 1949, 1951, and 1953. Between 29,800 and 138,850 steelhead were rescued from the creek each year (DFG 1940, DFG 1950, DFG 1952, DFG 1954).

Staff from DFG surveyed 20 miles of Tomki Creek in 1964 and found *O. mykiss* throughout the creek. Fingerlings were present downstream of the Long Branch Creek confluence and also in intermittent pools in the mid-section of the creek, while larger (four to eight inch) fish were found upstream of the Wheelbarrow Creek confluence. Low stream flows during the late spring, summer, and early fall were identified as the major limiting factor for fish populations. This factor explained why, "A large population of steelhead that might be found in a drainage such as this is almost entirely absent." The creek reportedly flowed throughout the year in the past, before extensive logging took place in the watershed (DFG 1964a).

During a 1972 survey, staff from DFG observed two size classes of steelhead in Tomki Creek and described the larger fish as "probably smolt." Due to limited spawning and nursery areas in the creek, surveyors concluded, "Tomki Creek's greatest value for SH use is in terms of fish passage to the higher tributaries with the watershed" (DFG 1972n).

Electrofishing was conducted in a number of Eel River tributaries in 1981 as part of PG&E's Potter Valley Project Fisheries Study. Tomki Creek was sampled in June 1981 and a total of 56 steelhead were collected upstream from the Wheelbarrow Creek confluence and 230 steelhead were found downstream from the Long Branch Creek confluence (PGE 1981).

Staff from DFG conducted a stream inventory of Tomki Creek in 1997. The survey began at the confluence with the Eel River and covered about 12.9 steam miles. Limited numbers of steelhead were found in the creek; a total of three YOY were captured during electrofishing at five sites (DFG 1997c). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, treating sources of fine sediment, and excluding cattle from the creek to avoid trampling and effects from defecation.

In the 1998 final report of PG&E's Potter Valley Project Monitoring Program, Tomki Creek is described as "significantly degraded from decades of timber harvest and other land use practices." According to the report, these practices have caused sedimentation, altered stream morphology in the watershed, and "compromised the quality of much of the remaining salmonid spawning and rearing habitats" (PGE 1998, p. xxiii).

Bear Skin Canyon Creek

Bear Skin Canyon Creek is tributary to Tomki Creek and consists of about 1.4 stream miles. It flows north, entering Tomki Creek about two miles upstream from the Eel River confluence.

Bear Skin Canyon Creek was surveyed in 1964 and described as a "very important contributor of summer stream flow." No fish were observed in the lower 100 yards of stream and it "appeared to be unattractive to fish" (DFG 1964b).

Staff from DFG conducted a stream inventory of Bear Skin Canyon Creek in 1997. No fish were observed during the survey and an eight-foot and a seven-foot waterfall were present within 0.1 miles of the creek mouth. The waterfalls "marked the end of the possible anadromous reach" (Schaible 1997).

Salmon Creek

Salmon Creek is tributary to Tomki Creek and consists of about 3.5 stream miles. It flows southeasterly, entering Tomki Creek about 2.6 miles upstream from the Eel River confluence.

Staff from DFG surveyed Salmon Creek in 1964 and observed low numbers of *O. mykiss* in the lower 0.5 miles of the stream. Flow was very low during the survey, but the stream was described as "an important spawning area for king salmon and steelhead" and spawning gravels were observed throughout the survey reach (DFG 1964c).
During a 1973 survey of Salmon Creek, staff from DFG noted "few" YOY steelhead. The survey report states, "Salmon Creek offers little potential for SH use, due to the extensive amounts of bedrock noted and also due to low flows, apparently even during the winter" (DFG 1972o).

Staff from DFG conducted a stream inventory of Salmon Creek in 1997. Two YOY *O. mykiss* were found at an electrofishing site just upstream from the mouth of the creek and juvenile steelhead were observed about 0.3 miles upstream (DFG 1997d). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment.

Long Branch Creek

Long Branch Creek is tributary to Tomki Creek and consists of about four stream miles. It flows north, entering Tomki Creek about 4.2 miles upstream from the Eel River confluence.

Staff from DFG surveyed the lower 1.5 miles of Long Branch Creek in 1964 and observed *O. mykiss* ranging from three to four inches in length. "Good" spawning areas were present but rearing habitat was said to be limited by low summer stream flows (DFG 1964d).

In a 1972 survey, the upstream limit of use by salmonids in Long Branch Creek was said to be three miles upstream from its mouth. Young-of-year steelhead were observed in the creek, which contained "excellent steelhead spawning potential" (DFG 1972p).

In 1985 staff from DFG investigated a sediment problem in the lower section of Long Branch Creek that appeared to originate from a landslide on an unnamed tributary. The sedimentation was found to adversely impact steelhead spawning and rearing habitat (DFG 1985).

Staff from DFG conducted a stream inventory of Long Branch Creek in 1997. Steelhead were captured at three electrofishing sites and juveniles were observed in the 3.7 mile reach upstream from the mouth (DFG 1997e). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment related to the road system.

Long Branch Creek tributary

An unnamed tributary to Long Branch Creek consists of about two stream miles. It flows southeasterly, entering Long Branch Creek about 2.9 miles upstream from the Tomki Creek confluence.

Staff from DFG conducted a stream inventory of this stream in 1997. During the survey juvenile steelhead were observed at several points in the lower 1.2 stream miles. The area upstream was characterized as a steep cascade (DFG 1997f). The inventory report recommended treating sources of fine sediment and increasing canopy.

Scott Creek

Scott Creek is tributary to Tomki Creek and consists of about four stream miles. It flows south, entering Tomki Creek about 4.8 miles upstream from the Eel River confluence.

Staff from DFG surveyed four miles of Scott Creek in 1972 and observed steelhead YOY. In its lower section the creek was noted to have "good SH potential" limited by low summer stream flows. Habitat quality decreased in the upper section due to low flows combined with silt in the stream bed (DFG 1972q).

Staff from DFG conducted a stream inventory of Scott Creek in 1999. Unidentified salmonids were observed during the survey only in the lower 0.3 miles of the stream. Recommendations for improving habitat in the creek including increasing riparian vegetation and addressing sediment sources related to road systems (DFG 1999b).

Cave Creek

Cave Creek is tributary to Tomki Creek and consists of about 4.4 stream miles. It flows north, entering Tomki Creek about 6.5 miles upstream from the Eel River confluence.

A 1958 field note documents an observation of *O. mykiss* in Cave Creek. "Steelhead or trout" fingerlings were observed in pools near a bridge on Redwood Valley Road (Anonymous 1958).

Staff from DFG surveyed Cave Creek in 1964 and observed juvenile and YOY *O. mykiss*. According to the survey report "steelhead and/or rainbow trout" spawn in this stream in the spring, while rearing habitat was noted as limited by low flows in the late spring and summer (DFG 1964e).

Juvenile steelhead were observed during a 1972 survey of Cave Creek, and the creek was said to contain 2.5 miles of potential spawning and rearing habitat. Stream flows were intermittent during the survey, which took place during August (DFG 1972r).

Staff from DFG conducted a stream inventory of Cave Creek in 1997. Juvenile and YOY steelhead were collected at electrofishing sites within the lower 2.4 stream miles (DFG 1997g). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment.

Cave Creek tributary

An unnamed tributary to Cave Creek consists of about 0.7 stream miles. It flows east, entering Cave Creek about 1.3 miles upstream from the Tomki Creek confluence.

Staff from DFG conducted a stream inventory of this tributary to Cave Creek in 1997. Electrofishing was conducted about 55 feet upstream from the mouth YOY, where steelhead were collected. A log debris barrier was observed about 0.1 miles upstream from the mouth of the creek (DFG 1997h). The inventory report recommended controlling sediment input into the creek and evaluating fish passage at a culvert located about 55 feet upstream from the mouth.

Little Cave Creek

Little Cave Creek is tributary to Cave Creek and consists of about 1.8 stream miles. It flows east, entering Cave Creek about 2.4 miles upstream from the Tomki Creek confluence.

Staff from DFG conducted a stream inventory of Little Cave Creek in 1997. Juvenile and YOY steelhead were collected at an electrofishing site located about 500 feet upstream from the mouth of the creek. An area of steep gradient about 0.6 miles upstream from the mouth was identified as the upstream limit for anadromous fish (DFG 1997i). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment related to the road system.

Little Creek

Little Creek is tributary to Tomki Creek and consists of about 1.9 stream miles. It flows east, entering Tomki Creek about 7.6 miles upstream from the Eel River confluence.

Staff from DFG conducted a stream inventory of Little Creek in 1997. One juvenile steelhead was found during electrofishing about 0.2 miles upstream from the Tomki Creek confluence. The survey report noted possible fish passage problems at a concrete fish ladder and a culvert, both located within 400 feet of the mouth of the creek (DFG 1997j). The report recommended planting riparian vegetation and controlling sediment input into the creek, including sediment sources related to the road system.

Rocktree Creek

Rocktree Creek is tributary to Tomki Creek and consists of about 4.6 stream miles. It flows east, entering Tomki Creek about 9.3 miles upstream from the Eel River confluence. Some stream survey reports describe Rocktree Creek as a tributary to String Creek.

Steelhead were rescued from Rocktree Creek in 1962. A total 1,216 steelhead were collected in the creek (DFG 1962b). About 1.5 miles of Rocktree Creek were surveyed during a 1967 stream survey. Juvenile *O. mykiss* ranging from two to five inches in length were observed in intermittent pools in the headwaters. The rest of the stream and streams nearby were dry during the survey (DFG 1964f).

Staff from DFG surveyed Rocktree Creek in 1972. The survey took place in August, when both flow and fish were absent. The survey report stated, "The muddy nature of Rocktree Creek, combined with low flows, severely restricts SH potential for this stream" (DFG 1972s).

Digger Creek

Digger Creek is tributary to Rocktree Creek and consists of about 1.2 stream miles. It flows northeasterly, entering Rocktree Creek about 1.4 miles upstream from the Tomki Creek confluence.

Staff from BLM surveyed a section of Digger Creek in 1974 and did not observe fish. It was described as "a small stream and flows are not substantial enough to support fish life." Water quality also was noted as a potential problem (BLM 1974b).

String Creek

String Creek is tributary to Rocktree Creek and consists of about 5.1 stream miles. It flows southeasterly, entering Rocktree Creek about 1.9 miles upstream from the Tomki Creek confluence. Some stream survey reports describe String Creek as a tributary to Tomki Creek and Rocktree Creek as a tributary to String Creek.

Steelhead were rescued from String Creek in 1939, 1940, and 1951. A total of 4,750 steelhead were rescued in 1939, 5,091 were rescued in 1940, and 3,316 were rescued in 1951 (DFG 1940, DFG 1941, DFG 1952).

In 1964 staff from DFG surveyed String Creek and did not observe fish. Most of the stream was dry during the survey but surveyors wrote that it "appears to have good to excellent spawning potential throughout most of its length" (DFG 1964f).

During a 1972 survey staff from DFG observed YOY *O. mykiss* in String Creek. Local residents reported that the creek is "heavily used by SH in years of adequate flow" (DFG 1972t).

Electrofishing was conducted in a number of Eel River tributaries in 1981 as part of PG&E's Potter Valley Project Fisheries Study. String Creek was sampled in June 1981, when 104 steelhead were collected (PGE 1981).

Staff from DFG conducted a stream inventory of String Creek in 1995. The report stated, "fish presence was observed throughout the survey from the streambank." The species of fish observed is not noted, but is assumed to include *O. mykiss* (DFG 1995d). The inventory report notes that water temperature may limit the fishery and recommends increasing riparian vegetation, along with treating sources of fine sediment.

Tartar Creek

Tartar Creek is tributary to String Creek and consists of about 2.2 stream miles. It flows northeasterly, entering String Creek about 1.3 miles upstream from the Rocktree Creek confluence.

About 0.75 miles of Tartar Creek were surveyed during a 1967 stream survey. Juvenile *O. mykiss* ranging from two to five inches in length were observed in intermittent pools in the headwaters of Tartar Creek. The rest of the stream and surrounding streams were dry during the survey (DFG 1964f).

Wheelbarrow Creek

Wheelbarrow Creek is tributary to Tomki Creek and consists of about three miles of intermittent stream. It flows northeasterly, entering Tomki Creek about 16.5 miles upstream from the Eel River confluence.

During a 1964 survey *O. mykiss* fingerlings were observed stranded in pools in the middle section of Wheelbarrow Creek. The creek was said to contain a "spawning and partial nursery area for steelhead." According to the report, the creek "goes dry throughout practically its entire length in the late spring and summer months" (DFG 1964g).

Staff from DFG conducted a stream inventory of Wheelbarrow Creek in 1997. Young-of-year *O. mykiss* were found at an electrofishing site located about 0.5 miles upstream from the mouth of the creek. A small dam was present about 2.2 miles upstream from the creek mouth and salmonids were not observed in the reservoir or further upstream (DFG 1997k). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy.

Bean Creek

Bean Creek is tributary to Tomki Creek and consists of about 1.6 miles of intermittent stream. It flows east, entering Tomki Creek about 17.4 miles upstream from the Eel River confluence.

Staff from DFG conducted a stream inventory of Bean Creek in 1997. Electrofishing yielded one YOY *O. mykiss* and one age 1+ individual at a site less than 0.2 miles from the creek mouth. The survey was stopped at about stream mile 0.3 due to bank slides

that clogged the channel and created a passage barrier (DFG 1997l). The inventory report notes that water temperatures "are near the threshold stress level for juvenile salmonids" and recommends increasing riparian vegetation.

Laurel Creek

Laurel Creek is tributary to Tomki Creek and consists of about 1.8 stream miles. It flows north, entering Tomki Creek about 20.6 miles upstream from the Eel River confluence.

Staff from DFG conducted a stream inventory of Laurel Creek in 1997. Ten YOY *O. mykiss* were collected at an electrofishing site located about 25 feet upstream of the Tomki Creek confluence. A concrete culvert located about 1.2 miles upstream from the creek mouth was identified as a fish passage barrier (DFG 1997m). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy.

Whitney Creek

Whitney Creek is tributary to the Eel River and consists of about 2.5 stream miles. It flows southwesterly, entering the Eel River at about stream mile 154.

Staff from DFG inspected Whitney Creek in 1966 in response to reports of the stream drying up due to a diversion. At the time, erosion damage was observed and attributed to floods in 1964, and "good" spawning areas were present but "infrequent." Young-of-year and yearling steelhead were observed in the creek, as well as one 27-inch adult steelhead that was seen about 1.5 miles upstream from the mouth (DFG 1966).

In 1974 staff from BLM observed rainbow trout in a section of Whitney Creek immediately upstream from the water diversion cited above. The section of the creek about 0.5 miles downstream from the confluence of the creek forks was described as "good rainbow trout habitat." The diversion was said to capture the creek's total flow for transfer to a pond on private land (BLM 1974c).

Staff from USFS surveyed Whitney Creek in 1980 and wrote, "Very few fish were observed during the survey, although the habitat is capable of sustaining large numbers." The lower one mile of the stream was privately owned and water diversions in this section were again found to divert the stream's entire summer baseflow. Upstream of the privately owned section, anadromous fish were said to have access to 0.25 miles of creek downstream from a 10-foot waterfall (USFS 1980a).

Hale Creek

Hale Creek is tributary to the Eel River and consists of about 1.5 stream miles. It flows east, entering the Eel River at about stream mile 155.

Staff from BLM surveyed Hale Creek in 1974 and did not observe fish. The stream was described as a "small spawning area" and spawning gravel was noted in the lower section. The upper section of the stream was believed to offer little potential fish habitat (BLM 1974d).

No fish were observed during a 1979 stream survey of Hale Creek. However, local residents reported seeing steelhead earlier in the year. The survey report states that steelhead and Chinook salmon "were once abundant, and spawned here." Poaching may have limited fish populations in this creek and surveyors wrote, "As long as there is sufficient water and fish are protected from excessive poaching, the population should recover" (Clark 1979a).

Mill Creek

Mill Creek is tributary to the Eel River and consists of about 3.6 stream miles. It flows southwesterly, entering the Eel River via Van Arsdale Reservoir at about stream mile 157.

Staff from DFG surveyed the lower three miles of Mill Creek in 1959 and described it as "a good spawning tributary for steelhead migrating up the Eel River." Steelhead from 1.5 to six inches in length were observed (DFG 1959a).

Mill Creek is mentioned in a 1969 report addressing fish resources of the upper Eel River in relation to the Potter Valley Project. In this report Mill Creek is described as one of the most important Eel River tributaries for steelhead in the section between Cape Horn and Scott dams (Anonymous 1969).

Staff from BLM surveyed Mill Creek in 1974 and observed rainbow trout ranging from 1 to 12 inches in length. The stream was described as "an excellent example of an undisturbed spawning tributary." Stream temperatures were considered ideal for most of the year and food sources were abundant. A resident rainbow trout population was noted upstream of impassable 30-foot falls, the exact location of which was not provided (BLM 1974e).

Staff from DFG surveyed the lower 0.25 miles of Mill Creek in 1995 and observed three YOY *O. mykiss*. The lower 600 feet of the stream was dry and surveyors noted "excessive" water diversions in the short section surveyed (DFG 1995e).

Rocky Creek

Rocky Creek is tributary to the Eel River and consists of about 0.7 stream miles. It flows south, entering the Eel River at the upstream end of Van Arsdale Reservoir, at about stream mile 158.

Staff from DFG surveyed Rocky Creek in 1938 and observed YOY steelhead about 0.5 miles upstream from the creek mouth. Spawning areas were described as "fair," pools and shelter were "good," and fish food items were "abundant." (DFG 1938i).

In 1980 staff from DFG surveyed Rocky Creek and found it to be completely dry. No spawning areas were observed, the culvert under Eel River Road was deemed an impassable barrier, and the stream was said to have "little fish value" beyond contributing winter flows to the Eel River (DFG 1980b).

Trout Creek

Trout Creek is tributary to the Eel River and consists of about 1.9 stream miles. It flows south, entering the Eel River about 3.8 miles upstream from the Van Arsdale Reservoir.

Staff from DFG surveyed Trout Creek in 1938 and did not observe fish. The stream was surveyed about 0.5 miles upstream from its mouth and its condition was described as "average," with "good" spawning areas. The survey report notes "impassable cascades" (DFG 1938j).

Trout Creek is mentioned in a 1969 report addressing fish resources of the upper Eel River in relation to the Potter Valley Project. In this report Trout Creek is described as one of the most important Eel River tributaries for steelhead in the section between Cape Horn/Van Arsdale and Scott Dams. It was said to contain "fair spawning areas" (Anonymous 1969).

Staff from DFG surveyed Trout Creek in 1979 and did not observe fish but noted, "game warden has seen steelhead in Trout Creek." Some erosion was seen and logging debris in the stream was noted to make fish passage difficult (Clark 1979b).

Young-of-year *O. mykiss* were observed during a 1980 survey of Trout Creek and the stream was described as "suitable for steelhead." Lack of spawning habitat was noted as a limiting factor and a falls at the mouth of the creek was thought to be passable only at high flows (DFG 1980c).

In 1995 staff from DFG observed two YOY *O. mykiss* in the lower 0.25 miles of Trout Creek. This section was said to provide "some spawning and rearing area for steelhead trout" (DFG 1995f).

Bucknell Creek

Bucknell Creek is tributary to the Eel River and consists of about 8.6 stream miles. It flows northwesterly, entering the Eel River about 4.5 miles upstream from Van Arsdale Reservoir.

Staff from DFG surveyed the lower four miles of Bucknell Creek in 1959 and observed "very good" spawning areas. Steelhead from 1.5 to five inches in length were present but not abundant, and the stream was described as "suitable for spawning steelhead" (DFG 1959b).

Bucknell Creek is mentioned in a 1969 report addressing fish resources of the upper Eel River in relation to the Potter Valley Project. In this report Bucknell Creek is described as one of the most important Eel River tributaries for steelhead in the section between Cape Horn and Scott dams. It is also said to have "excellent spawning areas" (Anonymous 1969).
In 1975, DFG staff stated, "Approximately 3.5 miles of Bucknell Creek is available to adult steelhead" (DFG 1975b). Juvenile *O. mykiss* ranging from one to five inches in length were observed during a 1980 DFG stream survey of Bucknell Creek. Surveyors described the creek as "an important steelhead spawning and rearing stream" and found "excellent cover, deep pools, and good summer flows" (DFG 1980d).

Bucknell Creek was sampled regularly over a number of years as part of PG&E's Potter Valley Project Monitoring Program. During these studies significant numbers of steelhead were collected in the creek every year from 1981 through 1995 (PGE 1998).

In a 1990 stream survey report Bucknell Creek is described as containing "some of the more important spawning and rearing areas for salmonids in this section of the upper Eel River." Juvenile and YOY steelhead were abundant and experienced "good" natural propagation. A log debris barrier in the lower section of the creek was modified in 1990, providing fish access to more than five miles of the creek (DFG 1990).

During a 1995 survey of Bucknell Creek steelhead densities were "low," and the creek was described as "in relatively good condition" although "spawning value was low." Rehabilitation efforts were recommended and included the removal of debris barriers and the construction of a jump pool at the base of a waterfall barrier (DFG 1995g).

In a 1995 Watershed Analysis Report for the Upper Main Eel River Watershed, Bucknell Creek is described as one of two creeks that are the "largest anadromous tributaries in this watershed" (USFS 1995, p. 19). These creeks are said to be "probably the cornerstone to the limited natural production of steelhead in the watershed" (USFS 1995, p. 25). Barriers and low summer flows are listed as limiting factors in Bucknell Creek and the report recommended controlling erosion, particularly from roads, and increasing riparian vegetation in the watershed.

Bucknell Creek tributary

An unnamed tributary to Bucknell Creek consists of about 2.5 stream miles. It flows west then north, entering Bucknell Creek about 5.4 miles upstream from the Eel River confluence.

Staff from DFG surveyed one mile of this tributary in 1995 and observed juvenile steelhead throughout the section at a density of about 5 fish per 100 feet of stream. The creek provided "spawning and rearing habitat for a limited number of salmonids" due to a lack of spawning gravel (DFG 1995h).

Alder Creek

Alder Creek is tributary to the Eel River and consists of about 1.7 stream miles. It flows south, entering the Eel River about 5.3 miles upstream from Van Arsdale Reservoir.

In 1995 staff from DFG surveyed the lower 0.2 miles of Alder Creek from the mouth to the USFS road crossing. A low density of juvenile and YOY steelhead, ranging from three to seven inches in length, was observed in this section. The creek was described as a "small, steep gradient stream." The quality of habitat upstream of the road crossing was unknown and a more extensive survey was recommended (DFG 1995i).

Dashiell Creek

Dashiell Creek is tributary to the Eel River and consists of about 2.2 stream miles. It flows southeasterly, entering the Eel River about 6.2 miles upstream from Van Arsdale Reservoir.

A field note documents 1956 observations of Dashiell Creek made at the Lake Pillsbury Road crossing. At this location the stream was thought to be too steep for spawning steelhead to ascend and it was reported that no rainbow trout or steelhead used the stream (Randolph 1956).

Dashiell Creek is mentioned in a 1969 report addressing fish resources of the upper Eel River in relation to the Potter Valley Project. In this report Dashiell Creek is described as one of the most important Eel River tributaries for steelhead in the section between Cape Horn and Scott dams (Anonymous 1969).

In 1973, USFS staff walked two miles of Dashiell Creek. A barrier was noted at about stream mile 1.5, but YOY "salmonids" were observed upstream at densities similar to those downstream (USFS 1973b).

In 1995, staff from DFG surveyed the lower 0.3 miles of Dashiell Creek, from the mouth upstream to a road crossing. A log and boulder barrier was found about halfway between the mouth and the road. Two YOY *O. mykiss* were observed upstream of the barrier and three juveniles were seen downstream. The creek was described as a "small, steep gradient stream" that "supports a very small population of steelhead trout in the lowest most section" (DFG 1995j).

Benmore Creek

Benmore Creek is tributary to the Eel River and consists of about 3.2 stream miles. It flows north, entering the Eel River about 2.2 miles downstream from Scott Dam.

In 1945 staff from DFG studied the effects of different water flows from Lake Pillsbury in order to determine the impacts on downstream fishlife. In a report on this study, Benmore Creek is described as one of the two "most important" tributary streams for steelhead spawning in the section of the Eel River between Cape Horn and Scott dams (DFG 1945).

A letter written by a DFG biologist summarizes the results of a 1970 survey of Benmore Creek. It states that the creek provided three miles of spawning and rearing habitat for steelhead and the density of fish observed indicated a population of about 1,267 juvenile steelhead in the stream (DFG 1975b).

In 1975, DFG staff stated, "[Benmore Creek] provides three miles of steelhead spawning and nursery area" (DFG 1975b). Steelhead YOY ranging from one to three inches in length were observed during a 1978 stream survey conducted by staff from USFS. Habitat conditions in the stream were described as "good" (USFS 1978a).

In 1995 staff from DFG surveyed Benmore Creek and observed *O. mykiss* "distributed sparsely for two miles from the mouth." The creek had "a high gradient and low quantity of quality spawning gravel" but it "supports a small population of rainbow trout or steelhead" (DFG 1995k).

Benmore Creek is mentioned in a 1995 Watershed Analysis Report for the Upper Main Eel River Watershed. The report states that natural barriers make the majority of this creek inaccessible to anadromous fish, but does not recommend barrier removal. A map indicates the presence of resident fish in a large portion of Benmore Creek (USFS 1995).

Staff from DFG conducted a stream inventory of Benmore Creek in 1998. Juvenile and YOY steelhead were found at an electrofishing site located about 0.1 miles upstream from the creek mouth and "salmonids" were observed at several other locations but not identified. Stream habitat was affected by limited spawning gravels, log debris accumulations, cattle trampling, and high gradients (CCC 1998a).

In 2006, USFS staff observed "only a few 1+ steelhead," but "abundant" YOY in lower Benmore Creek. Field notes include a report by DFG staff that spawning salmon were seen "in lower Benmore in certain years" (USFS 2006a).

Soda Creek

Soda Creek is tributary to the Eel River and consists of about three stream miles. It is formed by the confluence of Welch and Panther creeks and flows south, entering the Eel River about 1.1 miles downstream from Scott Dam. The drainage area is about 12.7 square miles.

Steelhead were rescued from Soda Creek during several years between 1939 and 1962. The number of steelhead collected each year ranged from 24,139 to 225,575 (DFG 1940, DFG 1954, DFG 1962b).

Soda Creek is mentioned in a 1969 report addressing fish resources of the upper Eel River in relation to the Potter Valley Project. In this report Soda Creek is described as one of the most important Eel River tributaries for steelhead in the section between Cape Horn and Scott dams. It was said to contain "excellent spawning areas" but "negligible" nursery habitat (Anonymous 1969). A 1970 DFG survey of Soda Creek found juvenile *O. mykiss* "at an average density of about 30 per 100 ft. of stream." The survey report notes mortality of "great numbers" of juveniles when the creek dries in the summer and recommends protesting summer water diversion (DFG 1970).

A 1973 USFS memo indicates that "the lower three miles or more [of Soda Creek] dry up during the summer months." Survey results found three to five trout in 100 feet of stream in the lower and middle survey sections. The memo adds, "Adult salmonids may be prevented from returning to this stream because of fish stripping procedures at Van Arsdale Dam" (USFS 1973c). Staff from USFS surveyed Soda and Panther creeks in 1979. *Oncorhynchus mykiss* was observed throughout the watershed which was said to have an established run of steelhead. Fish habitat was less suitable in Soda Creek than in other parts of the watershed due to low water levels and warm water temperatures (USFS 1980b).

Steelhead were "abundant" during a 1995 survey of Soda Creek and ranged from three to ten inches in length. Factors limiting the fish populations included low stream flows, high water temperatures, poor riparian vegetation, and the presence of pikeminnow (DFG 1995l).

In a 1995 Watershed Analysis Report for the Upper Main Eel River Watershed, Soda Creek is described as one of two creeks that are the "largest anadromous tributaries in this watershed (USFS 1995, p. 19). These creeks are said to be "probably the cornerstone to the limited natural production of steelhead in the watershed" (USFS 1995, p. 25). The report notes that the creek has been damaged by past flood events which have created a braided channel in the lower creek and a barrier of gravel deposits. Riparian planting and possible channel reconstruction were recommended to improve habitat in the watershed.

Field notes by USFS staff in 1996 for the "channel confinement Project site" of Soda Creek recommend, "Make an effort to get survival on riparian vegetation, and add more vegetation." The notes indicate that 12 vortex weirs were located in a 300 yard reach (USFS 1996).

Staff from DFG conducted a stream inventory of Soda Creek in 1998. During the survey YOY steelhead were found at an electrofishing site located about 1.6 miles upstream from the creek mouth (CCC 1998b). The inventory report recommended planting riparian vegetation, treating sources of fine sediment, and excluding cattle from the creek to avoid trampling and effects from defecation.

Soda Creek tributary

An unnamed Soda Creek tributary consists of about 1.1 stream miles. The creek flows east, entering Soda Creek near the Soda Creek Station.

Staff from USFS surveyed about 0.75 miles of the Soda Creek tributary in 1979. The report cites "minimal" trout habitat but noted a "population of juvenile rainbow trout/steelhead" that indicated "spawning use during higher flows" (USFS 1980c).

Panther Creek

Panther Creek is tributary to Soda Creek and consists of about 4.9 stream miles. The confluence of Panther and Welch creeks forms Soda Creek, about three miles upstream from the Eel River confluence.

Staff from USFS surveyed Soda and Panther Creeks in 1979. *Oncorhynchus mykiss* was observed throughout the watershed which was said to have an established run of steelhead. Most of the suitable habitat was present in the Panther Creek section of the watershed (USFS 1980b).

In 1995 staff from DFG surveyed Panther Creek and found steelhead to be "numerous" throughout the creek. Fish ranged from 2.5 to eight inches in length and their density was estimated at about 50 fish per 100 feet of stream. No fish were seen upstream of two barriers located about 2.7 miles upstream from the creek mouth. The creek contained "excellent spawning area for steelhead trout" (DFG 1995m).

Staff from DFG conducted a stream inventory of Panther Creek in 1998. Electrofishing was conducted at two sites, both within 0.1 miles of the creek mouth, and YOY and juvenile steelhead were found (Retherford 1998). The inventory report recommended increasing canopy and treating sources of fine sediment, including sediment sources related to the road system.

Cedar Creek

Cedar Creek is tributary to Panther Creek and consists of about two stream miles. It flows northeasterly, entering Panther Creek about 3.8 miles upstream from the Soda Creek confluence.
Staff from USFS surveyed Cedar Creek in 1977 and did not observe fish in the creek. The lack of fish was attributed to a drought and fish reportedly had been present in the stream until the summer of 1977. The stream was said to contain "excellent trout habitat" and "is expected to support fish through all but very dry years." Stocking was recommended to reestablish a fish population after the drought ended (USFS 1977a).

Welch Creek

Welch Creek is tributary to Soda Creek and consists of about 3.3 stream miles. It flows southeasterly to its confluence with Panther Creek, forming Soda Creek about three miles upstream from the Eel River confluence.

Staff from USFS surveyed the Soda Creek watershed in 1979. Welch Creek was not surveyed, but surveyors noted, "Panther + Welch Cr. have established runs of SH trout" (USFS 1980b). A 1980 USFS memo indicates that 1.2 miles of the creek was

surveyed and that "only 100 yards of stream at the mouth was marginal trout habitat." Only juvenile trout were observed (USFS 1980d).

Staff from DFG surveyed Welch Creek in 1993 and observed juvenile *O. mykiss*, mostly in the lower 0.25 miles of the creek. Surveyors reported it was likely that the stream dried up during the summer and wrote, "fish are found only a very short distance from the mouth and the overall gradient of the stream most likely precludes it from every having a sustainable population in the upper reaches" (DFG 1995n).

Welch Creek is mentioned in a 1995 Watershed Analysis Report for the Upper Main Eel River Watershed. The report states that natural barriers make the majority of this creek inaccessible to anadromous fish, but does not recommend barrier removal (USFS 1995).

Staff from DFG conducted a stream inventory of Welch Creek in 1998. Electrofishing was conducted about 0.1 miles upstream from the creek mouth and eight YOY and two age 1+ *O. mykiss* were found. The survey ended less than 0.3 miles upstream from the mouth where the stream channel became steep and dry (CCC 1998c). The inventory report recommended increasing canopy, treating sources of fine sediment, and excluding cattle from the creek to avoid trampling and effects from defecation.

Rice Fork

The Rice Fork is tributary to the Eel River and consists of about 18.8 stream miles. It flows northwesterly and enters Lake Pillsbury immediately upstream from Scott Dam.

Staff from DFG surveyed Rice Fork in 1938 and observed rainbow trout ranging from 1.25 to 6.0 inches in length in the lower creek. "Excellent" spawning areas and "good" pools and shelter were also noted (DFG 1938k).

Rice Fork was inspected during a 1961 survey of Eel River streams upstream of Scott Dam. In a report on this survey, John Day of DFG writes that Rice Fork "in all probability is the most important spawning tributary to Lake Pillsbury." Large numbers of YOY rainbow trout were observed in the creek, which was "up to carrying capacity." The report also stated that large trout were observed spawning in Rice Fork, and the four mile section from Crab Tree Springs to Bucknell Flats was particularly important (DFG 1961).
Staff from DFG completed a Fish Population Survey of the Rice Fork in 1988. In a description of the watershed's history, the author reports that steelhead used the Rice Fork for spawning and rearing prior to construction of Scott Dam in 1922. The sediment load had reportedly increased in the Rice Fork due to logging and road construction, and pikeminnow was called an issue in the creek. Pikeminnow and Sacramento sucker were the only fish collected during sampling in the Rice Fork in 1988 (DFG 1988b).

In 1993 staff from DFG surveyed the Rice Fork and found that rainbow trout were "sparse" and limited to the headwaters. Pikeminnow was "abundant," but only found downstream from the confluence with French Creek. Habitat was said to be affected by low summer flows and cattle presence, but good spawning gravel was present throughout. The survey report stated, "Rice Fork would be an excellent salmonid stream if the squawfish population were extirpated" (DFG 1993a).

Packsaddle Creek

Packsaddle Creek is tributary to Rice Fork. It consists of about 3.1 stream miles and flows northeasterly, entering the Rice Fork near Swallow Rock. At the maximum pool of Lake Pillsbury, the creek mouth is flooded.

During a 1980 survey of Packsaddle Creek, staff from DFG observed rainbow trout downstream of a rock barrier located 0.8 miles above the mouth (Yates and Swirhun 1980).

Staff from DFG surveyed Packsaddle Creek for fish species in 1993 and observed only pikeminnow. The creek contained "little to no habitat for salmonid fishes" due to numerous barriers and intermittent flows (DFG 1993b).

Willow Creek

Willow Creek is tributary to Rice Fork and consists of about five stream miles. It flows northeasterly, entering the Rice Fork about 1.2 miles upstream from the maximum pool extent of Lake Pillsbury.

During a 1993 survey of Willow Creek, staff from DFG observed rainbow trout in the lower half of the creek and this section supported a "self-sustaining population." The upper section of the stream was intermittent and did not support fish. The stream was called valuable as a source of cool water to the Rice Fork (DFG 1993c).

Deer Creek

Deer Creek is tributary to Rice Fork and consists of about 6.5 stream miles. It flows west, entering the Rice Fork about 1.6 miles upstream from the maximum pool extent of Lake Pillsbury.

Staff from DFG surveyed Deer Creek in 1938 and noted the presence of "occasional" rainbow trout ranging from two to three inches in length. The survey report notes "excellent" spawning areas and "good" pools and shelter in the creek (DFG 1938l).

Deer Creek was inspected during a 1961 survey of Eel River tributaries upstream of Scott Dam. A table included with the survey report indicates that rainbow trout were observed in Deer Creek about 650 feet upstream from a road crossing. It states, "This section of stream is of no importance as a spawning area" (DFG 1961).
In 1993, staff from DFG surveyed Deer Creek and observed rainbow trout ranging from three to six inches in length. The creek contained a barrier consisting of falls immediately upstream from its mouth, but it provided "spawning and rearing for a small population of resident trout" (DFG 1993d).

Rice Creek

Rice Creek is tributary to Rice Fork and consists of about 8.1 stream miles. It flows southwesterly, entering the Rice Fork about 4.3 miles upstream from the maximum pool extent of Lake Pillsbury.

Staff from DFG surveyed Rice Creek in 1938 and observed rainbow trout ranging from 1.5 to 5.0 inches in length. The creek was said to contain "excellent" spawning areas and "good" pools and shelter (DFG 1938m).

Rice Creek was inspected during a 1961 survey of Eel River tributaries upstream of Scott Dam. Rainbow trout were observed in the creek about 0.5 miles upstream from a road crossing. A report of the survey states, "At one time Rice Creek was one of the best spawning areas. Logging in recent years has had a great effect on this stream as can be evident by the large amount of silt in the stream bottom" (DFG 1961).

Staff from DFG observed rainbow trout in Rice Creek from its mouth to the Barker Creek confluence during a 1993 stream survey. A number of impassable boulder barriers were present upstream of Mauser Glade. Surveyors noted that the fish population had not recovered from earlier logging and siltation. Relatively few trout were observed despite the presence of good habitat throughout the stream (DFG 1993e).

Barker Creek

Barker Creek is tributary to Rice Creek and consists of about 1.8 stream miles. It flows southwesterly, entering Rice Creek about 5.8 miles upstream from Rice Fork.

Staff from DFG surveyed Barker Creek in 1993 and observed a "low population of rainbow trout." No fish were found upstream of a boulder falls located near the boundary of the Snow Mountain Wilderness Area and trout habitat was limited by a high gradient and lack of spawning gravels (DFG 1993f).

Bevans Creek

Bevans Creek is tributary to the Rice Fork and consists of about 3.5 stream miles. It flows northeasterly, entering the Rice Fork about 5.5 miles upstream from Lake Pillsbury.

Staff from USFS surveyed Bevans Creek in 1978. The survey report does not indicate that fish were present, although the fishery rating and the habitat were deemed "fair" (USFS 1978b).

Staff from DFG surveyed Bevans Creek in 1993 and found the stream dry during the survey, which took place in September. No fish were observed, but the survey report stated, "the stream may be of limited value as spawning habitat for trout during high flow years." A sandbar at the mouth of the creek may have prevented fish access (DFG 1993g).

Bear Creek

Bear Creek is tributary to the Rice Fork and consists of about 9.1 stream miles. It flows southwesterly, entering the Rice Fork about 7.2 miles upstream from the maximum pool extent of Lake Pillsbury.

Bear Creek was inspected during a 1961 survey of Eel River streams upstream of Scott Dam, and rainbow trout were observed in the creek about 650 feet upstream from a road crossing. The creek was described as "a good spawning stream" that "supports heavy fish pressure during the summer months." Planting of catchable trout was recommended in Bear Creek for the following year (DFG 1961).

Staff from DFG completed a Fish Population Survey of Bear Creek in 1988. In a description of the watershed's history, the author reports that steelhead used Bear Creek for spawning and rearing prior to construction of Scott Dam in 1922. Small logging

operations took place in the watershed until 1985 and restoration activities were taking place after a fire burned a large portion of the watershed in 1988. During the 1988 sampling rainbow trout and pikeminnow were collected, but pikeminnow abundance was considered minimal in this stream compared with the Rice Fork (DFG 1988c).

During a 1993 survey of Bear Creek staff from DFG observed both wild resident rainbow trout and catchable trout that were planted annually in the creek. The creek contained good trout habitat, including spawning areas, good summer streamflows, and cool water. However, the wild trout population was threatened by the presence of squawfish and possible predation of the YOY by the planted catchable trout (DFG 1993h).

Blue Slides Creek

Blue Slides Creek is tributary to Bear Creek and consists of about 4.2 stream miles. It flows west, entering Bear Creek about 1.4 miles upstream from Rice Fork.

During a 1993 survey staff from DFG observed a "thriving population of native rainbow trout" in Blue Slides Creek. Good spawning and rearing habitat were observed, but some sections of the creek were dry and it was described as a "relatively small stream" (DFG 1993i).

Parramore Creek

Parramore Creek is tributary to Rice Fork and consists of about 4.6 stream miles. It flows east, entering Rice Fork about 8.1 miles upstream from the maximum pool extent of Lake Pillsbury.

During a 1993 stream survey rainbow trout were observed in a small section of Parramore Creek upstream of Parramore Springs and downstream of a set of boulder barriers located less than one mile upstream from the springs. Pikeminnow occupied the area downstream of Parramore Springs. Stream flows were low, spawning areas were poor, and the creek was described as having "little value for rainbow trout" (DFG 1993j).

French Creek

French Creek is tributary to Rice Fork and consists of about 3.9 stream miles. It flows north, entering Rice Fork about 10.9 miles upstream from the maximum pool extent of Lake Pillsbury.

Staff from USFS surveyed French Creek in 1980 and observed "sparse" rainbow trout between two and six inches in length. Fish were noted in pools between the mouth and the Rock Creek confluence, and most segments did not have continuous flow (USFS 1978c).

French Creek was surveyed in 1993 and found to support a population of rainbow trout. Surveyors noted, "Much of the upstream area could be more valuable to the fishery if a better shade canopy was developed and there was less cattle use" (DFG 1993k).

In 2006, USFS staff observed only pikeminnow in the creek, upstream from the Rock Creek confluence. The field notes state, "Apparently the habitat, probably especially summer water temperatures, are too limiting for resident trout" (USFS 2006b).

Rock Creek

Rock Creek is tributary to French Creek and consists of about 3.6 stream miles. It flows northeasterly, entering French Creek about 0.4 miles upstream from Rice Fork.

Staff from USFS surveyed Rock Creek in 1978 and observed "few" rainbow trout representing one year class. Habitat was deemed "good" but productivity "low" (USFS 1978d).
In 1993 staff from DFG surveyed Rock Creek and observed a natural total passage barrier about 1.5 miles upstream from the mouth. Rainbow trout were present downstream of the barrier, and the fish numbered "more than would be expected for the size of the stream." Cattle grazing in the drainage was cited as likely impacting habitat quality (DFG 1993l).

Salt Creek

Salt Creek is tributary to the Rice Fork and consists of about 3.4 stream miles. It flows southwesterly, entering the Rice Fork about 11.9 miles upstream from the maximum pool extent of Lake Pillsbury.

Salt Creek was inspected during a 1961 survey of Eel River tributaries upstream of Scott Dam. Survey notes state that Salt Creek was barely flowing at its mouth during the survey and no fish were observed (DFG 1961).

In 1993 staff from DFG surveyed Salt Creek and described it as "one of the larger tributaries to the Rice Fork of the Eel River, providing year-round flows and habitat for Rainbow Trout." During the survey rainbow trout were observed up to a barrier in the headwaters. Logging activities were said to have created unstable hillsides in the upper reaches (DFG 1993m).

Salmon Creek

Salmon Creek historically was tributary to the Eel River and currently enters the system via Lake Pillsbury. It is formed by the confluence of Mill and Fuller creeks and consists of about 2.8 stream miles. It flows south through Gravelly Valley to enter Lake Pillsbury.
Staff from DFG surveyed Salmon Creek in 1938 and observed "steelhead" ranging from 1.5 to 4.0 inches in length approximately two miles upstream from the mouth. The survey report noted "extensive" natural propagation, "good" spawning areas, and "good" pools and shelter in the creek (DFG 1938n).

A 1941 letter, written by DFG fisheries biologist Leo Shapovalov, indicates that adult steelhead trapped at Cape Horn Dam were planted in Salmon Creek in March 1941. One of these fish, identified by tags, was caught in the lower Eel River near Fortuna in September 1941 and had reportedly migrated downstream from Salmon Creek (Shapovalov 1941).

Salmon Creek was inspected during a 1961 survey of Eel River tributaries upstream of Scott Dam. Regarding the rainbow trout population in Salmon Creek the report states, "This drainage appears to be at carrying capacity. It is a direct tributary to Lake Pillsbury and easily accessible for fish from the lake" (DFG 1961).

Staff from DFG surveyed Salmon Creek in 1993 and found that rainbow trout were "scarce." The creek was described as "a flat, wide, meandering stream with low cover and warm temperatures." These conditions fostered a large population of pikeminnow, which greatly outnumbered rainbow trout in the stream (DFG 1993n).

Mill Creek

Mill Creek is tributary to Salmon Creek and consists of about 6.1 stream miles. It flows southeasterly to its confluence with Fuller Creek, thus forming Salmon Creek about 2.8 miles upstream from the maximum pool extent of Lake Pillsbury. A diversion feeding the Lake Pillsbury Ranch Subdivision water system is located on Mill Creek.

Staff from USFS surveyed about two miles of Mill Creek in 1979. A subsequent memo states, "the total distance contained suitable trout habitat. A self-sustaining population of rainbow trout appears with abundant numbers, indicating the high quality of the existing fisheries" (USFS 1980e).

Rainbow trout were found throughout Mill Creek during a 1993 survey. The population was said to be limited by the presence of pikeminnow in the lower reaches, but about the upper sections surveyors noted, "Water temperatures, cover, and pool to riffle ration appeared excellent with good trout populations" (DFG 1993o).

Fuller Creek

Fuller Creek is tributary to Salmon Creek and consists of about 3.1 stream miles. It flows southeasterly to its confluence with Mill Creek, thus forming Salmon Creek about 2.8 miles upstream from the maximum pool extent of Lake Pillsbury.

Staff from DFG surveyed Fuller Creek in 1993 and observed rainbow trout downstream of a waterfall barrier located about 1.5 miles upstream from the Salmon Creek confluence. The creek was described as "a valuable resident trout stream and a contributor of water to Lake Pillsbury" (DFG 1993p).

Smokehouse Creek

Smokehouse Creek appears to have had confluence with Salmon Creek historically upstream from the Eel River confluence. Currently, it enters the Eel system via Lake Pillsbury. It consists of about 9.3 stream miles and flows south through Gravelly Valley to enter Lake Pillsbury.

Smokehouse Creek was inspected during a 1961 survey of Eel River tributaries upstream of Scott Dam. Notes indicate that the stream was intermittent, but "good spawning gravel" was present and it "appeared to be at carrying capacity." Many YOY rainbow trout and several larger fish were observed (DFG 1961).

Flows in Smokehouse Creek were intermittent in some areas during a 1993 survey. However, rainbow trout were present and surveyors wrote, "In general, Smokehouse Creek supports an excellent population of trout throughout all flowing areas, even above the sheer 40-50 foot waterfall." Pikeminnow was present in the lower creek, but was thought to be restricted to the lower gradient areas with warmer water (DFG 1993q).

Boardman Creek

Boardman Creek is tributary to Smokehouse Creek and consists of about 2.6 stream miles. It flows southwesterly and enters Smokehouse Creek about 4.2 miles upstream from the maximum pool extent of Lake Pillsbury.

Staff from USFS surveyed the lower one-half mile of Boardman Creek in 1980 and observed "suitable trout habitat" in only the lower one-fourth mile. In this area, a "self-sustaining population of rainbow trout" was noted (USFS 1980f).

Staff from DFG observed rainbow trout throughout the lower 1.5 miles of Boardman Creek during a 1993 survey. Surveyors noted, "the entire riparian corridor appeared to be rich in wildlife" but found that unstable soils had created siltation in many parts of the stream (DFG 1993r).

Squaw Valley Creek

Squaw Valley Creek appears to have had confluence with the Eel River in the vicinity of Graveyard Point historically. Currently, it is tributary to Lake Pillsbury and consists of about 3.3 stream miles flowing southwesterly to enter the lake near Lake Pillsbury Pines Resort.

Staff from DFG did not observe fish during a 1993 survey of Squaw Valley Creek and noted that the creek has "no fishery use." The survey report stated, "The year to year absence of fish was also confirmed by a property owner living in the upper reaches of the stream." The creek had several boulder barriers and limited spawning potential (DFG 1993s).

Horsepasture Gulch Creek

Horsepasture Gulch currently is tributary to Lake Pillsbury and consists of about 1.5 stream miles. It flows southwesterly to enter the lake northeast of Graveyard Point.

No fish were observed during a 1993 DFG survey of Horsepasture Gulch and no flow was present in the creek. A survey report stated, "Horse Pasture Gulch is a small intermittent drainage with no fish or other aquatic organisms." The creek was said to provide good winter stream flows into Lake Pillsbury (DFG 1993t).

Salt Spring Creek

Salt Spring Creek is tributary to the Eel River system via Lake Pillsbury. It consists of about 2.1 stream miles and flows southwesterly to enter the eastern arm of the lake.

Staff from DFG surveyed Salt Spring Creek in 1993 and did not observe fish. There was no stream flow at the time of the survey and a survey report described the creek as "a small seasonal drainage that provides winter flow to Lake Pillsbury and the Eel River" (DFG 1993u).

Bear Gulch Creek

Bear Gulch Creek is tributary to Lake Pillsbury and consists of about 9.3 stream miles. It flows west and enters the eastern arm of Lake Pillsbury.

No fish were observed during a 1993 DFG survey of Bear Gulch Creek. The creek was described as "aka relatively unimportant stream that contributes winter flow, but no summer flow to Lake Pillsbury" (DFG 1993v).

Thistle Glade Creek

Thistle Glade Creek is tributary to the Eel River and consists of about 5.8 stream miles. It flows west, entering the Eel River upstream of the maximum pool extent of Lake Pillsbury at about stream mile 173.3.

Thistle Glade Creek was inspected during a 1961 survey of Eel River tributaries upstream of Scott Dam. No fish were observed in the creek and it was included on a list of streams that "are of no importance as spawning areas" (DFG 1961).

During a 1993 survey of Thistle Glade Creek staff from DFG observed a "small population" of rainbow trout downstream of a boulder barrier located about 200 years upstream of the USFS road crossing. The creek appeared to contain excessive fine sediments and to lack food items for fish. However, "Water temperatures, stream cover and pool to riffle ratios were considered excellent for trout" (DFG 1993w).

Staff from DFG surveyed Thistle Glade Creek in 2000 and did not observe fish (Clemento 2000).

Hummingbird Creek

Hummingbird Creek is tributary to the Eel River and consists of about 3.2 stream miles. It flows west, entering the Eel River at about stream mile 174.8.

Staff from DFG surveyed Hummingbird Creek in 1938 and did not observe fish. The creek was said to be steep and "probably impassable to fish in lower region" (DFG 1938o).

Hummingbird Creek was inspected during a 1961 survey of Eel River streams upstream of Scott Dam. The creek was included on a list of streams in the area that "are of no importance as spawning areas" (DFG 1961).
Staff from DFG surveyed Hummingbird Creek in 1993 and did not observe fish. The creek exhibited year-round flows, but suffered from extensive bank erosion (DFG 1993x).

Staff from DFG surveyed Hummingbird Creek in 2000 and did not observe fish (Clemento 2000).

Berry Creek

Berry Creek is tributary to the Eel River and consists of about 1.5 stream miles. It flows northwesterly, entering the Eel River at about stream mile 176.

Staff from DFG surveyed Berry Creek in 1993 and did not observe fish. The survey report stated, "The stream had no fishery value, presumably due to the steep gradient and low flow" (DFG 1993y).

Staff from DFG surveyed Berry Creek in 2000 and did not observe fish (Clemento 2000).

Copper Butte Creek

Copper Butte Creek is tributary to the Eel River and consists of about 3.3 stream miles. It flows northwesterly, entering the Eel River at about stream mile 176.4.

Copper Butte Creek was inspected during a 1961 survey of Eel River tributaries upstream of Scott Dam. The creek was included on a list of streams in the area that "are of no importance as spawning areas" (DFG 1961).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* was observed in Copper Butte Creek (Brown 1991).

Staff from DFG surveyed Copper Butte Creek in 1993 and did not observe fish, but noted year-round flows, good water temperatures, cover, and pool to riffle ratios. The survey report stated, "The reason for lack of fish was not fully known, but may be related to the presence of a barrier near the mouth and/or the overall steep gradient." Surveyors recommended modification of a waterfall barrier near the stream mouth and a culvert under the USFS road. Stocking with local rainbow trout also was recommended (DFG 1993z).

Skeleton Creek

Skeleton Creek is tributary to the Eel River and consists of about 3.2 stream miles. It flows west, entering the Eel River at about stream mile 176.7.

Staff from DFG surveyed Skeleton Creek in 1938 and observed *O. mykiss* in the middle and upper sections of the creek. "Good" spawning areas and "good" pools and shelter were also noted (DFG 1938p). Stocking records indicate that Skeleton Creek was stocked with 8,000 *O. mykiss* in 1939 (DFG 1939c).

Skeleton Creek was inspected during a 1961 survey of Eel River tributaries upstream of Scott Dam. In a report of the survey, Skeleton Creek is described as "a good spawning stream" (DFG 1961). Staff from USFS surveyed Skeleton Creek in 1978 and observed "common" rainbow trout between one and ten inches in length. The fishery was rated "good" (USFS 1978e).

Staff from DFG surveyed Skeleton Creek in 1993 and noted that rainbow trout were relatively abundant in the middle and lower sections and scarce in the upper section of the stream. Trout were present upstream of several large waterfalls and it was thought that fish might have been planted there in the past (DFG 1993aa).

Cold Creek

Cold Creek is tributary to the Eel River and consists of about 5.7 stream miles. It flows west, entering the Eel River at about stream mile 181.2.

Cold Creek was inspected during a 1961 survey of Eel River tributaries upstream of Scott Dam. In a report of the survey, Cold Creek is described as "an excellent spawning stream" (DFG 1961).

Staff from USFS surveyed Cold Creek in 1978 and observed "common" rainbow trout to ten inches in length in the middle and lower reaches. The creek was deemed to have a "good" fishery and habitat with "medium" productivity (USFS 1978f).

Staff from DFG surveyed Cold Creek in 1993 and observed rainbow trout ranging from 1.5 to 8.0 inches in length. Fish were "very abundant" in the lower three miles of the stream. The creek was described as "a major tributary to the main stem Eel River" that "contains an excellent population of native Rainbow Trout, possibly the best in the watershed" (DFG 1993ab).

Rattlesnake Creek

Rattlesnake Creek is tributary to the Eel River and consists of about 5.7 stream miles. It flows southeasterly, entering the Eel River at about stream mile 183.5.

Ratttlesnake Creek was inspected during a 1961 survey of Eel River tributaries upstream of Scott Dam. Rainbow trout were observed in the creek and it was noted to have, "Good spawning areas adequate for small resident trout" (DFG 1961).

Staff from DFG surveyed Rattlesnake Creek in 1993 and rainbow trout were observed throughout the lower four miles of the creek. Surveyors wrote that the stream "has a good summer water flow and supports a good population of Rainbow trout." Erosion caused by past fires in the watershed was noted to be contributing sand and fine gravel to the streambed (DFG 1993ac).

Anderson Creek

Anderson Creek is tributary to the Eel River and consists of about eight stream miles. It flows west, entering the Eel River at about stream mile 184.9.

Anderson Creek was inspected during a 1961 survey of Eel River tributaries upstream of Scott Dam. A report on the survey described it as "an excellent spawning stream for Lake Pillsbury trout" and noted that "Trout have been observed spawning in this stream in April and early May" (DFG 1961).

Staff from USFS surveyed Anderson Creek in 1978. A survey noted that rainbow trout were "common" in the creek and described the stream's habitat condition as "good" (USFS 1978g).

In 1993 staff from DFG surveyed Anderson Creek and found that rainbow trout "appeared to be thriving in the long flat sections." Numerous boulder cascades formed barriers in the upper two miles of the creek and stream flow was intermittent in parts of the lower creek. In the stream survey report, surveyors described Anderson Creek as "one of the best trout fisheries in the upper Eel River watershed" (DFG 1993ad).

Staff from DFG surveyed Anderson Creek in 2000 and observed YOY and juvenile in "medium abundance." Stream flows were low during the survey and erosion was noted to be a problem (DFG 2000).

Horse Creek

Horse Creek is tributary to the Eel River and consists of about 3.3 stream miles. It flows east, entering the Eel River at about stream mile 186.1.

Horse Creek was inspected during a 1961 survey of Eel River tributaries upstream of Scott Dam. A report on the survey noted "Good spawning areas in lower portion of creek" but also described Horse Creek as "...quite small and insignificant." Rainbow trout ranging from two to eight inches in length were observed (DFG 1961).

Staff from USFS surveyed Horse Creek in 1977 and observed "few" rainbow trout between three and five inches in length. The survey report notes that the lower sections of the creek were dry in the summer, and that the fishery was "poor" and the habitat was "fair-poor" (USFS 1977b).

Staff from DFG surveyed Horse Creek in 1993 and rainbow trout were observed in the section downstream of barrier falls located about two miles from the creek mouth. Some sedimentation was noted in the creek, but surveyors said the creek was "a cool mountain stream with good canopy and appeared to be of value for wildlife as well as fish" (DFG 1993ae). Sampling in 1994 by USFS staff produced a population density estimate of 29 rainbow trout per hectare in Horse Creek (USFS 1994a). An associated reference states, "Almost entire creek has raw banks and frequent slides."

Corbin Creek

Corbin Creek is tributary to the Eel River and consists of about 14 stream miles. It flows west, entering the Eel River at about stream mile 186.4.

Corbin Creek was inspected during a 1961 survey of Eel River tributaries upstream of Scott Dam. Small numbers of rainbow trout were observed in Corbin Creek, and a report noted that trout from Lake Pillsbury were observed spawning in the creek. It was characterized as "an important spawning stream of the Eel River" (DFG 1961).
A survey report by USFS staff in 1977 noted unidentified "fish" throughout Corbin Creek. The surveyor notes effects of logging including erosion and loss of shading (USFS 1977c). Two status reports of California Wild and Scenic Rivers, published in 1983 and 1985, report the results of sediment studies in upper Eel River tributaries. Both reports noted particularly high sediment levels in Corbin Creek and stated that the creek was contributing turbidity to Lake Pillsbury and the Eel River (DFG 1983b, DFG 1987).

Staff from DFG surveyed Corbin Creek in 1993 and observed rainbow trout throughout the study reach. Surveyors wrote that the creek "supports a healthy trout population" and recommended bank stabilization in order to reduce sediment inputs from Forest Service roads (DFG 1993af).

Dutch Oven Creek

Dutch Oven Creek is tributary to Corbin Creek and consists of about 2.3 stream miles. It flows north, entering Corbin Creek about 3.8 miles upstream from the Eel River confluence. A second Dutch Oven Creek also is tributary to Corbin Creek as discussed below.

Staff from DFG surveyed Dutch Oven Creek in 1995 and observed three juvenile rainbow trout in the section downstream of the USFS road crossing culvert. The small number of fish was attributed to a large number of barriers in the stream, and surveyors noted good summer stream flows, cool water temperatures, and good canopy cover (DFG 1995o).

Wescott Creek

Wescott Creek is tributary to Corbin Creek and consists of about six stream miles. It flows south, entering Corbin Creek about 6.1 miles upstream from the Eel River confluence.

Staff from USFS surveyed Wescott Creek in September 1977 and observed "few" rainbow trout, ranging from one to seven inches in length. Productivity of the fishery was deemed "poor" and habitat condition "fair-poor." Erosion control was recommended for habitat management (USFS 1977d, USFS 1977e).

Staff from DFG surveyed Wescott Creek in 1993 and observed one rainbow trout, about 2.5 inches in length. The creek was said to contain good spawning gravels, riparian vegetation, and cool water temperatures, but surveyors wrote, "the fish population was extremely low and the reason was not readily apparent" (DFG 1993ag).

Staff from DFG surveyed Wescott Creek in 1995 and found rainbow trout present in low numbers to 1.3 miles upstream into Glenn County (Daugherty 1995).

Dutch Oven Creek

Dutch Oven Creek is tributary to Corbin Creek and consists of about 2.6 stream miles. It flows north, entering Corbin Creek about 7.9 miles upstream from the Eel River confluence. A second Dutch Oven Creek is tributary to Corbin Creek as described above.

Staff from USFS surveyed Dutch Oven Creek in 1977 and observed "common" rainbow trout ranging from two to seven inches in length. The survey report notes "marginal" habitat with areas of underground flow (USFS 1974).

Staff from DFG surveyed Dutch Oven Creek in 1995 and observed low numbers of rainbow trout from the creek mouth to about 1.4 miles upstream. Surveyors noted that the rainbow trout population "could be improved" and recommended barrier modifications, particularly of a culvert at the Forest Service road crossing (DFG 1995p).

North Fork Corbin Creek is tributary to Corbin Creek and consists of about 4.6 stream miles. It flows south, entering Corbin Creek about 8.5 miles upstream from the Eel River confluence.

Staff from USFS surveyed North Fork Corbin Creek in 1977 and observed "few" rainbow trout between one and seven inches in length. The creek was described as "mainly dry" with fish seen in isolated pools (USFS 1977f).

Staff from DFG surveyed the North Fork of Corbin Creek in 1993 and observed rainbow trout that were "relatively scarce." Two fish were observed upstream of a boulder falls located about 0.75 miles from the creek mouth, and this barrier was recommended

for removal. North Fork Corbin Creek was described as “a pristine mountain stream” and surveyors found “ideal habitat for Rainbow trout” but “surprisingly few fish” (DFG 1993ah).

Trout Creek

Trout Creek is tributary to the Eel River and consists of about 4.1 stream miles. It flows northeasterly, entering the Eel River at about stream mile 187.3.

Trout Creek was inspected during a 1961 survey of Eel River tributaries upstream of Scott Dam. Rainbow trout were observed in the creek and surveyors noted, “production appears better than other tributaries.” However, large amounts of silt were noted and the report adds, “This is an unimportant spawning tributary of the Eel River” (DFG 1961).

Trout Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this survey, a few fingerling rainbow trout were observed in the lower 50 yards of Trout Creek (Kubicek 1977). In a 1977 USFS survey report, staff noted “many severe slides, falls, and log barriers” in Trout Creek, as well as perennial flow and good shading. The creek was \ deemed an “important” tributary to the Eel for providing about 500 yards of “possible spawning area” upstream from the mouth (USFS 1977g).

Staff from DFG surveyed Trout Creek in 1993 and rainbow trout were observed throughout the creek downstream of a cascade barrier in the headwaters. The report author stated, “Overall, I feel this is an excellent stream for salmonids” (DFG 1993ai). In 1994, population density at a Trout Creek site was estimated at 35 fish per hectare (USFS 1994b).

Hull Creek

Hull Creek is tributary to the Eel River and consists of about 3.9 stream miles. It flows northeasterly, entering the Eel River at about stream mile 191.6.

Staff from USFS surveyed Hull Creek in 1978. A survey noted that rainbow trout were “common” in the creek and described the stream’s habitat condition as “fair” (USFS Unknown).

Rainbow trout were observed during a 1993 DFG survey of Hull Creek and surveyors noted that the creek “has value as a wild trout stream.” The creek contained spawning and rearing habitat and was described as “an important tributary to the Eel River headwaters” (DFG 1993aj).

Wesley Ives Creek

Wesley Ives Creek is tributary to Hull Creek and consists of about 3.6 stream miles. It flows east, entering Hull Creek about 0.2 miles upstream from the Eel River confluence.

Staff from USFS surveyed Wesley Ives Creek in 1978 and observed a few rainbow trout in the creek. Surveyors noted that the lower section of the stream was very unstable and contained many barriers to fish movement. Logging operations were being conducted in the watershed at the time (USFS 1978h).

In 1993 staff from DFG surveyed Wesley Ives Creek and observed rainbow trout. Abundance was estimated at about three fish per 100 feet of stream. The fish appeared to have low growth rates and surveyors noted, “In drought years such as this, there may be insufficient water for full development.” In the stream survey report, Wesley Ives Creek was described as “a near pristine watercourse that has value primarily as spawning and nursery area for a small population of Rainbow trout” (DFG 1993ak).

References

Anonymous, 1956. Field Note, Rowes Creek, August 14.

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Table 7. Distribution status and population features of *O. mykiss* in streams of the upper Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Outlet Creek	DF	DF		Y	2
Bloody Run Creek	DF	DF		Y	2
Bloody Run Creek tributary	DF	DF		UN	2
Cherry Creek	DF	DF		Y	3
Long Valley Creek	DF	DF	Y	Y	3
Sam Watt Creek	DF	UN		UN	0
Dutch Henry Creek	DF	UN		UN	0
Wilson Gulch Creek	DF	UN		UN	0
Reeves Canyon Creek	DF	UN	Y	UN	0
Sherwood Creek	PB	UN		UN	0
Rowes Creek	DF	UN		UN	0
Curly Cow Creek	PS	UN	Y	UN	0
Ryan Creek	DF	DF		Y	3
Bull Creek	DF	UN		UN	0
Berry Creek	DF	UN	Y	UN	0
Alder Creek	DF	PB	Y	Y	0
Davis Creek	DF	DF	Y	Y	3
Fulweiter Creek	UN	DF		Y	1
Moore Creek	DF	UN	Y	UN	0
Davis Creek tributary (Conklin Creek)	DF	DF	Y	Y	2
Mill Creek	DF	DF		UN	2
Willits Creek	DF	DF	Y	Y	3
Broaddus Creek	DF	DF	Y	Y	2
Baechtel Creek	DF	DF		Y	2
Haehl Creek	DF	DF	Y	Y	2
Brushy Creek	DF	UN		UN	0
Indian Creek	DF	UN		UN	0
Fish Creek	DF	UN		UN	0
Twin Bridges Creek	DF	UN		UN	0
Old Woman Canyon Creek	UN	UN		UN	0

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

Table 7. Distribution status and population features of *O. mykiss* in streams of the upper Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Garcia Creek	DF	UN		UN	0
Long Opening Creek	DF	UN		UN	0
Bear Pen Creek	DF	UN		UN	0
Thomas Creek	DF	PB		UN	0
Tomki Creek	DF	DF	Y	Y	3
Bear Skin Canyon Creek	PA	PA		N	0
Salmon Creek	DF	DF		Y	2
Long Branch Creek	DF	DF		Y	3
Long Branch Creek tributary	DF	DF		Y	2
Scott Creek	DF	PB		UN	1
Cave Creek	DF	DF		Y	3
Cave Creek tributary	DF	DF		UN	2
Little Cave Creek	DF	DF		UN	2
Little Creek	DF	DF	Y	UN	1
Rocktree Creek	DF	UN		UN	0
Digger Creek	UN	UN		UN	0
String Creek	DF	DF		UN	1
Tartar Creek	DF	UN		UN	0
Wheelbarrow Creek	DF	DF		Y	2
Bean Creek	DF	DF		UN	2
Laurel Creek	DF	DF		Y	2
Whitney Creek	DF	UN	Y	UN	0
Hale Creek	DF	UN	Y	UN	0
Mill Creek	DF	DF	Y	Y	2
Rocky Creek	DF	UN		UN	0
Trout Creek	DF	DF		Y	2
Bucknell Creek	DF	DF	Y	Y	3
Bucknell Creek tributary	DF	DF		Y	2
Alder Creek	DF	DF		Y	3
Dashiell Creek	DF	DF		UN	2

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

Table 7. Distribution status and population features of *O. mykiss* in streams of the upper Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Benmore Creek	DF	DF	Y	Y	3
Soda Creek	DF	DF	Y	Y	3
Soda Creek tributary	DF	UN		Y	0
Panther Creek	DF	DF		Y	3
Cedar Creek	PB	UN		UN	0
Welch Creek	DF	DF		UN	2
Rice Fork	DF	DF	Y	N	1
Packsaddle Creek	DF	UN		N	0
Willow Creek	DF	DF		N	1
Deer Creek	DF	DF		N	2
Rice Creek	DF	DF	Y	N	1
Barker Creek	DF	DF		N	1
Bevans Creek	PS	UN		N	0
Bear Creek	DF	DF	Y	N	2
Blue Slides Creek	DF	DF		N	1
Parramore Creek	DF	DF		N	1
French Creek	DF	UN	Y	N	0
Rock Creek	DF	DF	Y	N	1
Salt Creek	DF	DF	Y	N	2
Salmon Creek	DF	DF	Y	N	1
Mill Creek	DF	DF	Y	N	2
Fuller Creek	DF	DF	Y	N	2
Smokehouse Creek	DF	DF	Y	N	2
Boardman Creek	DF	DF	Y	N	2
Squaw Valley Creek	PA	UN		N	0
Horsepasture Gulch Creek	PA	UN		N	0
Salt Spring Creek	PA	UN		N	0
Bear Gulch Creek	PA	UN		N	0
Thistle Glade Creek	DF	UN		N	3
Hummingbird Creek	PA	UN		N	0
Berry Creek	PA	UN		N	0

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

Table 7. Distribution status and population features of *O. mykiss* in streams of the upper Eel River[1]

Stream/Tributary	Historical Presence	Current Presence	Evidence of Decline	Anadromy	Current Population Status
Copper Butte Creek	DF	UN	Y	N	0
Skeleton Creek	DF	DF		N	2
Cold Creek	DF	DF		N	3
Rattlesnake Creek	DF	DF		N	2
Anderson Creek	DF	DF	Y	N	3
Horse Creek	DF	DF		N	2
Corbin Creek	DF	DF	Y	N	2
Dutch Oven Creek	DF	DF	Y	N	1
Wescott Creek	DF	DF		N	1
Dutch Oven Creek	DF	DF	Y	N	1
North Fork Corbin Creek	DF	DF		N	1
Trout Creek	DF	DF		N	2
Hull Creek	DF	DF		N	1
Wesley Ives Creek	DF	DF		N	1

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

DISCUSSION

This document discusses 558 streams tributary to the Eel River, California for which some type of fisheries information is available. Most of these streams are described sufficiently in the reports of biologists and other observers that we are able to designate the historical status and current distribution of steelhead/rainbow trout (*Oncorhynchus mykiss*). Historically, steelhead appear to have used the vast majority of creeks, streams and rivers of the study area that maintained at least some cold water throughout the year for spawning and rearing. We found evidence sufficient to designate a definite historical run or population (DF) in 463 streams in the watershed (Table 8). We designated an additional 17 streams as having probable runs or populations (PB) and three streams as having possible runs or populations (PS). We assume that virtually all streams supporting *O. mykiss* historically were hydrologically connected to the ocean at least in some years, and that the populations in these streams were of relatively recent anadromous ancestry.

Table 8. Summary of *O. mykiss* distribution and related features in the Eel River Basin.

Sub-Basin	Historically Present Streams	Currently Present Streams	Anadromy Evident Streams	Decline Evident Streams
Lower Eel River	45	32	14	13
Van Duzen River	45	37	15	12
South Fork Eel River	153	107	51	41
Middle Eel River	32	24	12	5
North Fork Eel River	27	22	13	2
Middle Fork Eel River	70	46	29	15
Upper Eel River	91	64	29	35
Total	463	332	163	123

A small portion of the materials we reviewed suggested that steelhead historically *did not use* a specific watershed. Therefore, we assigned the PA (possibly absent) value in the historical status column in only 37 instances. (Please see the Methods section for further explanation of these terms.) However, the confirmed presence of *O. mykiss* in many small, ephemeral tributaries suggests against assuming lack of historical use. In 39 instances, we could not find sufficient information to justify one of the four status designations, leading to characterization as unknown (UN).

The current distribution status of *O. mykiss* (within the last 15 years) is as follows: 332 study area streams are DF status (*i.e.*, 72 percent of historical DF streams), 17 streams are assigned PB status, and six streams are PS status. Since genetics information is available for only a small number of the *O. mykiss* observations we reviewed, we are unable to note streams supporting only *O. mykiss* of hatchery origin. As a result, some streams may be designated DF that no longer support *O. mykiss* derived from native, anadromous stocks. Recent research concerning steelhead populations in California coastal watersheds suggests that few instances of entirely hatchery-origin, residualized populations in streams of the Eel River watershed occur (see, for example, Girman and Garza 2006).

Nineteen of our study streams appear to have no run or population currently and were assigned the PA value. In 186 instances, sufficient uncertainty existed regarding the potential of the stream to support *O. mykiss* that we used the UN value. We hope that new information can be developed to complete the current status designations and to update our designations as necessary. As described below, we believe that creating a "clearinghouse" for monitoring information will assist in effectively managing steelhead resources in the future.

Of the 463 historical DF streams in the study area, there is sufficient evidence to conclude that 163 (35 percent) currently are capable of supporting the anadromous *O. mykiss* form. Streams are assumed not to support anadromy either because no population is present or a known total passage barrier exists downstream from suitable spawning and rearing habitat. It is possible, then, that more than half of the known historical steelhead streams (*i.e.*, streams with historical DF status) in the Eel River watershed no longer support steelhead reproduction, although an unknown number of stream-based *O. mykiss* populations may continue to produce smolts. However, the paucity of recent monitoring data suggests against over-interpretation of the finding regarding anadromy.

Very few abundance estimates are available for *O. mykiss* populations in streams of the Eel watershed or for the collective run size. However, it is well established that current abundance is a fraction of historical levels. Run size estimates for the Eel River basin produced by DFG for various eras are as follows: in the year 1900, 255,000 individuals; in 1964, 82,000; in the late 1980s, 20,000; and in 1996, less than 9,000 (NMFS 2002, p. 30). Counts at Van Arsdale Fisheries Station indicate that the steelhead run in the upper Eel River has averaged less than 500 individuals since 2001 (see Appendix B).

Where we found reliable evidence of population decline, we cited this information and its source(s) in the description for the stream experiencing the decline and used a "Y" (for "yes") designation in the planning unit summary table. We applied the Y value to 123 streams, or about 22 percent of the streams in our study area. This percentage likely is biased low by the lack of abundance data in so many streams. In virtually every instance where information was sufficient to allow comparison between historical and current (*i.e.*, within the last 15 years) conditions, decline was evident.

Persistence factors and restoration considerations

The most commonly-cited anthropogenic factors in decreased *O. mykiss* abundance in streams of the Eel River watershed were (in unranked order): habitat degradation through cattle grazing, deforestation, or water diversion; construction of passage barriers including dams, drop structures, road crossings, weirs, concrete channels, and other structures; increased sedimentation through hydrologic modification, land use changes, or other processes; and overfishing. Anecdotal information also suggests that the extent and quality of estuarine habitat has decreased in the Eel system, which may lead to fewer, smaller smolts being produced and subsequent decreases in the numbers of spawning steelhead (Bond 2006; Bond *et al.* 2008). Similarly, the introduction of Sacramento pikeminnow (*Ptychocheilus grandis*) into Eel River watershed streams has had an unknown but potentially sizeable negative impact on steelhead populations, including degrading juvenile production in the mainstem Eel (DFG 1992).
It is beyond the scope of this study to assess the relative importance of these factors or otherwise quantify their impact on distribution and abundance of *O. mykiss*. Nevertheless, in previous distribution studies, we concluded that three primary factors most affected the steelhead populations in California coastal watersheds: flow reductions, passage barriers, and increased sedimentation rates (Leidy *et al.* 2005; Becker *et al.* 2008). Previous investigators have attributed declines in salmonid populations of the Eel River watershed to these causes (e.g., DFG 1997 DRAFT). In the following, we briefly review these three impact categories vis-a-vis streams of the Eel River watershed.

The Eel River watershed is notably lacking in large-scale water supply projects, with the obvious exception of the Potter Valley Project, for which the historic annual average diversion is 160,000 acre-feet (NMFS 2002). Potter Valley Project operations are subject to provisions established through the recent FERC re-licensing and Endangered Species Act consultation processes. Small scale diversions may represent the most important on-going and unaddressed impact to the Eel River steelhead fishery, as numerous re-vegetation, erosion control, and barrier modification projects have been completed in the last 30 years. In particular, diversion during the dry season is expected to lead to reduced migration opportunities and decreased water quality and extent of rearing habitat. Evaluation of the effects of water diversion on habitat in the Eel River watershed is complicated by a potentially high level of illegal diversions.

The most notable fish passage barrier in the Eel basin is Scott Dam, which precludes access to "some of the best spawning grounds in the entire watershed (Gravelly Valley)" (DFG 1939). Collectively, however, the many log jams produced by intensive logging throughout the various sub-basins of the Eel appear to have restricted access to spawning and rearing habitat more than any other factor, based on information in stream survey reports and the fact that the majority of barrier modification projects in the watershed treat log debris (Flosi 1992). Barriers consisting of poorly designed road crossings and multiple other types are catalogued in the Passage Assessment Database (or PAD, published by CalFish). Modifying these many barriers throughout the watershed would be costly, but technically feasible. As part of an examination of restoration opportunities in the Eel River basin, barriers described in the PAD for selected important streams have been reviewed and mapped. Interested readers should contact the authors regarding the results of this inquiry.

Numerous stream survey reports we reviewed documented the effects of intensive logging on steelhead habitat and steelhead populations throughout the watershed. The most notable effects of high siltation rates were the destruction of spawning grounds and stream-bottom fish food organisms. Excessive loading of fine sediment has been shown to decrease growth and survival of juvenile steelhead (Power 2003). Poor road construction practices and encroachment into riparian areas also were commonly cited as factors accelerating erosion rates, which are often locally high in substantial portions of the Eel basin based on geologic conditions. Finally, repeated references to impacts from cattle were found in the source materials, particularly accelerated sedimentation and destruction of streamside vegetation associated with inappropriate grazing practices.

Steelhead restoration in the Eel River watershed

Recovering steelhead in Eel River streams will require coordinated actions to mitigate the substantial loss of habitat that has resulted from human activities of the last 150 years. We support an approach of first identifying and protecting relatively healthy areas throughout the sub-basins of the watershed. Within these "anchor" areas, we recommend determining a set of priority streams for restoration. For each of these important streams, available information should be collected and analyzed to form the basis of a watershed assessment. Completed assessments identify limiting factors to steelhead production in the watersheds, often including passage barriers, sedimentation, stream flow, and water quality. Enhancement plans for each priority watershed should be prepared to respond to the limiting factors cited in the assessment. The plans list barrier modifications, land use changes, in-stream flow and water quality considerations, and re-vegetation and other projects necessary to meet restoration goals. Costs, responsibilities, and schedule should be assigned to the various elements of the enhancement plans.

Substantial efforts including restoration related studies, planning, and project implementation has occurred in many of the areas likely to be designated as "priority" in the Eel River watershed. However, we believe that a comprehensive study of steelhead resources using established methods (*i.e.*, geographic information system mapping and quantitative analysis of rearing habitat)

should be conducted to form the basis of a regional *O. mykiss* restoration strategy so that decision-makers and the public can direct financial and staff resources most efficiently and in a comprehensive and coordinated fashion. A preliminary review of the steelhead resources of the Eel River watershed indicates that restoration efforts focused on 30 or fewer Eel sub-basin and tributary streams could conserve a large proportion of the available rearing habitat.[1] Information developed for this preliminary review could be used in the comprehensive study we recommend.

The current report revealed a paucity of data regarding *O. mykiss* distribution in many, if not most, of the study area streams. Reporting on the streams of the study area appeared similar to the level experienced in a previous review of San Francisco Estuary streams and streams south of the Golden Gate (although it was not measured in the current study), wherein about one-third of the subject streams had two or fewer surveys. Also, like the record for the previous California study areas, quantitative information that could be used to characterize *O. mykiss* population features such as relative abundance, reproduction, anadromy, and others was not available for many of the examined streams.

A key element of a program to conserve steelhead resources would be a monitoring data clearinghouse through which *O. mykiss* distribution information is collected, stored, analyzed, and made publicly available. At a minimum, *O. mykiss* presence/absence surveys should be conducted every ten years in study area streams. For "priority" streams, we suggest more intensive monitoring to allow for analyzing population trends, for measuring the success of restoration activities, and for providing an adequate basis from which to perform adaptive management. The process of analysis and documentation recommended here will help ensure that costly or politically-challenging restoration efforts are implemented along with smaller-scale projects.

An overview of the problems facing the steelhead fishery of the Eel suggests that the watershed may be a particularly desirable target for restoration efforts. First, the baseline condition likely surpasses all but the Sacramento-San Joaquin and Klamath systems amongst California rivers. Secondly, the Eel has only one major dam blocking access to upstream habitat, as well as extensive habitat resources on other, downstream forks and tributaries. Third, needed restoration measures related to instream flows, passage, and sedimentation appear to be technically feasible by virtue of being each being relatively small-scale and typically located in low-development level landscapes. The eminent DFG biologist Leo Shapovalov also recognized these considerations in saying, "...of the major drainage basins in California the Eel River system...is best suited to be tried out as a Bureau of Fish Conservation management area" (DFG 1941).

[1] Interested persons are encouraged to contact the lead author for more information regarding evaluating watersheds of the Eel River.

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Appendix A: Characterization of Water Year Types for Water Years 1911 – 2008[1]

Water Year	Water Year Type	Water Year	Water Year Type	Water Year	Water Year Type
1911	Dry[3]	1945	Dry	1977	Very Dry
1912	Dry	1946	Wet	1978	Very Wet
1913	Dry	1947	Very Dry	1979	Very Dry
1914	Very Wet[6]	1948	Dry	1980	Wet
1917	Dry	1949	Dry	1981	Dry
1918	Very Dry[2]	1950	Dry	1982	Very Wet
1919	Dry	1951	Wet	1983	Very Wet
1920	Very Dry	1952	Very Wet	1984	Wet
1921	Very Wet	1953	Wet	1985	Dry
1922	Dry	1954	Wet	1986	Wet
1923	Very Dry	1955	Very Dry	1987	Dry
1924	Very Dry	1956	Very Wet	1988	Dry
1925	Wet[5]	1957	Dry	1989	Dry
1926	Dry	1958	Very Wet	1990	Very Dry
1927	Very Wet	1959	Dry	1991	Very Dry
1928	Dry	1960	Dry	1992	Very Dry
1929	Very Dry	1961	Dry	1993	Wet
1930	Dry	1962	Dry	1994	Very Dry
1931	Very Dry	1963	Wet	1995	Very Wet
1932	Dry	1964	Dry	1996	Wet
1933	Dry	1965	Very Wet	1997	Very Wet
1934	Very Dry	1966	Dry	1998	Very Wet
1935	Dry	1967	Wet	1999	Wet
1936	Average[4]	1968	Dry	2000	Dry
1937	Dry	1969	Very Wet	2001	Very Dry
1938	Very Wet	1970	Wet	2002	Dry
1939	Very Dry	1971	Very Wet	2003	Very Wet
1940	Wet	1972	Dry	2004	Dry
1941	Very Wet	1973	Wet	2005	Dry
1942	Wet	1974	Very Wet	2006	Very Wet
1943	Dry	1975	Wet	2007	Very Dry
1944	Very Dry	1976	Very Dry	2008	Dry

[1] Water year type characterization is based on discharge data from USGS gage 11477000 on the Eel River at Scotia, CA. Mean Annual Discharge (MAD) values were obtained from the USGS National Water Information System.

[2] MAD ≤ 4,194 cfs;

[3] MAD > 4,194 and ≤ 5,658 cfs;

[4] MAD > 5,658 and ≤ 7,761 cfs;

[5] MAD > 7,761 and <10,350 cfs;

[6] MAD ≥ 10,350 cfs.

Appendix B: Number of Steelhead Captured Annually at the Van Arsdale Fisheries Station Upstream Migrant Trap from 1933 – 2008[1]

Season	Steelhead[2]	Season	Steelhead
1933-34	3,247	1970-71	1,863
1934-35	2,225	1971-72	696
1935-36	6,310	1972-73	586
1936-37	6,861	1973-74	1,040
1937-38	3,413	1974-75	1,126
1938-39	4,786	1975-76	1,077
1939-40	3,889	1976-77	39
1940-41	2,228	1977-78	590
1941-42	no record	1978-79	106
1942-43	no record	1979-80	87
1943-44	no record	1980-81	1,966
1944-45	9,528	1981-82	646
1945-46	5,054	1982-83	369
1946-47*	4,409	1983-84	1,534
1947-48	178	1984-85	1,980
1948-49	2,433	1985-86	1,194
1949-50	no record	1986-87	1,952
1950-51	1,091	1987-88	2,206
1951-52	5,444	1988-89	331
1952-53	2,197	1989-90	691
1953-54	2,590	1990-91	31
1954-55	6,131	1991-92	60
1955-56	3,719	1992-93	823
1956-57	4,109	1993-94	33
1957-58	5,151	1994-95	434
1958-59	3,335	1995-96	1,743
1959-60	2,206	1996-97	511
1960-61	1,130	1997-98	2,393
1961-62	1,693	1998-99	7,679
1962-63	2,030	1999-00	3,150
1963-64	846	2000-01	641
1964-65	921	2001-02	308
1965-66	423	2002-03	102
1966-67	534	2003-04	149
1967-68	531	2004-05	234
1968-69	340	2005-06	253
1969-70	719	2006-07	1,635
		2007-08	625

[1] Data courtesy of Alan Grass of the California Department of Fish and Game.

[2] Numbers represent the total number of upstream migrating steelhead captured in a season and includes both hatchery and wild trout.

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