

STAFF SUMMARY FOR APRIL 20-21, 2022

23. SOUTHERN CALIFORNIA STEELHEAD**Today's Item****Information** ☐**Action** ☒

Consider and potentially act on the petition, Department's evaluation report, and comments received to determine whether listing southern California steelhead (*Oncorhynchus mykiss*) as endangered under the California Endangered Species Act (CESA) may be warranted.

Summary of Previous/Future Actions

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| • Received petition | Jun 14, 2021 |
| • Transmitted petition to DFW | Jun 23, 2021 |
| • Published notice of receipt of petition | Jun 16, 2021 |
| • Public receipt of petition and approved DFW's request for a 30-day extension | Aug 18, 2021; Webinar/Teleconference |
| • Received DFW's 90-day evaluation | Dec 15-16, 2021; Webinar/Teleconference |
| • Closed the public hearing and administrative record, and continued deliberations to Apr meeting | Feb 16-17, 2022; Webinar/Teleconference |
| • Today determine if listing may be warranted | Apr 20-21, 2022; Monterey/Trinidad |

Background

On Jun 14, 2021, FGC received a petition from California Trout to list southern California steelhead as endangered under CESA (Exhibit 1). On Jun 23, 2021, FGC staff transmitted the petition to DFW for review. A notice of receipt of petition was published in the California Regulatory Notice Register on Jul 16, 2021. At its Aug 2021 meeting, FGC approved a 30-day extension for DFW to complete its evaluation of the petition.

California Fish and Game Code Section 2073.5 requires that DFW evaluate the petition and submit a written evaluation with a recommendation to FGC; the evaluation report (Exhibit 3) was publicly received at FGC's Dec 2021 meeting. The evaluation report delineates each of the categories of information required for a petition, evaluates the sufficiency of the available scientific information for each of the required components, and incorporates additional relevant information that DFW possessed or received during the review period. Based on the information contained in the petition and other relevant information, DFW concludes that there is sufficient information to indicate the petitioned action may be warranted.

FGC scheduled a public hearing on the petition for its Feb 2022 meeting following the public release and minimum 30-day review period for the evaluation report, as required in Fish and Game Code sections 2074 and 2074.2. At its Feb meeting, FGC took public comment and received presentations from DFW, the petitioner, and a public organization. After oral testimony concluded, FGC discussed the item, closed the public hearing and administrative record pursuant to Fish and Game Code Section 2074.2, and continued deliberation to today's meeting.

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CESA and FGC's regulations require that the petition contain specific scientific information related to the status of the species. CESA and case law interpreting it make clear that FGC must accept a petition when the petition contains sufficient information to lead a reasonable person to conclude there is a substantial possibility the requested listing could occur; the requested listing is tied to the species' status, that is, whether the species' continued existence is in serious danger or is threatened by a number of factors, and in no way relates to economic consequences that might result from listing.

If FGC determines the petitioned action may be warranted, southern California steelhead becomes a candidate for listing as endangered pursuant to Section 2074.2. Candidate species are protected during the remainder of the listing process pursuant to Fish and Game Code Section 2085.

Significant Public Comments

Because FGC closed the public hearing and administrative record at its Feb 2022 meeting, there are no new comments to summarize for today's deliberations.

Meeting materials and public comments prepared in advance of the Feb 16-17, 2022 meeting are available at <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=198921&inline>. Public comments made at the Feb 2022 meeting may be viewed in the official meeting minutes, which is the meeting video found at [https://cal-span.org/meetings.php?folder\[\]=CFG&year=2022](https://cal-span.org/meetings.php?folder[]=CFG&year=2022).

Recommendation

FGC staff: Determine that listing may be warranted; direct staff to issue a notice reflecting this finding and indicating that southern California steelhead is a candidate for endangered species status.

DFW: Accept the petition for further consideration under CESA

Exhibits

1. [Petition, received Jun 14, 2021](#)
2. [DFW memo, received Nov 10, 2021](#)
3. [DFW 90-day evaluation report, received Nov 10, 2021](#)

Motion

Moved by _____ and seconded by _____ that the Commission, pursuant to Section 2074.2 of the California Fish and Game Code, finds that the petition to list southern California steelhead (*Oncorhynchus mykiss*) as an endangered species **does** provide sufficient information to indicate that the petitioned action **may be** warranted based on the information in the record before the Commission, and directs staff to issue a notice reflecting this finding and indicating that southern California steelhead is a candidate for threatened or endangered species status.

OR

Moved by _____ and seconded by _____ that the Commission, pursuant to Section 2074.2 of the California Fish and Game Code, finds that the petition to list southern

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California steelhead (*Oncorhynchus mykiss*) as an endangered species **does not** provide sufficient information to indicate that the petitioned action may be warranted based on the information in the record before the Commission.

California Fish and Game Commission
P.O. Box 944209
Sacramento, Ca 94244-2090

June 7, 2021

Notice of Petition: Southern California Steelhead (*Oncorhynchus mykiss*)

Commissioners,

California Trout ("CalTrout") is pleased to submit the following petition to list the Southern California steelhead (*Oncorhynchus mykiss*) as an Endangered Species under the California Endangered Species Act (CESA, FGC § 2050 et seq). This petition demonstrates warranted listing under CESA based on the factors specified in the statute.


CalTrout has been a statewide leader on trout, salmon, and steelhead conservation since its founding 50 years ago. It is CalTrout's belief that abundant wild fish indicate healthy waters and that healthy waters benefit all Californians. With more than sixty large-scale, "boots on-the-ground" conservation projects underway, in tandem with public policy efforts in Sacramento, CalTrout's six regional offices work tirelessly to advance our cause through a three-pillared approach to conservation.

Southern California steelhead ("Southern steelhead") is an iconic species on the South Coast of California. Southern steelhead are culturally important and serve as an indicator species to gauge the broader health of the entire watershed. The species is currently experiencing an alarming rate of habitat loss, compounded by climate crisis impacts. According to the California Department of Fish and Wildlife's Steelhead Restoration and Management Plan for California (1996), "southern steelhead are the most jeopardized of all of California's steelhead populations." This petition utilizes the best available science to fully establish that Southern California steelhead face the threat of certain extinction.

Twenty-five years ago, CalTrout was recognized in the forward of the state's Steelhead Restoration and Management Plan as being a leader in this cause. Today we again see a clear need for action by the Fish and Game Commission, and we request that the Fish and Game Commission list Southern California Steelhead as endangered.

We appreciate your consideration and look forward to working with the Commission on this critical listing. Please do not hesitate to reach out if you have any questions or would like to further discuss the petition.

Sincerely,



Curtis Knight
Executive Director
California Trout



June 7th, 2021

The California Department of Fish and Wildlife (CDFW) published their Steelhead Restoration and Management Plan for California twenty-five years ago (McEwan and Jackson, 1996). This plan laid out the blueprint for restoring this important and valued state resource by restoring degraded habitat and re-establishing access to historic habitat that is currently blocked. This plan reaffirmed the state's mandate framed in The Salmon, Steelhead Trout, and Anadromous Fisheries Act of 1988 (SB 2261) to significantly increase natural production of salmon and steelhead by the year 2000. As stated in the Plan, severe anadromous fish population declines, the potential for species listings under the Endangered Species Act (ESA), fulfillment of legislative mandates, and the state's Public Trust obligations called for immediate implementation of CDFW's Steelhead Management Plan.

Since its publication in 1996, agencies and concerned organizations have made consistent efforts to reverse the course of population decline for Southern California Steelhead (*Oncorhynchus mykiss*). It is now 2021, and Southern steelhead have seen little demonstrable improvement in population numbers and long-term persistence (National Marine Fisheries Services (NMFS) 5-Year Update, 2016) since the species' federal ESA listing in 1997. We respectfully submit this petition to list Southern California Steelhead as an endangered species under the California Endangered Species Act (CESA F&GC § 2050 et seq.).

Southern steelhead is an iconic species on the South Coast of California. Southern steelhead are culturally important and serve as an indicator species to gauge the broader health of the entire watershed. The species is experiencing an alarming rate of habitat loss, compounded by climate crisis impacts. Yet it is still not listed as endangered by the State of California.

The State of the Salmonids: Status of California's Emblematic Fishes (2017) used an exhaustive literature review and a standardized protocol (Moyle et al. 2015) to determine that Southern steelhead are of "Critical Concern," with the population in danger of extinction with the next 25–50 years due to anthropogenic and environmental conditions. Going further, it states, "Since their listing as an Endangered Species in 1997, Southern steelhead abundance remains precariously low." This statement only reinforces how dire the situation has become. CDFW, in their own management plan, stated that "Southern steelhead are the most jeopardized of all of California's steelhead populations."

Preventing the extinction of Southern steelhead will have long-term implications for all steelhead populations on the West Coast (Boughton et al. 2007b, 2006, NMFS 2016). Over millennia, steelhead have evolved an ability to use a variety of shifting habitats. Southern steelhead took advantage of this plasticity and honed it in the naturally dynamic environment of Southern California and Northern Mexico (NMFS 2016). The mechanisms underlying anadromy for Southern steelhead, which is an important component of their life history variation, are not completely understood. However, research and *in situ* studies point to both environmental and genetic components having significant influence on their life-history pathway.

Extirpation of Southern steelhead would initiate a process of irreversible, cumulative extinctions of other native *O. mykiss* populations through three main pathways. First, irreversible loss of heritable genetic loci responsible for anadromy will prevent their transmission to future progeny. Second, *O. mykiss* in Southern California tolerate higher water temperatures and more variable dissolved oxygen levels, and can therefore contribute these adaptive traits to steelhead in northern regions as they experience warming of coastal waters. Third, fish passage barriers that completely block access to freshwater spawning grounds prevents genetic mixing on a regional scale, and thus the few remaining Southern steelhead or the freshwater resident native rainbow trout that maintain anadromous genetic characteristics, are substantially reproductively isolated (Hoelzer et al. 2008). This isolation by habitat fragmentation represents an important uncoupling in the evolutionary legacy of the species and a direct threat to its continued existence.

Paraphrasing Fish and Game Code 2062, an endangered species under CESA is a native species or subspecies which is in serious danger of becoming extinct throughout all, or at least a significant portion of its range due to one or more causes—including loss of habitat, change in habitat, overexploitation, predation, competition, or disease. Southern steelhead are in danger of becoming extinct throughout their entire range primarily through modification, degradation, and simplification of required habitat for full life-history, and loss of access to historical habitat to maintain genetic diversity. Southern steelhead's continued existence is threatened by predation and competition from non-native aquatic species in their currently accessible habitat and in historical habitat once access is restored. The requirements to list Southern California steelhead as endangered under CESA F&GC § 2050 et seq. are met and exceed over its entire range and distribution.

This petition utilizes the best available science to fully establish that Southern steelhead face the immediate threat of certain extinction due to the loss, fragmentation, and simplification of their habitat and provides clear evidence that the State of California must exercise its mandate to protect native salmonids and steelhead by listing Southern steelhead as endangered.

California Trout, Inc was recognized in the foreword of the state's Steelhead management plan as being a leader in this cause. Today we again see a clear need for leadership and action by the Fish and Game Commission. We request that the Fish and Game Commission list Southern California Steelhead as endangered.

Scientific Information Required for Listing Petition:

Population trend (A)

The Southern steelhead population has decreased substantially from the estimated historic population size (Boughton et al. 2005, Boughton and Goslin 2006, Boughton et al. 2006). The Southern California Coast Steelhead distinct population segment (DPS) has been estimated to have annual runs of between 32,000 and 46,000 returning adults. Today, the annual run is estimated to be less than 500 total returning adults in any given year (Busby et al. 1996, Williams et al. 2011, Good et al. 2005, Helmbrecht and Boughton 2005, Boughton and Fish 2003). The four watersheds historically exhibiting the largest annual anadromous runs—Santa Ynez River, Ventura River, Santa Clara River, and Malibu Creek—have

experienced declines in run size of greater than 90 percent (Boughton et al. 2005, Good et al. 2005, Helmbrecht and Boughton 2005, Busby et al. 1996). Simply put, Southern steelhead remain in danger of extinction (Williams et al. 2011, Moyle 2017).

A comprehensive status review of steelhead was conducted by Busby et al. (1996), who characterized Evolutionarily Significant Units (ESUs) using the conceptual framework of Waples (1991), and then assessed extinction risk of each ESU. The Southern California Coast Steelhead DPS, based on the ESU definition, was subsequently listed as endangered by NMFS under the U.S. Endangered Species Act in 1997. The original listing characterized the southern range limit as the eastern end of the Santa Monica Mountains. In 2002, the ESA listing area was extended further south to the Tijuana River system at the U.S. border with Mexico. The listing was further modified in 2006 to include only the anadromous component of the ESU, which is composed of both anadromous and freshwater-resident forms of *O. mykiss* which can co-exist within watersheds. Good et al. (2005) updated the status of Pacific coast steelhead populations and another update was conducted in 2010 (Williams et al. 2011). None of these updates or reviews led to changes in the status of the species' listing. It has remained endangered under ESA.

Following the significant rise in Southern California's human population after World War II and the associated land and water development within coastal drainages, the Southern steelhead's population rapidly declined. This led eventually to the extirpation of populations in many watersheds, leaving only remnant or sporadic populations (Boughton et al. 2005, Good et al. 2005, Helmbrecht and Boughton 2005, Busby et al. 1996). A central tenet of the NMFS Recovery Plan (2012) is that a viable DPS will consist of a sufficient number of viable discrete populations that may be spatially dispersed but nevertheless adequately connected to achieve the long-term persistence and evolutionary potential of the species. The goal of status-review updates is to assess whether viability metrics for the DPS are moving toward or away from the viability criteria. The consensus of publications is that the status of the Southern California Coast steelhead DPS has not changed appreciably since the federal listing in 1997 (NMFS 1996, Busby et al. 1996, NMFS 2016). The most recent publication which compiled adult steelhead abundance through existing monitoring programs of various types and anecdotal observations within this DPS documented only 177 adult steelhead observations in the past 25 years (Dagit et al. 2020).

Range (B) and Detailed Distribution Map (L)

NMFS identifies the Southern California steelhead DPS as being comprised of the coastal watersheds extending from the Santa Maria River system south to the U.S. border with Mexico (Titus et al. 2010, NMFS 2012). Historically, *O. mykiss* occurred at least as far south as Rio del Presidio in Mexico (Behnke 1992, Burgner et al. 1992).

The range of watersheds within the DPS are generally classified in two basic types depending on their geomorphology; short coastal streams that are part of the coastal ranges, and larger river systems that extend inland through the coastal ranges. The smaller coastal systems are typified by the character of the Santa Monica and Santa Ana Mountain watersheds. The larger watershed class includes the Santa Maria, Santa Ynez, Ventura, Santa Clara, San Gabriel, Santa Ana, Santa Margarita, San Luis Rey, and San Diego

Rivers. These systems were further classified by predominate environmental and climate processes into five biogeographic population groups (BPGs). The entire range covers approximately 12,700 mi² with 25,700 mi. of streams (NMFS 2012). The established range of Southern steelhead contains several large human population centers with almost 22 million people. This figure, and level of landscape development and resource use implicit in it, is central to the current degraded condition of Southern steelhead

The range of the Southern steelhead is generally accepted as stated above, but not all stream miles within this range are equally habitable. NMFS used an Intrinsic Potential model to characterize and prioritize habitat suitability for species recovery. These models used an established set of factors to predict the potential for unimpaired over-summering habitat to be present at any given location in the DPS (Boughton 2006, NMFS 2012).

In general, Intrinsic Potential modeling is based on the idea that natural processes will tend to generate suitable habitat in reaches where discharge, gradient and topography meet certain criteria (Burnett et al. 2003). The parameters to model potential over-summering habitat for Southern steelhead included mean annual air temperature, mean discharge of streams during August and September, mean August air temperature and limiting access gradient in addition to stream gradient, discharge, and topography (Boughton et al 2006).


This work developed the ranked prioritization of watersheds within the DPS based on their environmental capacity to support a Southern steelhead population. This led to the designation of Category 1, identified to have the highest priority for recovery, followed by Category 2 then Category 3 populations within each of the five BPGs. This work assists in prioritizing restoration activities for target watersheds. However, the NMFS Recovery Plan describes the scientific basis for population-level and DPS-level recovery criteria whereby multiple populations within each BPG must have self-sustaining populations (NMFS 2012, NMFS 2016)

The delineation of the physical boundaries of Southern steelhead's range has been supported by genetic analysis and the observed variances among different *O. mykiss* populations. Early allozyme analysis of mitochondrial DNA performed before the ESA listing demonstrated a high degree of interpopulation differentiation within California (Nielsen 1994). Comparison of DNA samples among watersheds within the DPS to populations north of the DPS showed large differences in genetic markers. Samples collected from river system between the Santa Ynez River and Malibu Creek indicate the presence of mitochondrial DNA that is rare in steelhead populations north of the Southern steelhead DPS. (Busby et al. 1996). More recent genetic analyses of *O. mykiss* populations at the southern end of their range, using high-resolution genotyping of microsatellite loci and single nucleotide polymorphism (SNP) loci, indicate that the southern boundary of Southern steelhead range extends to northern Baja California, south of the U.S. border with Mexico (Abadia-Cardoso et al, 2015; Abadia-Cardoso et al, 2016).

Southern California Steelhead Distinct Population Segment's Established Range and Biogeographic Regions



The Distinct Population Segment extends from the Santa Maria River system in the north to our border with Mexico in the south. The range contains 5 biogeographic regions with watersheds grouped by similar landscape and ecologic conditions. To fully recovery the species, we must reestablish self sustaining populations in all biogeographic regions.

 Distinct Population Segment Range

Bio-Geographic Population Groups

 Conception Coast

 Mojave Rim

 Monte Arido Highlands

 Santa Catalina Gulf Coast

 Santa Monica Mountains

Distribution (C)

The spatial structure of Southern steelhead is influenced by fish passage barriers. The majority of watersheds historically occupied by Southern steelhead experienced extirpation due to anthropogenic barriers (Boughton et al 2005). The current distribution of Southern steelhead is defined as all anadromous waters below total natural barriers or man-made structural barriers (NMFS 1997). Anadromous adult Southern steelhead have been extirpated from approximately 60% of their historical range due to habitat fragmentation (NMFS 2012).

Southern steelhead have a complex life history that is central to their historical and current distribution. As covered in more detail in the Life History and Required Habitat sections, Southern steelhead predominantly express two forms: full anadromy and resident-freshwater. The anadromous and the resident-freshwater form co-exist throughout the DPS (Boughton et al 2006, Pearse et al. 2014).

The interplay of their life-history, their required habitat types, and distribution --both historical and current -- is complex (Boughton 2006). The freshwater resident form, or rainbow trout, are an integral part of the steelhead population, because anadromous adults can be the offspring of freshwater resident parents (Courter et al. 2013, Kendall et al. 2015, Abadia-Cardoso et al. 2016). It is likely that a combination of environmental and genetic factors determines anadromous or resident phenotype, which may be regulated by epigenetic factors (Baerwald et al, 2016). Genetic sampling above and below impassable dams within the established DPS for Southern steelhead indicates that they tend to be each other's closest relative (Clemento et al 2009.)

A number of barrier removal and habitat restoration projects have been implemented over two decades to address threats throughout the DPS (NMFS 2016). However, a number of large, complex fish passage barriers remain in place or not fully functional, even though significant investment over the years has supported advanced engineering design. The state ESA listing is anticipated to help move these projects forward into construction to realize their potential in species recovery. Environmental impacts from high intensity wildfires, floods, and extended drought have further reduced the number of small, isolated, remnant freshwater resident populations found in the upper tributaries (NMFS 2012). The Thomas Fire (2017) impacted many drainages throughout Santa Barbara and Ventura Counties; the Whittier Fire (2017) impacted the Santa Ynez watershed in Santa Barbara County, the Woolsey Fire (2018) impacted all creeks in the Santa Monica Mountains except Topanga Creek. The Holy Fire (2018) burned through Coldwater Canyon Creek in Riverside County which contains one of two known native rainbow trout populations descended from steelhead at the most southern extent of their range in California. Subsequent fire related floods and debris flows following these catastrophic events can cause local extirpation if emergency translocations are not performed in time.

Abundance (D)

Steelhead abundance numbers are naturally subject to high variability. Due to the character of the river systems in the DPS, monitoring of run sizes is difficult to quantify. Estimates of the historical (pre-1960s) abundance are available for several rivers in the DPS. The Santa Ynez River before 1950 is estimated to have had an annual run of 20,000-30,000 adult Southern steelhead. The Ventura River, pre-1960, had

estimated annual runs of 4,000-6,000 returning adults. The Santa Clara River, pre-1960, was 7,000-9,000 returning adults and Malibu Creek, pre-1960, 1,000 adult returns. (NMFS 2012).

A review of the data from life-cycle monitoring stations at Vern Freeman Diversion Fish Ladder, Robles Diversion Fish Passage Facility, from migrant trapping by Cachuma Operation and Maintenance Board and the CDFW's Coastal Monitoring Program (CMP) support the finding that little to no change has been observed in total abundance or spatial structure of Southern steelhead since the initial federal listing (Williams et al 2011, NMFS 2012, NMFS 2016). The most productive systems support single digit runs of returning adults on any given year (Busby 1996, Williams et al. 2011, Dagit et al. 2020). Contemporary literature reviews of monitoring data support the conclusion that the total population estimate is dangerously low. This is further illustrated by the recent compilation of all monitoring program data and independent observations within the federal ESA listing area between 1998-2018. This work documented only 177 positive identifications of returning adult Southern steelhead in the past 25 years (Dagit et al. 2020).

Fish that express the resident freshwater life-history strategy play a central role to the continued existence of Southern steelhead. If the current course of modification and loss of available habitat for anadromous Southern steelhead is not corrected, there will be a greater need for resident freshwater rainbow trout to produce the vast majority of smolts that express anadromy and enter the Pacific Ocean. Smolt production is the product of both resident freshwater and anadromous life-history strategies (NMFS 2012). Due to shrinking suitable habitat below natural or man-made barriers to migration; rainbow trout will be a key component to ensure we maintain and re-establish the expression of anadromy and that any smolts produced by freshwater residents have access to required habitat over the entire course of their journey to the ocean and upon their return.

Recent studies have shown the resident freshwater populations still possess the alleles associated with anadromy (Pearse et al. 2009; Abadia-Cardosa et al. 2016). These results indicate that adoption of the freshwater resident life-history pattern does not necessarily result in the loss of the genetic potential for anadromy. The genetic potential of resident *O. mykiss* to express anadromy remains (Nielsen 1999; Courter et al. 2013; Phillis et al. 2016; Apgar et al. 2017) and, given the opportunity through restoration activity, could support re-establishing viable anadromous populations.

It is important to note that these freshwater resident populations are at risk from watershed-scale adverse anthropogenic impacts, quickening climate stress and other population level threats to their continued success. Catastrophic wildland fire, long term drought and continued human alteration of headwater habitat all put additional pressure on resident freshwater rainbow trout populations (NMFS 2012). Excessive loss of local freshwater resident populations can lead to lower genetic variability and fitness (Pearse et al. 2014; Abadia-Cardoso et al. 2016; Leitwein et al. 2017). Indeed, genetic analysis of rainbow trout at the southernmost extent of their range in the United States indicate that these populations have low allelic diversity (Clemento et al. 2009; Pearse et al. 2009; Jacobson et al. 2014; Abadia-Cardosa et al. 2016; Apgar et al. 2017), potentially leading to decreased retention of the genetic markers that support anadromy and overall fitness

The movement of adult steelhead between watersheds is an important factor as well. Anadromous adults are known to stray from their natal systems and could be important for re-establishing viable populations

in formerly occupied watersheds (Bell et al. 2011). This could serve as a pathway to re-introduce genetic material across separate sub-populations (Garza et al. 2014). The inter-play of resident freshwater and anadromous life-histories is a critical component of Southern steelhead's current and future abundance and must be considered for recovery of the species.

Life history (E)

Steelhead are a highly migratory and adaptive species utilizing multiple habitat types over their complete life-history. The life cycle of Southern steelhead generally includes a freshwater period in coastal river systems followed by a migration to a marine environment to reach sexual maturity. Southern steelhead can express a great amount of variation in the timing and duration of each life-history stage in comparison to other species within the genus (Hayes et al. 2011, Quinn 2005, Hendry et al. 2004) This flexibility and malleability of life-history trajectories unique to Southern steelhead (Sloat and Reeves 2014, Kendall et al. 2015) is the evolutionary manifestation of the variability in environmental conditions that is characteristic of Southern California. This is particularly evident in the high number of sand-berm built estuaries in the DPS that must breach due to sufficient streamflow following winter rains to allow steelhead migratory access to a particular watershed.

Southern steelhead will spend one to four years maturing in the Pacific Ocean (Jacobs et al. 2011, Borg 2010, Haro et al. 2009, Leder et al. 2006, Quinn 2005, Davies 1991, Groot and Margolis 1995, Northcote 1958). Anadromous adults grow substantially larger than freshwater residents, leading to higher fecundity of returning anadromous females (NOAA 2012). After reaching maturity, Southern steelhead typically return to their natal river system to spawn, although strays do occur and may be an important vector to maintain genetic variability and connection across basins (Garza et al. 2014) Spawners typically return between January and May, but year-to-year variation in environmental conditions across diverse geographic settings have allowed Southern steelhead variability in spawning period. Variability in access to any river system is compounded by the sporadic nature of hydrologic connectivity common to river systems in Southern California.

Following sand-berm breaching, whereby a lagoon becomes an estuary that connects a freshwater stream to the ocean, steelhead will move into coastal river systems. Upon entering the river system, Southern steelhead can migrate several to hundreds of miles to reach suitable spawning habitat. Upon finding suitable gravel, females excavate a redd and deposit their eggs. Males then fertilize the eggs, after which the eggs are covered with gravel by the female. The embryos' incubation time may vary from three weeks to two months depending on environmental conditions. Newly hatched *O. mykiss* or alevins will then remain in the gravel for an additional two to six weeks. Unlike salmon, adult steelhead do not typically die following their spawning trip, and have been observed to return to the ocean and then come back to freshwater to spawn again. The frequency and nature of repeat spawning by Southern steelhead as a species, is poorly understood, but this iteroparous life-history strategy can occur (Moyle et al 2008, Moyle 2002).

Juvenile Southern steelhead or parr will rear and forage in a variety of freshwater habitat types depending on their maturation rate before beginning their migration to the ocean. Southern steelhead parr will

spend between one to three years in freshwater before migrating to the ocean (Shapovalov and Taft 1954, Moore 1980, Quinn 2005). The timing of out-migration is influenced by a variety of environmental cues including streamflow, temperature, and breaching of the sand berm at the river's mouth. Out-migration to the ocean usually occurs in the late winter and spring. Smolts will spend a short time in the estuary. Here the mixing of fresh and saltwater habitats allows for the morphological changes that smolts need to undergo to prepare themselves for the ocean environment. In some watersheds, smolts may rear in a lagoon or estuary for several weeks or months prior to entering the ocean.

In contrast to Central California lagoons where juveniles grow substantially faster and larger than their riverine reared counterparts (Smith 1990, Bond et al. 2008, Hayes et al. 2008, Atkinson 2010), Southern steelhead are less frequently observed in estuaries. This may be attributed to low population numbers, adaptation for rapid outmigration, and/or poor lagoon habitat. Studies from more northern estuaries support the idea that larger juveniles have a higher survival advantage after outmigration into coastal marine waters and, as a result, have a greater opportunity to return to their natal streams as adults for spawning (Bond et al. 2008, Hayes et al. 2008, and Atkinson 2010). Therefore, if conditions permit, increased juvenile steelhead estuarine rearing prior to emigration could be a critical contributor to enhance the viability of steelhead populations.

The cycle described above is referred to as their fluvial-anadromous life-history strategy. Southern steelhead can also express two additional life-history trajectories: a freshwater-resident pathway and a lagoon-anadromous pathway. The freshwater-resident pathway describes *O. mykiss* that complete their entire life cycle in freshwater. Fish that follow this life-history trajectory are commonly known as rainbow trout. Rainbow trout will incubate, hatch, rear, mature, reproduce, and die in freshwater. A lagoon-anadromous pathway describes a hybrid option. Southern steelhead smolts out-migrate, but can remain in the lagoon or estuary for a year before returning upstream to freshwater habitat to spawn.

These descriptions only cover the predominant life-history pathways for *O. mykiss*. It does not, however, capture the full complexity of the life-history permutations that can be exhibited by *O. mykiss*. Plasticity of life-history should be considered the central characteristic for Southern steelhead in understanding their life cycle (Kendall et al. 2015). An interplay between environmental conditions and adaptive behavior likely causes shifts between resident and migratory life-history behavior expressed by a Southern steelhead (Kendall et al. 2015, Pearse et al. 2014, Pearse 2016, Satterthwaite 2012; Beakes 2010). The seasonality of the hydrologic cycle impacts the predominant life-history trajectory expressed in particular watersheds. Southern steelhead's long-term viability is dependent on this life-history plasticity, and on their ability to migrate to new habitat.

Kind of habitat necessary for survival (F)

Habitat characteristics at any one location may change significantly from year to year in the Southern California Mediterranean climate. A Mediterranean climate is distinguished by warm, wet winters under prevailing westerly winds and calm, hot, dry summers, as is characteristic of the Mediterranean region and parts of California, Chile, South Africa, and southwestern Australia. As water warms and preferred habitat alters seasonally, hydrological connectivity between habitat types becomes important, and

influences the ability of *O. mykiss* to move throughout the river system to seek refuge areas if needed. Their multiple life-history trajectories rely on a network of habitat types to build in the critical redundancy. This allows any individual to complete their life cycle by exploiting the best available habitat for that stage of development at any given time. A simple example is that juvenile Southern steelhead can find the necessary thermal refugia to over-summer in a tributary that flows year-round or in the river's estuary. The interplay of habitat type, habitat condition, and the connectivity between habitats over time is paramount in their development and survival.

Southern steelhead require cool, clean water, and complex, connected habitat. Each habitat type must provide sufficient nutrients and foraging opportunities to allow for the growth and development required for their current life-history stage (NMFS 2012). Ocean-going adult steelhead require sufficient water quality, depth, cover, and marine vegetation. Estuary and lagoon habitats must provide uncontaminated water and substrates with connected wetlands for juveniles. Effective mobility for juvenile and adult Southern steelhead requires mainstem river migration corridors that are free of obstruction. They must also minimize excessive risk of predation and provide enough water quantity to allow for cover, shelter, and holding areas.

The geological character of their geographic range is young, highly erodible sedimentary rock. Excessive sedimentation and turbidity are critical water quality components in all habitat types and impacts how Southern steelhead utilize each habitat type. Freshwater spawning sites must provide sufficient water quantity as well as good water quality. Southern steelhead gravel sizes must fall within a range that supports spawning and incubation. Freshwater rearing habitat must provide sufficient water quantity and quality with lateral connectivity to the floodplain. These characteristics are essential for rearing and foraging as it provides refugia and habitat complexity.

Within each of these habitat types, Southern steelhead realize changes in their availability depending on the habitat conditions or quality. The preferred biotic conditions of any habitat type are subject to the immense variability common in Southern California. Documented habitat tolerances and ranges are important, but Southern steelhead's ability to move into microenvironments in response to changing conditions is a critical component of their required habitat types and conditions (Moyle et al. 2017). Their required habitat conditions align with habitat types suited to their life-history development stage.

The primary habitat conditions that influence Southern steelhead development are temperature, dissolved oxygen, water depth, and velocity. Of these, water temperature is the best studied and can change significantly diurnally and seasonally. Southern steelhead tolerate warmer water temperatures than more northern salmonids, as they have adapted to a wider range of environmental conditions characteristic of a highly variable climate. The upper temperature threshold of 25°C has been observed to coincide with cessation of feeding and retreat to thermal refugia in Southern steelhead (Boughton et al. 2015, Sloat and Osterback 2013, Spina 2007).

Juvenile Southern steelhead regularly persist in conditions outside of the ideal range. Juvenile steelhead prefer water temperature in the range of 10–17 ° C, but have been observed in the Ventura River with water temperature that peaked at 28°C (Carpanzano 1996). The relatively warm water of the Ventura River has been observed to result in more rapid growth of juvenile steelhead than has been observed in more northerly populations (Moore 1980, McEwan and Jackson 1996).

While temperature is a principle biotic condition impacting overall survival of Southern steelhead, dissolved oxygen, water depth, and water velocity during their freshwater development stages are important factors as well. Dissolved oxygen levels, as influenced by water temperature, above 5mg/L is considered adequate for survival. In contrast, 3 mg/L is considered to be the lethal lower limit for unimpaired growth (EPA 1986) , but is dependent on duration, magnitude, frequency, and accessibility of refugia (McLaughlin et al. 2009, Matsubu et al. 2017, Huber and Carlson 2020).

For returning adult Southern steelhead, 7 inches is considered the minimal water depth needed for successful migration. Water velocities over 10 ft/sec are considered sub-optimal for migration upstream (Bovee 1978, Thompson 1972, Barnhartt 1986). Water velocities that hinder the swimming of adult returners have a greater impact on effective migration than depth (Barnhartt 1986). Southern steelhead fry prefers water depths that are from 2–14 inches with juveniles occupying similar depths with observed preference for 10–20 inches (Bovee 1978).

Factors affecting the ability to survive and reproduce (G)

Destruction, modification, and fragmentation of native habitat are recognized as the primary causes for the decline of the Southern steelhead (NMFS 2012). This has occurred due to the development of water infrastructure, agriculture, urbanization, and climate change-induced events including catastrophic wildland fire and drought. Water storage, withdrawal, diversions, flood control, and hydropower have greatly reduced, disconnected, simplified, or eliminated Southern steelhead habitat. These actions have modified natural flow and sediment regimes, which in turn have resulted in degraded water quality, changes in aquatic species communities, depletion of necessary flows for life-history development, and disrupted habitat maintenance processes (NMFS 2012). The Conservation Action Planning (CAP) Workbooks (Hunt, 2008) prepared for NMFS informed the federal recovery plan and hold true today. The CAP Workbooks resulted from reviewing existing information on steelhead habitat conditions and assessing the magnitude and extent of threats to steelhead and their habitats. These workbooks were used to develop recovery planning actions across the DPS.

Large dams in the Ventura River, Santa Clara River, Santa Ynez River, Malibu Creek, and other impassable barriers created by water diversions, flood control channels and certain bridges have had the most profound effect on blocking Southern steelhead migration between the ocean and upstream freshwater spawning, rearing, and foraging areas. These barriers disconnect the longitudinal and lateral ecosystem processes of the headwaters from lower sections and restrict floodplain access. This not only blocks migration to upstream spawning, rearing and foraging habitat but also restricts and impedes the effective out-migration of smolts (Stoecker and Kelley 2005). In some cases, migration through and access to critical habitat is blocked as is the case for 100-ft tall Rindge Dam in the lower three miles of Malibu Creek in the Santa Monica Mountains BPG (U.S. Army Corps of Engineers, 2020). Land development, whether for agriculture or urban development, leads to reduction in habitat complexity, alteration of flow and sediment transport, and degrades water quality (Moyle et al. 2017). Both agriculture and urbanization increase water demand. Even though almost 80% of water in Southern California is imported, over-reliance on surface diversion and groundwater pumping has resulted in depletion of instream flows and groundwater aquifers.

The rate of change in climate conditions brought on by climate crisis is a significant challenge to the continued existence of Southern steelhead. Climate change models for Southern California that evaluate conservative atmospheric forcing projections predict warmer atmospheric temperatures, sea level rise, ocean acidification, increased surface water temperatures, and changes in frequency, severity, duration, and intensity of drought and precipitation (Wade et al. 2013). Climate crises will exacerbate the problems associated with anthropogenic degradation of riverine, estuarine, and marine habitats already present (Williams et al. 2015). Floods and persistent drought conditions have periodically reduced already limited spawning, rearing, foraging habitats, and migration corridors.

Impacts to Southern steelhead from climate crisis impacts include direct effects from temperature such as mortality from heat stress, changes in growth and development rates, expanded parasite range and disease susceptibility. Changes in the flow regime also affect survival and behavior. Southern steelhead mortality and growth rates are also expected to suffer from the indirect effects that result from changes in the freshwater habitat structure and the invertebrate and vertebrate community, which govern food supply and predation risk (Crozier et al. 2008, Petersen and Kitchell 2001). Expected behavioral responses include shifts in seasonal timing of important life-history events, such as adult migration, spawning, fry emergence, and juvenile migration (Hayes et al. 2011, Boughton et al. 2009).

Direct threats to survival and reproduction include the presence of non-native vegetation and aquatic species that outcompete Southern steelhead for limited resources. Poor water quality and inconsistent water flow are hallmarks of unsuitable habitat for Southern steelhead, which can be exacerbated by competition or predation from non-native species.

As the impacts of climate change become more pervasive, catastrophic events such as fire and extended drought will lead to sudden extirpation of already fragmented populations. These reproductively isolated populations become more inbred through time, and as their genetic diversity decreases, their resilience to environmental threats may also decrease. All of these interacting and negative feedback loops have earned Southern steelhead a rating of “critically vulnerable” to the impacts of climate change, with a forecast of being likely to go extinct by 2100 without strong conservation measures (Moyle et al 2013).

Degree and immediacy of threat (H)

Southern steelhead are facing the highest degree of concern and an immediacy of threat to the continued persistence of this species over the next 50 years. Anadromous *O. mykiss* in southern California face significant threats from water and land management practices that have degraded or curtailed freshwater and estuarine habitats. This has severely reduced the capability of the species to sustain viable populations within most watersheds (Moyle et al. 2011, 2008). Given the current status of the species and the degraded condition of many freshwater and estuarine ecosystems, the continued existence of the species may be further threatened by shifts in climatic and oceanographic conditions (NMFS 2012).

Recent assessments of Southern steelhead forecast that they are in danger of extinction within the next 25–50 years due to the degradation of habitat associated with human development and the widespread impacts of climate crisis (Moyle et al 2017). This assessment is the result of a standardized protocol scoring for seven metrics: area occupied (anadromous and resident freshwater), estimated adult abundance,

dependence on human intervention for persistence, environmental tolerance under natural conditions, genetic risks, vulnerability to climate change and anthropogenic threats. Scoring of the metrics was based on literature reviews, expert knowledge, and interviews with species experts (Moyle et al 2017).

Impact of existing management efforts (I)

Federal

The principal management strategy for Southern steelhead lies at the federal level for regulatory and recovery planning within the DPS boundaries. The listing of the Southern steelhead in 1997 under the Endangered Species Act (62 FR 43937) covered steelhead in anadromous water below natural and man-made fish passage barriers within the Southern California Coastal Steelhead DPS, which followed the geographic boundaries of the Southern steelhead ESU. The original listing was bounded by the Santa Maria River at the northern end, to Malibu Creek in the Santa Monica Mountains at the southern end. After documentation of steelhead in San Mateo Creek in San Diego County by CDFW biologists in 1999-2001, and genetic analysis by NOAA showing native steelhead ancestry, the ESA listing was extended south to the U.S.-Mexico border in 2002 (67 FR 21586). As such, the federal ESA listing established requirements for steelhead consultation under NMFS jurisdiction for this amended area, and the Southern California Steelhead Recovery Plan was produced by NMFS pursuant to that listing.

Four U.S. National Forests within the DPS (Angeles, Cleveland, Los Padres, San Bernardino) all have land management practices in place that require protection and conservation decisions to account for listed species. The federal government's oversight of the Clean Water Act (CWA) Section 404/401 Program requires that any project undergo consultation with NMFS when in the listing area for Southern steelhead. Additionally, the federal government's oversight and certification of the Flood Insurance Program through the Federal Emergency Management Agency (FEMA) strongly influences development of floodplains.

Even with these tools at the federal government's disposal, their impact on the long-term survivability of Southern steelhead has been challenging. No discernable change in total population size has been detected since the species was listed by the federal government in 1997. NMFS oversight and management of the species to date has been a key component directing the work of recovering the species. This has been supplemented by project funding from multiple federal agencies to implement NMFS Recovery Plan across the DPS. As stated above, many steelhead migration barriers have been remediated since the federal ESA listing. However, a number of large fish passage barriers remain in place or not fully functional. Significant investment over the years has supported advanced engineering design for remediation of these barriers, but implementation has been problematic.

The lack of legal basis to enforce recalcitrant landowners, entities, and agencies that are responsible for providing protections under ESA has presented problems. The rapid translation of scientific advances in understanding watershed and population dynamics, the ambiguity in the criteria established by NMFS during their oversight of passage barrier remediation has hindered implemented needed restoration actions. Without the species listed under CA Endangered Species Act, NMFS is, in most cases, the only government agency with direct oversight over the condition of the species and its required habitat. This has resulted in protracted legal battles and little option for enforcement.

The impact from the loss of habitat, exploitation of natural resources and the threat from aquatic invasive species has remained unchanged in successive status reviews by NMFS (Williams et al 2011, NMFS 2016). Major milestones of the federal recovery plan remain unachieved. Obsolete dams in the Ventura River and Malibu Creek system still stand. The Vern Freeman Diversion, long recognized as an ineffective partial passage barrier on the main stem of the Santa Clara River, a Core 1 population, has not been remediated over two decades and two lawsuits. Flow releases from Bradbury Dam to support Southern steelhead development in the Santa Ynez, a Bureau of Reclamation project, were secured after a lengthy regulatory process, but Bradbury Dam provides no opportunity for passage to two-thirds of Southern steelhead native headwater habitat in this system. Additional legal protection is imperative to move forward these projects essential to the species' survival.

Another impact of the federal listing is the ability to conduct scientific analysis on the species itself. It is not for lack of interest or want that the most fundamental research to establish the genetic uniqueness of the species pre-dates the federal listing. Federal guidelines and policies on the handling of the species for research purposes are a deterrent to continued research even though there has been significant innovation and advancement in DNA and gene sequencing technology.

State of California

The State of California has several published plans that provide for the management and conservation of Southern steelhead. The Steelhead Restoration and Management Plan for California (1996) written by California Department of Fish and Wildlife is foremost among these. This management plan identified the "impending extinction" of Southern steelhead within twenty-five years. Southern steelhead were given the highest priority for department management conservation action. The State of California's application of the Public Trust Doctrine is a second tool that provides the state a broad-based legal precedent to address threats to Southern steelhead survival. Fish and Game Code Sections 1600–1603 and 5935–5937 are additional mechanisms for State oversight in the management of Southern steelhead. The California State Water Resources Control Board (SWRCB) administers the water rights permitting system. They control utilization of waters for beneficial uses throughout the state (Grantham and Moyle 2014).

However, the system does not provide an adequate regulatory mechanism to implement the requirements of CDFG Code Sections 5935–5937 for the owner of any dam to protect fish populations below impoundments. Additionally, SWRCB generally lacks the effective oversight and regulatory authority over groundwater development comparable to surface water developments for out-of-stream beneficial uses.

Section 1600 Lake or Streambed Alteration Agreements program is the principal mechanism through which the CDFW provides protection of riparian and aquatic habitats. However, increased protection through this mechanism is needed to protect riparian and aquatic habitats important to migrating, spawning, and rearing steelhead.

Finally, monitoring of stocks (particularly annual run-sizes) is essential to assess the current and future status of individual populations and the DPS, as well as to develop basic ecological information on the Southern steelhead populations of the Recovery Planning Area. However, the Coastal Monitoring Plan

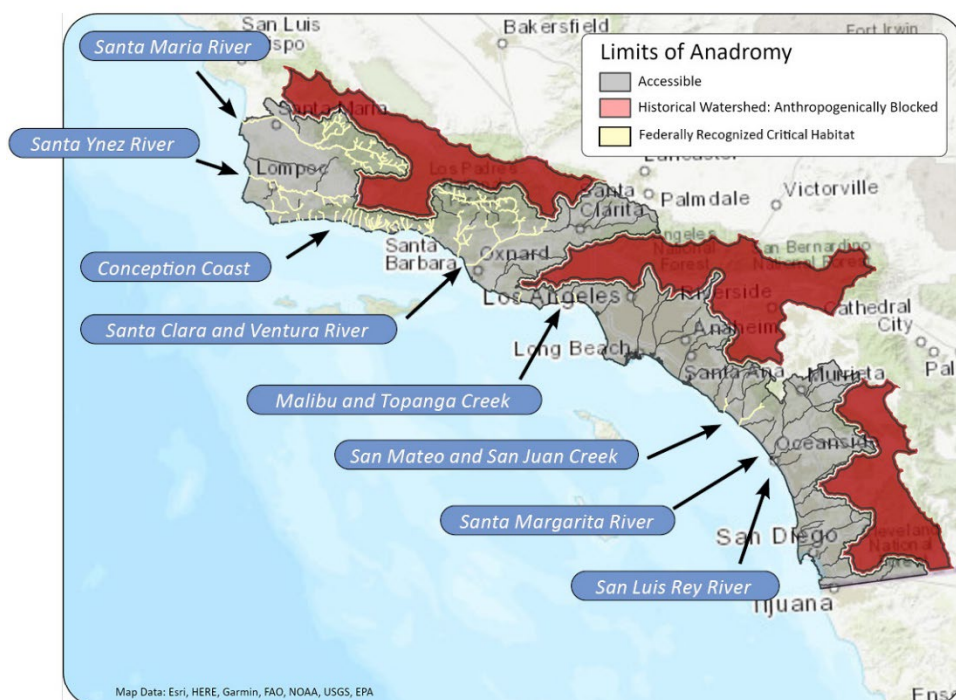
remains unfinished for the Southern California region, and long-term funding for its implementation has not been identified and secured.

Suggestions for future management (J)

CalTrout recommends that the Fish and Game Commission list the species as endangered under CESA accepting the current limits of anadromy as established by the ESA listing for this species (NMFS 2002, 2012). The federal ESA listing covers *O. mykiss* downstream of total manmade or natural barriers in anadromous waters, and these fish are under jurisdiction of NMFS. *O. mykiss* upstream of total barriers are not covered under the federal ESA listing, and are under jurisdiction of the U.S. Fish & Wildlife Service.

We need to recognize Southern steelhead as endangered at the state level to augment the protection provided by the federal listing.

This recommendation is put forth because no demonstrable increase in Southern steelhead abundance has occurred since the initial ESA listing and the threat of extinction is immediate (NMFS 2011, NMFS 2016, Moyle et al. 2017).



CalTrout wants to ensure that all state agencies have the clear mandate to prioritize for Southern steelhead protection and conservation in strategic planning, funding appropriations, and resource management plans. The listing of Southern Steelhead as endangered will provide full acknowledgement to Californians of the fundamental importance this species has to the state and the ecosystem.

Listing of the species as endangered will allow the state and its citizens to realize the value of funds invested to date in Southern steelhead recovery. Many of these Southern steelhead conservation projects are large scale efforts with multiple stakeholders, and have required significant funds for planning, design, and implementation. As more projects are planned and move into construction, the state listing will be important for successful implementation and effectiveness monitoring of these projects.

Specifically, when the commission lists the Southern steelhead as endangered, CDFW will have direct authority to oversee projects proposed within the current limits of anadromy. This will provide CDFW the

ability to establish species-specific mitigation measures that must be met for take coverage to be authorized.

CalTrout supports following the federal ESA listing coverage for below barrier steelhead, while keeping the above-barrier resident rainbow trout outside the ESA listing coverage. Above-barrier native rainbow trout are precious genetic resources for Southern steelhead recovery, but also are part of a robust sport fishery in the mountains of Southern California. Excluding these rainbow trout from CESA coverage also allows for emergency translocation after wildland fire without regulatory delays, and allows for conservation brood stock development and research to be performed to increase the genetic and geographic diversity of native rainbow trout of steelhead ancestry.

Our recommendation of adopting the federal ESA listing structure is intended to conserve key ecologic and evolutionary processes to preserve species diversity, while incorporating ESU-defining features of reproductive isolation and adaptation (Waples 1991). The anadromous component of the ESU covers a precariously small steelhead population expressing the anadromy trait in a discontinuous spatial context trending towards extinction. It therefore meets the four Viable Salmonid Population criteria (abundance, trends, spatial structure, diversity) used to guide ESA risk assessments (McElhany et al 2000), as well meeting the discrete and significant criteria for listing under CESA. The resident component of the ESU covers a large number of native rainbow trout that are geographically dispersed, but are genetically demonstrable remnant populations of Southern steelhead (Abadia-Cardoso et al 2016). These trout have been reproductively isolated behind barriers for decades, and have undergone localized adaptation.

Following the existing paradigm of quantitative genetics, most phenotypes are controlled by many genes of small effect (Waples, 2018). The interplay of neutral and adaptive loci enabling rainbow trout to survive in diverse above-barrier habitats, as well as the extent to which anadromy-associated genes are subject to selective pressure in resident trout, is not clearly understood. This is particularly evident in the case of chromosomal inversions (e.g., *Omy5* locus)(Pearse et al 2014) and transcriptional regulators (e.g., *Greb1L*)(Hess et al 2016, Prince et al 2017, Mohammed et al 2013). These have been shown to be important in triggering anadromy and/or run timing, in which a small number of genes produce a large impact on phenotypes. In this regulatory hierarchy, one or more master regulator proteins and/or epigenetic conditions can regulate hundreds of genes of varying penetrance, and thereby produce ecological/evolutionary diversity.

Native rainbow trout that have undergone adaptive evolution are still at risk from environmental threats such as drought, fire, flood in addition to anthropogenic threats. The proposed CESA management framework allows for emergency translocation of these above-barrier fish before sudden extirpation. It also allows for research to increase understanding of physiological tolerances unique to Southern steelhead and applicable to salmonids statewide. This ESA listing framework also provides for continued recreational fishing in the mountains of Southern California where native rainbow trout persist above major barriers. This in itself is a significant consideration for the state and its people. This is further impetus for the state, considering the diverse threats to steelhead and resident rainbow trout, to remove barriers and provide access to historical habitat in high priority watersheds, as identified through Intrinsic Potential modeling and designated in the NMFS Recovery Plan, to promote genetic interbreeding to the extent possible as soon as possible.

Additionally, CalTrout recommends that:

- a) special restrictions of catch-and-release, barbless lures only regulations apply to native trout in areas demonstrated to have steelhead lineage (Abadia-Cardoso et al 2016),
- b) signs be posted and fishing survey boxes be installed at key access points in the DPS for fishers that clearly state the role of these native rainbow trout in Southern steelhead recovery and what information is being collected,
- c) only triploid (non-reproducing) rainbow trout be stocked in streams within the DPS, and
- d) that stocked reservoirs and still-water bodies have adequate barriers to escape of hatchery trout into high priority Southern steelhead recovery rivers throughout the DPS.

CalTrout recommends the adopting of the current ESA listing area not only to preserve the organizing principles that currently directs recovery actions, but also to establish a state-level endangered species redundancy. For a species that is endemic and iconic to the coast of Southern California, redundancy in the species' protection at the state level will lay the groundwork for redundancy in Southern steelhead populations within the DPS.

Availability and sources of information (K)

The National Marine Fisheries Service as a part of the National Oceanic and Atmospheric Administration generated the majority of the information presented here through the NMFS Southern California steelhead Recovery Plan and 5-year status reviews, other technical documents, scientific publications, and biological opinions. CDFW and other state agencies have published Southern steelhead planning, recovery, and assessment documents which have also served to draft this petition. CDFW's Steelhead Restoration and Management Plan for California and NMFS's Southern California Steelhead Recovery Plan are cited throughout. Extensive research on *O. mykiss* physiological tolerances and behavior, particularly on resident rainbow trout, is provided by reference herein, as well as the most recent assessment of adult steelhead population abundance (Dagit et al. 2020).

The scoring of the potential for extinction of Southern steelhead is a product of the comprehensive overview of salmonid species in California conducted most recently by Moyle and co-authors in 2017.

CESA Listing Factors

CESA regulates that a species should be listed as endangered or threatened if the Fish and Game Commission determines that its continued existence is in serious danger by one or any combination of the following factors:

Present or Threatened Modification or destruction of habitat

Southern steelhead have declined in large part because of the degradation, simplification, fragmentation, and total loss of habitat (Hunt & Associates 2008). The destruction of habitat is the result of human land use, agriculture, and flood control management decisions. Water withdrawal, storage, conveyance, and diversions have greatly reduced or eliminated historically accessible Southern steelhead habitat.

Modification of natural flow regimes by water infrastructure development has resulted in increased water temperatures and depleted the flow necessary for migration, spawning, rearing, and forging. This has also resulted in the disruption of habitat forming and ecosystem maintenance processes. While previous loss of habitat was strictly the result of more tangible, direct anthropogenic activity, climate crisis is amplifying these impacts at an accelerating pace.

This assessment of the Present or Threatened Modification or Destruction of habitat is the result of a comprehensive analysis outlined in the Conservation Action Planning Workbooks. This process used available information in a consistent, transparent, and reproducible fashion to assess aquatic habitat quality and anthropogenic threats to that habitat (The Nature Conservancy 2010, Kier Associates and NMFS 2008, Hunt & Associates 2008). This process was applied to all 45 watersheds that comprise the Southern steelhead DPS. The assessment published in 2012 concluded that the general DPS-wide condition of all major watershed was “Fair” to “Poor” with only 4 of the 45 watersheds were assessed to score a “Good” rating (NMFS 2012).

The DPS-wide threat of habitat modification and destruction remains a concern (NMFS 2011, NMFS 2016). While a number of smaller restoration actions have created landscape level habitat improvements, the practices over the past century including large dam construction, mainstem channel straightening and floodplain disconnection, remain in place and their legacy of alteration continues to ripple through time to this day.

Overexploitation

Southern steelhead populations historically supported an important recreational fishery throughout their range. Reporting on recreational angling for Southern steelhead on the Santa Ynez indicated a vibrant fishery with substantial angling opportunities prior to development of the Bradbury Dam/Lake Cachuma Facilities. Similar accounts are true for the Ventura, Santa Clara, and other river systems such as San Juan Creek and San Mateo Creek in the DPS (NMFS 2012). Recreational angling for Southern steelhead increased the mortality of returning and freshwater-resident adults, but is not considered the principal cause for the decline of the species (NMFS 2012).

Predation

Introductions of non-native aquatic invasive species (AIS) resulted in increased predator populations in numerous river systems in the DPS. Once established, these introduced species increase the level of predation experienced by native salmonids (NMFS 1996, Busby et al. 1996). AIS in the Southern steelhead DPS are pervasive and deleterious. These species are known to prey on rearing juvenile Southern steelhead (Cucherousset and Olden 2011).

NMFS concluded that the information available on these impacts to steelhead did not suggest that the DPS was in danger of extinction, or likely to become so in the foreseeable future because of predation. (NMFS 2012). It is recognized that small, isolated populations of Southern steelhead can be more vulnerable to extinction through the combination of multiple secondary threats, and the role predation plays may be heightened under the current degraded condition of their native habitat.

Competition

In addition to the increase of predation on Southern steelhead by AIS, Southern steelhead are also in direct competition for critical aquatic habitat and resources with AIS (Marks et al. 2010, Scott and Gill 2008, Fritts and Pearson 2006, Bonar et al. 2005, Dill and Cordone 1997) including fishes and amphibians such as largemouth bass, redeye bass, bullhead, sunfish species, and bullfrogs. All these species thrive in warmer slow-moving water. They can also withstand lower water quality conditions than Southern steelhead. The combination of a Mediterranean climate and decades of habitat loss led to habitat conditions suitable for uncontrolled AIS population growth. This uncontrolled population growth of AIS is evident in Sespe Creek, a tributary of the Santa Clara River. Designated as critical habitat by NMFS and a State identified Wild and Scenic River, it is teeming with AIS in the slow-moving pool habitat. However, in the smaller tributaries in this system with cool water temperatures and greater slope, there are healthy juvenile Southern steelhead population numbers (Stillwater 2019).

The presence of invasive species in San Mateo Creek in northern San Diego County is another example where invasive species threaten the recovery of Southern steelhead. In recent years, the San Diego Regional Water Quality Control Board has sought to combat this problem using a novel approach by preparing a 303d listing for invasive aquatic species in San Mateo Creek as a non-point source pollutant. This proposal has received preliminary approval by the Regional Water Board for incorporation into the San Diego Regional Basin Plan. A formal 303d listing would open up significant funding to remove invasive aquatic species from San Mateo Creek. The last purported Southern steelhead observed in 2017 in lower San Mateo Creek was likely lost due to predation by invasive species.

Disease

The combination of disease, AIS infestation and predation are likely to play a major role in the population size of Southern steelhead. Many diseases are known to influence the development and survival of steelhead (Noga 2000, Wood 1979, Rucker et al 1953), although limited data or information exists to explicitly link infection levels and rate of mortality (NMFS 2012). With the increased environmental stress on resident rainbow trout populations that are experiencing impacts due to climate crisis, they will likely encounter new parasites that have expanded range which may lead to sudden extirpations of the few remaining coastal steelhead populations.

Other Natural Occurrences or human related activities

Southern steelhead are on the front line for climate crisis impacts. The DPS covers the southern edge of the species' total range on the West Coast. The DPS is projected to experience the greatest overall increase of air and water temperatures. Persistent drought has increased surface air temperatures and altered natural precipitation patterns (Williams et al. 2015, NMFS 2016). This has accelerated the loss of habitat needed for all life-history stages for an already stressed population. Climate change will have a significant impact on their continued existence (Wade et al 2013). Climate crisis impacts on salmonid species are increasing over time. Building resiliency into the remaining populations of Southern steelhead is essential to their survival (Williams et al. 2016) and to the survival of salmonids further north along the coast. Even given their inherent plasticity, the impacts of climate crisis will outpace their ability to utilize this flexibility. The most recent NMFS 5-year status review completed in 2016 concluded that the ongoing drought and ocean conditions in the years preceding its publication likely reduced the survival of Southern steelhead across the DPS.

Conclusion

Southern steelhead are an iconic California species that deserve the highest level of state protection. State and federal entities have had decades to address the precipitous and continuing decline in Southern steelhead populations through all manner of guidance, policy, and mandate. Yet this species remains on the brink of extinction throughout its range. The principal condition for protection under CESA is met.

Southern steelhead have an irreplaceable impact on Southern California watersheds and communities. The total loss of this species will have irreversible consequences.

For this reason and all of those presented in this petition, CalTrout requests that the California Fish and Game Commission use the powers that it has vested to list this species as endangered under the California Endangered Species Act. We must ensure that future Californians have the ability to enjoy this amazing species.

Sincerely,



Curtis Knight
Executive Director
California Trout

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Memorandum

Date: October 29, 2021

To: Melissa Miller-Henson
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Evaluation of the Petition to List Southern California steelhead (*Oncorhynchus mykiss*) as Endangered under the California Endangered Species Act**

The California Department of Fish and Wildlife (Department) has completed its evaluation of the Petition to list Southern California steelhead as an endangered species (Petition) under the California Endangered Species Act, Fish and Game Code section 2050 et seq. The California Fish and Game Commission (Commission) received the Petition from California Trout on June 14, 2021. Pursuant to Fish and Game Code section 2073, the Commission referred the Petition to the Department on June 23, 2021. On July 9, 2021, in accordance with Fish and Game Code section 2073.5, subdivision (b), the Department requested a 30-day extension to further analyze the Petition and complete its evaluation report. The Commission approved this request, and the due date for the Petition evaluation is October 21, 2021.

The Department completed the attached Petition evaluation report pursuant to Fish and Game Code section 2073.5. (See also Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1).). The Department's evaluation report delineates the categories of information required in a petition and evaluates the sufficiency of the available scientific information regarding each of the Petition components. Based upon the information contained in the Petition, the Department has determined that there is sufficient scientific information available at this time to indicate that the petitioned action may be warranted. The Department recommends that the Petition be accepted and considered.

If you have any questions or need additional information, please contact Mr. Jonathan Nelson, Environmental Program Manager, Fisheries Branch, at (916) 376-1641 or by email at [REDACTED] or Ms. Valerie Cook, Acting Branch Chief, Fisheries Branch, at (916) 616-6366 or by email at [REDACTED]

Attachment

Melissa Miller-Henson
Executive Director
Fish and Game Commission
October 29, 2021
Page 2

cc: California Department of Fish and Wildlife

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**State of California
Natural Resources Agency
Department of Fish and Wildlife**

REPORT TO THE FISH AND GAME COMMISSION

**EVALUATION OF THE PETITION
FROM CALIFORNIA TROUT
TO LIST SOUTHERN CALIFORNIA STEELHEAD (*ONCORHYNCHUS MYKISS*)
AS ENDANGERED
UNDER THE CALIFORNIA ENDANGERED SPECIES ACT**

**Prepared by
California Department of Fish and Wildlife
NOVEMBER 2021**



I. Executive Summary

California Trout (Petitioner) submitted a petition (Petition) to the California Fish and Game Commission (Commission) to list Southern California steelhead (*Oncorhynchus mykiss*) as endangered pursuant to the California Endangered Species Act (CESA), Fish and Game Code Section 2050 *et seq.* For purposes of the Petition, the Petitioner defines Southern California steelhead as all *O. mykiss*, including anadromous and resident life histories, below manmade and natural complete barriers to anadromy from the Santa Maria River, San Luis Obispo County (inclusive) to the U.S.-Mexico Border (hereinafter, all references to “Southern steelhead” are to this definition of Southern California steelhead).¹

The Commission referred the Petition to the California Department of Fish and Wildlife (Department) in accordance with Fish and Game Code Section 2073. (Cal. Reg. Notice Register 2017, No. 13-Z, p. 479.) Pursuant to Fish and Game Code Section 2073.5 and Section 670.1 of Title 14 of the California Code of Regulations, the Department has prepared this evaluation report for the Petition (Petition Evaluation). The Petition Evaluation is an evaluation of the scientific information discussed and cited in the Petition in relation to other relevant information possessed or received by the Department. The Department’s recommendation as to whether to make Southern steelhead a candidate for listing under CESA is based on an assessment of whether the scientific information in the Petition is sufficient under the criteria prescribed by CESA to consider listing Southern steelhead as endangered.

After reviewing the Petition and other relevant information, the Department determined the following:

- Population Trend. The Petition provides sufficient scientific information on the trend of Southern steelhead populations to indicate that the petitioned action may be warranted. The Petition describes how Southern steelhead populations have declined substantially from their historical numbers and many populations have been extirpated.
- Range. The Petition provides sufficient scientific information about the range of Southern steelhead to indicate that the petitioned action may be warranted. The Petition specifies that the listing should only include anadromous and resident Southern steelhead populations below artificial and natural total barriers.

¹ Petitioner did not specify whether they are seeking listing as a subspecies, an evolutionarily significant unit (ESU), or a distinct population segment (DPS). NMFS previously listed Southern steelhead as an ESU, then later changed the listing to a DPS. If the Commission finds that the Petition contains sufficient information to indicate that the petitioned action may be warranted and accepts the Petition for further consideration, the Department will consider the appropriate listing classification, if any, during the development of the status review.

- Distribution. The Petition provides sufficient scientific information on Southern steelhead distribution to indicate that the petitioned action may be warranted. The Petition mostly attributes current distribution to major fish passage barriers.
- Abundance. The Petition provides sufficient scientific information on both historical and recent Southern steelhead abundance to indicate that the petitioned action may be warranted. The Petition states that according to recent abundance estimates Southern steelhead populations have extremely low numbers or have been extirpated.
- Life History. The Petition provides sufficient scientific information on Southern steelhead life history to indicate that the petitioned action may be warranted.
- Kind of Habitat Necessary for Survival. The Petition provides sufficient scientific information on the types and conditions of habitats necessary for the survival of Southern steelhead to indicate that the petitioned action may be warranted.
- Factors Affecting the Ability to Survive and Reproduce. The Petition provides sufficient scientific information on factors affecting the ability of Southern steelhead to survive and reproduce to indicate that the petitioned action may be warranted. The Petition cites major passage barriers and impacts of climate change as two such factors.
- Degree and Immediacy of Threat. The Petition contains sufficient scientific information on the degree and immediacy of threats to the survival of Southern steelhead populations to indicate that the petitioned action may be warranted. The Petition states that remaining populations of Southern steelhead are in danger of going extinct within the next 25-50 years. Based on available abundance estimates and presence/absence data, and the various threats present within the Southern steelhead range, populations appear to be extremely depressed or extirpated and it is likely that remaining populations are in immediate danger of extirpation.
- Impacts of Existing Management. The Petition contains sufficient scientific information on the impacts of existing management to indicate that the petitioned action may be warranted. The Petition states that existing federal and state management measures do not adequately protect Southern steelhead from threats to their survival.
- Suggestions for Future Management. The Petition contains sufficient scientific information on suggestions for future management to indicate that the petitioned action may be warranted. In addition to listing Southern steelhead as endangered under CESA, the Petition suggests specially restricting fishing, collecting angler

data, and minimizing interaction of hatchery trout with natural-origin steelhead.

- Availability and Sources of Information. The availability and sources of scientific information provided in the Petition are sufficient to indicate that the petitioned action may be warranted. The Petition has an 8-page bibliography and frequently cites publications by the National Marine Fisheries Service (NMFS).
- A Detailed Distribution Map. The detailed map of Southern steelhead distribution in the Petition provides sufficient scientific information to indicate that the petitioned action may be warranted. The Petition includes an additional map showing watershed areas that were historically occupied by Southern steelhead but are now anthropogenically blocked from Southern steelhead.

The Petition requests that the Commission list Southern steelhead as endangered under CESA. The Petitioner defines Southern steelhead as all *O. mykiss*, including anadromous and resident life histories, below manmade and natural complete barriers to anadromy from the Santa Maria River, San Luis Obispo County (inclusive) to the U.S.-Mexico Border. A Southern California steelhead Distinct Population Segment (Southern California steelhead DPS) is currently listed as endangered under the federal Endangered Species Act (ESA) with the same geographic scope; however, that federal listing includes only naturally spawned anadromous *O. mykiss*.

The Petition Evaluation is an evaluation of the scientific information discussed and cited in the Petition in relation to other relevant information possessed or received by the Department. In completing its Petition Evaluation, the Department has determined the Petition provides sufficient scientific information to indicate that the petitioned action may be warranted. Therefore, the Department recommends the Commission accept the Petition for further consideration under CESA.

II. Introduction

A. Candidacy Evaluation

CESA sets forth a two-step process for listing a species as threatened or endangered. First, the Commission determines whether to designate a species as a candidate for listing by determining whether the petition provides “sufficient information to indicate that the petitioned action may be warranted.” (Fish & G. Code, § 2074.2, subd. (e)(2).) If the petition is accepted for consideration, the second step requires the Department to produce, within 12 months of the Commission’s acceptance of the petition, a peer reviewed report based upon the best scientific information available that indicates whether the petitioned action is warranted. (Fish & G. Code, § 2074.6.) The Commission, based on that report and other information in the administrative record, then determines whether the petitioned action to list the species as threatened or endangered is warranted. (Fish & G. Code, § 2075.5.)

A petition to list a species under CESA must include “information regarding the population trend, range, distribution, abundance, and life history of a species, the factors affecting the ability of the population to survive and reproduce, the degree and immediacy of the threat, the impact of existing management efforts, suggestions for future management, and the availability and sources of information. The petition shall also include information regarding the kind of habitat necessary for species survival, a detailed distribution map, and other factors the petitioner deems relevant.” (Fish & G. Code, § 2072.3; see also Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1).) The range of a species for the Department’s petition evaluation and recommendation is the species’ California range. (*Cal. Forestry Assn. v. Cal. Fish and Game Com.* (2007) 156 Cal. App. 4th 1535, 1551.)

Within 10 days of receipt of a petition, the Commission must refer the petition to the Department for evaluation. (Fish & G. Code, § 2073.) The Commission must also publish notice of receipt of the petition in the California Regulatory Notice Register (Fish & G. Code, § 2073.3.). Within 90 days of receipt of the petition, the Department must evaluate the petition on its face and in relation to other relevant information the Department possesses or receives and submit to the Commission a written evaluation report with one of the following recommendations:

- Based upon the information contained in the petition, there is not sufficient information to indicate that the petitioned action may be warranted, and the petition should be rejected; or
- Based upon the information contained in the petition, there is sufficient information to indicate that the petitioned action may be warranted, and the petition should be accepted and considered.

(Fish & G. Code, § 2073.5, subds. (a)(1), (a)(2).) However, “Upon the request of the [Director of the Department], the [C]ommission may grant the [D]epartment an extension of time, not to exceed 30 days, to allow the [D]epartment additional time to further analyze and evaluate the petition and complete its evaluation report.” (Fish & G. Code, § 2073.5, subd. (b).) The Department’s candidacy recommendation to the Commission is based on an evaluation of whether the petition provides sufficient scientific information relevant to the petition components set forth in Fish and Game Code Section 2072.3 and the California Code of Regulations, Title 14, Section 670.1, subdivision (d)(1).

In *Center for Biological Diversity v. California Fish and Game Commission* (2008) 166 Cal. App. 4th 597, the California Court of Appeals addressed the parameters of the Commission’s determination of whether a petitioned action should be accepted for consideration pursuant to Fish and Game Code Section 2074.2, subdivision (e), resulting in the species being listed as a candidate species. The court began its discussion by describing the standard for accepting a petition for consideration

previously set forth in *Natural Resources Defense Council v. California Fish and Game Commission* (1994) 28 Cal. App. 4th 1104:

As we explained in *Natural Resources Defense Council* [citation], “the term ‘sufficient information’ in section 2074.2 means that amount of information, when considered with the Department’s written report and the comments received, that would lead a reasonable person to conclude the petitioned action may be warranted.” The phrase “may be warranted” “is appropriately characterized as a ‘substantial possibility that listing could occur.’” [Citation] “Substantial possibility,” in turn, means something more than the one-sided “reasonable possibility” test for an environmental impact report but does not require that listing be more likely than not. [Citation]

(*Center for Biological Diversity, supra*, 166 Cal. App. 4th at pp. 609-10.) The court acknowledged that “the Commission is the finder of fact in the first instance in evaluating the information in the record.” (*Id.* at p. 611.) However, the court clarified:

[T]he standard, at this threshold in the listing process, requires only that a substantial possibility of listing could be found by an objective, reasonable person. The Commission is not free to choose between conflicting inferences on subordinate issues and thereafter rely upon those choices in assessing how a reasonable person would view the listing decision. Its decision turns not on rationally based doubt about listing, but on the absence of any substantial possibility that the species could be listed after the requisite review of the status of the species by the Department under [Fish and Game Code] section 2074.6

(*Ibid.*) CESA defines the “species” eligible for listing to include “species or subspecies” (Fish & G. Code, §§ 2062 and 2067), and courts have held that the term “species or subspecies” includes “evolutionarily significant units.” (*Central Coast Forest Assn. v. Fish & Game Com.* (2018) 18 Cal.App.5th 1191, 1236, citing *Cal. Forestry Assn., supra*, 156 Cal. App. 4th at pp. 1542 and 1549.)

B. Petition History

In 1997 NMFS listed a Southern California steelhead Evolutionarily Significant Unit (Southern California steelhead ESU) as endangered under the federal ESA. That listed ESU was defined as anadromous *O. mykiss* below manmade and natural complete barriers to anadromy from the Santa Maria River, San Luis Obispo County (inclusive) to Malibu Creek, Los Angeles County (62 FR 49937). In 2002, NMFS expanded the range of the Southern California steelhead ESU south to the U.S.-Mexico Border following additional *O. mykiss* occurrences and documented spawning activity south of Malibu Creek (67 FR 21586). In 2004, NMFS proposed including resident populations of *O. mykiss* that co-occur with anadromous populations in the Southern California steelhead ESU (69 FR 33101), but NMFS did not adopt that proposal. In 2005, NMFS proposed changing the Southern California steelhead ESU listing to a Southern California steelhead DPS listing (70 FR 67130). In 2006, NMFS adopted that proposal (71 FR

833) and has not made any changes to the scope of the Southern California steelhead DPS listing since then. The Southern California steelhead DPS currently listed under the federal ESA only includes naturally spawned anadromous *O. mykiss* originating in streams below natural and manmade impassable barriers from the Santa Maria River (inclusive) to the U.S.-Mexico Border (71 FR 833; 50 CFR 224).

On June 14, 2021, the Commission received from California Trout the Petition to list Southern steelhead, including both anadromous and resident life histories of *O. mykiss*, as endangered under CESA. On June 23, 2021, the Commission referred the Petition to the Department for evaluation. On July 9, 2021, in accordance with Fish and Game Code Section 2073.5, subdivision (b), the Department requested a 30-day extension to further analyze the Petition and complete its evaluation report. The Commission approved this request, and, accordingly, the Department's Petition Evaluation was due to the Commission by October 21, 2021.

On October 4, 2021, the Department emailed the Petitioner to ask for clarification on the definition of "Southern California steelhead" as used in the Petition. On October 5, 2021, the Petitioner emailed the Department back with the following clarification: "CalTrout defines Southern California steelhead as all *Oncorhynchus mykiss*, including anadromous and resident life histories, below manmade and natural complete barriers to anadromy from the Santa Maria River, San Luis Obispo County (inclusive) to the U.S.-Mexico Border with the understanding that anadromous (adult southern steelhead) arise from anadromous and resident naturally spawning adults." This definition is well supported by the Petition. The Department asked the Petitioner for this clarification because of references on pages 3, 15, and 16 of the Petition to the current listing of the Southern California steelhead DPS under the federal ESA that appeared to incorrectly describe the scope of that ESA listing to include the resident life history of *O. mykiss* below natural and manmade impassable barriers. Those references created some uncertainty about how the Petitioner intended to define Southern California steelhead in the Petition. The Petitioner's clarification in their email response on October 5, 2021, resolved that uncertainty.

The Department submitted this Petition Evaluation report to the Commission on November 17, 2021. The Commission has not previously received a petition to list Southern steelhead under CESA.

The Department evaluated the scientific information discussed and cited in the Petition in relation to other relevant information the Department possessed or received as of October 29, 2021. That other relevant information included letters received by the Department from United Water Conservation District on August 17, 2021; the Association of California Water Agencies on August 19, 2021; Casitas Municipal Water District on August 20, 2021; the Mountains Recreation and Conservation Authority on September 16, 2021; Rancho Mission Viejo on September 17, 2021; the Santa Monica Mountains Conservancy on September 21, 2021; and Cachuma Conservation Release Board on October 20, 2021. In accordance with Fish and Game Code Section 2073.5,

subdivision (c), this Petition Evaluation includes copies of those letters in Appendix A. The letters from United Water Conservation District, Casitas Municipal Water District, Rancho Mission Viejo, and Cachuma Conservation Release Board included references to other documents. The Department reviewed and considered those referenced other documents as part of its evaluation of the Petition. Those referenced other documents are available for review upon request to the Department: contact Vanessa Gusman, Senior Environmental Scientist (Specialist), at [REDACTED].

Pursuant to Fish and Game Code Section 2072.3 and Section 670.1, subdivision (d)(1), of Title 14 of the California Code of Regulations, the Department evaluated whether the Petition includes sufficient scientific information regarding each of the following petition components to indicate that the petitioned action may be warranted:

- Population trend;
- Range;
- Distribution;
- Abundance;
- Life history;
- Kind of habitat necessary for survival;
- Factors affecting ability to survive and reproduce;
- Degree and immediacy of threat;
- Impacts of existing management;
- Suggestions for future management;
- Availability and sources of information; and
- A detailed distribution map.

C. Overview of Southern steelhead

The Southern steelhead geographic range extends from the Santa Maria River in Santa Barbara County south to the U.S.-Mexico Border. *Oncorhynchus mykiss* is a polymorphic species with two distinct alternative phenotypes: anadromous, which migrate to and from the ocean; and resident, which never migrate to the ocean (Behnke 1992). Common nomenclature refers to the anadromous life history as “steelhead” and the resident life history as “Rainbow Trout.” The two forms are sympatric, i.e., they can interbreed, throughout much of their range (McMillan et al. 2007), and offspring can express either life history (Pascual et al. 2001). The expression of anadromy or residency is subject to a fish’s genotype, individual condition, and environmental factors (Sloat et al. 2014). Juvenile steelhead and Rainbow Trout are difficult to distinguish

without genetic (Pearse et al. 2014), morphological (Beeman et al. 1995; Haner et al. 1995), or physiological evaluations (Negus 2003). Adult steelhead returning from the ocean are easier to identify due to their larger size and overall steel-gray color (Dagit et al. 2020).

In southern California, steelhead upstream migration typically begins in the winter, with returning adults relying on winter rainstorms to breach sandbars and provide connectivity to estuaries and lagoons, enabling passage into creeks for spawning from December through May (California Trout 2019). Spawning occurs in shallow, flowing water and gravel substrate usually near the crest of pool habitats. Adequate stream flow, gravel size, and embeddedness are crucial for egg survival as they allow for oxygenated water to permeate through sediment to the egg (Coble 1961). When a female steelhead finds adequate spawning grounds, it will use its caudal fin to excavate a redd where eggs are deposited and fertilized by a male. Unlike other anadromous salmonids, steelhead do not always die after a reproductive cycle and may try to return to the ocean. If adult steelhead cannot emigrate back to the ocean after spawning, they require large, deep pools that provide refuge during the hot summer months (Boughton et al. 2015).

Steelhead embryos take anywhere from three weeks to two months to hatch depending on water temperature (Turner et al. 2007). Fish hatch as alevin with their yolk sacs still attached and will continue to live in the gravel for an additional two to six weeks before emerging (NMFS 2012). Once emerged as fry they will spend a few months developing in shallow water along the stream bank. As they grow into parr, they develop a pink stripe and oval parr marks along their lateral line. As parr, they continue to grow for an additional 1-4 years and begin to establish territories. Larger steelhead outcompete smaller steelhead for ideal habitats like deep pools while smaller steelhead inhabit riffles (Barnhart 1986). Parr will ultimately begin transitioning into smolts and migrate downstream to estuaries and lagoons where they complete the process of smoltification, which involves morphological and physiological changes as fish prepare for a marine environment (Fessler and Wagner 1969). Migration to the ocean typically occurs during mid to late spring but can vary depending on connectivity between the ocean and estuary/lagoon (Booth 2020). Resident Rainbow Trout early life stages mirror those of anadromous steelhead until their life history strategies diverge (Moyle 2002). Rather than migrating to the ocean, resident *O. mykiss* will reside in freshwater for the remainder of their lives.

Steelhead will remain in the ocean for 1-4 years (two years is typical) before returning to their natal streams to spawn (Barnhart 1986). Studies documenting steelhead ocean behavior, distribution, and movement are limited, but like other salmonids, steelhead exhibit strong homing behavior to their natal streams. However, evidence of straying has been documented in steelhead in central California (Donohue et al. 2021), and genetic population structure analyses suggest that there was historical exchange of genetic information between coastal populations (Garza et al. 2014).

A central premise of the Petition is that Southern steelhead population abundances are extremely low, and populations are in danger of extinction in the next 25-50 years due to anthropogenic and environmental impacts (Moyle et al. 2017). Moyle et al. (2008) estimated fewer than 500 annual anadromous adult returns for Southern steelhead, with far fewer spawning anadromous adults. Since the listing of the Southern California steelhead ESU in 1997, Southern steelhead abundance has not substantially increased, and populations have likely declined during recent drought years. Southern steelhead exhibit unique adaptations, life histories, and genetics and, therefore, represent an important component of steelhead diversity in California.

III. Sufficiency of Scientific Information to Indicate that the Petitioned Action May Be Warranted

The Petitioner provided sufficient scientific information on Southern steelhead to indicate that the petitioned action may be warranted. Information was provided on population trend, range, distribution, abundance, life history, habitat necessary for survival, factors affecting the ability to survive and reproduce, degree and immediacy of threat, impacts of existing management efforts, and suggestions for future management. The Petition also contains sources of information, which were cited throughout the document to support the information presented.

While most of the information included in the Petition is supported by citations to relevant studies, in some instances the Petitioner did not provide citations for their statements. For example, in the section on habitat necessary for survival, starting on page 9 of the Petition, the Petitioner discusses use of various habitat types by *O. mykiss* of different life stages but provides few citations to support the information presented. The Department found that support for most uncited statements in the Petition can be found in McElhany et al. (2000), Crozier et al. (2008), Moyle et al. (2008), NMFS (2012), Jacobson et al. (2014), and Moyle et al. (2017). To the extent the Petition makes assertions without citing specific support, the Department assumes these statements to be true for purposes of the Petition Evaluation. If the Commission accepts the Petition for further consideration, the Department will need to verify these statements during the status review period.

There are a few statements in the Petition that may need further clarification if the Commission accepts the Petition for further consideration. For example, on page 7 the Petition mentions life-cycle monitoring stations at Vern Freeman Diversion Fish Ladder and Robles Diversion Fish Passage Facility; however, monitoring efforts at these sites are primarily fixed counting stations associated with fish ladders and do not technically constitute full life-cycle monitoring stations as described in Fish Bulletin 180 (Adams et al. 2011). Additionally, the Department could not verify the numbers provided for the total watershed area (12,700 mi²) and stream mileage (25,700 mi) within the Southern steelhead range on page 4 of the Petition. The Department determined that the approximate total watershed area and stream mileage for the Southern steelhead range

are 11,586 mi² and 15,758 mi, respectively (NMFS 2012). For purposes of the Petition Evaluation, the Department assumes these statements in the Petition to be correct.

On page 2 of the Petition, the Petitioner also discussed the potential contribution of Southern steelhead adaptive traits to northern populations of steelhead. The current knowledge of steelhead population genetic structure is that, while there is a degree of straying and gene flow between populations, migration to nearby basins decreases as distance between basins increases (Clemento et al. 2008; Garza et al. 2014). The extent of genetic exchange occurring between Southern steelhead and more northern populations is unknown.

Much of the information presented in the Petition is focused on the anadromous life history of Southern steelhead, particularly the population abundance and trend information. Information on population abundance and trends of resident *O. mykiss* below barriers in southern California is limited, though the Department has internal data on resident *O. mykiss* observations in various southern California streams collected by the Department and the Santa Monica Mountains Resource Conservation District (RCD) for the years 2004 – 2021.

A. Population Trend

i. Scientific information in the Petition

The information regarding population trends is contained on page 2 of the Petition. The Petition references multiple sources, primarily from NMFS, that describe the declines of Southern steelhead populations from tens of thousands of returning anadromous adults to fewer than 500 in recent years. The Petition states that the status of the Southern steelhead populations has not changed considerably since Southern California steelhead ESU was listed under the ESA in 1997. Referenced documents indicate that multiple populations have been extirpated and the largest historical populations in the Santa Ynez River, Ventura River, Santa Clara River, and Malibu Creek watersheds, have declined over 90 percent. A compilation of various Southern steelhead observation data from 1994 through 2018 documents only 177 observed anadromous adult Southern steelhead within the past 25 years (Dagit et al. 2020).

ii. Other relevant information

While abundance estimates are not available for all populations of Southern steelhead, available presence/absence data shows a downward trend. Of the 52 priority recovery watersheds listed in the NMFS recovery plan for the Southern California steelhead DPS, only 8 watersheds contain a remnant population and most of those are above total barriers (Department internal data, M. Larson). NMFS determined that an annual run size greater than 4,150 anadromous adults would constitute a viable population in the Southern California steelhead DPS (NMFS 2012; Williams et al. 2016).

The Department has internal data on resident *O. mykiss* observations in various southern California streams collected by the Department and the Santa Monica

Mountains RCD for the years 2004 – 2021. However, these *O. mykiss* observations do not equate to total estimates of population abundance in streams for which they are available.

iii. Conclusion

The Petition provides sufficient scientific information on the trend of Southern steelhead populations to indicate that the petitioned action may be warranted. The Petition describes how Southern steelhead populations have declined substantially from their historical numbers and many populations have been extirpated.

B. Range

i. Scientific information in the Petition

Information on Southern steelhead range is provided on pages 3-4 of the Petition. A map showing the Southern California steelhead DPS geographic range is on page 5. The Southern California steelhead DPS includes coastal streams from the Santa Maria River down to the U.S.-Mexico Border; however, this defined range includes some stream areas not suitable to steelhead. The Petition states that intrinsic potential (IP) modeling was used to rank priority watersheds within the DPS into Core 1, Core 2, and Core 3 populations based on their capacity to support steelhead populations. Notably, assignment of these categories to Southern California steelhead DPS watersheds is based on both quantitative IP modeling as well as qualitative evaluation of restoration potential of the watershed and its capacity to support viable steelhead populations.

The Petition states that the current Southern California steelhead DPS boundaries are supported by genetic relationships between steelhead populations in California. Populations within the Southern California steelhead DPS have different genetic markers than those in other California steelhead DPSs. It is also worth noting that although the South-Central California Coast steelhead DPS and the Southern California steelhead DPS do not have distinct lineages (Clemento et al. 2008), they are separated based on biogeography (Busby et al. 1996).

It is important to note that while the Petition requests that the Commission list Southern steelhead under CESA consistent with the geographic boundaries of the current Southern California steelhead DPS listing under the ESA, the Petitioner's definition of Southern steelhead for purposes of the Petition includes the resident life history of *O. mykiss* and the Southern California steelhead DPS listed under the federal ESA does not (see Section (II)(B) for more information).

ii. Conclusion

The Petition provides sufficient scientific information about the range of Southern steelhead to indicate that the petitioned action may be warranted. The Petition specifies that the listing should only include *O. mykiss* populations below artificial and natural total barriers. The information presented is an accurate account of the range of Southern steelhead.

C. Distribution

i. Scientific information in the Petition

Information on distribution of Southern steelhead is provided on page 6 of the Petition. The Petition notes that current distribution is influenced by fish passage barriers, most of which are anthropogenic. The Petition defines Southern steelhead distribution to be all waters below natural or manmade barriers to anadromy. The Petition emphasizes that resident and anadromous *O. mykiss* coexist throughout their southern California range and resident *O. mykiss* contribute to the steelhead populations because offspring from resident individuals can express anadromy. The Petition also notes that wildfires can impact steelhead distribution and post-fire debris flows have the potential to cause local extirpations. The Petition does not provide a detailed comparison of historical and current distribution but states that the Southern California steelhead DPS has been extirpated from approximately 60% of its historical range due to habitat fragmentation.

ii. Conclusion

The Petition provides sufficient scientific information on Southern steelhead distribution to indicate that the petitioned action may be warranted. The Petition mostly attributes current distribution to major fish passage barriers. It is likely there are some intermittent and ephemeral streams that are not occupied by or suitable for steelhead, but these were not specified in the Petition.

D. Abundance

i. Scientific information in the Petition

Information on population abundance for Southern steelhead is provided on pages 6-8 of the Petition. Historical estimates of anadromous adult abundance are provided for a few major rivers in the DPS with numbers in the thousands to tens of thousands. Review of multiple NMFS documents and Dagit et al. (2020) cited in the Petition revealed that the most robust Southern steelhead streams currently only support annual runs of anadromous adults in the single digits.

The Petition emphasizes that resident *O. mykiss* are important contributors to Southern steelhead populations and maintaining the anadromous life history of Southern steelhead. The Petitioner cites recent studies that have shown alleles associated with anadromy in resident freshwater *O. mykiss* populations, which indicates that they have the potential to express anadromy and contribute to anadromous populations. The Petition also notes that shrinking populations of freshwater resident *O. mykiss* are vulnerable to loss of genetic diversity and fitness, including the potential loss of genes associated with anadromy. The Petition states that genetic contributions of residents, as well as anadromous strays from neighboring watersheds, may be key in maintaining and improving Southern steelhead abundance.

ii. Other relevant information

As mentioned in Section (III)(A)(ii), the Department has internal data on resident *O. mykiss* observations in various southern California streams collected by the Department and the Santa Monica Mountains RCD for the years 2004 – 2021. However, these *O. mykiss* observations do not equate to total estimates of population abundance in streams for which they are available.

iii. Conclusion

The Petition provides sufficient scientific information on both historical and recent Southern steelhead abundance to indicate that the petitioned action may be warranted. The Petition demonstrates that Southern steelhead abundance has declined significantly from historical numbers and existing populations are at risk of loss of genetic diversity and fitness due to their small numbers. Abundance has not improved since the Southern California steelhead ESU was federally listed in 1997. Existing populations appear to be either extremely depressed or extirpated.

E. Life History

i. Scientific information in the Petition

Life history information is provided on pages 8-9 of the Petition. The Petition discusses the migratory and adaptive nature of Southern steelhead. It describes the length of ocean residency for the anadromous life history as one to four years prior to returning to natal rivers to reproduce. Anadromous adult Southern steelhead typically migrate upriver between January and May. The Petition states that spawn timing can vary due to environmental conditions and that inconsistency in hydrologic connectivity can affect access of Southern steelhead to their spawning grounds.

The Petition briefly describes the spawning process, egg incubation, egg hatching, juvenile rearing, outmigration, and smoltification. The Petition mentions the use of estuary environments by smolts in their transition to the ocean, and that, when available, estuary habitat can help enhance survival. The Petitioner states that Southern steelhead are found less often in estuaries than steelhead in more northern watersheds possible due to low population numbers, quick downstream migration, or poor estuary habitat, although a citation is not provided for this statement.

In addition to the description of a fluvial-anadromous life history, the Petition states that there are two other key life history strategies: freshwater-resident and lagoon-anadromous. The Petitioner clarifies that these three strategies are not the only life history pathways available and do not cover the full complexity of life history expression in Southern steelhead. Additionally, the Petition cites multiple studies that have shown expression of migratory vs. resident life history to be a result of genetics and environmental conditions.

ii. Conclusion

The Petition provides sufficient scientific information on Southern steelhead life history to indicate that the petitioned action may be warranted.

F. Kind of Habitat Necessary for Survival

i. Scientific information in the Petition

Information on habitat necessary for survival is found on pages 9-11 of the Petition. The Petition describes southern California as having a Mediterranean climate where there are strong seasonal fluctuations in precipitation, temperature, and wind patterns. These fluctuations can have a pronounced effect on accessibility of habitat suitable for Southern steelhead, which take advantage of a variety of habitat types during different stages in their life cycle. The Petition gives a generic description of juvenile and adult Southern steelhead habitat requirements including adequate water quality and depth, sufficient forage and nutrients, presence of cover habitat, and appropriate gravel size. The Petitioner notes that sedimentation and turbidity can be an issue in southern California streams due to their erodible geology.

Developmental stages of the Southern steelhead life cycle are affected by changes in temperature, dissolved oxygen, water depth, and water velocity. The Petition states that Southern steelhead may have greater temperature tolerances than more northern steelhead because Southern steelhead have adapted to a greater range of environmental conditions due to the variation in climate. The Petition states that the upper temperature tolerance for Southern steelhead is 25°C. The Petition asserts that temperature preference for juvenile Southern steelhead falls within 10-17°C. They have been observed in water temperatures as high as 28°C in the Ventura River; however, this is not preferable. The Petition specifies limits for other abiotic factors affecting juvenile and adult Southern steelhead including dissolved oxygen, water depth, and water velocity.

ii. Other relevant information

The Petition does not discuss food requirements for juveniles in the freshwater habitat. Juvenile salmonids in streams mostly consume aquatic and terrestrial invertebrates (Bjornn and Reiser 1991; Rundio and Lindley 2008). Bjornn and Reiser (1991) estimated that, in order to achieve maximum growth rates, juvenile salmonids in streams with daily temperatures around 10°C require food resources amounting to 6-7% of their body weight each day. Elevated temperatures have been found to result in increased food consumption of juvenile *O. mykiss* (Wurstbaugh and Davis 1977). It is also important to note that deep pool habitat is essential for Southern steelhead kelts that over-summer in streams if they are not able to return to the ocean (Boughton et al. 2015).

Marine conditions, such as fluctuations in sea surface temperature, can directly influence salmonid survival and production (Mantua et al. 1997). There are various

indices that describe these fluctuations in ocean conditions and can help determine years during which Pacific salmonids will experience a more productive ocean and those during which they will experience a less productive ocean. These indices include the Ocean Niño Index (ONI), Pacific Decadal Oscillation (PDO), and the North Pacific Gyre Oscillation (NPGO). Positive ONI and PDO values and negative NPGO values indicate warmer ocean temperatures and lower productivity in the California Current Ecosystem (NOAA 2021), which are typically unfavorable conditions for Pacific salmonids including Southern steelhead.

iii. Conclusion

The Petition provides sufficient scientific information on the types and conditions of habitats necessary for the survival of Southern steelhead to indicate that the petitioned action may be warranted.

G. Factors Affecting the Ability to Survive and Reproduce

i. Scientific information in the Petition

Factors affecting the ability of Southern steelhead to survive and reproduce are described on pages 11-12 of the Petition. Citing NMFS (2012), the Petition states that the decline of Southern steelhead populations can mainly be attributed to destruction, modification, and fragmentation of their native habitat. Anthropogenic water uses have negatively impacted the suitability and availability of Southern steelhead habitat. Large dams and other complete migration barriers are present on the Ventura River, Santa Clara River, Santa Ynez River, and Malibu Creek. These obstructions block access to upstream Southern steelhead habitat and can also impede smolt outmigration. The Petition notes that land development, including dams and diversions, can also have negative effects on water and sediment flows, water quality, and habitat complexity. The Petition states that water demand is high in southern California, which affects surface water and groundwater availability.

Climate change is another factor described in the Petition that poses a threat to Southern steelhead. Predicted impacts of climate change including higher temperatures, sea level rise, ocean acidification, and heightened intensity and duration of drought and precipitation will exacerbate already existing anthropogenic disturbances. As a result, Southern steelhead survival and behavior may be negatively affected. The Petition also mentions that catastrophic events such as wildfires may result in rapid extirpation of vulnerable Southern steelhead populations due to subsequent impacts on water quality.

ii. Conclusion

The Petition provides sufficient scientific information on factors affecting the ability of Southern steelhead to survive and reproduce to indicate that the petitioned action may be warranted. Specifically, large dams and obstructions have blocked off much of the historical spawning and rearing habitat of Southern steelhead and climate change will

likely have pronounced negative effects on remaining habitat and Southern steelhead survival. Stochastic events such as wildfires are also threats to the persistence of Southern steelhead.

H. Degree and Immediacy of Threat

i. Scientific information in the Petition

Discussion of the degree and immediacy of threat is on pages 12-13 of the Petition. Moyle et al. (2008, 2011, and 2017) are cited in stating that Southern steelhead are in danger of going extinct within the next 25-50 years as a result of water and land management practices that have reduced suitability and availability of habitat as well as environmental stressors produced by drought and climate change. The continued existence of Southern steelhead is threatened by many environmental and anthropogenic factors, especially given the current status of the populations (NMFS 2012).

ii. Conclusion

The Petition contains sufficient scientific information on the degree and immediacy of threats to the survival of Southern steelhead populations to indicate that the petitioned action may be warranted. Based on available abundance estimates and presence/absence data, and the various threats present within the Southern steelhead range, populations appear to be extremely depressed or extirpated and it is likely that remaining populations are in immediate danger of extirpation.

I. Impact of Existing Management Efforts

i. Scientific information in the Petition

The Petition provides a description of the impact of existing management efforts, both federal and state, on pages 13-15. NMFS released the Southern California Steelhead Recovery Plan for the Southern California steelhead DPS in 2012. Additional land development and water management regulations provide protections for Southern steelhead. However, the Petitioner states that these federal protections have not been adequate in terms of having positive population-level impacts. No positive change has been observed in population abundance since the Southern California steelhead ESU was listed under the federal ESA in 1997. The Petitioner asserts that there are also issues with enforcing legal protective actions under the ESA when landowners or other stakeholders are not cooperative.

The Petition recognizes that many large migration barriers still exist since plans for remediation of these barriers have been difficult to implement. Major recovery actions that were described in the 2012 federal recovery plan, such as the removal or remediation of dams, have yet to be addressed. Federal regulations can also be an impediment to research, which is important for enhancing knowledge of the species.

The Petition lists a few mechanisms through which the State of California should be able to protect Southern steelhead but provides reasons why these management

mechanisms are ineffective. The Petition states that Section 1600 of the California Fish and Game Code is the main way that riparian and aquatic habitats are conserved, but the Petitioner asserts that further protection is needed for steelhead habitat. The Petition also notes that the Coastal Monitoring Plan (now called the California Monitoring Plan) is not completed for southern California and funding has not been identified for full implementation of that plan.

ii. Conclusion

The Petition contains sufficient scientific information on the impacts of existing management to indicate that the petitioned action may be warranted. The Petition states that existing federal and state management measures do not adequately protect Southern steelhead from threats to their survival.

J. Suggestions for Future Management

i. Scientific information in the Petition

Suggestions for future management are discussed on pages 15-17 of the Petition. The main recommendation presented by the Petitioner is to list Southern steelhead as endangered under CESA. The Petitioner proposes that the CESA listing include all *O. mykiss*, including both anadromous and resident life histories, below manmade and natural fish passage barriers, while excluding above-barrier resident *O. mykiss*. Excluding above-barrier *O. mykiss* in the CESA listing would allow for the continuation of above-barrier recreational Rainbow Trout fisheries. The Petitioner asserts that excluding above-barrier *O. mykiss* also allows for efficient implementation of emergency translocations following wildfires and provides the opportunity for broodstock development and research to enhance genetic and geographic diversity of native *O. mykiss*.

The Petitioner says that listing Southern steelhead under CESA will preserve important phenotypic and genetic diversity of the species. They also note that with Southern steelhead listed under CESA, the Department will have the authority to create specific mitigation requirements for authorization of take. There may also be higher prioritization of implementation and effectiveness monitoring of Southern steelhead conservation projects. The Petitioner states that Southern steelhead meet the “discrete and significance criteria for listing under CESA.” These criteria are specific to the 1996 U.S. Fish and Wildlife Service and NMFS joint Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the Endangered Species Act, commonly referred to as the DPS Policy (61 FR 4722; 70 FR 67130), and are not necessarily relevant to a listing under CESA.

The Petitioner provides four additional recommendations that focus on fishing restrictions, collecting angler data, and minimizing interaction of hatchery trout with natural-origin Southern steelhead. These recommendations could be beneficial by reducing mortality of native *O. mykiss* in recreational trout fisheries. They may also

contribute to the preservation of native genetic diversity by mitigating introgression and hybridization with hatchery stocks (Waples 1991).

ii. Conclusion

The Petition contains sufficient scientific information on suggestions for future management to indicate that the petitioned action may be warranted. In addition to listing Southern steelhead as endangered under CESA, the Petition suggests specially restricting fishing, collecting angler data, and minimizing interaction of hatchery trout with natural-origin steelhead.

K. Availability and Sources of Information

The availability and sources of scientific information provided in the petition are sufficient to indicate that the petitioned action may be warranted. The Petition provides eight pages of literature cited. Much of the Petition relies on information from NMFS 5-year status reviews and the 2012 Southern California Steelhead Recovery Plan. The Petition also frequently references a recent assessment of anadromous adult Southern steelhead abundance (Dagit et al. 2020) as well as publications by Moyle and coauthors.

L. A Detailed Distribution Map

The detailed map of Southern steelhead distribution in the Petition provides sufficient scientific information to indicate that the petitioned action may be warranted. A map of the Southern California steelhead DPS established range is on page 5 of the Petition. The DPS range includes watersheds from the Santa Maria River down to the U.S.-Mexico Border. The map also shows the five defined biogeographic regions that are groupings of watersheds based on landscape and ecology. The map does not specify whether it depicts current or historical distribution, rather it shows the current boundaries of the Southern California steelhead DPS. An additional map is provided on page 15 showing historical watershed areas that are now anthropogenically blocked.

IV. Recommendation to the Commission

The Department has evaluated the Petition on its face and in relation to other relevant information the Department possesses or received and determined that the Petition provides sufficient scientific information to indicate that the petitioned action may be warranted. Therefore, the Department recommends the Commission accept the Petition for further consideration under CESA.

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Appendix A.

Copies of Letters Received by the Department During Its Evaluation of the Petition



Board of Directors
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August 17, 2021

Vanessa Gusman
California Department of Fish and Wildlife
Fisheries Branch
PO Box 944209
Sacramento, CA 94244-2090

Subject: CalTrout petition to list Southern California Steelhead as endangered under the California Endangered Species Act (CESA)

Dear Ms. Gusman:

United Water Conservation District (United) submits the following information in response to the CalTrout petition to list southern California Steelhead as an endangered species under the California Endangered Species Act (CESA) (CalTrout petition). As a California Special District with a vested interest in the conservation of southern California steelhead (*Oncorhynchus mykiss irideus*) (steelhead; *O. mykiss*), United has a well-documented history of monitoring southern California steelhead in the Santa Clara River watershed. The work of United, along with a handful of others in the region, comprises the majority of the monitoring conducted on the species in southern California. Through this monitoring and data analysis, United has developed an understanding of *O. mykiss* in the watershed that has been leveraged in extensive consultations with the regulatory agencies over the years. An information gap regarding *O. mykiss* ecology exists in the region and key research questions remain unanswered, as the information presented below demonstrates. That history and knowledge gap compels the conclusion that the California Department of Fish and Wildlife (CDFW) should study this species – not list it based on the limited information provided in the CalTrout petition.

To aid CDFW's review, United provides additional information and references, formatted to primarily address inaccuracies, or in some cases correct information, presented in the CalTrout petition, followed by a discussion and references to specific documents for consideration in the evaluation of the petition. Specific references included in this submittal are largely focused on steelhead in the Santa Clara River watershed, though reference to the greater geographic region and steelhead population is included as appropriate.



The CalTrout Petition Misrepresents United's Freeman Diversion.¹

The CalTrout petition states that United's Freeman Diversion facility has not been remediated. This statement fails to recognize that (1) the existing facility² continues to provide passage for steelhead, with two confirmed upstream migrating steelhead observations as recently as 2020, (2) United is continuing to prepare a Habitat Conservation Plan (HCP) pursuant to Section 10 of the federal Endangered Species Act (ESA) associated with the rehabilitation of the fish passage facility at the Freeman Diversion and an updated bypass flow program intended to balance the needs of species and water resources in the region, (3) physical modeling of alternative fish passage designs by the United States Bureau of Reclamation (BOR) is currently underway, and (4) United continues to consult with National Marine Fisheries Service (NMFS) and CDFW on all of the above. The rehabilitated fish passage facility will represent a significant improvement over the existing condition and will provide improved fish passage conditions for steelhead as well as Pacific lamprey (*Entosphenus tridentatus*), design criteria for which is a primary component in the 10+ year alternative fish passage design process underway with NMFS and CDFW's involvement.

The adult steelhead run size estimates³ are unsubstantiated by quantitative data. Establishment of achievable management and recovery objectives is hampered by the lack of reliable historic and current population data.

The historic run size estimate in the Southern California Steelhead Recovery Plan⁴, which is cited by the CalTrout petition, comes from "The Updated Status of Federally listed ESUs of West Coast Salmon and Steelhead" (Good et al. 2005) and includes steelhead estimates for each

¹ CalTrout Petition. See pg. 13, paragraph 1.

² United operates the Freeman Diversion to conserve, maintain, and put to beneficial use the waters of the Santa Clara River watershed, with one of the primary goals being to combat seawater intrusion in the Oxnard Plain. United has diverted water from the Santa Clara River at the Freeman Diversion to provide for surface water deliveries and groundwater recharge in accordance with water right license 10173 and permit 18908. CDFW protested the original application to the water rights permit in 1980, citing a remnant steelhead resource in the river. Through much coordination and consultation between United, CDFW, the State Water Resources Control Board (SWRCB), and the Department of Water Resources (DWR), a steelhead study was completed in the river in the early 1980s, which resulted in the installation of a Denil fish ladder and implementation of bypass flows for fish passage at the request of and based on specifications provided by CDFW. SWRCB issued water right permit 18908 to United in 1987 and subsequently amended it in 1992. The permit incorporated CDFW's recommended fish ladder and bypass flow provisions, which were notably protested by DWR due to the importance of combating the severe seawater intrusion experienced in the Oxnard Plain. Nevertheless, United accepted the fish passage provisions and began implementation when the Freeman Diversion became operational in 1991. Over the years, United has modified bypass flows several times for the benefit of steelhead, each time decreasing diversion yield compared to its water rights license and permit. As a result, the seawater intrusion conditions have been magnified by the ongoing drought conditions and limited diversion yield.

³ CalTrout Petition. See pg. 2, paragraph 5, pg. 6 paragraph 5, and pg. 7 paragraph 1.

⁴ NMFS. 2012. Southern California Steelhead Recovery Plan. See pg. xiii, paragraph 3.



of the major watersheds. Within the Ventura River watershed, the estimate traces back to a 1946 CDFW letter commenting on the future Matilija Dam.⁵ Within the Santa Clara River watershed, the 1980 estimate by Moore⁶ of the average population traces back to the same 1946 CDFW letter from which Moore extrapolated an estimate in the Santa Clara River by comparing the potential habitat of the two watersheds. This fact is echoed in CDFW's 1996 Steelhead Restoration and Management Plan for California⁷ and again by NMFS (2005)⁸, which also includes a review of the historical run sizes in the major southern California watersheds. Moore's knowledge of the Santa Clara Watershed comes from the late 1970s and early 1980s, one of the wettest periods on record, causing an overestimation of river miles of suitable steelhead habitat. In the same 1980 report, Moore notes that projecting the average run size can be misleading, particularly in systems subject to extreme flow fluctuations from year-to-year.

In a review of the history of steelhead in the Santa Ynez River, Alagona et al. (2012)⁹ acknowledges the natural variation in steelhead run sizes, particularly in the southern California ecosystems, noting that "[a]ll of these perturbations and processes affect steelhead populations, which may have varied by two orders of magnitude annually owing to natural changes alone." The original source of the Santa Ynez River estimate came from a report generated by Shapovalov¹⁰, a CDFW employee, which relied upon the opinion of another CDFW employee (Carl Tegen) who was working as a trapper in the Santa Ynez River watershed. Tegen compared the number of steelhead in the Santa Ynez River to counts in the Eel River and deduced that the Santa Ynez steelhead run during the year in question (1944) was "at least as large" as the Eel River. While it is apparent that there were many adult steelhead in the Santa Ynez in 1944, it would be inaccurate to assume that his estimate was a running average of a natural run of steelhead for the same reason that Moore notes in his 1980 report regarding year-to-year fluctuations in flows within these river systems.

CDFW acknowledges this subjectivity in quoting the U.S. Fish and Wildlife Service (USFWS) in the Fish Species of Special Concern in California.¹¹ CDFW notes that the estimates of historical run sizes "are highly subjective and probably correct only within an order of magnitude". In Good et al. (2005), NMFS concurs with the earlier CDFW statement and goes a

⁵ Clanton D.A. and Jarvis J.W. 1946. Field inspection trip to the Matilija-Ventura watershed in relation to the construction of the proposed Matilija Dam. California Division of Fish and Game, Field Correspondence.

⁶ Moore M. 1980. An Assessment of the Impacts of the Proposed Improvements to the Vern Freeman Diversion on Anadromous Fishes of the Santa Clara River System, Ventura County, California. See pg. 14, paragraph 2.

⁷ CDFW. 1996. Steelhead Restoration and Management Plan for California. See pg. 55, paragraph 4.

⁸ Good T.P., Waples R.S., Adams P. 2005. The Updated Status of Federally listed ESUs of West Coast Salmon and Steelhead. See pg. 282, paragraph 4.

⁹ Alagona P.S., Cooper S.D., Capelli M., Stoecker M., Beedle P. H. A History of Steelhead and Rainbow Trout (*Oncorhynchus mykiss*) in the Santa Ynez River Watershed, Santa Barbara County, California. See pg. 169, paragraph 4.

¹⁰ Shapovalov L. 1944. Preliminary Report on the Fisheries of the Santa Ynez River System, Santa Barbara County, California. See pg. 12, paragraph 2.

¹¹ CDFW. 1995. Fish Species of Special Concern in California. See pg. 81, paragraph 4.



step further to adjust down the historical run size estimate for the Santa Ynez based on a logical inference regarding Tegen's experience in the Santa Ynez and Eel Rivers. Good et al. (2005) summarizes their review of historical run sizes by stating that "the estimates of historical run sizes for the Southern California steelhead ESU are based on very sparse data and long chains of assumptions that are plausible but have not been adequately tested." Therefore, to properly evaluate southern California steelhead, CDFW must first develop an accurate estimate of adult run size necessary to establish the status of the species and appropriate recovery goals in southern California watersheds.

Furthermore, another concern is that the estimates were based on an artificially stocked population supported during the extensive steelhead planting program implemented by CDFW beginning in the 1890s and continuing up to the 1930s (Bowers 2008). In the 1910s, southern California rivers, including the Santa Clara and Ventura, along with their tributaries, were receiving up to 3 million trout from northern hatcheries per year. The fish planted were predominantly steelhead and a mix of resident with the anadromous form. This topic is discussed further below.

The focus on human induced population decline in steelhead¹² in southern California ignores the influence of artificial steelhead planting by CDFW.

In southern California, the rise and fall of the steelhead population directly correlates with CDFW's planting of northern steelhead in southern California waters. Prior to the planting from northern hatcheries, records of steelhead in the southern California rivers are minimal. For example, records from the missionary period never mention trout or steelhead, which contrasts with the rivers further north, and scarce records from the pre-colonial period. As noted in the review of steelhead in the Santa Ynez River by Alagona et al. (2012)¹³, "we found relatively few explicit records of Chumash exploitation of riverine fish, such as steelhead in the Santa Ynez River, from Spanish, Mexican, and early American explorers and settlers," indicating that steelhead were possibly not as prevalent and abundant as previously asserted. Alagona et al. (2012) continues: "At present, the only archaeological evidence for steelhead presence comes from several theses and a museum contribution describing excavations of sites in former inland Chumash villages with associated information on the identity of fish elements... [s]teelhead remains were found at three of four excavated sites... 6 salmonid bone elements found at Xonxon'ata [located on Zaca Creek 6 miles above its confluence with the Santa Ynez River] constituted only 0.2% of the identifiable fish bones recovered at this site, with the rest assignable to marine species, and these bones appeared to come from immature steelhead or rainbow trout." Alagona et al. (2012) acknowledges that more research is necessary to draw conclusions

¹² CalTrout Petition. See pg. 3, paragraph 3

¹³ Alagona P.S., Cooper S.D., Capelli M., Stoecker M., Beedle P. H. A History of Steelhead and Rainbow Trout (*Oncorhynchus mykiss*) in the Santa Ynez River Watershed, Santa Barbara County, California



regarding the presence of salmonid bones at the Santa Ynez River archaeological sites; however, the findings provide an indication of limited steelhead presence during the pre-colonial period.

As noted above, large numbers of trout from northern hatcheries were planted in southern California rivers in the 1890s up to the 1930s. The planted fish were predominantly steelhead and a mix of resident with the anadromous form. The history of the steelhead fisheries during this time is well documented.^{14,15} By the early 1930s, there was a trend towards planting larger “catchable-sized” trout. In the late 1930s, the focus of the hatcheries had changed to producing and planting “catchables” that were mostly from a resident form of *O. mykiss*.¹⁶ The decline in steelhead in southern California rivers coincided with the change in hatchery practices.

The population decline following the cessation of planting from northern hatcheries is evident in correspondence generated by CDFW officials and numerous newspaper articles at the time (McEachron 2007 and Bowers 2008). Alagona et al. (2012) also cited Spanne (1975), which “noted that runs of anadromous fish in the Santa Ynez River occurred right up to the construction of Bradbury Dam, but that they were much more predictable and frequent in the late nineteenth and early twentieth centuries based on the memories of elderly residents.” The late nineteenth and early twentieth century time period is coincident with the steelhead planting program that was underway in southern California at that time. By 1951, the mention of a steelhead fishery in the newspapers had almost ceased to exist. During that year (1951), CDFW biologist Willis Evans stated: “The fisheries value of these drainages lies primarily in the existence of a resident population of rainbow trout in the head waters areas. Their range throughout most of the subject drainages is curtailed by the lack of sustained year long stream flows. High summer water temperatures above the tolerance of trout also prevent trout development in otherwise suitable streams such as lower Piru Creek.”¹⁷ “These drainages” referred to the Ventura and Santa Clara River watersheds. The following year (1952), the Santa Paula Chronicle reported that “Steelhead fishing season ended this year without a single catch being made.” In 1954, a few steelhead were reported in the Ventura River but no catches were reported. Notably, these statements from CDFW were made prior to any major dams being constructed in the Santa Clara River watershed. Santa Felicia Dam, constructed on Piru Creek in 1955, was the first such dam. More

¹⁴ McEachron M. 2009. A Review of Historical Information Regarding Steelhead Trout in the Piru Creek Watershed, Ventura County, California.

¹⁵ Bowers K. 2008. History of Steelhead and Rainbow Trout in Ventura County: Newsprint Accounts from 1870 to 1955. Vol I.

¹⁶ CDFW. 1970. Fish Bulletin 150 A History of California Fish Hatcheries. See pgs. 50-52.

¹⁷ Evans W.A. 1951. U.S. Department of Agriculture “Report of Survey Santa Clara-Ventura Rivers and Calleguas Creek Watersheds, California” (January 1951). See pg. 1, paragraph 4.



recent records of steelhead in the Santa Clara River, primarily made by fisherman, CDFW, and by United were reported and are also well-documented.^{18,19,20}

The CalTrout petition refers to steelhead monitoring at the Freeman Diversion fish ladder, stating that it, in part, “supports the finding that little to no change has been observed in total abundance or spatial structure of Southern steelhead since the initial federal listing.” United does not refute this statement. However, it should be noted that it is consistent with previous CDFW surveys in the Santa Clara River watershed, which found low numbers of steelhead going back to the 1950s. Later, CDFW conducted a two year study in coordination with United in 1982-1983 and 1983-1984.²¹ It resulted in the trapping and identification of a total of 3 steelhead over the two-year study period. As noted above, monitoring at the Freeman Diversion fish ladder has identified low numbers of adult steelhead, typically 0 to 2 individuals per year, since beginning operation in 1991 up to 2021. Combined with earlier observations, monitoring at the Freeman Diversion indicates that the total abundance of steelhead has remained relatively stable since well before the federal listing.

Further research into the relationship between resident and anadromous life-histories must be included in the analysis²² of the status of steelhead, species stability, and recovery.

When considering the petition and potential future listing, the contribution of resident rainbow trout must be considered. A document prepared by NOAA-NMFS Southwest Fisheries Science Center supports this approach by stating: “Steelhead and rainbow trout belong to the same species (*O. mykiss*), and steelhead are the ocean-migratory (“anadromous”) form and rainbow trout are the freshwater-resident form. There is a growing body of literature showing that steelhead and rainbow trout share freshwater habitat, mate with one another, and their offspring can either undergo physiological changes necessary to migrate to the ocean as a steelhead or undergo freshwater maturation as a rainbow trout.”²³ As evidenced by this interplay, the ecology of the species clearly requires close examination by CDFW.

The CalTrout petition states that “[f]ish that express the resident freshwater life-history strategy play a central role to the continued existence of southern steelhead.” United agrees with the CalTrout petition regarding this interplay of the freshwater resident and anadromous *O. mykiss* life-histories. NMFS recognizes the importance of the life history plasticity between the resident and the anadromous form of *O. mykiss*. In the recovery plan process, NMFS stated: “It is difficult to envision a successful recovery effort without a better

¹⁸ Stoecker M., Kelley E. 2005. Santa Clara River Steelhead Trout: Assessment and Recovery Opportunities.

¹⁹ Puckett L.K. and Villa N.A. 1985. Lower Santa Clara River Steelhead Study. Final Report.

²⁰ Entrix. 2000. Results of Fish Passage Monitoring at the Vern Freeman Diversion Facility Santa Clara River 1994-1998

²¹ Puckett L.K. and Villa N.A. 1985.

²² CalTrout Petition. See pg. 8, paragraph 1.

²³ Ohms H.A. and Boughton D.A. 2019. Carmel River Steelhead Fishery Report - 2019.



understanding of the functional relationship between resident and anadromous fish.” They go on to explain that “this continuum has a significant implication for viability criteria.”²⁴ The most recent NMFS 5-year review of the species referred to resident *O. mykiss*, their importance to the viability of anadromous steelhead populations, and how viability criteria in the Recovery Plan should be updated to account for the contribution of resident fish, a topic that is discussed in more detail below. Recently, several authors that have worked extensively with the southern California steelhead population published a study²⁵ that makes a key point: “Resident *O. mykiss* in upper watershed areas outside the designated critical habitat are not protected by either state or federal endangered species acts, despite their documented link in maintaining maximum numbers of [s]teelhead (NMFS 2012).” Dagit et al. (2020) also states that the Southern California Steelhead Recovery Plan (NMFS 2012) and Boughton et al. (2007) proclaim that an important consideration to prevent extinction is “protecting existing populations and all life history expressions.”

The current recovery population viability goal of 4,150 spawners per year on average for southern California steelhead comes from Lindley’s (2003) “random walk with drift” model using field data from the Central Valley (Boughton et al. 2007; Williams et al. 2016). However, the “random walk” model considers only 100 percent anadromous spawners (thereby disregarding the significant contribution of resident *O. mykiss*). This approach effectively means that in terms of achieving recovery goals, resident trout would not contribute to the anadromous form even though NMFS recognized that the Santa Clara River has maintained a population of smolts emigrating to the ocean while upstream migrant runs were too small to be self-sustaining. The limited consideration of purely anadromous fish for the recovery goal is biologically inappropriate for this species, and contrary to the wide recognition that resident *O. mykiss* play a key role in conservation of native coastal *O. mykiss*, including the steelhead life history strategy – particularly in arid southern California where intermittent flow regimes and prolonged droughts are common (Dagit et al. 2020). The viability studies recognized that the “interchange between resident and anadromous fish groups would almost certainly lower the extinction risk of both groups.”²⁶ They go on to state that during their performance-based criteria analysis the interchange between the resident and anadromous form could have large consequences when determining extinction. Specifically, “we suspect that extinction risk of steelhead fraction is likely to be highly sensitive to the details of this interchange.”

In the most recent 5-year review of the species, NMFS states that “the criteria that mean annual spawner abundance 1) be greater than 4,150, and 2) be composed of 100% anadromous individuals, were recommended as a risk-averse approach. It was expected that

²⁴ NMFS. 2012. See pg. 14-13, paragraph 7.

²⁵ Dagit, R., M.T. Booth, M. Gomez, T. Hovey, S. Howard, S.D. Lewis, S. Jacobson, M. Larson, D. Mccanne, and T.H. Robinson. 2020. Occurrences of Steelhead Trout (*Oncorhynchus mykiss*) in southern California, 1994-2018. California Fish and Wildlife 106(1):39-58.

²⁶ Boughton. 2007. See pg. 8, paragraph 2.



further scientific work would either support these criteria or allow one or both to be relaxed” depending on the scientific research to fill key knowledge gaps including “uncertainty about the magnitude of normal fluctuations in adult abundance, and... uncertainty about the underlying biological mechanisms for expression of life-history diversity, especially factors triggering anadromous versus resident life-histories within populations.”²⁷ Thus, there is clear acknowledgment that additional research is needed to gain a more complete understanding of steelhead ecology and, among other things, refine the viability goal under the federal ESA. These findings and research questions would also need to be closely considered by CDFW in the evaluation of the petition.

Dagit et al. (2020) also notes that, “[a]s reported by Williams et al. (2016) and confirmed by our observations, at no point since [southern California] steelhead were listed as endangered in 1997 was the preliminary provisional viable population goal of 4,150 annual anadromous spawners observed in any individual watershed, nor through the DPS as a whole.”

Finally, Dagit et al. (2020) states that “[b]uilding quantitative models that consider both anadromous and resident fish in the production of smolts, in addition to watershed-specific carrying capacities would be a valuable effort towards refining population goals.” United strongly agrees, and points to the last southern California steelhead 5-year review that also stated: “Overall, these results show that resident and anadromous forms are tightly integrated at the population level, suggesting a revision of the viability criterion for 100 [percent] anadromous fraction” (NMFS 2016). Moyle (2017) acknowledges that the life-history trait of “partial anadromy is an active area of research to gain insight into underlying environmental and genetic influences. This multigenic trait has important implications for endangered steelhead recovery and fisheries management strategies.”

The CalTrout petition states that “[t]he resident component of the ESU covers a large number of native rainbow trout that are geographically dispersed, but are genetically demonstrable remnant populations of Southern steelhead;” however, the information presented above demonstrates that the interplay between the anadromous and resident life-histories is an open and ongoing area of research with direct implications on the status of the species. A review of the best available scientific information results in numerous findings and conclusions regarding the need for additional research on this topic. Researchers and regulatory agencies acknowledge that further study is necessary to ascertain key data required to make informed management decisions. Therefore, United urges CDFW to evaluate the entire breeding population, including resident fish as well as south-central coast steelhead (discussed below) in their review of the CalTrout petition. Should southern California steelhead become a candidate species, CDFW must again evaluate the entire breeding population in the status review to achieve a more realistic recovery goal that is true

²⁷ NMFS. 2016. 5-Year Review: Summary and Evaluation of Southern California Coast Steelhead Distinct Population Segment. National Marine Fisheries Service. West Coast Region. California Coastal Office. Long Beach, California. See pg. 20, paragraph 2.



to the biology and genetic structure of the native *O. mykiss* population in southern California. In considering the appropriate population, CDFW can employ a more holistic approach to protecting native *O. mykiss* in southern California, and permit applicants and restoration biologists will be afforded more viable options for project proposals that will lead to meaningful improvements for this population.

The fraction of anadromy must be considered at the sub-watershed level due to highly variable environmental conditions.

Tributaries within the Santa Clara watershed support a healthy population of *O. mykiss*. Stoecker and Kelley (2005) summarized various surveys conducted by CDFW and academic institutions documenting observations of over 100 *O. mykiss* per 100 feet of stream length. Moore, as referenced in Stoecker and Kelley (2005), did an extensive survey of both Santa Paula Creek and Sespe Creek, and their tributaries, reporting “abundant” trout in most of the tributaries. Some of his observations included 15 *O. mykiss* per 100 feet in Lion Creek and 70 *O. mykiss* per 100 ft in Howard Creek. A survey by CDFW, also referenced in Stoecker and Kelley (2005), found *O. mykiss* to be abundant in various tributaries to Sespe Creek in 1994 to 1995. As an example, they observed over 100 *O. mykiss* per 100 feet in Howard Creek. While no estimates were made to calculate the total abundance of *O. mykiss* observed in the Santa Clara River watershed, it would be safe to assume that during these surveys the totals were substantial given that, for example, on Sespe Creek about 47 miles of spawning and rearing habitat *O. mykiss* were reported by CDFW²⁸. During this same period, various studies documented the anadromous migration within the watershed. A two-year study conducted by CDFW in 1982-1984 found no smolts migrating out of the Sespe despite trapping, electroshocking, and netting downstream of the Sespe tributary throughout the primary smolt migration period²⁹. In the early 1990s, smolts were trapped and counted at the Freeman Diversion. In 1994, for example, United operated a downstream migration trap from February 21 through May 25 and a total of 83 smolts were collected at the trap during this period.³⁰ It is worth noting that smolts collected at the facility ranged from 0 to approximately 800 during the operation of the downstream migrant trap.

With survey and monitoring results documenting an abundant resident population but relatively few smolts produced from these watersheds, there is a strong indication that *O. mykiss* in the Santa Clara River have a natural low fraction of anadromy. A naturally low fraction of anadromy is expected where the cost to migrate to and from the ocean is high (i.e., low success rate) compared to staying within the watershed as residents. This observed low fraction of anadromy may be explained by the dynamics of many of the rivers in southern California.

As an example, the Santa Clara River is a large watershed (1,625 square miles) dominated by a sandy braided channel in the mainstem. During high flows, suspended sediment levels in the

²⁸ CDFW. 1996. See pg. 205, paragraph 5

²⁹ Puckett L.K. and Villa N.A. 1985.

³⁰ Entrix. 1994. Results of Fish Passage Monitoring at the Vern Freeman Diversion Facility, Santa Clara River, 1994. See pg. 3-10, Table 3-4



Santa Clara River are elevated to a point that is expected to preclude upstream migration opportunity³¹. A key section of the river for emigration to the ocean is well documented by observations dating back to the 1700s to go dry, thus precluding passage. During large portions of the year, portions of the river mainstem remain dry due to percolation to the underlying groundwater basins as surface water is quickly lost in the broad alluvial floodplain.³²

Kendall et al. (2015) reviewed various studies documenting the factors that may influence the fraction of anadromy. One study found that “migration cost did influence life histories in one model which indicated that emigration survival was one of the critical factors shaping the expression of anadromy.”³³ Residency was predicted to increase as emigration survival decreased. Kendall found other studies that concluded that perhaps the southern portions of the species range may be skewed towards residency with the higher cost of anadromy due to seasonally dry stream reaches and lagoon sandbar formations limiting migration opportunities.

Using over 20 years of data collected at the Freeman Diversion from the downstream migrant trap, Booth (2020) concluded that smolt migration timing was correlated with the day length and was less dependent on flow magnitude. Booth found that 95% of all smolts arrived between mid-March and late May with the majority arriving at the collection system in mid-April to mid-May. Most importantly, Booth concluded that “downstream migration in the Santa Clara River often may occur too late in the season to be synchronized with likely opportunities for downstream migration to the estuary and ocean.”³⁴ Upon reviewing the historic hydrology for the system, Booth found that it is a relatively common occurrence for smolts in the Santa Clara River to be unable to successfully migrate to the ocean even with natural hydrology conditions. In summary, *O. mykiss* in the Santa Clara River watershed produce a very small fraction of anadromy, which is expected due to high cost for anadromy and the lack of opportunities for successful emigration and upstream migration. It is likely that the historic planting of steelhead, discussed in more detail above, temporarily modified the fraction of anadromy, thereby increasing the anadromous run size in the system for a short period. Prior surveys have revealed that the resident form of *O. mykiss* are well established within the watershed and are likely to continue to produce the anadromous form. This relationship needs to be studied before a CESA listing determination can be made. As NMFS has stated, the viability of the species would be expected to rise when considering the resident contribution.

³¹ Stillwater Sciences. 2020. Assessment of Suspended Sediment Effects on Adult Steelhead: Implications for Limitations on Steelhead Behavior and Physiology in the Santa Clara River

³² Beller E.E., R.M. Grossinger, M.N. Salomon, S.J. Dark, E.D. Stein, B.K. Orr, P.W. Downs, T.R. Longcore, G.C. Coffman, A.A. Whipple, R.A. Askevold, B. Stanford, J.R. Beagle. 2011. Historical ecology of the lower Santa Clara River, Ventura River, and Oxnard Plain: an analysis of terrestrial, riverine, and coastal habitats. See pg. 82

³³ Kendall N.W., McMillan J.R., Sloat M.R., Buerhens T.W., Quinn T.P., Pess G.R., Kuzischin K.V., McClure M.M., Zabel R.W. Anadromy and residency in steelhead and rainbow trout (*Oncorhynchus mykiss*): a review of the processes and patterns. See pg. 335, paragraph 2

³⁴ Booth M.T. Patterns and Potential Drivers of Steelhead Smolt Migration in Southern California. See pg. 24, paragraph 2.



Genetics on the population structure. The CalTrout petition discusses nuclear DNA with respect to geography, but fails to consider genetic evidence establishing that there is no differentiation between the southern California and the south-central coast populations of steelhead.

The best available scientific information does not support southern California steelhead being distinct from south-central coast steelhead. In 2008, scientists at National Oceanic and Atmospheric Administration (NOAA) Southwest Fisheries Science Center concluded that “[n]o genetic basis was found for the division of populations [from southern California] into two distinct biological groups, contrary to current classification under the US and California Endangered Species Acts.”³⁵ The Clemento et al. (2008) study analyzed nuclear DNA, representing the best available scientific information and a far superior approach to identifying genetic structure in coastal *O. mykiss* populations compared to the prior studies cited in the original listing that used allozymes (proteins), maternally inherited mitochondrial DNA (Busby et al. 1996), and karyotyping (chromosome sampling). Thus, the more recent – and more reliable – studies from 2008 demonstrate that the two populations should be reclassified as one based on the most updated and most rigorous genetic data.

Other comments on the CalTrout petition:

- The CalTrout petition fails to acknowledge that the language of CESA covers the listing of a “species or subspecies” and not a distinct population segment (DPS).
- While arguing for the listing of the anadromous life-history form, CalTrout recommends not listing the resident life-history form above total barriers even though both forms are genetically identical and comprise a single species, *O. mykiss*. The CalTrout petition stops short of identifying the anadromous life-history form as a species or subspecies, likely owing to the fact that the anadromous and resident life-history forms comprise one species. In the status review of the northern California summer steelhead, CDFW indicated that this ecotype should not be listed under CESA, a recommendation based at least partially on the genetics of the species,³⁶ which indicated closer relation between localities as opposed to run-timing, and failed to meet the definition of a subspecies, as the petition requested. The same finding should apply to the genetics of anadromous and resident *O. mykiss*.
- The CalTrout petition recommends that catch-and-release fishing with barbless lures only be permitted in waters demonstrated to have steelhead lineage.³⁷ Catch-and-release

³⁵ Clemento A.J, Anderson E.C., Boughton D., Garza J.C. 2008. Population genetic structure and ancestry of *Oncorhynchus mykiss* populations above and below dams in south-central California. See pg. 1321, paragraph 1.

³⁶ CDFW. 2021. California Endangered Species Act Status Review for Northern California Summer Steelhead (*Oncorhynchus mykiss*). See pg. 149, paragraph 4.

³⁷ CalTrout Petition. See pg. 17, paragraph 1.



fishing results in a percentage of mortality, so the recommendation runs contrary to the arguments presented in the CalTrout petition.

- The CalTrout petition states that the listing of steelhead under CESA is needed to augment the protections provided by the federal ESA listing³⁸ but the effective protections for the species would not change significantly. Currently, while NMFS administers protections for steelhead under the federal ESA and CDFW administers protections for steelhead under the Fish and Game Code (F&G Code), “take” is already prohibited under the federal ESA without an incidental take permit and is also effectively prohibited by CDFW’s interpretation and application of F&G Code.
- It is important that CDFW use the best available scientific information when describing the species’ basic life history. The CalTrout petition states that “the timing of out-migration is influenced by a variety of environmental cues including streamflow, temperature, and breaching of the sand berm at the river’s mouth.”³⁹ It is important to add that recent new evidence points to day length (also known as photoperiod) as being a major driver of juvenile outmigration timing⁴⁰ and potentially as important, if not more so, than the environmental cues listed by CalTrout’s petition.
- The CalTrout petition notes that “[e]xcessive sedimentation and turbidity are critical water quality components in all habitat types and impacts how southern California steelhead utilize each habitat type.”⁴¹ United agrees, and would note that as part of the Freeman Diversion MSHCP currently in development, United has completed an analysis of the effects of suspended sediment concentrations and turbidity on the behavior of steelhead. United encourages CDFW to evaluate the effects of sedimentation and turbidity as part of their analysis.
- The CalTrout petition notes that “7 inches is considered the minimal water depth needed for successful migration” for adult steelhead.⁴² United agrees that the minimum water depth necessary for adult migration in southern California rivers is something other than the 0.7 feet (8.4 inches) referenced in the CDFW critical riffle analysis standard operating procedure,⁴³ which was developed based on an analysis completed for the SWRCB Policy for Maintaining Instream Flows in Northern Coastal California Streams.⁴⁴ United encourages CDFW to evaluate region specific data on fish size and river flows in their analysis to determine more appropriate flow depth criteria.

³⁸ CalTrout Petition. See pg. 15, paragraph 3.

³⁹ CalTrout Petition. See pg. 9, paragraph 1.

⁴⁰ Booth M. 2020. Patterns and Potential Drivers of Steelhead Smolt Migration in Southern California. North American Journal of Fisheries Management, Volume 40, Issue 4: pp 1032-1050.

⁴¹ CalTrout Petition. See pg. 10, paragraph 3

⁴² CalTrout Petition. See pg. 10, paragraph 2

⁴³ CDFW 2017. Standard Operating Procedure for Critical Riffle Analysis for Fish Passage in California

⁴⁴ Policy for Maintaining Instream Flows in Northern California Coastal Streams. Division of Water Rights. State Water Resources Control Board. February 4, 2014.



Vanessa Gusman
California Department of Fish and Wildlife - Fisheries Branch
August 17, 2021
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The lack of reliable historic and current population data, compounded by artificial planting, and the lack of proper research into resident and anadromous life histories, fraction of anadromy, and genetic differentiation compels further study of southern California steelhead prior to making a CESA listing decision based on CalTrout's petition. The evaluation must consider all available sources of information to reach the best available scientific information threshold, including the information provided herein, and the attached reference documents, as a starting point for this species.

Respectfully,

A handwritten signature in blue ink, appearing to read 'Anthony Emmert', with a stylized flourish at the end.

Anthony Emmert
Assistant General Manager

August 17, 2021

The Honorable Peter Silva
President, California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

**RE: ACWA Response to Notice of California Endangered Species Act Petition:
Southern California Steelhead.**

Dear President Silva:

The Association of California Water Agencies (ACWA) writes in regard to the petition currently pending before the California Fish and Game Commission (Commission) to list Southern California steelhead (Southern steelhead) as an Endangered Species under the state's Endangered Species Act (CESA, FGC § 2050 et seq.). ACWA represents more than 460 public water agencies that collectively deliver approximately 90 percent of the water in California for domestic, agricultural, and industrial uses.

The ongoing drought emergency has left water agencies throughout the state with the difficult task of managing limited water supplies to support a multitude of needs. ACWA believes it is imperative that the Commission consider drought conditions and current water management circumstances within the South Coast region when evaluating whether to designate Southern steelhead a "candidate species." Therefore, we write to communicate the intent of our organization to provide staff within the Department of Fish and Wildlife (Department) with information on present water management conditions, challenges currently facing water agencies in that region, and other information that, we hope, will inform the evaluation of this petition.

Efforts have been underway for years, at both the state and federal level, to address the plight of Southern steelhead. Listed as endangered under the federal ESA since 1997, the distinct population segment (DPS) for Southern steelhead presently consists of coastal watersheds extending from the Santa Maria River system south to the U.S.-Mexico border. The recovery plan for Southern steelhead, adopted by the National Oceanic and Atmospheric Administration (NOAA) in 2012, has resulted in many conservation actions to reduce and eliminate specific threats throughout the region. ACWA members in the region have been actively involved in steelhead recovery planning and implementation through investments in habitat restoration and by modifying infrastructure and operations. While water agencies are committed to the recovery of Southern steelhead, they must view this CESA petition through the lens of current water management circumstances in the region. In the near-term, designating Southern steelhead as a "candidate species" would allow various state agencies to place new restrictions on water agencies already working diligently to effectively manage limited supplies. Water agencies need to contemplate how new operational restrictions would impact their ability to meet all the needs of their customers.

ACWA appreciates the responsibility currently before Department staff and the Commission in evaluating this petition. There are many factors that will help determine whether to list Southern steelhead as a “candidate species.” Our members along the South Coast are closely following this petition because the Commission’s ultimate decision, particularly in the midst of a historic drought, could drastically alter water management operations throughout the region.

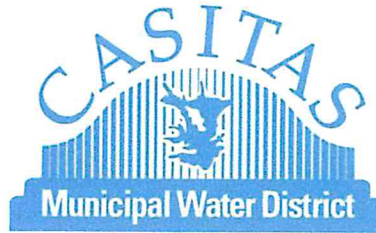
ACWA will be in touch with Department staff over the coming weeks. In the meantime, please contact me at krisa@acwa.com or (916) 441-4545 with any questions regarding ACWA’s comments.

Sincerely,



Kristopher M. Anderson, Esq.
Legislative Advocate

cc: The Honorable Samantha Murray, Vice President, California Fish and Game Commission
 The Honorable Jacque Hostler-Carmesin, Member, California Fish and Game Commission
 The Honorable Eric Sklar, Member, California Fish and Game Commission
 The Honorable Erika Zavaleta, Member, California Fish and Game Commission
 Ms. Melissa Miller-Henson, Executive Director, California Fish and Game Commission
 Mr. Scott Gardner, Wildlife Branch Chief, California Department of Fish and Wildlife



SENT VIA ELECTRONIC MAIL

August 20, 2021

Vanessa Gusman
California Department of Fish and Wildlife
Fisheries Branch
PO Box 944209
Sacramento, CA 94244-2090
via email: [REDACTED]

Subject: Comment Letter for Casitas Municipal Water District Related to the Petition to List Southern California Steelhead Under the California Endangered Species Act

Introduction

The Casitas Municipal Water District (Casitas) appreciates the opportunity to comment on the petition by California Trout (CalTrout) to list southern California steelhead (steelhead) Distinct Population Segment (DPS) as endangered under the California Endangered Species Act (CESA). This petition was submitted to the California Fish and Game Commission (Commission) on June 7, 2021.

Casitas as well as the United States Bureau of Reclamation (Bureau) have been active participants in the recovery of steelhead in the Ventura River since the federal listing in 1997 by designing and operating a diversion with a state-of-the-art fish passage facility and fish passage lifecycle monitoring station. Additionally, Casitas developed meaningful instream flows for steelhead in coordination with the National Marine Fisheries Service (NMFS) and the California Department of Fish and Wildlife (CDFW). Casitas agrees that recovery actions are paramount to the viability and success of this species. However, after a thorough review of the petition, Casitas has some concerns and comments to share with CDFW and the Commission. This letter will address concerns Casitas has in that adding an additional permitting process will most likely delay projects, including recovery actions that are already in place or are in the advanced planning stages, as well as additional concerns regarding elements of recovery that CalTrout did not provide in their petition letter. Additionally, CDFW is already involved in steelhead recovery by partnering with NMFS on Section 7 and Section 10 federal ESA consultations and by conducting monitoring and research on the steelhead DPS. The federal and state governments are already dictating and requiring recovery actions through the NMFS recovery plan for southern California steelhead. Adding steelhead to the list of those species covered under the CESA will most likely duplicate recovery efforts already occurring resulting in unnecessary redundancies and delays. CalTrout is expecting recovery to occur in a timeframe that is not reasonable or realistic. Many recovery actions have been implemented and many large scale actions are in the advanced planning phases. The unprecedented drought that has occurred since 2007 has had a significant adverse effect on the recovery of the species resulting in no change in the steelhead numbers in the region. Would adding this species to the list of those species covered under the CESA change that or provide additional, meaningful recovery actions not already included in the federal recovery plan? Lastly, we are concerned that CalTrout is requesting

the Commission to only list the federally designated DPS of southern California steelhead, whereas the CESA does not extend beyond the species or subspecies level (i.e., it does not extend to distinct populations segments or evolutionarily significant units). The CESA defines an endangered species as “a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease” (California Fish and Game Code Section 2062). CalTrout also is requesting the Commission to only consider the anadromous form of *Oncorhynchus mykiss* and to not consider the resident form of the species for CESA listing, which we believe goes against the CESA definition of a species. The remainder of this comment letter includes these topics:

- Regulatory and Permit Burden and Redundancy
- Recovery Timeframe
- Recovery Actions Implemented and Planned
- Effects of Drought on Recovery
- The State is Already Involved in Recovery Through Federal Consultations
- Other State Actions That are Supporting Recovery Outside of CESA

Regulatory and Permit Burden and Redundancy

If the Commission were to list southern California steelhead as endangered under CESA, Casitas and other entities that have projects potentially affecting steelhead will now have an additional permit process that will cause additional delays and, in our opinion, will only include redundancies that are already included in federal biological opinions and multiple other permits required to implement projects including restoration and recovery projects. A list of recovery projects that will aid in the recovery of the species and have the potential to be delayed due to an additional permit requirement are included below.

CalTrout believes if the Commission determines a listing is warranted, “CDFW will have direct authority to oversee projects proposed within the current limits of anadromy. This will provide CDFW the ability to establish species-specific mitigation measures that must be met for take coverage to be authorized” (CalTrout 2021). The CDFW is already a partner in federal consultation and recovery efforts and have developed site-specific recovery measures in collaboration with NMFS. CDFW scientists have been involved with the federal consultation at the Robles Diversion Facility and are involved with other consultations in the DPS ultimately dictating some of the conservation and recovery measures and actions CalTrout believes would only occur if the species was listed under CESA. Since CDFW is already involved in the federal consultation process, there is no need to add additional regulatory burden on applicants and CDFW staff that are already involved in recovery of the species.

Recovery Timeframe

CalTrout’s petition includes concerns about the lack of increased fish numbers since the listing in 1997. The federal recovery plan discusses the complexities in recovery planning and the timeframe required for biologically meaningful and quantifiable recovery based on objective, measurable criteria. This paragraph is included on page 5-1 of the recovery plan (NMFS 2012).

“The West Coast’s salmon and steelhead populations have always been sensitive to the variability of the northeast Pacific climate-ocean system . . . So steelhead recovery as a form of human stewardship has to be judged over a broader timeline, with multi-year setbacks in population size considered to be a normal and expected event, and progress judged at the scale of multiple decades and even multiple human generations.”

Dr. David A. Boughton, Chair, NOAA Fisheries
South-Central/Southern California Steelhead
Technical Recovery Team, 2010

Although the most recent NMFS 5-year review (NMFS 2016) determined there has been no appreciable increase in steelhead numbers since the listing, there are numerous large scale recovery and restoration actions in the planning stages with goals to increase steelhead numbers within the southern California DPS and neighboring segments. There are also large scale recovery actions occurring or that have already occurred in the neighboring south-central steelhead DPS (San Clemente Dam decommissioning, Los Padres dam fish passage design, Arroyo Grande Creek and watershed improvement projects) intended to aid in the recovery of the south-central California steelhead DPS, but will also aid in recovery of the southern California steelhead DPS. These recovery actions take time to develop through scientific research, advanced and sometimes unprecedented engineering design, and lengthy consultations with resource agencies. Adding additional consultation under CESA would only introduce redundancies to current requirements and consultations already involving CDFW, with potential consequences of delaying important recovery actions.

Recovery Actions Implemented and Planned

Numerous small- and large-scale recovery actions are occurring in the DPS. Many are in the advanced planning stages and could be implemented within the next ten years and some are already in place. These actions are anticipated to result in a measurable increase in steelhead numbers in the DPS over a reasonable timeframe as described in the NMFS recovery plan. Below is a list of recovery actions that have already occurred or are in the planning process. Note that this is not an exhaustive list and other recovery projects may exist of which we are unaware.

Robles Fish Passage Facility

Casitas completed an \$8 million dollar steelhead fish passage improvement project to the Robles Diversion Facility on the Ventura River in 2005. This project was completed in part with CDFW grants. Casitas worked with CDFW, NMFS, and others to design this facility, which is now operated under a NMFS Biological Opinion. This passage facility now provides access to historic spawning and rearing habitat upstream of the facility. As of 2020, a total of 1,341 *O. mykiss* have been documented passing upstream or downstream through the facility. This facility is just one of many improvement projects undertaken that will aid in the recovery of steelhead in the DPS.

Matilija Dam Ecosystem Restoration Project

The Matilija Dam Ecosystem Restoration Project has been in the design and planning stages for decades. Delays due to funding, complexities with sediment, etc., are an indication of the diverse complexities that can occur with a large-scale recovery/restoration project. The good news is that upfront projects required before the dam can be removed started this year after years of planning and consultations. This project is similar to the San Clemente Dam decommissioning project that occurred on the Carmel

River in 2015. Monitoring results indicate that steelhead and other anadromous fish (Pacific lamprey) are now utilizing important habitats upstream in the Carmel River. The removal of Matilija Dam will be a big step toward improving steelhead numbers in the Ventura River and the DPS overall. The current projection timeline for dam removal is ten years.

Foster Park Fish Passage Improvement Project

The City of Ventura will be providing fish passage over an exposed subterranean diversion dam and exposed pipeline crossing over the next two years. This project is on the lower Ventura River and will provide unimpeded passage conditions for steelhead to reach high quality spawning and rearing habitats upstream.

Freeman Diversion HCP and Fish Passage Improvements

A draft Habitat Conservation Plan has been submitted to NMFS, the United States Fish and Wildlife Service (USFWS) and CDFW to obtain incidental take coverage for multiple species including steelhead at the Freeman Diversion on the Santa Clara River. This plan includes operations that provide instream flows that mimic the pattern, timing, magnitude and duration of flows for upstream and downstream migrating steelhead. The plan also includes a new fish passage facility at the diversion. This fish passage facility was developed through an alternatives analyses from a fish passage review panel and is designed to provide natural rate of migration past the facility for steelhead. Additional conservation measures including mitigation are included in this document that will assist in the recovery of steelhead in the DPS.

Santa Felicia Dam Relicensing Project

The relicensing of the Santa Felicia Dam on Piru Creek, a tributary of the Santa Clara River, through the Federal Energy Regulatory Commission (FERC) included multiple requirements from the FERC, NMFS, the USFWS, the United States Forest Service and CDFW such as instream flows for steelhead migration and rearing, flows to maintain natural geomorphic processes, invasive species management, monitoring and adaptive management, and fish passage over Santa Felicia Dam. Some of these requirements are already in the implementation phase while others are in the advanced planning phases.

Rindge Dam Decommissioning on Malibu Creek

The Rindge Dam on Malibu Creek is in the planning phase and CalTrout is a partner in moving this project forward. The CalTrout website states “the dam removal project is now poised to proceed into design phase, following recent authorization of the project’s feasibility study led by the U.S. Army Corps of Engineers and pending formal approval in Congress. This is a major milestone, but the hard work is now ahead to complete design, put together a successful dam removal team, restore migration of the endangered southern steelhead, and secure funding for the >\$200M project.”

Quiota Creek Fish Passage Barrier Removals

The Cachuma Operation and Maintenance Board replaced numerous low flow crossings with bridges on Quiota Creek, a tributary to the Santa Ynez River. The original crossings were barriers to steelhead migration. They have all been replaced and passage has been restored to this creek.

Salsipuedes Creek and El Jaro Creek Fish Passage Barrier Structures

Fish passage structures have been constructed on these two tributaries to the Santa Ynez River, providing access to miles of habitat for steelhead.

Arroyo Hondo Creek Fish Passage Project

Fish passage was restored through a 300-foot culvert beneath highway 101 on Arroyo Hondo Creek on the Santa Barbara coast. This is a small coastal stream that provides excellent spawning and rearing habitat for steelhead. The CDFW has monitored fish passage in this creek using Sonar technology.

Solstice Creek Fish Passage Restoration

Passage barriers at road crossings have been removed and a passage design at the Hwy 1 crossing has been reviewed by a fish passage consultant that provided a peer review and passage design alternatives to NMFS and CalTrans. CalTrans is working with NMFS to start implementing the project. Solstice Creek is a small coastal stream located near Malibu in the Santa Monica Mountains.

Trabucco Creek Fish Passage Project

CalTrout is leading an effort to provide fish passage under the interstate 5 bridge in Trabucco Creek in the San Juan Creek watershed, Orange County, California. The project, which is in the 65% design phase will provide access to 15 miles of upstream high quality spawning and rearing habitat for steelhead.

This is not an exhaustive list of recovery efforts occurring in the DPS. The CalTrout petition states that Southern steelhead have seen little demonstrable improvement in population numbers and long-term persistence since the species' federal ESA listing in 1997. It also states that state and federal entities have had decades to address the precipitous and continuing decline in Southern steelhead populations through all manner of guidance, policy, and mandate. This contradicts the results of the NMFS 5-year review that states "while the status of the populations of steelhead within the Southern California Coast Steelhead DPS has not changed appreciably since the last status review, a number of recovery related activities have been undertaken which may result in some reduction in threats to the species, and potentially lead to a future increase in individual populations." The 5-year review highlights NMFS' belief that recovery actions will increase steelhead population numbers in the DPS and it does not conclude there is a "precipitous and continuing decline in Southern steelhead populations in the DPS" as stated in the CalTrout petition.

Although steelhead numbers are low, there are few robust monitoring programs over a meaningful timescale occurring in the DPS. The minimal data that does exist as well as anecdotal information was included in the most recent paper by Dagit et al. (2020), but the authors do acknowledge the lack of data in the DPS. It is too early to use fish numbers to demonstrate progress and population data is lacking in the DPS. The number of recovery actions occurring in the DPS are based on work conducted by project proponents, federal resource agencies, CDFW and project partners and stakeholders. These projects will aid in the recovery of this species and consequently the petition didn't demonstrate how an additional listing through CESA would provide unique conservation or recovery measures that are not already included in the NMFS recovery plan and California state planning documents.

Effects of Drought on Recovery

Southern California has experienced an unprecedented drought since 2007. This has resulted in substantial reductions in migration opportunities for southern steelhead in the DPS. In arid southern

California, steelhead require elevated winter flows to open seasonally closed sandbars in coastal lagoons as well sufficient instream flows in coastal rivers and streams to migrate to high quality spawning habitats. In some instances these sandbars never opened during the driest years of the drought and when they did, instream flows were not of a sufficient magnitude and duration for steelhead to make it to spawning habitat.

Due to the drought conditions that have occurred over more than a decade, it is not reasonable or prudent for CalTrout to postulate that there is a precipitous decline in steelhead numbers and that current recovery actions will not result in an increase in the numbers of steelhead in the DPS. Once wet conditions return to the region and multiple recovery actions are in place throughout this and neighboring DPSs, steelhead will have access to a significant amount of historic habitat, and once established, population numbers should increase.

Other State Actions That are Supporting Recovery Outside of CESA

The CDFW is currently conducting instream flow evaluations in priority drainages in California. One of these priority drainages is the Ventura River. The Ventura River is also one of five priority stream systems selected as part of the California Water Action Plan (WAP) effort. The WAP was developed to move California toward more sustainable water management. As part of the WAP, the CDFW Instream Flow Program is supporting flow enhancement activities and developing flow criteria in priority streams that support critical habitat for threatened and endangered anadromous salmonids. The intention of these evaluations is to aid in steelhead recovery.

The Sustainable Groundwater Management Act (SGMA) of California is recent state legislation enacted to help protect groundwater resources over the long-term. Under SGMA, groundwater agencies must develop groundwater sustainability plans. These plans must include an analysis of groundwater dependent ecosystems including potential impacts to sensitive species from groundwater pumping. Plans are under development in the Ventura River and other priority drainages in the DPS further aiding in the recovery of southern California steelhead.

Conclusions

The overarching theme of the CalTrout petition is that the current federal recovery process is not resulting in an increase in steelhead numbers in the DPS and that a CESA listing will somehow, without any supporting evidence, provide additional and unique actions fostering an increase in steelhead numbers. CalTrout states in their petition that “a number of large, complex fish passage barriers remain in place or not fully functional, even though significant investment over the years has supported advanced engineering design. The state ESA listing is anticipated to help move these projects forward into construction to realize their potential in species recovery” (CalTrout 2021). These complex projects take significant amounts of time and funding to analyze, design, permit, and build. It is our opinion and experience that adding an additional regulatory step through CESA will not help move projects forward, but will most likely cause substantial delays. As stated above, CDFW is already a regulatory partner with NMFS on federal consultations and recovery efforts. Consequently, there is no need to list this species under CESA since the current recovery plan is being managed and implemented with CDFW as a partner to NMFS.

We urge CDFW and the Commission to deny the petition to list southern California steelhead as endangered under CESA. We appreciate your review of this comment letter and please feel free to contact me with any questions or correspondence.

Sincerely,



Michael L. Flood, General Manager
Casitas Municipal Water District
1055 North Ventura Avenue
Oak View, California 93022
Via email: mflood@casitaswater.com

Literature Cited

- California Trout (CalTrout). 2021. Notice of Petition: Southern California Steelhead (*Oncorhynchus mykiss*). Submitted to the California Fish and Wildlife Commission. June 7, 2021.
- Dagit, R., M. Booth, M. Gomez, T. Hovey, T., S. Howard, S. Lewis, S. Jacobson, M. Larson, D. Mccanne, and T. Robinson. 2020. Occurrences of Steelhead Trout (*Oncorhynchus mykiss*) in southern California, 1994-2018. 106. 39-58.
- National Marine Fisheries Service (NMFS). 2012. Southern California Steelhead Recovery Plan. Southwest Region, Protected Resources Division, Long Beach, California.
- National Marine Fisheries Service (NMFS). 2016. 5-Year Review: Summary and Evaluation of Southern California Coast Steelhead Distinct Population Segment. National Marine Fisheries Service. West Coast Region. California Coastal Office. Long Beach, California.



MOUNTAINS RECREATION & CONSERVATION AUTHORITY
King Gillette Ranch
26800 Mulholland Highway
Calabasas, California 91302
Phone (818) 878-0866 Fax (818) 878-0508

September 16, 2021

California Fish and Game Commission
P.O. Box 944209
Sacramento, California 94244-2090

**Full Support for Expedited Listing
of Southern California Steelhead as Endangered**

Dear President Silva and Commissioners:

The Mountains Recreation and Conservation Authority (MRCA) fully supports the listing of the Southern California steelhead as endangered under the California Endangered Species Act. The MRCA owns and manages thousands of acres in watersheds that currently support tenuous populations of this imperiled species. The species' unique ability among all salmonid species to tolerate a higher range of water temperatures is vital to compensate for global warming. This summer has been a loud wake up call to do all we can as conservation agencies to protect the few remaining Southern California Steelhead populations. The populations in the Santa Clara River, Arroyo Sequit, Malibu Creek, and Topanga Creek all contain significant lands owned by the MRCA. We urge you to expedite listing of this phenomenal anadromous fish species. The MRCA Governing adopted the attached resolution on September 1, 2021 supporting the pending petition from California Trout.

Sincerely,

A handwritten signature in black ink, appearing to read 'George Lange'.

George Lange
Chairperson

MOUNTAINS RECREATION AND CONSERVATION AUTHORITY

September 1, 2021
Resolution No 21-125

RESOLUTION OF THE GOVERNING BOARD OF THE MOUNTAINS RECREATION AND CONSERVATION AUTHORITY SUPPORTING THE LISTING OF THE SOUTHERN CALIFORNIA STEELHEAD AS ENDANGERED UNDER THE CALIFORNIA ENDANGERED SPECIES ACT AND AUTHORIZING A COMMENT LETTER TO THE CALIFORNIA FISH AND GAME COMMISSION

Resolved, That the Governing Board of the Mountains Recreation and Conservation Authority (MRCA) hereby:

1. FINDS that the Southern California steelhead should be listed as endangered under the California Endangered Species Act;
2. FINDS that the proposed action is categorically exempt from the provisions of the California Environmental Quality Act;
3. ADOPTS the staff report and recommendations dated September 1, 2021;
4. AUTHORIZES a comment letter to the California Fish and Game Commission fully supporting the listing of the Southern California steelhead as endangered under the California Endangered Species Act;
5. AUTHORIZES the Executive Officer or his designee to do any and all acts necessary to carry out this resolution and any recommendations made by the Governing Board.



Chairperson

AYES: Muñoz, Paranick, Hasenauer, Lange

NOS: none

ABSTAIN: none

ABSENT: none

I HEREBY CERTIFY that the foregoing resolution was adopted at a regular meeting of the governing board of the Mountains Recreation and Conservation Authority, duly noticed and held according to law on September 01, 2021.

Date: September 1, 2021



Executive Officer

RANCHO MISSION VIEJO

September 17, 2021

VIA EMAIL

Jonathan Nelson, Environmental Program Manager I,
Anadromous Fisheries Conservation and Management Program,
California Department of Fish and Wildlife,
1010 Riverside Parkway,
West Sacramento, CA 95605

Reference: Southern California Steelhead (*Oncorhynchus mykiss*) CESA Petition

Subject: Rancho Mission Viejo Comments

Dear Mr. Nelson:

Rancho Mission Viejo (RMV) provides the following comments for your consideration as you develop a recommendation on the California Endangered Species Act (CESA) petition submitted by California Trout ("Petition") for the Southern California steelhead ("Southern steelhead").

RMV is located in Southern Orange County and is owned and managed by the O'Neill family. The Ranch is bound by the existing communities of Rancho Santa Margarita, Mission Viejo, San Juan Capistrano and the undeveloped Cleveland National Forest and MCB Camp Pendleton. Various habitat types including but not limited to coastal sage scrub, chaparral, grassland, oak woodland, riparian, and waterways are present on the ranch. Since 1882, the O'Neill family has been a responsible steward of the Ranch. We have and continue to actively manage the Ranch to protect the resources on it. We intend to continue this tradition of stewardship into the future through implementation of the Southern Subregion Habitat Conservation Plan (SSHCP), approved by U.S. Fish and Wildlife Service on January 10, 2007.

RMV is the principal permittee under the SSHCP. In summary, the SSHCP Conservation Strategy provides a comprehensive, habitat-based approach to the protection of SSHCP Covered Species and their habitats by focusing on the lands and aquatic resource areas essential for the long-term conservation of the Covered Species and by providing for appropriate management for



those lands. The SSHCP Habitat Reserve ultimately will conserve approximately 32,818 acres in southern Orange County, comprised of historical RMV lands and three County of Orange wilderness parks.

This letter describes how the SSHCP Habitat Reserve, a product of existing regulatory mechanisms and management efforts, benefits the Southern steelhead. Establishment and management of the SSHCP Habitat Reserve addresses the factors cited by the Petition as warranting listing, including: 1) Present or Threatened Modification or Destruction of Habitat, 2) Overexploitation, 3) Predation, 4) Disease, and 5) Other Natural Occurrences or Human Related Activities.

Background Information: Steelhead & the SSHCP

The Southern steelhead was federally-listed as endangered in 1997 in the Southern California ESU that extends from the Santa Maria River in the north southward to Malibu Creek without Critical Habitat (62 FR 43937–43954). In 2002 the range of the Southern California ESU was extended south to the United States–Mexico Border (67 FR 21586–21598). On January 5, 2006, the federal endangered status of the southern steelhead was re-affirmed for 10 Distinct Population Segments (DPS) of West Coast Steelhead (71 FR 834).

The Southern steelhead historically occurred in two creeks within the SSHCP area (San Juan Creek and Arroyo Trabuco Creek), but has not been documented in either creek within the SSHCP area in recent decades. Since 2001, there are four documented records of Southern steelhead in lower San Juan Creek below the SSHCP area (Dagit et al. 2020). Notably, the 2006 federal listing indicated a "paucity of information" for the Southern steelhead due to a lack of recent and historical data for the species (71 FR 851). The federal listing also noted that except for colonization of a small population in San Mateo Creek, just south of the SSHCP area, the Southern steelhead appears to be extirpated from all systems south of Malibu Creek to the Mexican border. Further, in the 2005 designation of Critical Habitat for Southern steelhead, Arroyo Trabuco and Upper, Mid Upper, and Middle San Juan Creek within the SSHCP area were considered to be unoccupied; only the lower segments of the two creeks west of I-5 were designated Critical Habitat (70 FR 52488-52627). For these reasons, while Southern steelhead, as a federally-listed species, was initially considered for coverage by the SSHCP, existing baseline conditions indicated that coverage was not needed because future direct and indirect impacts to the Southern steelhead were considered to be highly unlikely.

Further, according to the National Marine and Fisheries Service (NMFS) 2016 5-year review of Southern steelhead, San Juan Creek does not meet the viability criteria for Core 1 and 2 populations, including adult abundance, spatial structure, and smolt counts. The Technical Review Team (TRT) did not identify San Juan Creek as a High Priority for recovery (NMFS 2016).

Based on this background information, and consistent with NMFS' 2016 5-year review, RMV does not consider the SSHCP area to be important for conservation and recovery of the Southern steelhead. Nonetheless, conservation and management of the SSHCP Habitat Reserve would not preclude, but would in fact likely enhance, suitable habitat conditions for Southern steelhead should it colonize San Juan and Arroyo Trabuco creeks upstream of I-5 in the future. The following discussion demonstrates how the SSHCP could benefit the Southern steelhead in light of identified threat factors.

1. Present or Threatened Modification or Destruction of Habitat

The SSHCP provides for the conservation and management of two fish species, the arroyo chub and partially three-armed stickleback. The conservation and management actions for these two species are relevant to the Southern steelhead as the steelhead will directly benefit from the actions taken by RMV to conserve chub and stickleback aquatic habitat and manage this habitat to enhance its suitability to support all three species. All aquatic habitat in San Juan Creek will be included in the Habitat Reserve and all aquatic habitat in Arroyo Trabuco Creek will be included in the Habitat Reserve or Supplemental Open Space (at the northern reach of the creek below Cleveland National Forest). On RMV lands within San Juan Creek, this will be accomplished by the recordation of the SSHCP conservation easement. In accordance with the SSHCP Phased Dedication Program, RMV has been incrementally recording the SSHCP conservation easement over its future Habitat Reserve lands. All but 16.25 acres of San Juan Creek are already enrolled in the Habitat Reserve and therefore subject to its protections, management actions, and prohibited and permitted uses. The remaining acres will be enrolled in the Habitat Reserve in the near future. Upstream of RMV lands, San Juan Creek is within Casper's Wilderness Park which the County of Orange enrolled in the SSHCP Habitat Reserve in 2007. The County also enrolled the portion of the Arroyo Trabuco Creek in O'Neill Regional Park at the same time. Thus, potential habitat for the Southern steelhead in San Juan and Arroyo Trabuco creeks is protected - see the attached Figure 1.

The SSHCP includes an Invasive Species Control Plan (ISCP) that addresses the existing and foreseeable impacts of invasive plant and wildlife species on the RMV portion of the Habitat Reserve in both San Juan and Arroyo Trabuco creeks, as well as giant reed in Casper's Wilderness Park in upper San Juan Creek upstream of RMV. The riparian invasive plant species currently targeted for specific controls are: giant reed (*Arundo donax*), pampas grass (*Cortaderia selloana*), castor bean (*Ricinus communis*), tamarisk (*Tamarix ramosissima*), tree tobacco (*Nicotiana glauca*) and Spanish sunflower (*Pulicaria paludosa*). For example, the San Juan Creek invasive plant control project was implemented in a phased approach, with the first phase commencing in 2010 and the final phase completed in 2018. Approximately 110 acres of giant reed has been cut and removed from the project site to date, at a cost of over \$795,000. Giant reed has been reduced by >95% of its abundance in the San Juan Creek project area. All other

target weeds were infrequent and scattered. Quantitative and qualitative data collected at transect locations in the weed removal areas documented that the dead giant reed stumps are starting to decompose, and native species are recruiting into areas formerly dominated by giant reed and other target weeds. Implementation of the ISCP has significantly improved the quality of aquatic and riparian habitat in San Juan Creek for multiple species including the chub, stickleback and steelhead.

With regard to the Arroyo Trabuco Creek, the County implements a Resource Management Plan within O'Neill Regional Park designed to protect biological resources. Currently, there are invasive species removal efforts underway with a focus on 10-20 acres of giant reed removal, and 85 acres of riparian habitat enhancement/restoration in Arroyo Trabuco Creek.

Within RMV lands, the potential impacts to chub and stickleback and other riparian and aquatic species that may result from water quality threats such as temperature, salinity, and pollution, will be mitigated through implementation of the RMV Water Quality Management Plan (WQMP). The WQMP specifies Best Management Practices (BMPs) designed to mitigate "conditions of concern" and "pollutants of concern". BMPs include but are not limited to physical improvements such as water quality basins, infiltration basins, and detention basins constructed within approved development areas that are designed to capture and treat stormwater runoff prior to discharge. BMPs also include public education about behaviors that can degrade water quality, such as throwing trash into creeks.

In compliance with the SSCHP and related regulatory agency permits, RMV will be removing a large Arizona style crossing of San Juan Creek that is identified as a fish passage barrier. This crossing will be replaced with a bridge. Construction of this bridge is anticipated to begin in 2022. Removal of the Arizona crossing and restoration of its footprint back to native habitats will occur after bridge construction is complete. Coordination between Cal Trout and the County regarding the construction of a fish passage ladder on the Arroyo Trabuco Creek is ongoing.

Potential steelhead habitat in San Juan and Arroyo Trabuco creeks is a) permanently conserved, b) managed for the benefit of multiple riparian species, and c) protected from degradation related to development. There is not a present or threatened modification or destruction of steelhead habitat within the SSHCP area.

2. Overexploitation

The Petition notes that recreational angling is not considered the principal cause of Southern steelhead decline. Fishing is not a permitted activity within the RMV portion of Habitat Reserve, and the County of Orange regulates fishing in O'Neill Regional Park (Arroyo Trabuco Creek). Therefore, the threat of over-exploitation is not present.

3. Predation

The ISCP mentioned above also addresses invasive wildlife such as American bullfrogs and African clawed frogs. RMV regularly monitors San Juan Creek and its tributaries such as Chiquita Creek for the presence of these species and conducts a removal program when necessary. RMV is also required to monitor all water quality treatment facilities adjacent to San Juan Creek for the presence of these species and again conducts a removal program when necessary. Thus, RMV is actively managing any potential predation threat.

4. Disease

RMV has described those management measures that it is implementing to promote habitat suitability for steelhead and to eliminate stressors such as invasive plants or wildlife. These actions are designed to promote resiliency in the steelhead population.

5. Other Natural Occurrences or Human Related Activities.

Increased wildfires and climate change are two other factors that could affect long-term habitat conditions for fish species such as Southern steelhead.

With respect to wildfires, the SSHCP includes a Wildland Fire Management Plan (WFMP) that will protect riparian/wetland habitats in the San Juan Creek and Arroyo Trabuco watersheds to the extent possible in the event of more frequent and/or severe fires in the future. While the WFMP focuses mainly on upland vegetation communities, protection and restoration of these resources will also protect the quality of riparian/wetland habitats by controlling upland erosion and potential pollution and sedimentation of waterways from runoff after fire events.

Climate change could affect habitat for Southern steelhead in at least three ways: (1) higher temperatures could affect the temporal stability of aquatic systems (e.g., heat stress) that may be critical for life history traits such spawning, foraging, fry emergence, and migration, should the species colonize the Habitat Reserve; (2) altered precipitation, including longer drought periods, as well as more intense storms, could have various effects on habitat quality and Southern steelhead behavior, including drought-related stress and more frequent and/or intense reset events in the case of increased stormwater runoff; and (3) increased fire frequency and/or severity, as noted above.

While management at the Habitat Reserve-scale cannot directly address climate change at the global or regional scale, the Habitat Reserve management program provides for monitoring and management of effects related to climate change, including collecting regional climate, weather,

and air quality information to examine potential correlations between habitat and population changes and environmental variables. As described above, the WQMP will also address potential effects of climate change on aquatic resources such as temperature and water chemistry.

Summary and Conclusion

In this letter, RMV has explained why it does not consider the SSHCP area to be important for conservation and recovery of the Southern steelhead consistent with the findings of the NMFS TRT. However, by protecting potential suitable habitat and implementing management measures therein, consistent with the SSHCP, RMV has provided suitable habitat conditions for Southern steelhead should it colonize San Juan and/or Arroyo Trabuco creeks upstream of I-5 in the future. Thus, if the Southern steelhead is listed under CESA, RMV requests that the SSHCP be recognized as contributing to the protection and management of the Santa Catalina Gulf Coast population such that "Covered Activities" under the SSHCP (including specified development and infrastructure projects) would not be considered "take" pursuant to California Fish and Game Code Section 86 and would not require a Section 2081(b) Incidental Take Permit.

RMV appreciates the opportunity to provide these comments. Should you have any questions regarding our comments, please feel free to contact me at (949) 240-3363 Ext. 297 or via email at lcoleyeisenberg@ranchomv.com.

Sincerely,



Laura Coley Eisenberg

Senior Vice President, Open Space & Resource Management

Attachment: Figure 1

Citations

National Marine Fisheries Service. 2016. 5-Year Review: Summary and Evaluation of Southern California Coast Steelhead Distinct Population Segment. National Marine Fisheries Service. West Coast Region. California Coastal Office. Long Beach, California.



FIGURE 1
 Southern Subregion Habitat Reserve
 Rancho Mission Viejo

SANTA MONICA MOUNTAINS CONSERVANCY

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September 20, 2021

California Fish and Game Commission
P.O. Box 944209
Sacramento, California 94244-2090

**Full Support for Expedited Listing of
Southern California Steelhead as Endangered**

Dear President Silva and Commissioners:

The Santa Monica Mountains Conservancy (Conservancy) fully supports the listing of Southern California steelhead as endangered under the California Endangered Species Act. The Conservancy's jurisdiction includes four watersheds -- Santa Clara River, Arroyo Sequit, Malibu Creek, and Topanga Creek-- that support exceedingly fragile populations of this species. The species' unique genetic capability among all salmonid species to tolerate a higher range of water temperatures is vital to compensate for global warming as stream temperatures irreversibly increase all up the California coast. This summer of heat, drought, and fire has been a loud wake up call to do all we can as conservation agencies to protect the few remaining Southern California Steelhead populations to preserve an adequate genetic reservoir. We urge you to expedite listing of this imperiled anadromous fish species as petitioned by California Trout.

Sincerely,

A handwritten signature in blue ink, appearing to read "Irma Muñoz".

Irma Muñoz
Chairperson



**CACHUMA
CONSERVATION
RELEASE BOARD**

City of Santa Barbara

Goleta Water District

Montecito Water District

October 20, 2021

VIA E-MAIL AND U.S. MAIL

Vanessa Gusman
California Department of Fish &
Wildlife, Fisheries Branch
PO Box 944209
Sacramento, CA 94244-2090
E-Mail:

Commissioner Peter S. Silva
President
California Fish & Game
Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814
E-Mail: fgc@fgc.ca.gov

Re: CCRB Comments Relating to the Petition to List Southern California
Steelhead Under the California Endangered Species Act

Dear Ms. Gusman and Mr. Silva:

The Cachuma Conservation Release Board (“CCRB”), a joint powers agency composed of the Goleta Water District, the City of Santa Barbara, and the Montecito Water District, appreciates the opportunity to comment on California Trout, Inc.’s (“CalTrout”) petition to list the Southern California Steelhead (“Steelhead”) as endangered under the California Endangered Species Act (“CESA”).

For the past several decades, CCRB has worked diligently and effectively to improve the condition of Steelhead in the Santa Ynez River watershed in Santa Barbara County. As explained in detail below, CCRB’s demonstrated track record of collaborative efforts to preserve and protect Steelhead has created substantial amounts of additional habitat for Steelhead despite the significant environmental challenges facing the region and contributed extensively to expanding the scope of scientific knowledge about this unique species.

Given its longstanding efforts to protect Steelhead, CCRB is concerned that CalTrout’s petition fails to acknowledge how effective actions taken under the federal Endangered Species Act (“Federal ESA”) have been in enhancing the status of the species under challenging conditions. The petition also ignores CDFW’s existing participation in efforts to protect Steelhead and the ways in which imposing additional regulatory efforts may ultimately do more harm than good in the future. Accordingly, CCRB respectfully submits that listing Steelhead under CESA would not advance the state’s policy of preventing the extinction of the specie and asks that CalTrout’s listing petition be denied. In the sections that follow, this letter provides information about the work done in the Santa Ynez River watershed to protect Steelhead, the status of the species in this watershed, and the unintended consequences of listing steelhead under CESA.

P.O. Box 3767
Santa Barbara, CA 93105

www.ccrb-board.org

I. CCRB and Its Member Agencies' Efforts Have Made Significant Improvements to the Status of the Steelhead Fishery in the Santa Ynez River Watershed.

For decades, CCRB and its member agencies have worked tirelessly, successfully, and at great expense, to improve conditions for Steelhead and the status of the species in the Santa Ynez River watershed. For example, beginning in 1993—four years before the species was listed under the Federal ESA—CCRB began participating extensively in studies and planning efforts that ultimately led to the issuance of the biological opinion that currently governs the operations of the Cachuma Project.¹ Recently, the State Water Resources Control Board (“State Board”) recognized that the flow regime that CCRB helped to develop for the Cachuma Project should form the basis for a water rights order that the State Board determined would keep the Santa Ynez River Steelhead fishery below Bradbury Dam in “good condition” under Fish & Game Code section 5937.²

CCRB’s member agencies have also funded or carried out eighteen habitat improvement projects since 2000. Such projects include remediating numerous fish passage barriers on Salsipuedes, Quiota, and Hilton Creeks, all of which are tributary to the lower Santa Ynez River, as well as several streambed enhancement projects specifically designed to improve Steelhead habitat in streams deemed highly suitable for promoting Steelhead recovery. Altogether, habitat improvement projects funded or implemented by CCRB’s member agencies have added more than twenty miles of high-quality Steelhead habitat in the Santa Ynez River watershed.

CCRB’s cooperative, collaborative efforts to improve conditions for Steelhead in the Santa Ynez River watershed remain ongoing. Currently, CCRB is working with U.S. Bureau of Reclamation (“Reclamation”), the National Marine Fisheries Service (“NMFS”), the California Department of Fish & Wildlife (“CDFW”) and local stakeholders in the Santa Ynez Valley to develop studies and plans to implement Order WR 2019-0148. CCRB is also providing substantial hydrologic and biological support to Reclamation’s efforts to develop a new, even more protective flow regime for the Cachuma Project and the lower Santa Ynez River in connection with an ongoing consultation process between NMFS and Reclamation under the Federal ESA. The proposed action supported by CCRB will not only provide enhanced streamflows for Steelhead in the lower Santa Ynez River; it will also provide opportunities for CCRB and its member agencies to carry out additional habitat improvement projects and studies in the Santa Ynez River and its tributaries.

In short, CCRB and its member agencies have taken and continue to take a variety of concrete actions to improve and protect Steelhead and their habitat in one of the species’ most important watersheds. CalTrout’s petition, however, suggests that these efforts and substantial regulatory efforts under state water law and the Federal ESA are insufficient because the status of the species has not changed appreciably since Steelhead were listed as endangered in 1997. But CalTrout’s frame of reference is

¹ The Cachuma Project captures seasonal floodwaters on the Santa Ynez River and provides substantial water supplies for Cachuma Project Member Units such as CCRB’s members.

² State Water Resources Control Board, Order WR 2019-0148, *In the Matter of Permits 11308 and 11310 (Applications 11331 and 11332) held by the United States Bureau of Reclamation for the Cachuma Project on the Santa Ynez River* (“Order WR 2019-0148”) (available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/cachuma/docs/wro2019_0148_withagreement_final.pdf).

too narrow to support listing under CESA. Indeed, NMFS previously recognized that the progress of efforts to promote Steelhead recovery should be “judged at the scale of multiple decades and even multiple human generations.”³ And to the extent that the status of the species has not changed appreciably since 1997, the lack of a substantial increase in the Steelhead population is more accurately attributed to extremely challenging environmental conditions than a lack of regulatory supervision.

II. As a Result of CCRB’s Efforts and Existing Regulations, the Santa Ynez River Watershed Steelhead Fishery Has Persisted Through Decades of Challenging Environmental Conditions.

Since Steelhead were first listed under the Federal ESA in 1997, the Santa Ynez River watershed has experienced several periods of drought, including a record-setting drought from 2012-2019 that resulted in a five year-long local emergency in Santa Barbara County. Yet another drought emergency was recently declared by Governor Newsom on July 8, 2021.

Steelhead in the Santa Ynez River watershed face significant challenges from drought conditions. For example, Steelhead require elevated winter flows to open a seasonally closed sandbar where the Santa Ynez River meets the Pacific Ocean in Santa Barbara County, and also require sufficient instream flows in coastal streams and Santa Ynez River tributaries to access high quality spawning habitat. While CCRB’s member agencies and their ratepayers have implemented rigorous water conservation measures to cope with severe drought conditions, the Santa Ynez River watershed Steelhead population has still faced unprecedented and unavoidable challenges from drought over the past two decades. Catastrophic wildfires in 2016 and 2017-2018 have also adversely affected Steelhead habitat in the Santa Ynez River watershed.⁴

Despite these challenges, Steelhead population numbers have, as CalTrout admits, not appreciably diminished. Thus, it is reasonable to infer that the increased habitat created by CCRB and its member agencies’ activities and projects has allowed Steelhead to weather the challenging environmental conditions experienced in recent years, and that the status of the species will improve in concert with those conditions. It is unclear how listing Steelhead under CESA would have or could make a difference in the status of the species. Indeed, because CDFW is already heavily involved in promoting Steelhead recovery in the Santa Ynez River watershed, adding an additional layer of regulatory burden could do more harm than good for the species’ cause.

III. Listing Steelhead under CESA Could Make it More Difficult for CCRB and its Members to Improve the Status of the Species.

CalTrout contends that if Steelhead are listed under CESA, CDFW will have direct authority to oversee projects within their current range, and will be able to impose “species-specific mitigation measures” through incidental take permits that CDFW may issue under CESA. CalTrout’s suggestion

³ National Marine Fisheries Service, Southern California Steelhead Recovery Plan (Jan. 2012) p. 5-1 (available at <https://repository.library.noaa.gov/view/noaa/15988>).

⁴ See e.g., United States Forest Service, Draft Whittier Burned Area Report (Aug. 13, 2017) (available at <https://www.cafsti.org/wp-content/uploads/Whittier-Burned-Area-Emergency-Response-2017.pdf>).

that CDFW requires additional regulatory and oversight authority in order to ensure the recovery of the species within the Santa Ynez River watershed contains two logical errors.

First, CDFW is already heavily involved in protecting Steelhead in the Santa Ynez River watershed. For example, CDFW has substantial oversight and consultation authority under Order WR 2019-0148, which governs Reclamation's operation of the Cachuma Project. CDFW is also already a partner in the ongoing Section 7 consultation process for the Cachuma Project between Reclamation and NMFS. In these roles, CDFW has provided substantial comments to Reclamation, NMFS, and the State Board in connection with proposed projects, Steelhead studies, and management plans. It is unclear why Steelhead recovery efforts will be enhanced by supplementing CDFW's already substantial authority with an additional listing under CESA.

Second, granting CDFW additional authority is unnecessary and could ultimately prove counterproductive. Currently, the vast majority of projects that could affect Steelhead in the Santa Ynez River watershed are already subject to CDFW's permitting authority under Fish & Game Code section 1600 *et seq.* Indeed, if Steelhead are listed as endangered under CESA, CCRB and its member agencies' future habitat improvement projects will need to comply with an additional permit process that could delay their ability to implement such projects going forward. Delaying important habitat improvement projects in the Santa Ynez River watershed is inconsistent with CESA's goals, and any decision to list Steelhead as endangered may well prove imprudent. At a minimum, CDFW and the Commission should ensure that any future decision to list Steelhead under CESA does not interfere with the development and implementation of the types of projects that have already proven successful in protecting and preserving Steelhead in the Santa Ynez River watershed.

IV. Conclusion

CCRB and its members remain deeply committed to improving conditions for Steelhead in the Santa Ynez River watershed and promoting the recovery of the species. CCRB is concerned, however, that CalTrout's listing petition ignores the success of ongoing recovery efforts in the face of extremely challenging environmental conditions presented in recent years. Further, listing Steelhead under CESA could delay these efforts by adding another layer of regulatory burdens on projects with a successful track record of improving and expanding Steelhead habitat in the Santa Ynez River watershed. Accordingly, CCRB disagrees that listing Steelhead under CESA is necessary to achieve our shared goal of protecting and preserving this important species given the ongoing endangered listing of the species under the Federal ESA. We strongly believe that such a listing would do nothing to further the cause of steelhead recovery and ask that CalTrout's listing petition be denied.

Sincerely,



Peter Cantle, Executive Director
Cachuma Conservation Release Board

Memorandum

Date: October 29, 2021

To: Melissa Miller-Henson
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Evaluation of the Petition to List Southern California steelhead (*Oncorhynchus mykiss*) as Endangered under the California Endangered Species Act**

The California Department of Fish and Wildlife (Department) has completed its evaluation of the Petition to list Southern California steelhead as an endangered species (Petition) under the California Endangered Species Act, Fish and Game Code section 2050 et seq. The California Fish and Game Commission (Commission) received the Petition from California Trout on June 14, 2021. Pursuant to Fish and Game Code section 2073, the Commission referred the Petition to the Department on June 23, 2021. On July 9, 2021, in accordance with Fish and Game Code section 2073.5, subdivision (b), the Department requested a 30-day extension to further analyze the Petition and complete its evaluation report. The Commission approved this request, and the due date for the Petition evaluation is October 21, 2021.

The Department completed the attached Petition evaluation report pursuant to Fish and Game Code section 2073.5. (See also Cal. Code Regs., tit. 14, § 670.1, subd. (d)(1).). The Department's evaluation report delineates the categories of information required in a petition and evaluates the sufficiency of the available scientific information regarding each of the Petition components. Based upon the information contained in the Petition, the Department has determined that there is sufficient scientific information available at this time to indicate that the petitioned action may be warranted. The Department recommends that the Petition be accepted and considered.

If you have any questions or need additional information, please contact Mr. Jonathan Nelson, Environmental Program Manager, Fisheries Branch, at (916) 376-1641 or by email at [REDACTED] or Ms. Valerie Cook, Acting Branch Chief, Fisheries Branch, at (916) 616-6366 or by email at [REDACTED]

Attachment

Melissa Miller-Henson
Executive Director
Fish and Game Commission
October 29, 2021
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cc: California Department of Fish and Wildlife

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