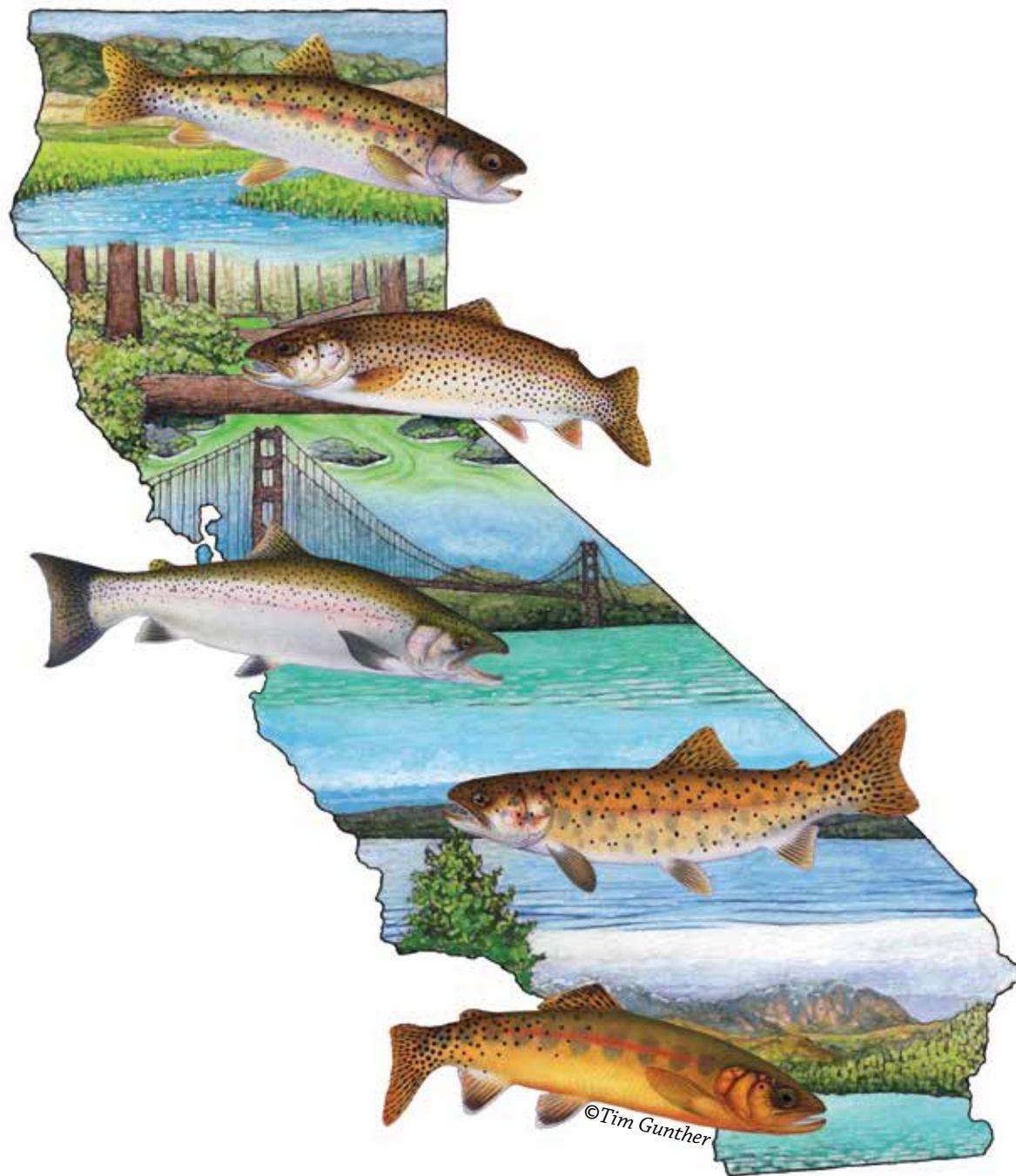


# An Angler's Guide to the California Heritage Trout Challenge



State of California  
Natural Resources Agency  
California Department of Fish and Wildlife  
Heritage and Wild Trout Program



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2017

# Table of Contents

Chapter 1: <i>Coastal Rainbow Trout</i> .....	2
Chapter 2: <i>Eagle Lake Rainbow Trout</i> .....	10
Chapter 3: <i>Coastal Cutthroat Trout</i> .....	18
Chapter 4: <i>Lahontan Cutthroat Trout</i> .....	26
Chapter 5: <i>Paiute Cutthroat Trout</i> .....	34
Chapter 6: <i>McCloud River Redband Trout</i> .....	42
Chapter 7: <i>Goose Lake Redband Trout</i> .....	52
Chapter 8: <i>Warner Lakes Redband Trout</i> .....	60
Chapter 9: <i>Golden Trout Overview</i> .....	66
Chapter 10: <i>Kern River Rainbow Trout</i> .....	72
Chapter 11: <i>Little Kern Golden Trout</i> .....	80
Chapter 12: <i>California Golden Trout</i> .....	86
Chapter 13: <i>Bull Trout</i> .....	92
Chapter 14: <i>Frequently Asked Questions</i> .....	96
Chapter 15: <i>How To Complete The Challenge</i> .....	100
Chapter 16: <i>Fish Handling And Release</i> .....	104
Chapter 17: <i>Aquatic Invasive Species</i> .....	106
Chapter 18: <i>Special Considerations</i> .....	110
Contributors .....	113
Additional Resources .....	114

## Preface

California's natural heritage includes one of the most diverse assemblages of native trout forms found in the United States. Over the millennia, 12 different sub-species, or forms, of trout evolved to inhabit the diverse habitats found in California. These include temperate rain forests, high deserts, large inland rivers, isolated lake basins and mountain streams.

The same forces that shaped our landscape played a hand in contributing unique characteristics to each of our native trout. Adaptations to hydrological, ecological and climatic conditions resulted in astounding varieties in size, coloration and life history patterns. By traveling the state and witnessing these iconic native trout first-hand, one will begin to notice unique physical characteristics that differentiate one from another. Given California's large geographic area and wide variety of bioregions, pursuing the state's native trout will reward anglers with exposure to the state's diverse natural heritage.

The California Fish and Game Commission (Commission) established the Heritage Trout Challenge (Challenge) in 2004 and directed the California Department of Fish and Wildlife (CDFW) Wild Trout Program to administer it. Since 1971, the Wild Trout Program has protected and enhanced quality trout fisheries sustained by natural reproduction. The Commission created a policy to guide the management and regulation of wild trout resources and to designate certain waters to be managed exclusively for wild (naturally self-reproducing) trout. In 1998, the program was expanded to increase emphasis

and awareness about the beauty, diversity, historical significance and special values of California's native trout and their habitats. The native trout forms in this state are regarded as "heritage" trout and the program's name was accordingly changed to the Heritage and Wild Trout Program.

The California Heritage Trout Challenge was designed to promote the ecological and aesthetic values of native trout and their habitats, encourage anglers to learn more about the state's natural heritage, and build public support for native trout restoration efforts. CDFW welcomes anglers, families and friends to "take the Challenge" and, in the process, explore new waters and appreciate the diverse fishing opportunities California has to offer. We hope this handbook encourages those who have not taken the Challenge to do so and aids those already in pursuit of our heritage trout. Although this handbook has many valuable insights to finding and fishing for heritage trout, it also provides useful information to those who simply want to learn more about these species.

This handbook was created as a guide to the California Heritage Trout Challenge, to provide anglers with detailed information on how and where to catch these fish, as well as describe their unique attributes. We hope you enjoy taking this information and putting together trips of a lifetime that will enhance your perspective on California's natural diversity, heritage and our state's many cold-water fisheries.

# A Challenge Delivered

Dear Native Trout Enthusiasts,

Having grown up in California and being an avid angler, I am fortunate to be able to travel throughout the state and observe its amazing abundance of native trout and the unique places they inhabit. Working with the Heritage and Wild Trout Program for over 20 years, I have been involved in efforts to help protect and conserve these special resources. Being immersed in the fishing world, I noticed over the years that most anglers have a relatively limited understanding of the diversity of California's native trout. After trout fishing around the globe, I realized California provides some of the most unique and special trout fishing opportunities found anywhere. I set a goal to inform anglers about California's trout assemblage and associated natural and aesthetic values; the Challenge became the vehicle for delivering this message.

I discovered the recently launched Cutt Slam, sponsored by the Wyoming Game and Fish Department. This angler recognition program acknowledges anglers who catch four native Wyoming cutthroat trout. I saw the potential for its application in California, which spurred a vacation to Wyoming with my wife to learn firsthand about the Cutt Slam. I will never forget the time we spent chasing native cutthroat throughout the Rocky Mountains, which provided not only cherished memories, but also key observations that would help launch a similar program in California. Ron Remmick, the biologist behind the creation of the Cutt Slam, gave me invaluable feedback and input on their program and on how to launch our own effort in California.

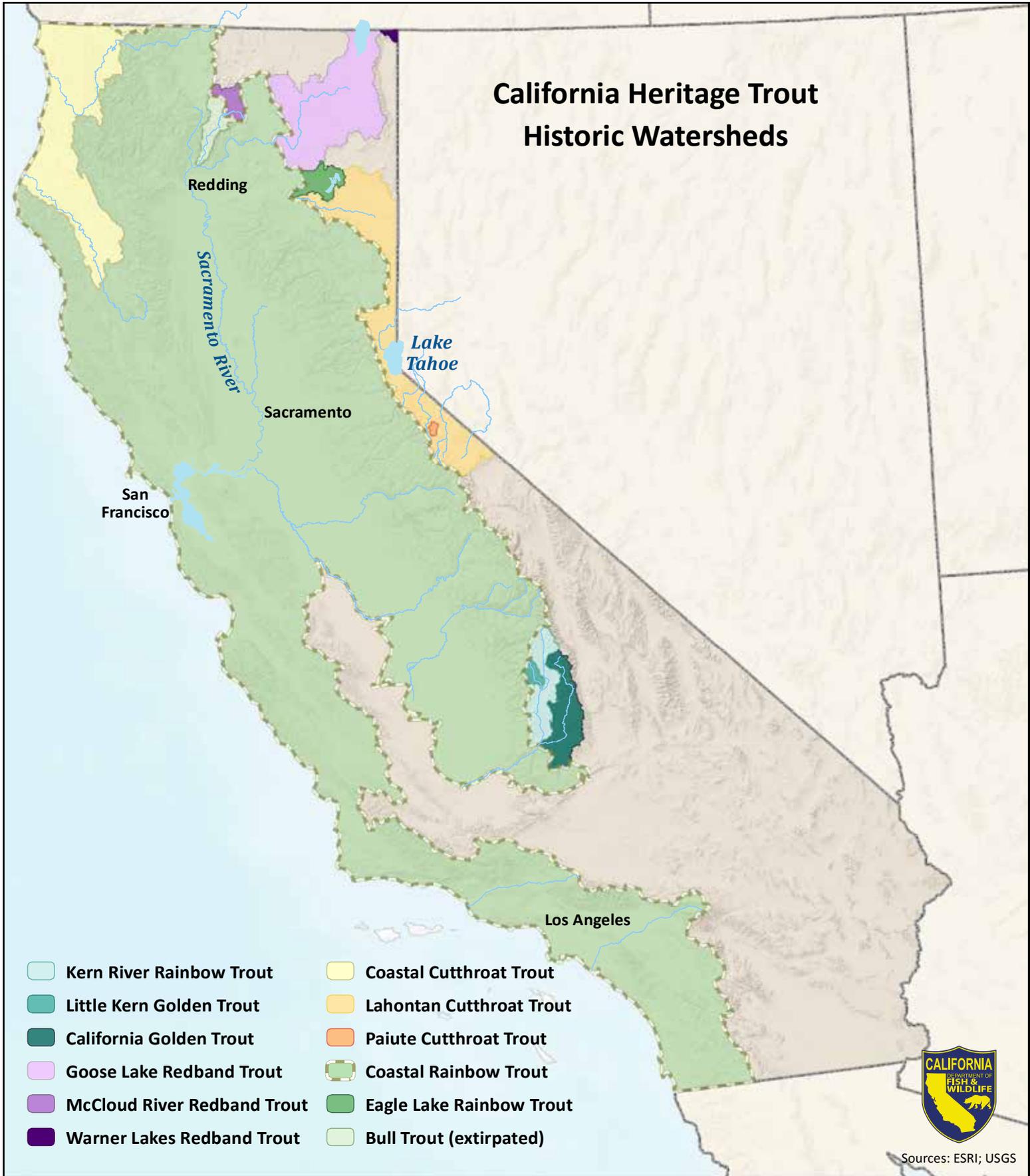
The next step in the process was to determine how many trout it would take to qualify and what to name the program. Although my wife and I completed the Cutt Slam in a relatively short period of time, I wanted this Challenge to require anglers to see a large portion of the state. After looking at maps and the associated qualifying watersheds, I settled on six as the magic number. This would encourage anglers to learn about other areas and waters in California that were likely outside their normal "home range," and gain a better understanding of the diversity of habitats that California native trout call home. The final step: what to call it? Although many names were proposed during the initial stages, like the Heritage Trout Six-Pack (which was one of my favorites), we settled on the California Heritage Trout Challenge.

Being associated with the Challenge and the anglers that have completed it has been one of the most rewarding experiences of my career. Hopefully this guide will provide the inspiration, along with information, to help you complete the Challenge and create your own native trout angling memories.

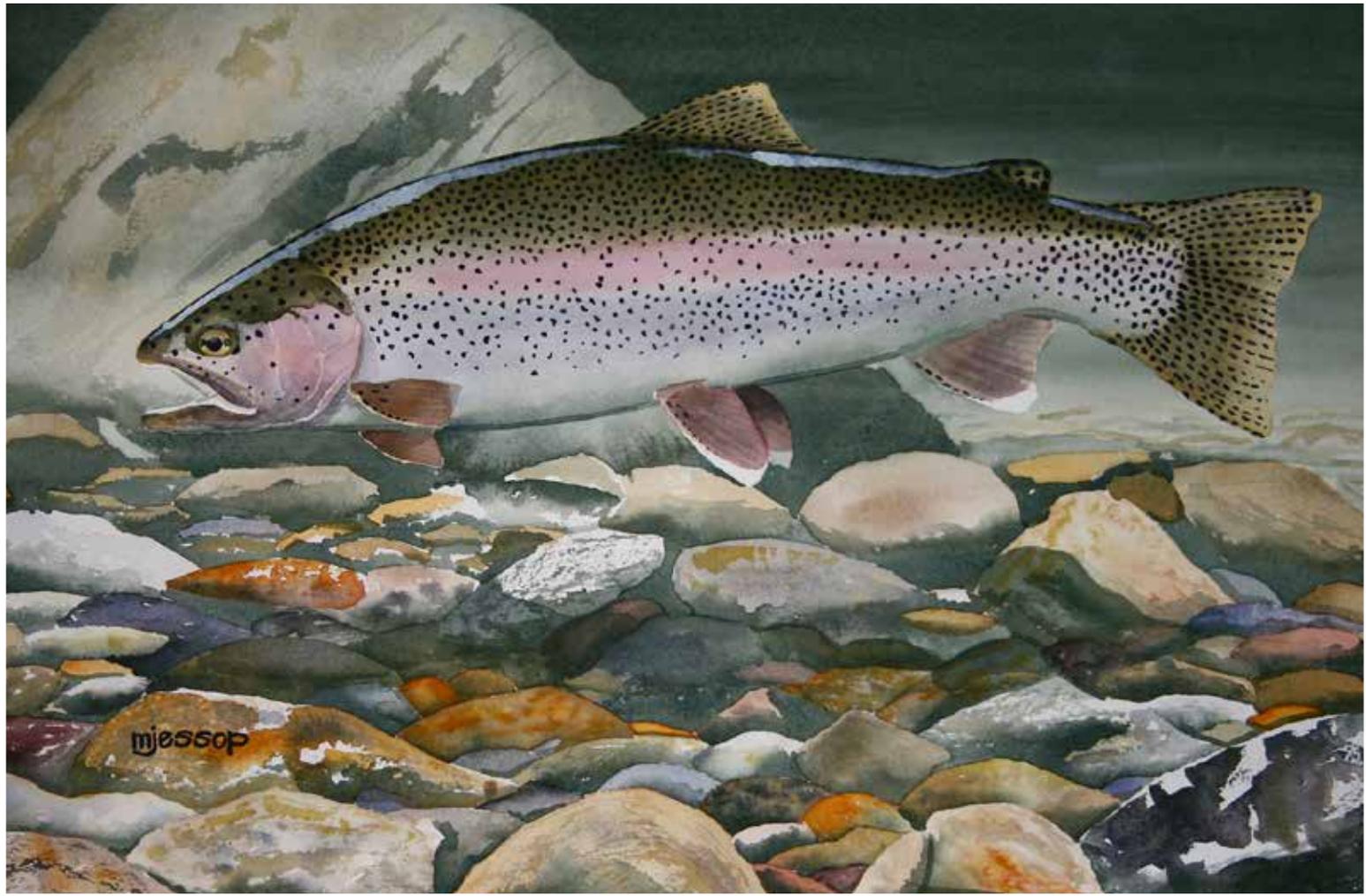
Tight lines,

*Roger K. Bloom*  
Inland Fisheries Program Manager  
California Department of Fish and Wildlife

## California Heritage Trout Historic Watersheds



Sources: ESRI; USGS



## CHAPTER 1

# Coastal Rainbow Trout

*Oncorhynchus mykiss irideus*

## Overview

*Rainbow trout collectively refer to numerous subspecies of *Oncorhynchus mykiss* which, in California, include coastal rainbow trout, three golden trout, three redband trout and Eagle Lake rainbow trout. Coastal rainbow trout (subspecies *irideus*) are native to Asia and North America in tributaries draining to the Pacific Ocean. They include both resident fish that inhabit freshwater for their entire life cycle and anadromous steelhead that spend time in both freshwater and the ocean. Coastal rainbow trout and steelhead are the same species but exhibit different life history patterns.*

First described in Kamchatka, Russia in the late 1700s, the name *mykiss* is derived from the word *mykizha*, meaning ‘colorful one.’ The subspecies name, *irideus*, stems from both Latin and Greek words for rainbow; Iris is the Greek goddess of the rainbow. The origin of the common name “steelhead” is unknown but is likely due to the steel blue and chrome colors observed when returning to freshwater on their annual spawning migration.

Rainbow trout have been introduced into coldwater habitats throughout most of the world due to their renown as a sport fish and their economic value as a food source. Rainbow trout stocking began in the late 1800s, when fertilized eggs were shipped from San Francisco to the east coast of the United States. Shortly after, a federal fish hatchery was established in the McCloud River system that likely gathered

stock from both coastal rainbow and redband trouts. They are now present in every state and province in North America with coldwater habitats and were introduced across the globe to Europe, Asia, Africa, South America and Australia.

### **Identification**

Coastal rainbow trout are highly variable in color, body shape and meristic characters (quantitative physical counts, such as the number of scales along the lateral line or number of rays on a fin). This variability is especially true between resident fish and steelhead. Juvenile coastal rainbow trout are heavily spotted with large, dark, oval parr marks along the lateral line. The spaces between the parr marks are generally wider than the marks themselves. This pattern acts as camouflage to help them blend into their stream environment.







Adults generally have silver sides streaked by an iridescent pink to red lateral band. Numerous black spots pepper the tail, adipose fin, dorsal fin and back, often radiating in lines along the fin rays of the tail. The cheeks (opercula) are also pinkish, the back iridescent blue to nearly brown, the sides and belly silver, white or yellow.

Steelhead are known for their large size, silver-blue 'chrome' color, and square-shaped tail. The ocean provides a rich food source that allows rapid growth and these adaptations help them blend into this environment to prey on larger food sources such as other fish. Resident stream forms are generally darker than lake or sea-run forms and adults may retain the color patterns of parr, especially in smaller streams and creeks.

### ***Distribution***

In North America, coastal rainbow trout are native to Pacific coast streams, from the Kuskokwim River in Alaska south to Baja California. In California, coastal rainbow trout are the most widely-distributed native trout form and are found on the western slopes of the Sierra Nevada in waters draining to the Pacific Ocean. Widespread glaciation that occurred over 10,000 years ago likely limited coastal rainbow trout distribution to elevations less than 8,000 feet on the west slope of the Sierra Nevada (probably lower elevations in the northern part of the range). However, upstream distribution within this portion of their historic range is largely unknown and likely varied from stream to stream. The extent to which a given population was able to ascend these streams was probably dependent upon the location



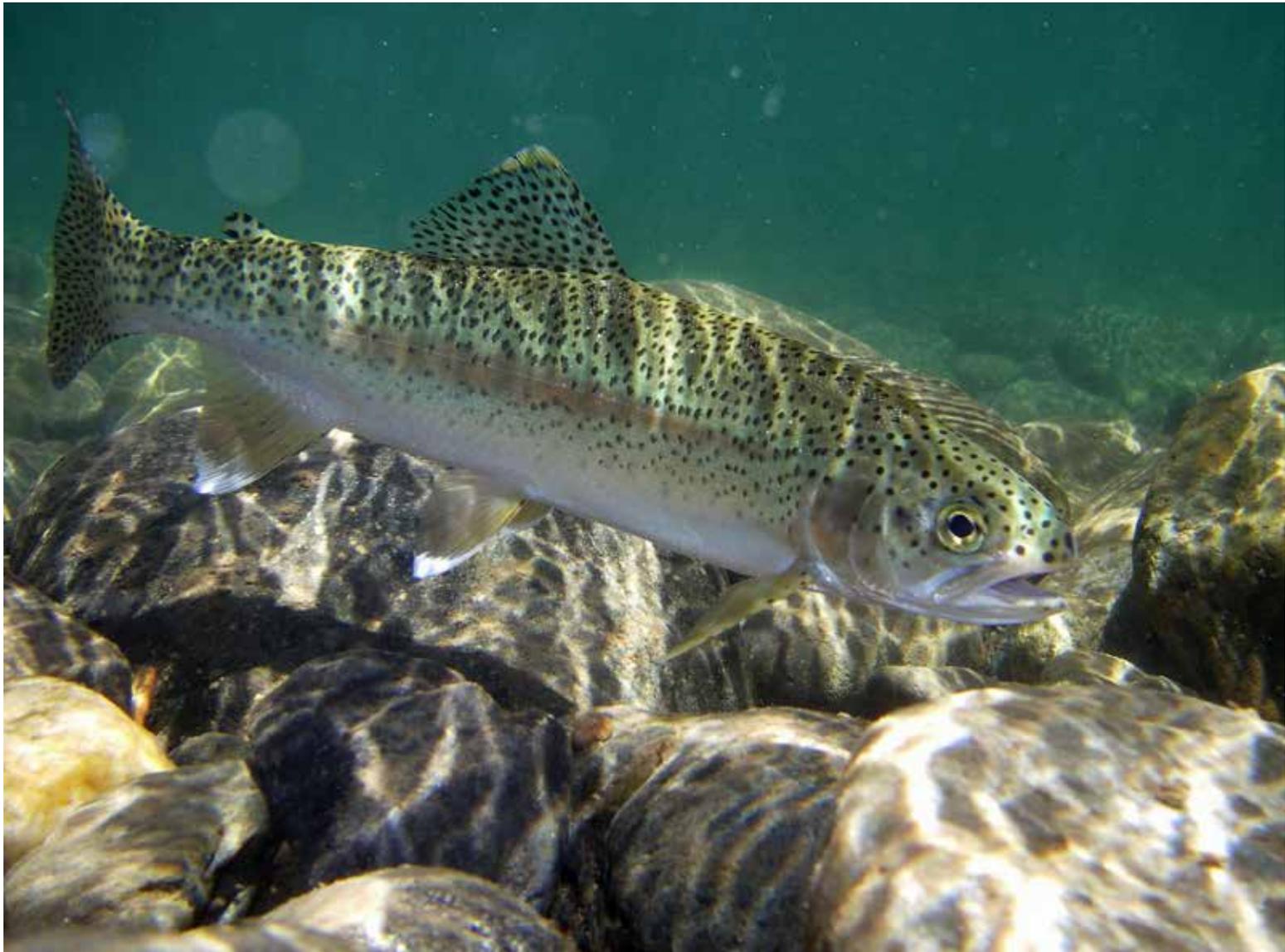
of impassable barriers, rather than a given elevation. For the purpose of the Challenge, any coastal rainbow trout or steelhead caught in waters draining to the Pacific Ocean, including the near-shore marine environment, qualify regardless of elevation. Both hatchery-raised and wild trout are accepted.

### **Conservation**

Wild, naturally-spawning resident coastal rainbow trout are likely much more abundant now than they were historically because of their wide-spread introduction into most suitable waters in the state, including reservoirs. Tailwater fisheries below large dams often provide excellent habitat conditions with stable flow and water temperatures. While local populations in urban and agricultural areas may be diminished or even eliminated, total abundance statewide is high. However, the anadromous life his-

tory form (steelhead) is severely impacted by dams, development, urbanization, water diversions, timber harvest, agriculture, and other land use practices across the state. Most steelhead populations in California are listed as endangered or threatened under the Federal Endangered Species Act.

Conservation actions are typically focused on bolstering anadromous populations via hatchery propagation, release of juvenile steelhead and habitat restoration. However, large dams in most rivers and streams within the historic range of steelhead prevent access to a majority of the historic spawning grounds. This impedes restoration, particularly given that dams provide stable downstream tailwater habitats that generally favor the stream-resident, rather than anadromous, life history pattern.



**Angling Notes**

*Rainbow trout are, by far, the most popular coldwater species among anglers in California (and perhaps the world) due to their widespread distribution, willingness to take all forms of tackle and bait, and their nearly singular reputation as hard-fighting fish, regardless of size. Steelhead fisheries take this reputation to the extreme and many anglers are devoted almost exclusively to steelhead fishing.*

*Due to the large variety of habitats in which coastal rainbow trout are found, specific recommendations on fishing techniques and terminal tackle are difficult to provide. Check with fishing shops in the area you intend to fish to get tips on local conditions and suggested tackle. Because steelhead and coastal rainbow trout are the same species, you may only include one in a single application. If steelhead is listed as the species on the application, the image on your certificate will be customized to include this form, and the same goes for resident rainbow trout.*



“

*Wow, we even got hats and a letter! Ah, the benefits of the privileged few :) My wife, Jolie, can no longer tease me about the Challenge. She was quite surprised at how nice the certificates are and how few people have accomplished the task so far. The Challenge...an opportunity to embrace the awesome beauty of California seeking tight lines with ancient quarry, forever memorable in the mind and soul.*

Raymond Hickman

*What you hunt for are fish. What you find in the process is pure treasure - take the Challenge!*

Dave Frye

*We got our certificate today with both our names on it and want to thank you for doing such a great job. After much ohhing and ahhing Rick said "and look the fish printed on the certificate are bigger than most of the fish we actually caught!" - too funny. Thanks again for all your guidance and tips. I'm going to miss your useful emails, so if you run across a good small stream don't hesitate to let us know.*

Diedre Engle & Rick Steadry

*As a family we have many stories to tell about our adventures in catching native trout in CA.*

Robert Mayfield

”



## CHAPTER 2

# Eagle Lake Rainbow Trout

*Oncorhynchus mykiss aquilarum*

## Overview

*Eagle Lake rainbow trout are adapted to survive in the highly alkaline waters of Eagle Lake near Susanville (Lassen County), which is a designated Heritage and Wild Trout Water. They were first described by John O. Snyder in 1917 as a subspecies of rainbow trout and named aquilarum after the Latin word for eagle.*

*Later examinations indicated Eagle Lake rainbow trout were hybridized versions of redband trout, rainbow trout, and/or Lahontan cutthroat trout.*

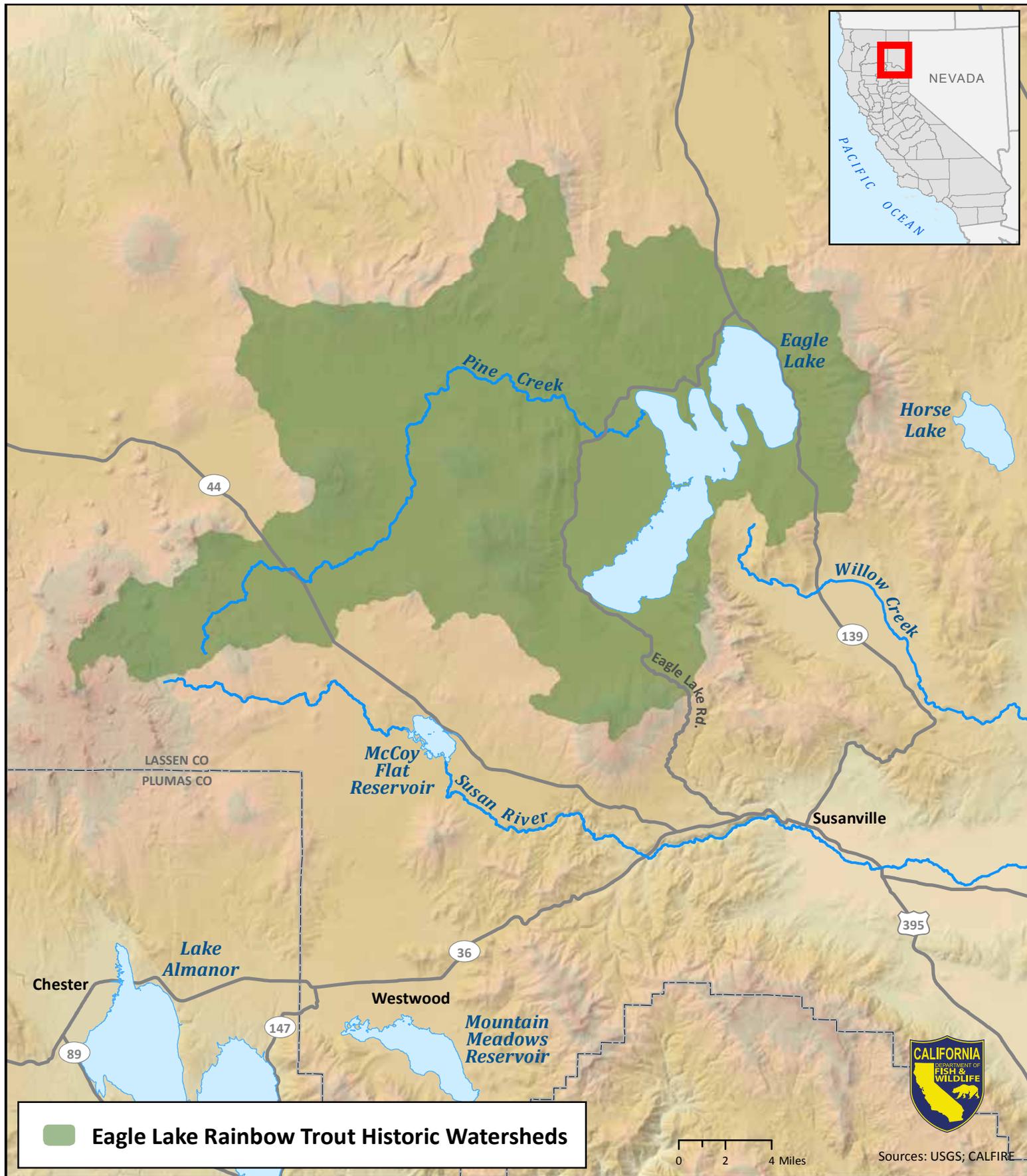
The latter is plausible because Eagle Lake is located in the Lahontan Basin and other native Lahontan fish species exist in the lake. Lahontan cutthroat trout may have inhabited Eagle Lake at some point, possibly 10,000 to 20,000 years ago.

However, recent genetic studies suggest Eagle Lake rainbow trout are most closely related to rainbow trout in the Feather River. The Lahontan cutthroat trout population in Eagle Lake, if one ever existed, probably died off during a prolonged dry period, allowing for the later invasion of Eagle Lake rainbow trout when more favorable conditions returned. Given the relatively recent volcanic activity (geologically speaking) and resulting uplift and mountain building in this area, it is possible the headwaters of the Feather River were once connected to Eagle Lake.

Eagle Lake rainbow trout are late maturing and particularly long-lived (up to 11 years). Historically, most spawning occurred in Pine Creek, a tributary on the western shore of the lake. Upstream spawning migrations coincide with spring snowmelt and, in the past, it is believed the juvenile trout spent the first one to two years of life in this stream environment before out-migrating back to the lake.

In the 1930s and 1940s, the lake's water levels were extremely low and resource managers feared the species may go extinct. To help bolster the population, a weir was installed on Pine Creek in the 1950s to capture Eagle Lake rainbow trout and collect eggs and milt. The eggs are fertilized and transported to state fish hatcheries where they are reared for about a year and a half. Once large enough, they are replanted into Eagle Lake





and stocked into other waters across California. This artificial rearing process helps this species survive until natural spawning in Pine Creek can be reestablished.

### **Identification**

Eagle Lake rainbow trout are similar in appearance to coastal rainbow trout. A pinkish band highlights the lateral line, the fins are tipped in white, and irregularly-shaped spots are profuse. An acute observer might notice the heavy spotting pattern wanes toward the belly, scales are finer than on steelhead trout and the snout is quite rounded. The predatory nature of life in a lake environment lends itself toward fish with large, squared-off tails for propulsion, large eyes, and increased body size. The average Eagle Lake rainbow trout reported in recent creels is about 18 inches in length and three pounds, although they have been known to reach upwards of 28 inches and 10 pounds.

### **Distribution**

Eagle Lake rainbow trout are endemic to Eagle Lake and its main tributary, Pine Creek. It is one of California's largest natural lakes and is fairly unique due to its high pH and alkalinity. Fish that live in highly alkaline waters require special adaptations. Fortunately for Eagle Lake rainbow trout, previous attempts to introduce numerous other sport fishes, including lake trout, rainbow trout, bluegill, largemouth bass, bullhead and crappie failed because these fish lacked the adaptive responses that Eagle Lake rainbow trout have.

Due to their fast growth rates, potential for large size, and prized fighting ability on the end of a line, Eagle Lake rainbow trout are stocked into numerous waters across California to provide additional sport fishing opportunities. In the past, Eagle Lake rainbow trout



were even exported to other states and Canada. For the Challenge, only trout captured in the Eagle Lake watershed qualify.

undergone more than 60 years of artificial selection in a hatchery setting, this may have long-term negative effects on their genetic integrity. Additionally,

Pine Creek flows intermittently into Eagle Lake and is dominated by non-native brook trout that were introduced in the 1940s. A top restoration goal is to remove non-native brook trout and reestablish natural spawning of Eagle Lake rainbow trout in Pine Creek. As part of this process, the fish weir was modified in 2012 to allow spawning Eagle Lake rainbow trout some access to Pine Creek.

Eagle Lake rainbow trout face other threats, including habitat degradation from logging, grazing, water diversions, railroads, and roads. Climate change, drought, and associated low lake levels are a growing concern. Prolonged low lake

levels are contributing to reduced available habitat, increased water temperature, and harmful changes to the lake's water chemistry. CDFW worked with numerous state, federal, and non-profit agencies to publish a conservation strategy for Eagle Lake rainbow trout. The primary focus is on restoration in the Pine Creek watershed to reestablish a wild, naturally-spawning population. Other ongoing actions include fencing off sections of the creek to exclude livestock, replacing impassible culverts, and removing structures that divert water from Pine Creek.



### **Conservation**

Eagle Lake rainbow trout are a California Species of Special Concern and have been petitioned for listing under the Federal Endangered Species Act three times (once in 1994 and twice in 2003). These petitions have been determined “not warranted,” owing to the ongoing and considerable conservation and restoration efforts occurring in the Eagle Lake basin. The need for a fish weir to maintain artificial spawning currently prevents natural reproduction at self-sustaining levels. Since Eagle Lake rainbow trout have

**Angling Notes**

*The diet of Eagle Lake rainbow trout varies with age and season. Newly-planted trout in their first year feed mainly on zooplankton, as well as benthic invertebrates (leeches and amphipods). By August, most of the trout switch to feeding on juvenile tui chubs. When conditions are right, trout can be seen foraging in shallow water along the edge of the lake but generally retreat to deeper, cooler habitat when water temperatures increase.*

*Eagle Lake accommodates a variety of fishing opportunities, including bait fishing, wading with fly fishing gear and trolling from a boat or float tube. The weather and time of year often dictate where fish are located, how deep in the water column they are and what type of gear is most effective.*

*Trolling from a boat is popular any time of year, but has advantages during the warmer summer months when fish spend more time in the deeper waters of the south basin. This area cannot easily be targeted from shore or by float tube. Heavy lures or downriggers allow anglers to target deep-holding fish.*

*Trolling from smaller watercraft, like float tubes or pontoon boats, is popular during the fall when Eagle Lake rainbow trout spread out from the south basin and occupy all areas of the lake. They feed heavily on tui chubs in shallow water and patterns imitating the size and color of tui chubs work well. A wide variety of flies are also effective, including leeches, woolly buggers, snails, scuds and small baitfish patterns. Flashy body materials with marabou tails in any combination of rust, orange, brown, green or white are standard fare. Heavy bead heads or jig patterns are excellent, as they provide an up and down swimming action when stripped or trolled. Try slow stripping with floating or intermediate line and either straight monofilament leader (rated four to six pounds) or tapered leader (3x or 4x tippet). Good near-shore trolling areas include Wildcat Point, Pelican Point, tule beds near the Spalding boat launch, Rocky Point, Buck Point and Stone's Landing. Be aware of incoming weather and associated strong winds; stay close to shore to avoid being blown out into the lake if using small watercraft.*

*In the fall and early winter months, bait fishing from shore or wading with fly gear can be good. Tackle mentioned above is suggested when shore fishing. Anglers should target areas of structure, such as submerged rocky outcrops and tule beds. Eagle Lake rainbow trout aggregate in groups; while a location can be "dead" for some period of time, an incoming group of feeding fish can change the scenario dramatically. Periods of inclement weather seem to increase angler success, so worse weather usually means better fishing. A stormy day and wading in just the right spot may lead to a catch of 20 fish or more.*





*The “Heritage Trout Challenge” led to an interesting journey of learning, not only about our native fish, but also leading us to travel to some interesting parts of California we might not have seen otherwise.*

John Hernikl

*My husband and I began our quest for the Heritage Trout in 2007. It has been a wonderful adventure, taking us to places we would not have thought to go. There have been many additional bonuses along the way. The dirt roads to Dismal Creek gave one the feeling that you were at the ends of the earth or that you could see it from there. Just incredible scenery! Also discovered wonderful obsidian in the area. Freeman Creek’s neighbors are the amazing sequoias, giving our experience there a very timeless quality. The mind’s eye continues to relive the visions of these places. Many thanks to you for presenting the Challenge and to your very helpful staff who advised my husband and I in the planning of these trips.*

Karen Hernikl

*This is my second application. I really enjoyed the program. I learned a lot about the native trout and got to see a lot of beautiful country I probably would have never visited otherwise. Thank you very much.*

Jeff Cooper





## CHAPTER 3

# Coastal Cutthroat Trout

*Oncorhynchus clarkii clarkii*

## Overview

*California has three subspecies of cutthroat trout, two of which are resident fish that inhabit inland freshwater environments. Coastal cutthroat trout are unique in that they exhibit multiple life history patterns, including those that stay within a relatively small area of a particular stream (resident), migrate to the ocean for a portion of their life (anadromous, much like steelhead), migrate larger distances within a river environment (fluvial), and live in lakes.*

Sea-run forms typically remain close to the coast in low-salinity areas and can be found in estuaries, lagoons and the mouths of large rivers. The plasticity of coastal cutthroat trout migratory patterns may be due to highly variable habitat conditions as well as the presence of other larger-sized salmonids like steelhead and salmon. This flexibility may release coastal cutthroat trout from competition and predation at certain times of year, while allowing them to track the movements of prey fish.

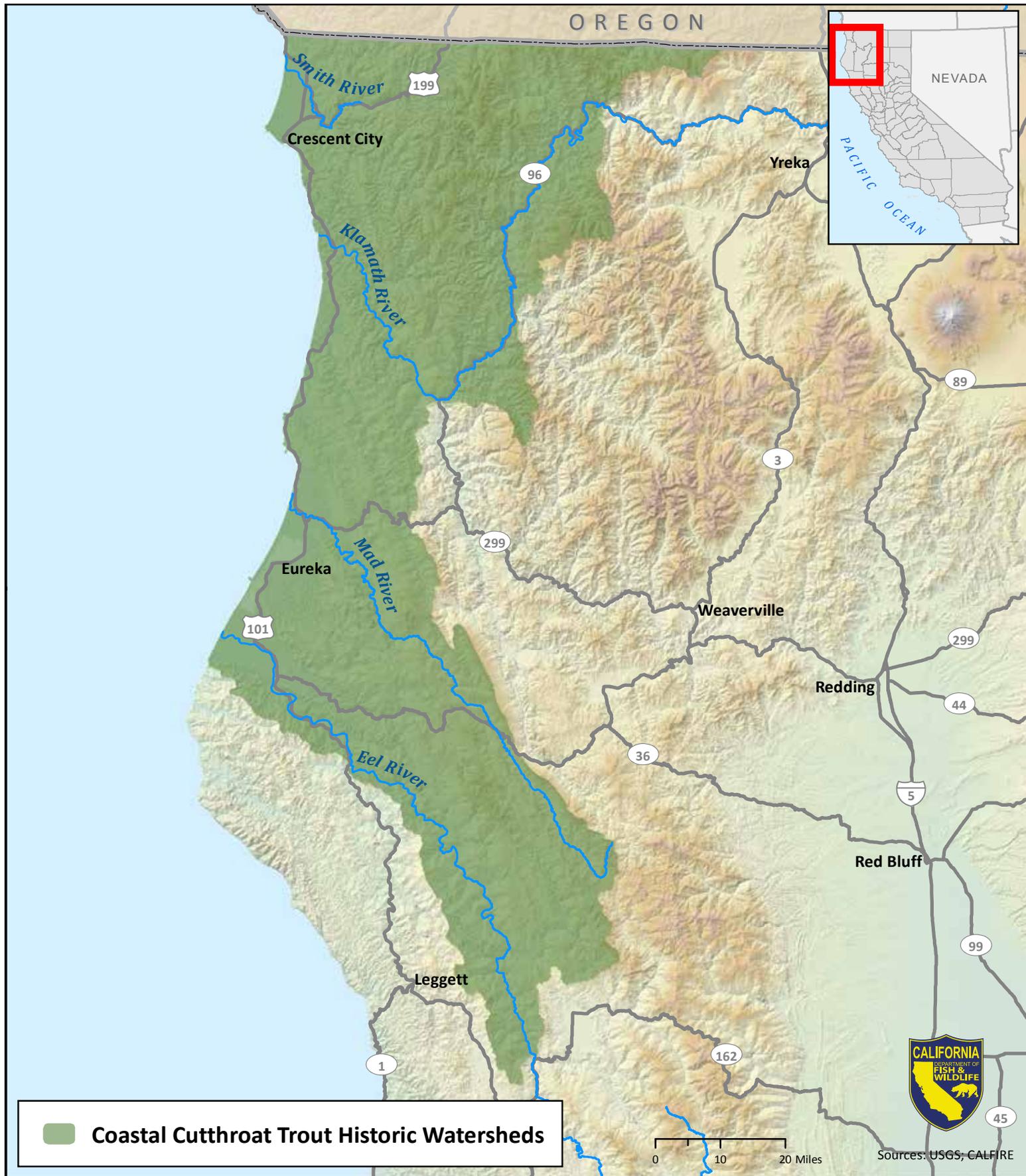
They were first described by John Richardson in 1836 and are named after Captain William Clark from the Lewis and Clark expedition. Coastal cutthroat trout represent an early lineage in the cutthroat trout family and likely diverged from interior populations approximately 1 million years ago.

### **Identification**

Coastal cutthroat trout are similar in appearance to coastal rainbow trout but have heavier spotting, particularly below the lateral line. They may have heavy spots on the paired and anal fins. In freshwater, adults have a dark coppery or brassy appearance, sometimes with iridescent hues. Cutthroat trout tend to be more slender-bodied than rainbow trout, with rather large heads and the characteristic red, orange or yellow slashes under the jaw. The maxillary typically extends past the eye, even in smaller-sized cutthroat trout. Well-developed teeth are found in the mouth.

Coastal cutthroat trout and coastal rainbow trout live in similar habitats and naturally hybridize, making identification difficult. For the purposes of the Challenge, if cutthroat slashes are visible, the fish will qualify.







### **Distribution**

Coastal cutthroat trout inhabit a large range along the Pacific coast, extending from the Eel River in California north to coastal rainforests in Alaska. They prefer estuaries, lagoons, and small, low-gradient coastal streams. Areas with cool, clean water with ample cover and deep holding pools are preferred habitats, especially in warmer summer months.

In California, coastal cutthroat trout are at the southern edge of their range. Self-sustaining populations occur in many coastal basins, including Humboldt Bay tributaries. Coastal cutthroat trout also rear in several lagoons and ponds including Big, Stone, and Espa lagoons, and the Lake Earl-Talawa complex. The princi-

pal large stream systems they occupy are the Smith, Mad, and lower Klamath rivers. The largest known population in California resides in the Smith River. Historic coastal cutthroat trout distribution may have once extended past the Eel River south to the Russian River (Sonoma County), but they have not been documented in this area for quite some time.

### **Conservation**

Coastal cutthroat trout are a state Species of Special Concern. Their overall range is large and California includes a relatively small portion of it. Due to the size, steep gradient, and difficulties in accessing many of the coastal tributaries they inhabit, population surveys are problematic and, therefore, are generally

lacking. Compounding the issue is natural hybridization that occurs with coastal rainbow trout/steelhead, making identification and differentiation difficult, even for well-trained biologists.

The greatest conservation need for coastal cutthroat trout is updated information on their status and distribution so appropriate management measures can be taken. Land use activities, particularly past inten-

sive timber harvest, has led to habitat loss. Coastal cutthroat trout appear to be particularly sensitive to habitat degradation and are often the slowest species to recolonize restored habitats. A range-wide, multi-agency effort is compiling all research and monitoring data on this species to assess their status. Recent conservation measures have included habitat restoration and land acquisition of key coastal cutthroat trout habitats.



### **Angling Notes**

*Coastal cutthroat trout historically supported a relatively minor sport fishery, primarily as a result of by-catch when fishing for other species of trout or salmon. Their notably aggressive feeding behavior and energetic fighting has increased their popularity with anglers in recent decades.*

*Due to their migratory behavior, large coastal cutthroat trout can be captured in streams and rivers when steelhead and salmon have migrated to the ocean. Adults in freshwater feed on benthic macro-invertebrates, terrestrial insects and small fish. During winter, coastal cutthroat trout feed on earth-worms washed in by winter storms. In the ocean, they feed on various crustaceans and other fish.*

*Coastal cutthroat trout can often be found in pools with fallen logs or undercut banks and typically dominate these areas. Larger fish will occupy the prime feeding lane at the head of a pool. They prefer slower-moving water, either waiting in cover to ambush smaller fish or in deep water foraging for prey. Due to this behavior, sight fishing for coastal cutthroat trout in medium to larger-sized streams is difficult. Generalized fly angling techniques using dry flies or dead drifting nymphs are largely ineffective and typically end up with more coastal rainbow trout in the creel.*

*In freshwater environments, anglers should target deep pools with woody debris or undercut banks and use lures or small streamers on sink tip lines. A good technique is to drift the streamer or lure toward cover and then strip or reel it away. Try trailing a small nymph behind the streamer. Drifting or stripping large terrestrial insect patterns may also be successful. Another option is to target smaller creeks in which coastal cutthroat trout are the only species present. The fish may be smaller, but the likelihood of catching a cutthroat is higher and dry flies can be quite effective.*

*The best habitats to target larger coastal cutthroat trout are lagoons or estuaries. Since lagoons have fairly uniform habitat, coastal cutthroat trout typically stay on the move, looking for prey. Covering lots of water by trolling with a streamer or small lure is a good technique. Fishing from a float tube or pontoon boat can be particularly effective if you can key into the areas coastal cutthroat trout inhabit. Although they eat crustaceans and smaller ocean fish in estuary systems, you may also have success targeting trout that are foraging on food drifting or swimming near the mouth of the river.*

*Timing is important and the best fishing periods are often associated with out-migrating salmon and steelhead fry. Please refer to the current California Freshwater and Saltwater Sport Fishing Regulations since fishing seasons and gear restrictions vary in anadromous waters on the north coast, including potential low flow closures.*





“

*It was a fun and worthwhile adventure and I learned a great deal in the process. It also took me to places that I wouldn't have ever ventured to while driving 2,549 miles in the car! I appreciated learning more about the trout species and will share my experience to hopefully educate those who might not have any idea about the delicate and fragile environment in which these fish survive. Thank you for supporting this program.*

John Frenzel

*I made it to the rusted steel bridge at Monache by about 4, filtered water, cooked dinner, and set up my fly rod. By this time of summer, the Kern is pretty shallow, but golden trout were eagerly rising for our flies, as the short season requires constant feeding. I used a hand-tied dark olive wooly bugger, size 14, had a couple of hits, then caught and released one 8-incher before putting the rest down from the commotion. I have always felt that the color and markings of the golden trout are the most beautiful of all trout and I marvel whenever I see one.*

*The certificate I was awarded for achieving the California Heritage Trout Challenge is one my most treasured documents. Working toward this goal has renewed my energy, enthusiasm and commitment to the cause of saving California's rare native trout. The icing on the cake is being able to hike, explore and angle in our state's beautiful and scenic outdoors.*

Steven Berg

”



## CHAPTER 4

# Lahontan Cutthroat Trout

*Oncorhynchus clarkii henshawi*

## Overview

*Lahontan cutthroat trout are native to the Lahontan Basin which drains four major river systems on the eastern side of the Sierra Nevada: the Walker, Carson, Truckee, and Susan rivers. Over 12,000 years ago, one massive lake, Lake Lahontan, was located in this basin and was possibly the largest lake in North America at the time. It has since dried considerably and remains as a handful of isolated, smaller lakes, including Pyramid and Walker lakes in Nevada. As part of the Great Basin, these waters do not drain to the ocean; rather they occur in terminal basins (no outlet streams) and evaporate in the dry desert environment.*

Reflective of their long isolation, Lahontan cutthroat trout are recognized as a genetically distinct inland subspecies of cutthroat trout. They were named henschawi to honor the naturalist H. W. Henshaw, who provided trout specimens that contributed to describing this subspecies.

Lahontan cutthroat trout are well-known for their large size. The largest one reported by an angler was 41 pounds, caught in Pyramid Lake in 1925. There is anecdotal information of a 62-pound Lahontan cutthroat trout sold by the Paiute tribe in 1916. These reports, and the large size that anglers still capture today, sometimes gives this trout the moniker of “largest of the cutthroat trout.” John C. Fremont and Kit Carson, upon first seeing the Truckee River in the mid-1800s, originally named it the “Salmon Trout River” after the giant cutthroat they observed.

### *Identification*

Well-adapted to both lake and stream environments, Lahontan cutthroat trout evolved two distinct body types and associated coloration patterns. The larger, lake-form fish tend to have squared, rather than forked tails for propulsion. This helps them chase prey and avoid predators. Overall body color is green to greenish brown-bronze on the back, faint yellow with a pink lateral band on the sides and silver to white on the belly. The round parr marks disappear as the lake-resident fish matures. Fish in spawning colors, especially males, can be vibrant copper, red, and orange. Large, almost ink black rounded spots sparsely dot the body, with fewer below the lateral line.

Like other cutthroat trout, they possess the distinguishing red to orange slash mark at the throat, but



the red can be pale on lake forms. The generally much smaller stream-resident form shares the faint rosy pink along the lateral line and the cutthroat slashes. However, they can generally be distinguished by darker coloration that is often a copper to green color, more numerous body spots and the retention of parr marks into adulthood. These parr marks tend to occur in numerous rows, or sub-rows, of increasingly smaller size. Often, five dark halos rim the iris of the eye. The sides are copper or lemon-yellow in color, fading into a white belly and olive-copper back.

Owing to their restricted distribution in the headwaters of their former range, they are often small. However, those caught in streams can be vibrantly colored and heavily-spotted, making them a unique catch.

### ***Distribution***

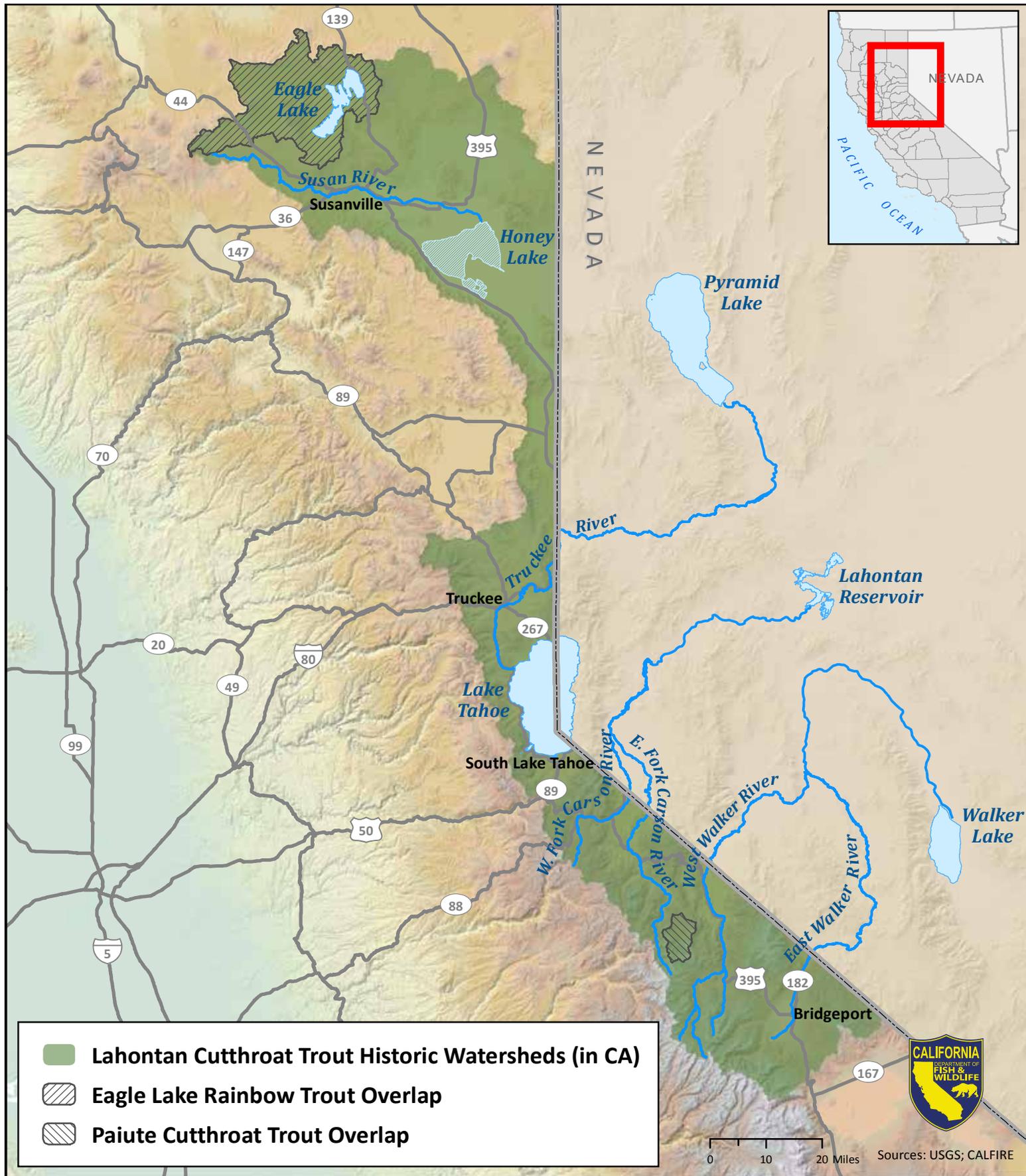
Lahontan cutthroat trout inhabit a wide range of habitats from cold, high-elevation mountain streams in California to lower-elevation and highly alkaline des-

ert lakes in Nevada. They once occupied a vast range east of the Sierra Nevada but were extirpated from nearly 95 percent of their native habitat in California. Their range extends from the Sierra Nevada crest in California northeast into Nevada, including a small portion of Oregon.

In California, the historic range of Lahontan cutthroat trout includes Lake Tahoe and the Carson, Truckee and Walker river basins. Reports from settlers in 1853 assert Lahontan cutthroat trout were abundant in the Susan River as well, although they have not been documented in this drainage for many decades.

Introduction of non-native trout into the four primary watersheds that comprise their native range in California, along with extensive habitat alteration from human land use activities, caused their extirpation from most of their former range. Most self-sustaining populations are located in isolated headwater streams and are the result of reintroduction







efforts. State fish hatcheries have been increasing their production and stocking of Lahontan cutthroat trout to expand fishing opportunities for this species in accessible waters within their native drainages.

### **Conservation**

Lahontan cutthroat trout are federally Threatened under the Endangered Species Act. Abundance and distribution shrank rapidly in the face of extensive landscape changes associated with development, mining, timber harvest, road and railroad building, dams and diversions, pollution, non-native fish introductions and commercial harvest.

In the mid-1800s, the “silver rush” of the Comstock Lode further impacted this subspecies. It is

well documented they were harvested heavily in the late 1800s and shipped by rail to mining camps in San Francisco, Salt Lake City and other locations. In 1970, the Lahontan cutthroat trout was listed as Endangered under the Federal Endangered Species Act, but the listing was downgraded to Threatened in 1975 to allow for more flexible management.

Numerous restoration and recovery projects were implemented in recent decades and coordinated efforts are ongoing, involving government agencies, universities, and non-profit organizations to benefit the subspecies. Heenan Lake, a designated Heritage and Wild Trout Water, maintains the state’s broodstock to assist with conservation and recovery efforts.

**Angling Notes**

*In streams, Lahontan cutthroat trout typically feed on drifting terrestrial or aquatic insects. They are opportunistic feeders, eating whatever is most abundant on a seasonal basis. A wide variety of dry flies and standard nymph patterns are effective (or combinations thereof), such as the “hopper-dropper” technique. Terrestrial patterns such as beetles, ants and grasshoppers are often quite effective. Lahontan cutthroat trout prefer slower water; target areas with good cover like undercut banks, overhanging vegetation or woody debris. While Lahontan cutthroat trout in streams and rivers tend to be smaller than their lake-dwelling counterparts, some broodstock planted within their native range can provide quality angling for larger fish.*

*Lake-resident Lahontan cutthroat trout in California generally feed on insects. Look for areas of structure (submerged rocks, woody debris or drop-offs) and try a variety of streamers, nymphs, lures or other subsurface patterns. When lake fishing, it is important to get your terminal tackle to the right water depth. An intermediate sink tip line will help you get down to where the trout are and try a very slow retrieval.*

*At Heenan Lake, anglers typically use one of three techniques: nymph fishing with an intermediate sink line and a small beaded nymph (prince nymph, hare’s ear, or bird’s nest), indicator fishing with multiple midges or scuds suspended at varying depths in the water column or trolling (gold-colored lures are very popular).*

*Float tubes and small paddle craft are popular at Heenan Lake but you can also sight fish for actively feeding trout with a dry fly while walking the shoreline. For the Challenge, your certificate will be customized with an image of either a lake- or stream-form Lahontan cutthroat, depending on the habitat where you caught it.*





“

*Thank you for offering this Challenge. It is an incredible opportunity to visit some very remote areas within California and catch some truly beautiful native fish.*

Michael Marshall

*My wife and I had a terrific time exploring the back roads of California to find and catch these beautiful fish. We will continue our Heritage Trout Challenge for the other species in California, but also pursue redband and cutthroat species in other Western states. Thanks for the great job you do.*

Keith Pfeifer

*I wanted to take the time to include this note of thanks for this program. My son and I truly enjoyed this quest and more importantly learned much about our native trout and various areas of the state. Researching the fish and the locations they could be found was truly half the fun and I now see a deep appreciation for preserving these fisheries for my son. I think that may be one of the true gifts of this program. Thanks again and I hope this program remains in place as now my daughter wants to complete the challenge as well.*

Jeffrey Pyle

”



## CHAPTER 5

# Paiute Cutthroat Trout

*Oncorhynchus clarkii seleniris*

## Overview

*Paiute cutthroat trout are close relatives of Lahontan cutthroat trout and are native to Silver King Creek and tributaries in the Carson-Iceberg Wilderness Area (Alpine County). They occurred as far upstream as Llewellyn Falls, a natural waterfall that blocked the upstream movement of trout.*

Ancestors of Paiute and Lahontan cutthroat trout were separated approximately 8,000 years ago by volcanic and mountain uplift events that created stream barriers. They share similar morphologic features and nearly all the same genetic material. However, perhaps due to a phenomenon known as “genetic drift,” Paiute cutthroat trout are clearly distinguished from Lahontan cutthroat trout by the near absence of body spots. A purplish iridescent hue across the body and the lack of spots contribute to the distinctive translucent and shimmering appearance that is honored in the name, *seleniris*. It references Selene, the Greek goddess of the moon. John O. Snyder first described them in 1933 and thought the unique coloration suggested a “fanciful resemblance of its evanescent tints to the lunar rainbow.”

Paiute cutthroat trout were inadvertently saved from probable extinction by Basque shepherds, who moved them in coffee cans above Llewellyn Falls in 1912. CDFW has a letter from Virgil S. Connell, breeder of purebred Rambouillet sheep, dated 1944, that describes his life grazing sheep and fishing in this area. Beginning in 1890, he spent every summer in Fish Valley and would set up his camp next to Silver King Creek where he observed “the creek was literally alive with trout. In a few minutes we had more than we could eat.” They would capture “thousands of trout” below the falls but never saw any above. One day, while fishing the base of Llewellyn Falls, they captured more than they knew what to do with and decided to move some above the falls. A new population, protected by the large waterfall, was born.



Subsequent introductions of non-native trout into Silver King Creek below Llewellyn Falls created a hybridized population with strikingly different physical characteristics. If not for the coffee can transplant above the falls by Connell and his workers, J. O. Snyder would likely have never discovered this unique form of cutthroat trout, now regarded as one of the rarest trout in North America due to its small range.

### **Identification**

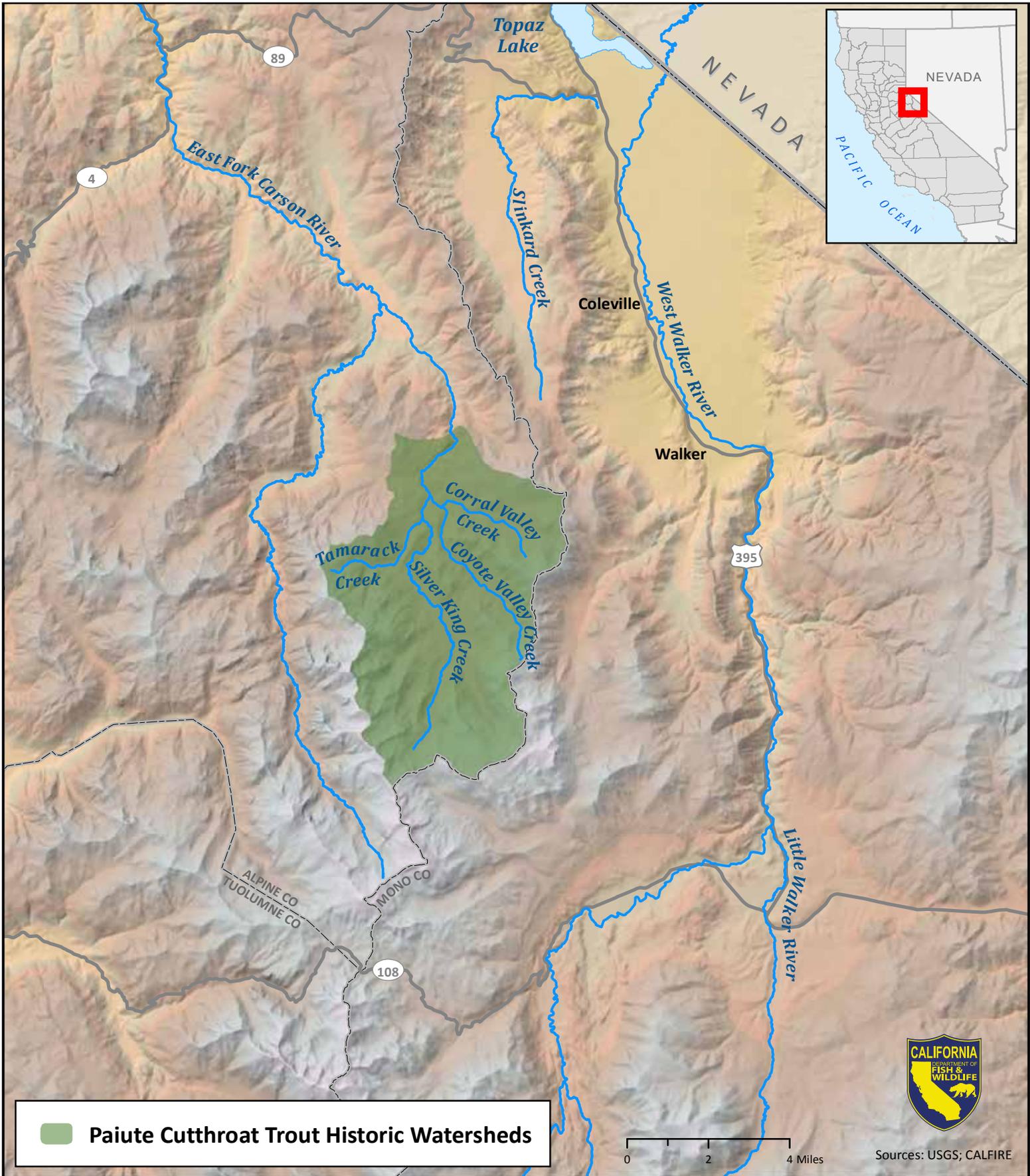
Paiute cutthroat trout are differentiated from all other forms of cutthroat trout by their lack of body spots, although some exhibit a few, particularly toward the tail of the fish and along fin margins. Their sides are a gradual blend of colors, starting with a copper-green back, fading to peachy-pink, then light

yellow, and finishing with a white belly. The opercula, or cheeks, have a rosy-peach sheen, complemented with an orange or peach-colored cutthroat slash. As noted, they exhibit a striking iridescent purplish hue across the body.

### **Distribution**

Paiute cutthroat trout are native to Silver King Creek and tributaries and were historically found between two barriers, Llewellyn Falls and a steep gorge section with a series of natural falls, approximately six miles downstream near Snodgrass Creek. Their population was expanded above Llewellyn Falls and out-of-basin refuge populations were established in four other streams. Paiute cutthroat trout must be caught in the Silver King Creek drainage to qualify for the







Challenge. Pay particular attention to the sport fishing regulations, as much of the drainage is currently closed to fishing to protect these fish.

### **Conservation**

Paiute cutthroat trout were one of the first animals in the nation to be listed as Endangered in 1967 under the Federal Endangered Species Act. In 1975, they were downgraded to Threatened to facilitate management and restoration. Past habitat degradation from grazing was a significant threat to the Paiute cutthroat trout population; however, impacts were largely mitigated by the 1990s. To protect this

subspecies and its habitat, grazing is no longer allowed in the upper Silver King Creek basin above Snodgrass Creek.

Restoration efforts have occurred in the Silver King Creek basin for over 60 years and the population is monitored annually. A restoration project to remove hybridized fish below Llewellyn Falls was implemented in 2013 and will continue until non-native fish are no longer present. The main recovery goal is to remove Paiute cutthroat trout from the list of endangered species by re-establishing a self-sustaining population in their entire native range. This



will expand the population's protected stream habitat by approximately 11 miles and serve as a buffer against extinction from threats such as wildfire, drought and disease. To further their protection, progeny from the

1912 shepherd transplant were introduced into other fishless waters of the Sierra Nevada, outside the Paiute cutthroat trout's historic range, creating out-of-basin refuge populations.

### **Angling Notes**

*The majority of Silver King Creek and its tributaries are currently closed to angling, although individuals that migrate downstream may be captured in the portion of Silver King Creek open to legal angling (downstream of the Snodgrass Creek confluence). If restoration efforts are successful, anglers may one day be able to fish for one of the rarest trout in North America, if not the world. Angling tips are similar to those for Lahontan cutthroat trout, as Paiute cutthroat trout also prefer slower water, areas with cover and terrestrial insects such as grasshoppers, ants and beetles.*





“

*My husband and I were married last summer and went to Wyoming and completed the Wyoming native cutthroat trout “Cutt Slam” for our honeymoon. Thus, it only seemed natural to take the California Heritage Trout Challenge this year for our 1st anniversary. I learned to fly fish last year on the Wyoming trip and have been “hooked” ever since.*

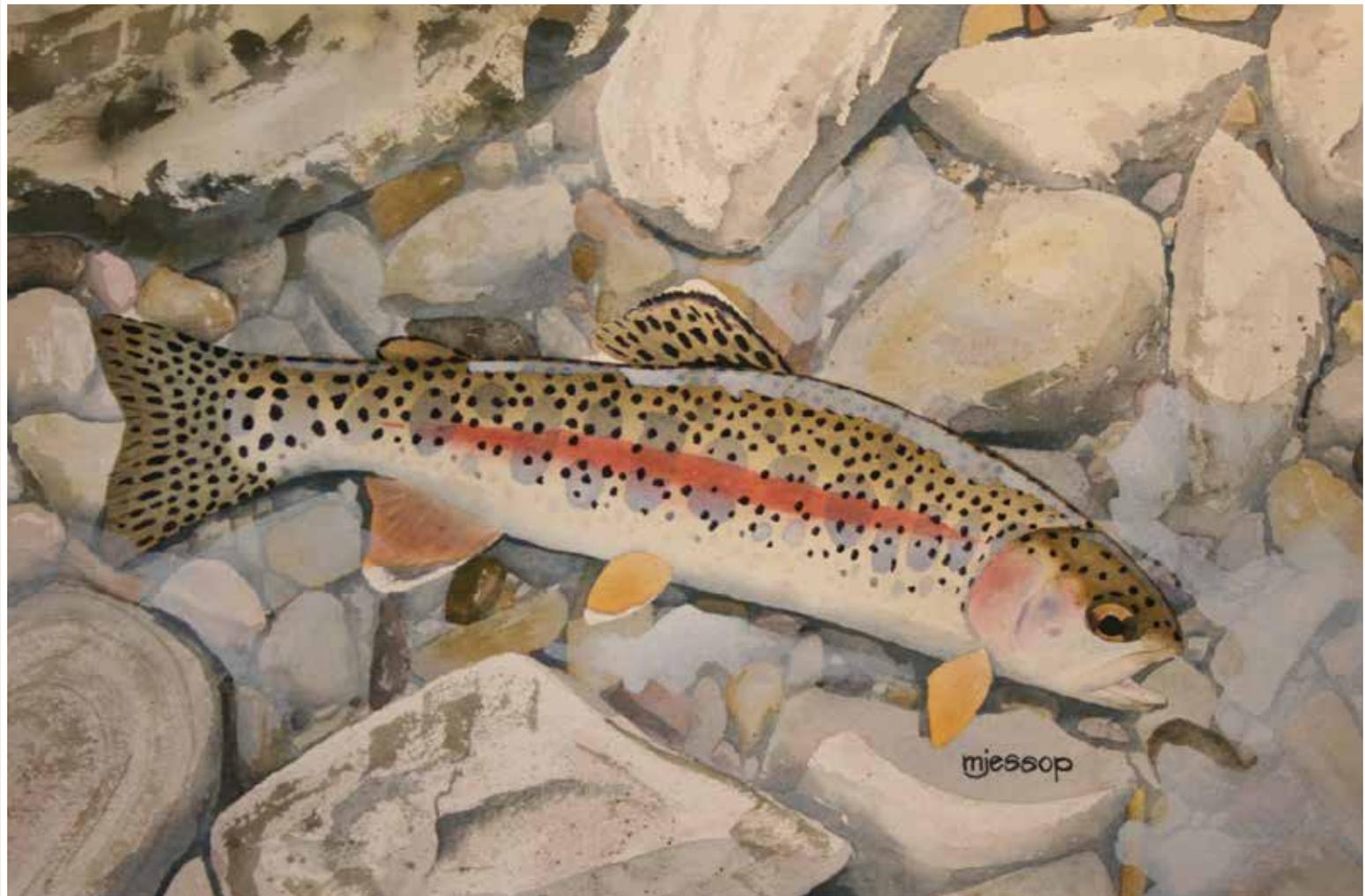
*We used internet blogs as well as the CDFW website and we purchased numerous forest service maps to plan for the Challenge.*

*We left our trout quest on July 15th and expected to be gone two weeks and catch as many heritage trout as we could. However, we were having so much fun we ending up staying gone 24 gloriously, cool days. My husband and I were both able to catch six of the heritage trout and have a fabulous first anniversary camping trip too! How COOL is that? We will both have trout certificates for the wall to remember our anniversaries. We plan to continue adding native trout to our life list on future trips.*

*Thank you for the opportunity to complete the challenge and enjoy seeing California’s beautiful and wild trout, creeks, rivers, lakes, back-roads and byways. These are to us, the real beauty of our California.*

Joseph and Joy Skipper

”



## CHAPTER 6

# McCloud River Redband Trout

*Oncorhynchus mykiss stonei*

## Overview

*McCloud River redband trout are known for their brilliant brick-red lateral line, often so vibrant it obscures the parr marks. The first written description on record dates back to 1885. Deputy U.S. Fish Commissioner Livingston Stone used the name “red-banded trout” to describe fish in the McCloud River that appeared different from other trout found in the Sacramento River basin. This form of trout was given the subspecies name stonei by Dr. Robert Behnke in commemoration of Livingston Stone.*

McCloud River redband trout are an ancestral form of trout isolated in the headwaters of the McCloud River by geologic and hydrologic events. These events created waterfalls that prevented later movement of fish, such as coastal rainbow trout, into the headwaters. Physically isolated from other trout forms, McCloud River redband trout adapted to the local environment of the upper McCloud River basin and developed unique attributes.

This area is volcanically active and the loamy soil that dominates the region is largely composed of sand, silt, clay and volcanic ash. Most tributary streams remain isolated from the upper McCloud River because the porous composition of the substrate per-

colates water easily and reduces instream surface flows. Many tributaries only experience limited connectivity with the McCloud River, even during high flow events. Genetically pure McCloud River redband trout are found in a small number of these headwater streams and continue to persist primarily due to spring influences and groundwater recharge.

The more hydrologically stable main-stem McCloud River is dominated by redband-rainbow trout hybrids, a potential result of past hatchery stocking. In order to protect remaining populations of McCloud River redband trout, all hatchery stocking has been ceased above Middle Falls in recent decades.







### **Identification**

The three subspecies of redband trout found in California share similar traits, such as distinct lateral bands, parr marks with additional rows of sub-parr marks, an irregular and often profuse spotting pattern and white tips on the pelvic, anal and dorsal fins.

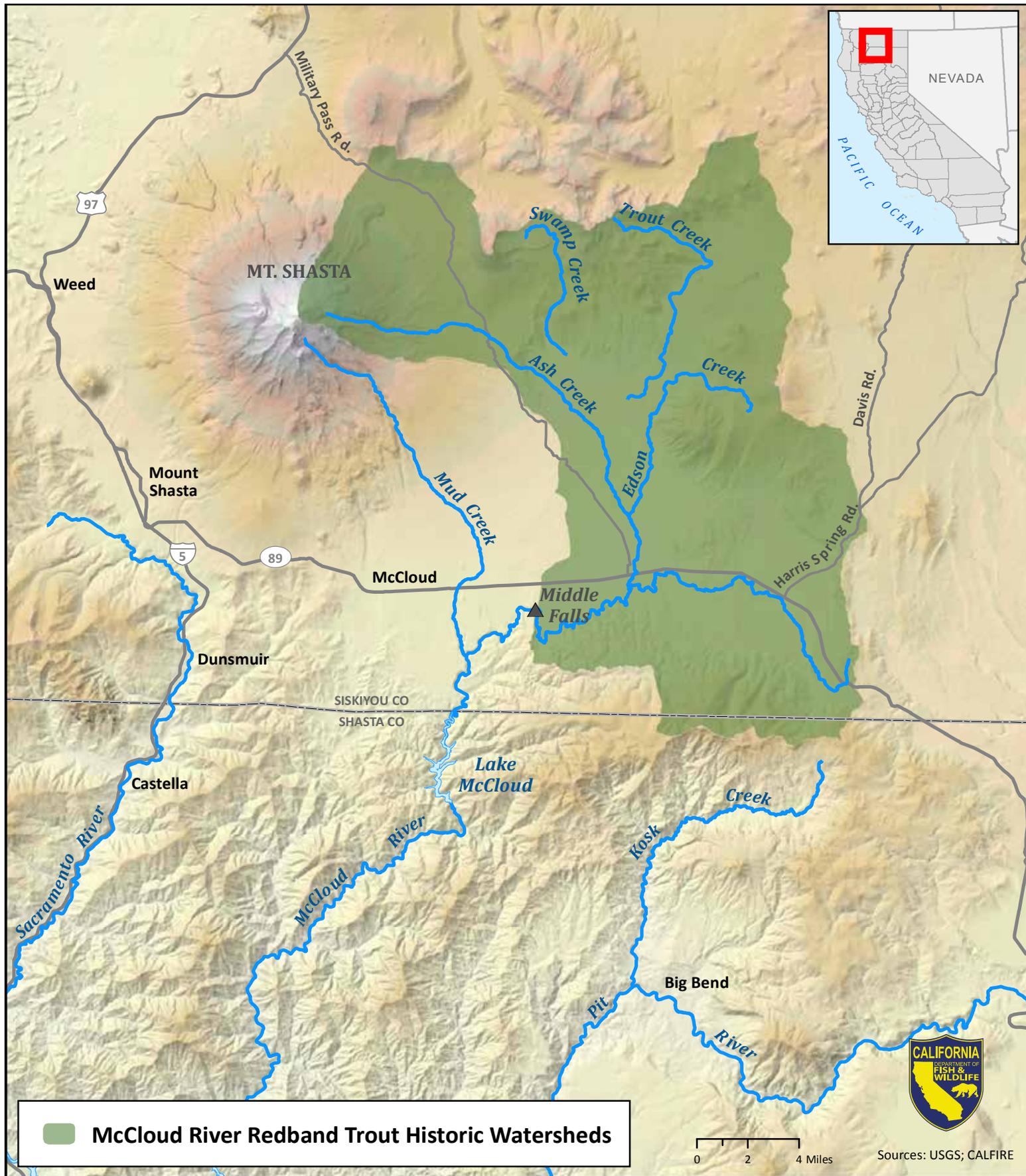
Some redband trout may even have an orange “cutthroat” mark under the maxillary. Coloration is usually more intense in larger fish and mature males. While the three subspecies are similar in appearance, there are subtle differences that become evident once you handle and observe these fish. There is often variation in body color not only among the three subspecies, but also within one subspecies in the same stream habitat.

McCloud River redband trout have a bright brick-red lateral band and, of the three forms in California, it is the most distinct and intensely colored. They usually have a noticeable white tip on their fins, although sometimes it can be yellow or orange. The operculum, or cheek, is rosy red, and adult fish often retain their parr marks. The black spots on McCloud River redband trout tend to be larger, rounder and more prevalent above the lateral line compared to coastal rainbow trout spots, which are irregularly-shaped and profuse on the sides and toward the belly.

### **Distribution**

McCloud River redband trout are native to the upper McCloud River (Shasta and Siskiyou counties), a tributary to the Sacramento River. It is believed that redband trout were historically the only native fish species found in the McCloud River and tributaries above Middle Falls.

Non-native trout, including rainbow, brown and brook trouts, were introduced into the upper McCloud River as early as the late 1800s. McCloud River redband trout can interbreed with coastal rainbow trout, creating hybridized offspring that may not be as well adapted for the arid



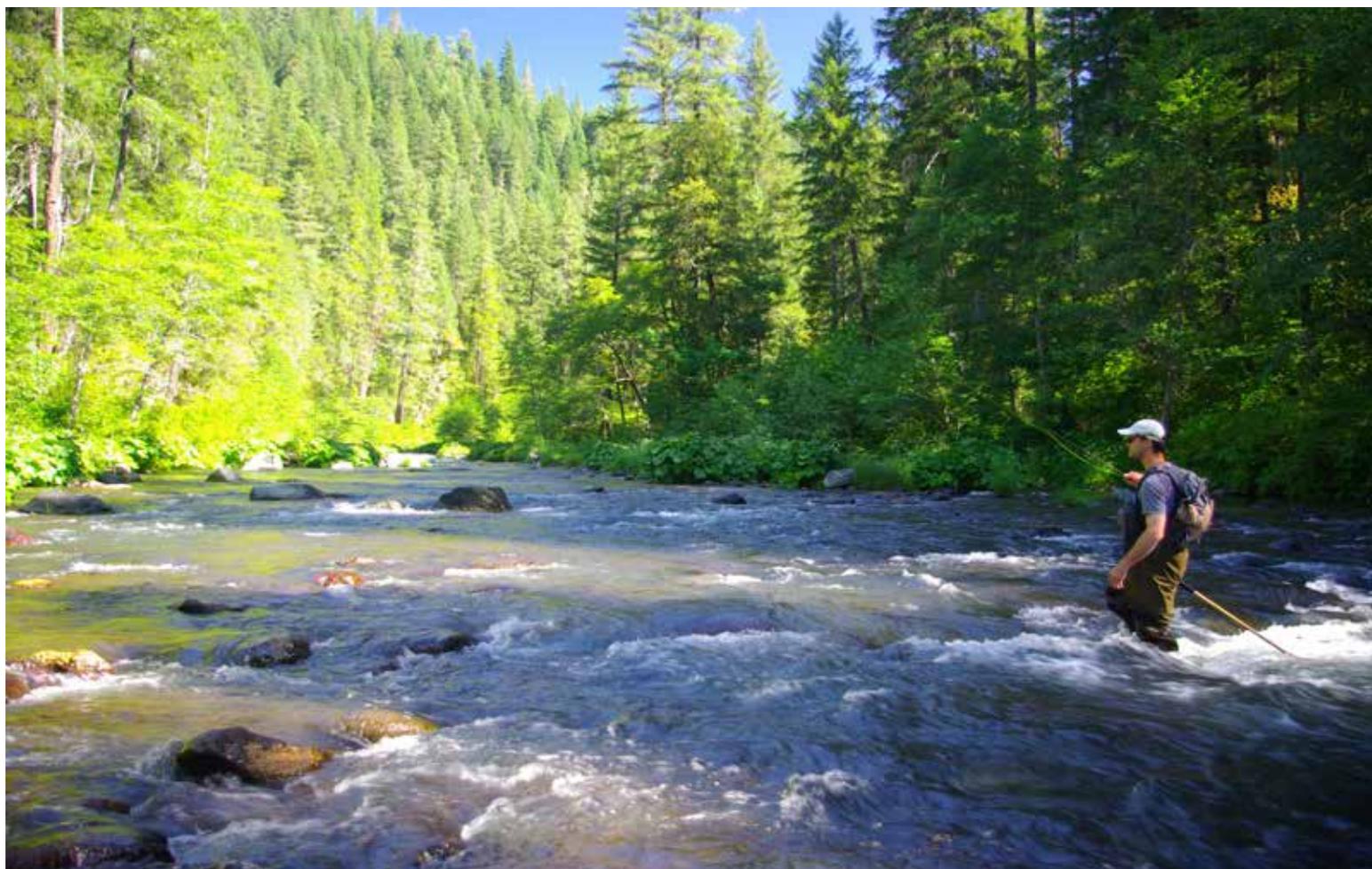
environment in which redbands evolved. These offspring and subsequent generations tend to exhibit a progression away from redband-like physical traits toward rainbow ones. Brown and brook trout compete for limited habitat and larger brown trout that become piscivorous (fish eating) may prey on juvenile trout.

Today, pure McCloud River redband trout are found mostly in isolated headwater tributaries where non-native trout were not introduced. While trout showing the physical characteristics described above can be caught anywhere in the McCloud River basin to qualify for the Challenge, the headwater tributaries in the upper watershed provide the best opportunity to catch redband trout that exhibit the distinct bright

coloration of their ancestral lineage. The majority of these headwater tributaries flow off the southeastern slopes of Mount Shasta and feed the main-stem McCloud River from the north.

### **Conservation**

McCloud River redband trout are a Species of Special Concern in California. Conservation measures have been taken to protect the remaining populations of McCloud River redband trout for over 40 years. Since 1994, hatchery rainbow trout are no longer stocked in the upper McCloud River to limit further hybridization and competition. Pure populations identified from genetic analysis were relocated to other streams to create additional refuge populations in the event of environmental catastrophes such as wildfire, drought





or disease. Some streams in the upper McCloud River basin are closed to fishing to further protect them and land use practices have been substantially improved.

In 1994, the McCloud River redband trout was identified as a candidate species for listing under the Federal Endangered Species Act. To preclude listing and reduce the threat of extinction, state and federal agencies collaborated with local landowners and formed the Redband Core Group. A conservation agreement was created in 1998 to identify threats and help protect these trout and their habitats. Numerous restoration actions have occurred under this agreement and, as a result, McCloud River redband

trout were not listed as Threatened or Endangered. Examples of restoration activities include improving roads to reduce sediment inputs, fencing streams from livestock and protecting key streams from logging, fire, angling and off-road vehicles.

CDFW recently completed a status assessment of the pure populations and information generated from these surveys was used to revise and update the conservation agreement.

Although these activities improved the ecosystem health of the upper McCloud River basin, this redband trout remains a Species of Special Concern

(CDFW) and Sensitive Species (U.S. Forest Service). CDFW and the U.S. Forest Service actively monitor redband populations and habitats and conduct restoration activities as partners in the Redband Core Group. CDFW is working with the University of California, Davis to conduct a genetic analysis of fish in all upper McCloud River tributaries to determine the proportion of “pure” versus hybridized fish and to hopefully identify additional core populations. Drought has severely impacted available habitat in all streams supporting core conservation popula-

tions and this subspecies is now at high risk. Negative genetic impacts (bottlenecking, inbreeding depression and drift) from very low population sizes are a principal threat, along with reductions in suitable habitat. To mitigate against low flows, increased water temperatures in the summer and freezing conditions in the winter, a large number of McCloud River redband trout were moved to the Mount Shasta Hatchery to protect this subspecies. In 2016, when conditions improved, some were restocked to their natal streams.



#### **Angling Notes**

*McCloud River redband trout now exist in small stream habitats. Populations with the highest genetic integrity are isolated from one another. Anglers should exercise caution and consider employing catch and release techniques with barbless hooks to protect populations in streams that are open to angling. Please refer to the current California Freshwater Sport Fishing Regulations for streams that are closed to fishing. McCloud River redband trout seldom exceed 14 inches in length and, like most resident trout populations, are opportunistic feeders. Standard dry and nymph flies and small lures are effective.*





*Wanted to thank you for putting the Heritage Trout Challenge program together as it's really a great way to not only learn about these special fish but also a good motivator to see places in our state that one might not normally visit. Really been a pleasure to participate. Even though I've caught six of the various types, I'm definitely going to keep trying for the others - it's just too much fun!*

Greg Robbin

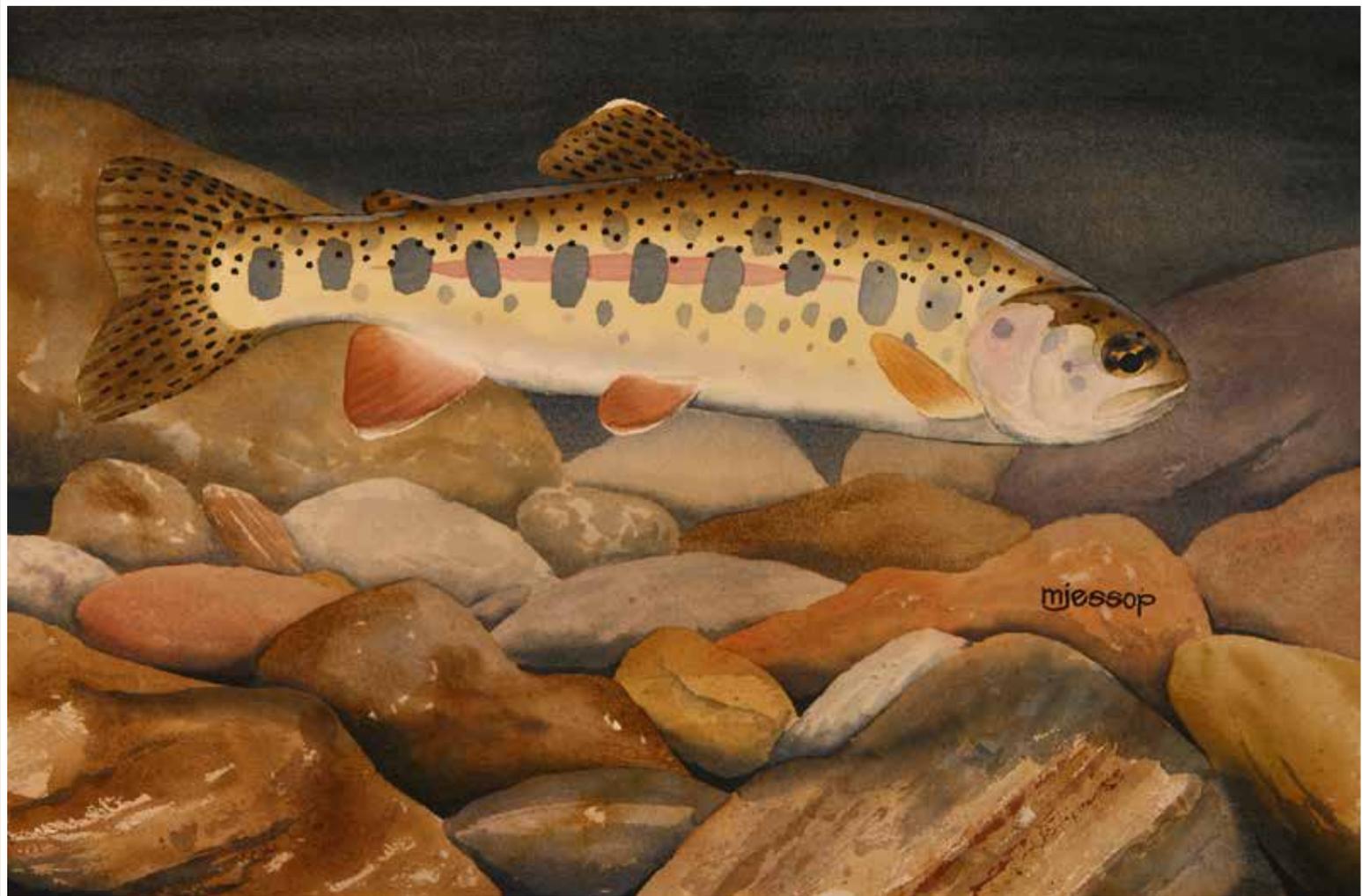
*I thank the department for creating this special challenge; as it enabled me to experience fishing in beautiful streams and forest areas I would have not otherwise seen. I feel privileged to have had the good fortune to visit and fish the pristine and enchanting waters featured in the attached photos.*

William Howard Uller

*I have been teaching my two oldest children about native trout and how to fish for them. On August 14, 2009, they each completed catching their sixth species. It took us almost two years, but they each did it. They made each cast, set the hook (sometimes the fish did it for them) and reeled them in. We got pictures and released each fish. My son completed catching his sixth species just before his younger sister caught hers. My son will be turning 10 at the end of the month and my daughter will be turning eight in a few days.*

Gregg Whitley





## CHAPTER 7

# Goose Lake Redband Trout

*Oncorhynchus mykiss ssp.*

## Overview

*The northern Great Basin in California and Oregon is home to many unique forms of interior redband trout. These are thought to represent ancestral lineages of an early form of rainbow trout that were isolated from the Pacific Ocean and more recent invasions of coastal rainbow trout. Two forms of redband trout are distributed in the far north-east corner of California, the Goose Lake and Warner Lakes redband trouts. Although geographically close to one another, genetic analyses show they are distinct enough to merit recognition as separate subspecies. However, to date, they are not formally recognized as such.*

Goose Lake is a shallow, alkaline lake that, throughout history, has undergone tremendous fluctuations in lake level. The lake went dry five times in recorded history, most recently from 2012 to 2016. Conversely, during extremely wet cycles, it overflowed the south rim to connect with the headwaters of the Pit River. Goose Lake redband trout have two different life history patterns that likely contributed to their survival in Goose Lake which, at times, may have extreme water chemistry or no water at all. Adfluvial fish spend a portion of their life cycle in the lake, where they grow to large size and then migrate into tributaries to spawn. Resident fish spend their entire life cycle in tributary streams.

Along with Goose Lake redband trout, eight other fish species are native to the Goose Lake basin: Sacramento sucker, Modoc sucker, Pacific lamprey, Pit-Klamath brook lamprey, tui chub, California roach, speckled dace, and Pit sculpin. All of these species utilize both lake and stream habitats to persist. Four of these fishes are endemic to Goose Lake, meaning they are found nowhere else.

### **Identification**

Goose Lake redband trout tend to be paler in color than McCloud River redband trout, with a subtle lemon-yellow body, especially below the lateral line. Rather than brick-red, they are more apt to have





pinkish hues along the lateral line and on the operculum. In addition, they may have white tips on their fins, but they are usually less pronounced than on other redband trout.

Coloration is more intense in larger stream-resident fish and mature males. Spotting patterns are highly variable and may range from sparse to dense. Larger-sized adfluvial (lake-dwelling) fish become silver-grey in color, exhibit a subdued pink lateral stripe, and are significantly less spotted. Faint purplish parr marks may be present, especially in younger fish, and are often retained into adulthood in stream-res-

ident fish. The Goose Lake redband trout is generally lighter in color with fewer spots than its close relative, the Warner Lakes redband.

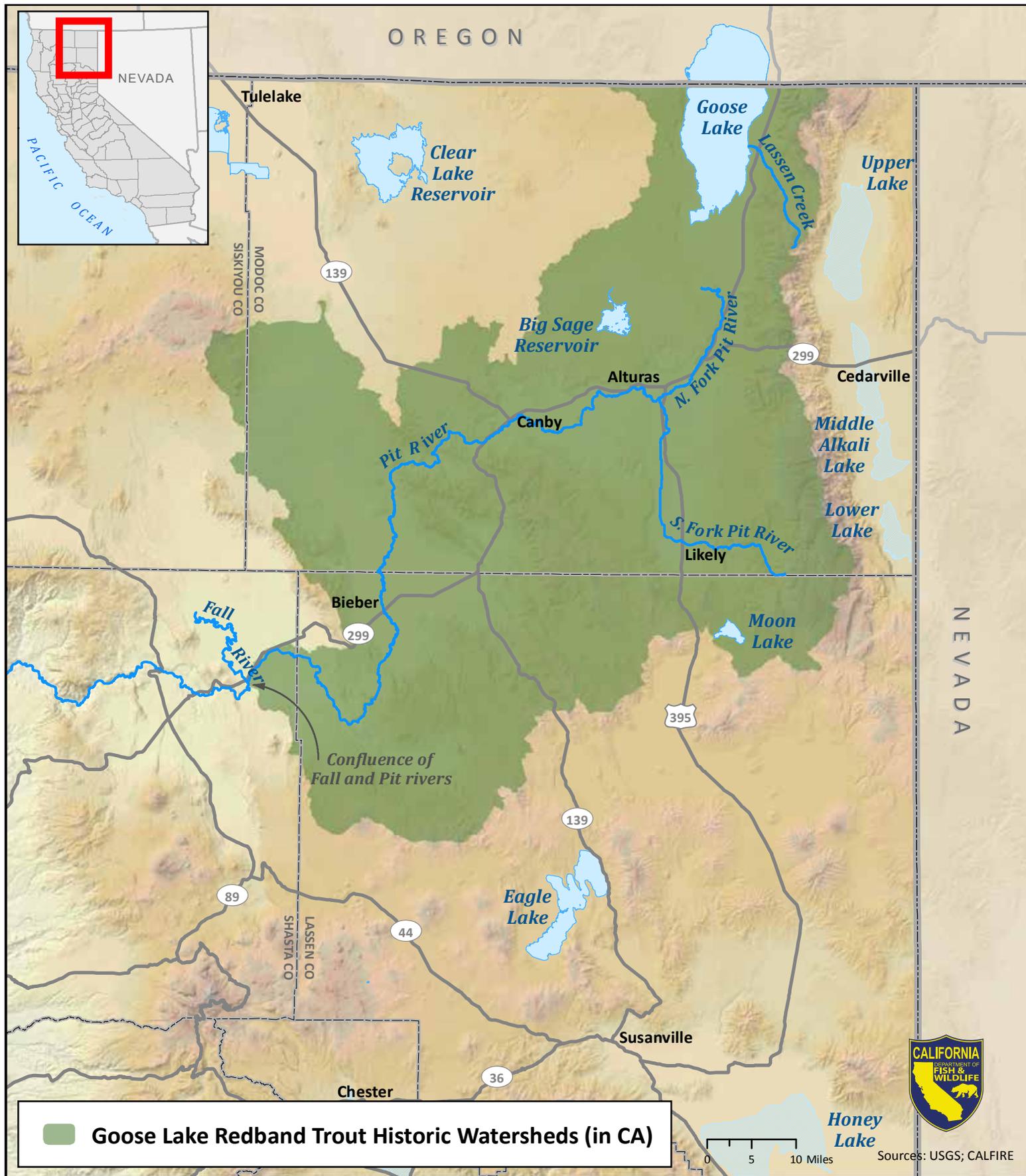
### ***Distribution***

Goose Lake redband trout are endemic to Goose Lake and tributaries in northeastern California and southeastern Oregon. In California, the majority of perennial tributaries with redband trout populations flow off the western slopes of the Warner Mountains and feed Goose Lake on the northeastern shore. In past wetter climatic periods, Goose Lake has overflowed to the south and, as a result, tributaries to the upper Pit River may also contain redband trout. However, their genetic relationships to Goose Lake redband trout

and other fish that have “redband” characteristics in the lower Pit River are poorly understood.

### ***Conservation***

There has been considerable interest in conserving all populations of native Goose Lake fishes, including redband trout. Anthropogenic factors, including habitat degradation, cattle grazing, water diversions and the introduction of non-native fishes have threatened Goose Lake redband trout and other fishes in the basin. In addition, drought has played a sizeable role in the status of this subspecies.



Although a natural part of the ecosystem in the arid, high desert of northeastern California, prolonged drought has amplified concerns about future prospects of maintaining adequate cold water habitats. Increasing reliance upon groundwater pumping, in place of instream water diversions, may exacerbate the situation by reducing longer-term groundwater aquifer recharge and prolonged percolation into streams.

Largely because of a drought from 1987 to 1994, a proposal was developed to list the entire Goose Lake fish fauna as Threatened under the Federal Endangered Species Act. In response, the Goose Lake Fishes Working Group was formed in 1991, made up of representatives from both California and Oregon, including private landowners, state and fed-

eral agencies, nongovernmental organizations and universities. In 1995, the Goose Lake Fishes Conservation Strategy was completed to help conserve and restore native fishes in the Goose Lake basin.

Numerous actions have been undertaken to improve fish passage and habitat. Modifications made to land use practices will benefit the Goose Lake fish fauna and their habitats. In addition, CDFW has conducted fisheries, habitat and genetic analyses throughout the California portion of the range to better understand population structure and factors influencing the status and distribution of Goose Lake redband trout and other native fish. Though Goose Lake redband trout do not face immediate extinction risk, the California population is not entirely secure and they are a California Species of Special Concern.



### **Angling Notes**

*In the 1800s, when lake levels were high, large lake-form redband trout were abundant enough to support a commercial fishery in Goose Lake. Modern recreational fishing in the lake is minimal as the lake (when full) is very large, shallow, and highly turbid, generally preventing boat access and reducing effectiveness of techniques like trolling. The shallow water and expansive alkali flats surrounding the lake severely limit shore fishing opportunities.*

*Therefore, most anglers target stream-resident Goose Lake redband trout. Depending on snow-pack, flows may be high and turbid in this area well into June and tend to start clearing in early July. Special angling regulations apply to most streams in the Goose Lake basin to protect the unique fish fauna. Lassen Creek, the largest tributary to Goose Lake in California, is often targeted for Goose Lake redband trout. The lower portion of the creek is on private property; however, the portion upstream of the Lassen Creek Campground is publicly accessible.*

*Lassen Creek includes both higher-gradient forested areas and more technical slow-water meadow habitat. Pools are few and far between, except in some areas where habitat restoration activities have occurred or beaver ponds exist. In addition to Lassen Creek, there are several other small tributaries on the eastern shore of Goose Lake that offer redband trout angling opportunities. Because Goose Lake has historically overflowed south into the Pit River system, catching a trout that exhibits redband trout characteristics within the upper Pit River and its tributaries, above the confluence with the Fall River, will also qualify.*

*Currently, the genetic relationship(s) of these populations to those within the Goose Lake basin are unknown and warrants further study. They may or may not exhibit redband characteristics. To increase your odds of observing the unique physical traits that make Goose Lake redband trout different from other forms, consider visiting streams within the Goose Lake basin itself.*

*Overall, stream-resident Goose Lake redband trout achieve a maximum size of approximately 12 inches, are generalists in terms of feeding behavior, and standard dry and nymph flies, as well as small lures, are effective.*





“

*Recently I completed the Heritage Trout Challenge. At first it was just part of my senior project for school, however it became much more. Researching the different fish and their heritage waters became enjoyable and exciting. Because of the program I have learned to fly fish and my passion for native trout has begun. I just turned 17-years-old and am now considering changing my soon to be college major to fisheries biology from wild-life management. I will always remember hiking down to Fish Creek to catch the Little Kern golden and seeing the small creek they exist in. It took a while to find a cut deep enough to hold fish but once I did and actually held the little guy in my hands I couldn't help but think about how amazing this little guy is. Each of the heritage trout adapted in their own way and each now holds a special meaning to me.*

*Among the numerous things I learned from the challenge, something that stuck out the most was how little other fisherman know about our native trout. Before the challenge I didn't know much either; however now I want to gain as much knowledge as I can and wish to help the conservation effort of our wonderful fish. Overall, I would just like to thank all involved in the program, it truly is wonderful and surprisingly impacted my life in ways I never expected.*

Sarah Wassmund

”



## CHAPTER 8

# Warner Lakes Redband Trout

*Oncorhynchus mykiss ssp.*

## Overview

*The Warner basin is composed of a series of lakes, marshes and sloughs that are vestiges of a large Pleistocene lake in the northern Great Basin. This area is inhabited by a unique subspecies of trout, the Warner Lakes redband trout. It is a primitive form of rainbow trout that has been isolated from the Pacific Ocean and more recent invasions of coastal rainbow trout for thousands of years.*

Genetic analyses indicate that Warner Lakes and Goose Lake redband trout are closely related; however, they are considered different enough to be separate subspecies. The majority of the Warner Lakes basin is located in Oregon, although the eastern slopes of the Warner Mountains feed a few small tributaries that maintain Warner Lakes redband populations in California.

### ***Identification***

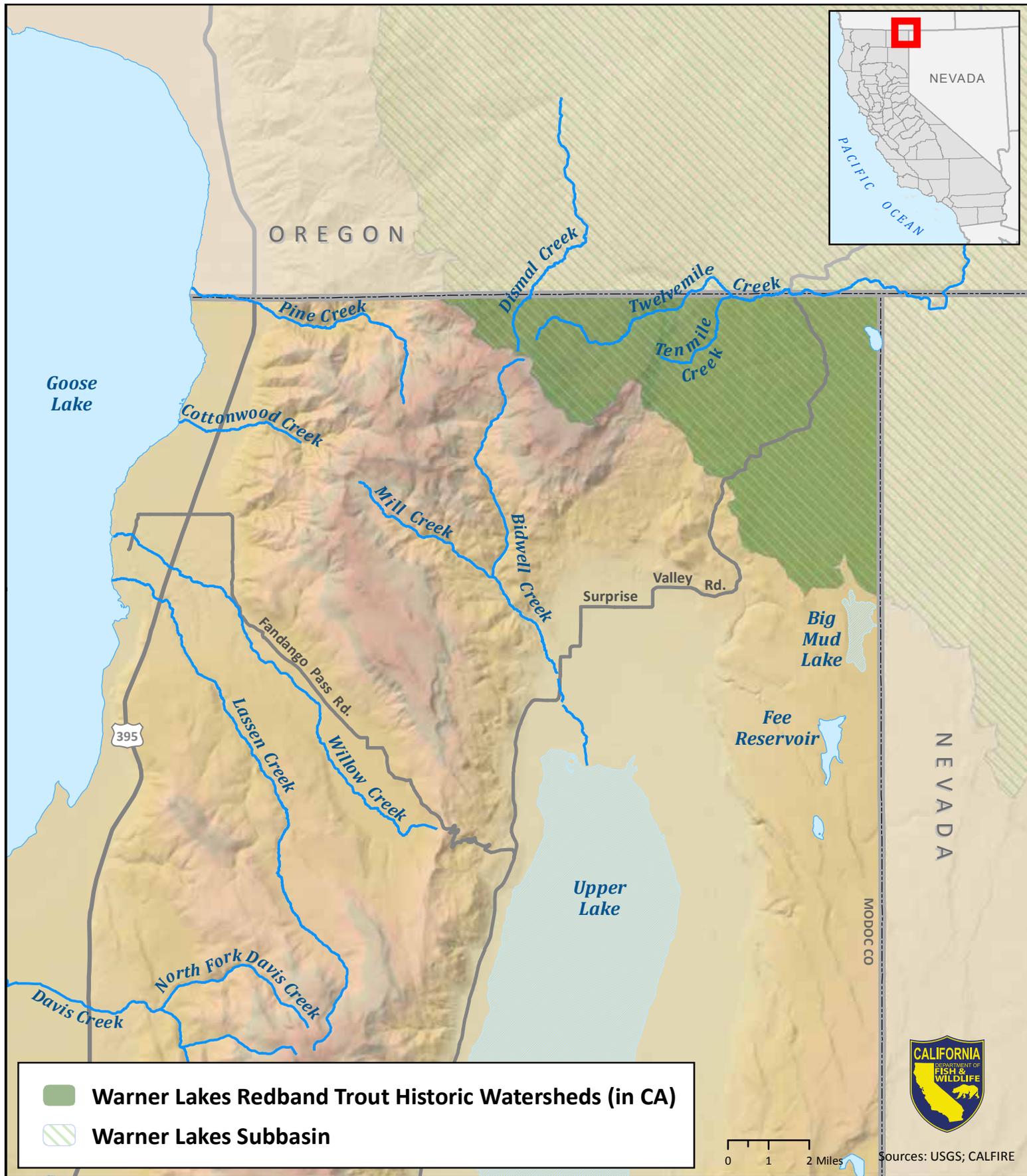
Warner Lakes redband trout are similar in overall appearance to Goose Lake redband trout. However, they are generally darker in color with an olive-hued dorsum (top of fish) that fades to yellow along the sides. The spotting pattern tends to be denser, es-

pecially below the lateral line. Warner Lakes redband trout generally have a purplish lateral line and operculum, as opposed to a brick red lateral line in McCloud River redband trout and a pinkish band in Goose Lake redband trout. The pectoral, pelvic and anal fins may exhibit darker orange to copper colors.

### ***Distribution***

Warner Lakes redband trout are endemic to the Warner basin of south-central Oregon and northeastern California. A very small portion of this basin occupies the extreme northeastern part of California, with three primary watersheds draining the northern and eastern flanks of the Warner Mountains, flowing north into Oregon. No comprehensive distribution







surveys have been performed for the Warner Lakes redband trout within California, so it is currently unknown if they inhabit all three drainages or portions thereof.

There is also speculation that Warner Lakes redband trout occupy several streams draining the eastern flank of the Warner Mountains into Surprise Val-

ley (Alkali Flats). Genetic studies are underway to address this issue. At this time, fish captured in streams within Surprise Valley and the surrounding hills that exhibit the characteristics of Warner Lakes redband trout will qualify, along with the north-draining tributaries that flow into the Warner basin.

#### **Conservation**

Due to the limited distribution of Warner Lakes redband trout in California, the majority of population assessments and conservation actions have occurred in Oregon. CDFW has conducted fisheries assessments in a few small tributaries in the Warner Mountains and is currently conducting a genetic analysis of these fish to better understand their relationships with other forms of redband trout. Although recognized as a distinct subspecies, they have not been formally named.

#### **Angling Notes**

*Warner Lakes redband trout in California exist at elevations near 7,000 feet and, along with the north-facing aspect of the streams they inhabit, snow may be present well into July. In years with average or above average snowpack, it is not advisable to travel to these streams until late summer. In addition, road conditions are mainly unimproved and high-clearance vehicles are recommended.*

*Due to the small size of these streams, Warner Lakes redband trout seldom exceed 12 inches in length. They are opportunistic feeders and standard dry and nymph flies are effective. Lures may be difficult to use owing to dense riparian vegetation. The fish in Dismal Creek can be spooked very easily, so tread softly, crouch low to the ground and avoid creating a shadow over the water. In the springtime, the surrounding meadows are particularly beautiful and teeming with wildflowers.*





*Thank you for giving me the opportunity to catch these  
incredible fish.*

Matt Drummond

*The HTC was a great way to introduce my son to fishing the  
backcountry. He is hooked (and so am I) on pursuing native  
trout throughout California and beyond. The HTC also opened  
our eyes to the challenges that many of these fish face in our  
state. Because of the CDFW's HTC, we have become more aware  
anglers, not only of the environment where we hunt these fish,  
but also of the environment that threatens their existence.*

Chris Bell

*Completing the Challenge took me to a number of interesting  
and remote regions in California. I look forward to receiving  
your validation and also to further trips to encounter a few of  
the remaining species.*

Mike Bell

*Just returned from Eagle Lake where I got my #11! Can't say  
enough good things about the HTC program.*

Phil Erikson

*Great Challenge. It has been terrific fun.*

Derald Lahti





## CHAPTER 9

# Golden Trout Overview

*The Kern River basin contains three unique subspecies of golden trout: Kern River rainbow trout, California golden trout and Little Kern golden trout. Thousands of years ago, the Kern River connected to the San Joaquin River via Tulare Lake, which is now dry. It's possible this passageway allowed an ancestral form of trout to migrate from the Pacific Ocean into the Kern River. The drying of Tulare Lake cut off this connection and prevented later invasions of fishes into this drainage. Subsequent mountain uplift and volcanic events occurred, creating physical barriers to upstream fish movement that further isolated some populations. Variations in natural selection led to separate evolutionary paths and, ultimately, to the three different subspecies we now recognize as golden trout.*

During glacial periods and the shorter-term interglacial wet cycles in the late Pleistocene (10,000 to 20,000 years ago or later), Tulare Lake overflowed and the resulting connections between the San Joaquin and Kern rivers again provided opportunities for trout to gain access to the Kern River basin. How many ancestral invasions occurred to give rise to these three subspecies is unknown, but the earliest of these invasions would have been of an ancient “redband” type trout, similar to the earliest redband trout entering the northern Sacramento River basin.

The most recent invasions (up to about 10,000 years ago or later) would likely have been of more recently evolved coastal rainbow trout. Multiple theories about the distribution and evolution of the golden trout complex have been proposed, including the

possibility that an ancestral form of trout invaded the Kern basin not from the Pacific but, rather, from the Gulf of California. This concept is buoyed by the fact that the most primitive living species linked to redband trout (Gila, Apache and Mexican golden trouts) likely evolved and radiated from this region, rather than from the Pacific Ocean itself.

Whatever their origins, these spectacularly colored and highly-prized golden trout have long been acknowledged as among the most beautiful trout in the world. All three are endemic to California, meaning they are native to this area and nowhere else.

Kern River rainbow trout occur in the main-stem Kern River from Lake Isabella upstream to the headwaters. Little Kern golden trout are isolated in the





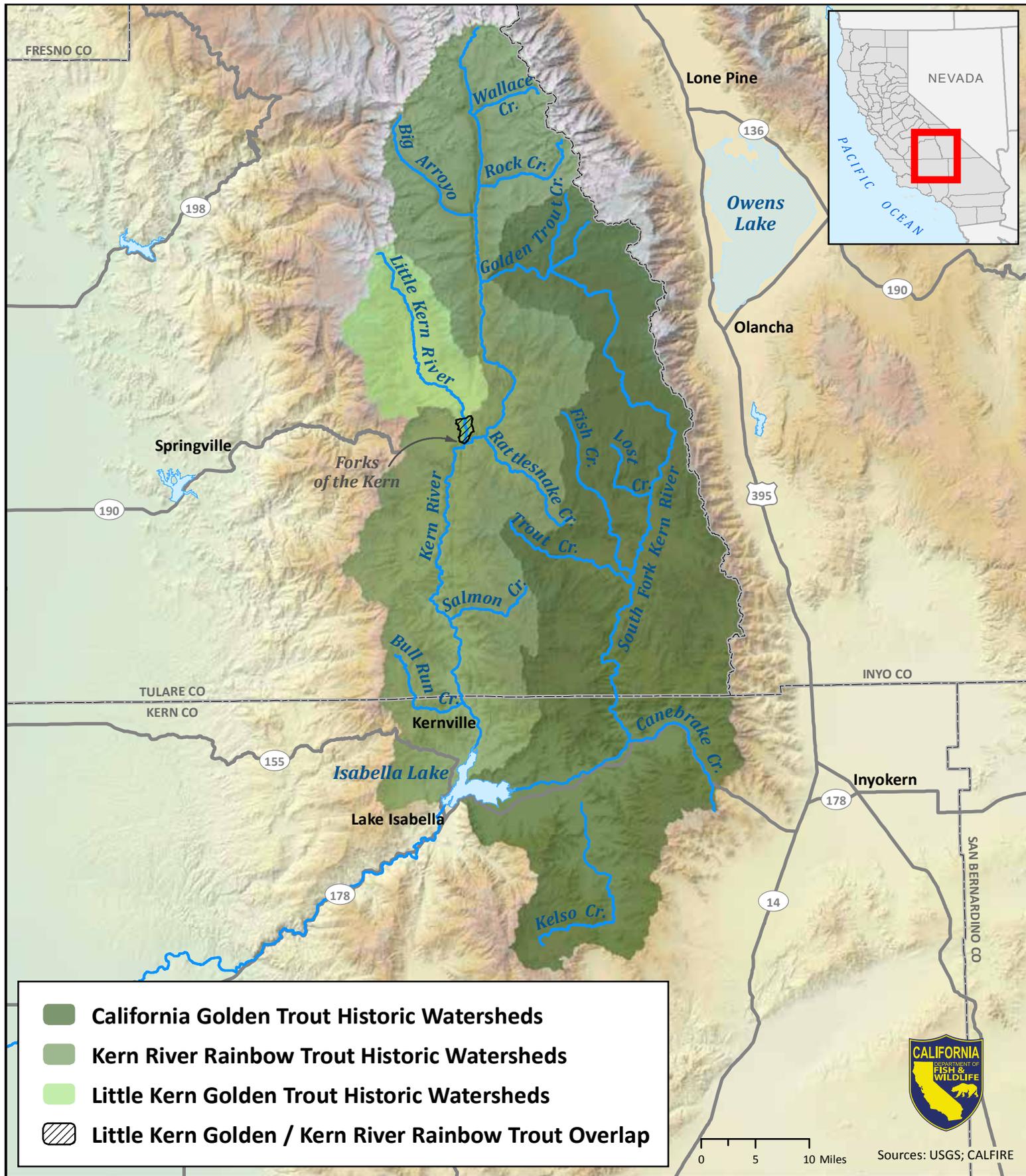


Little Kern River, a major tributary on the west side of the basin; its confluence with the mainstem Kern River is known as the Forks of the Kern. California golden trout are found on the east side of the plateau in two major tributaries, the South Fork Kern River and Golden Trout Creek.

Human activities have significantly altered the genetic status of these three subspecies, both by moving them within the basin, and by stocking non-native hatchery trout from outside sources. Conservation measures have been implemented over many decades, with the principal intent to identify and protect genetically “pure” populations. However, resource managers are faced with the daunting task of determining what exactly constitutes a pure fish within this basin. Natural waterfalls that isolate populations from upstream-migrating fish do not necessarily prevent fish from moving downstream. Some level of movement of Little Kern golden trout and California golden trout into the mainstem Kern River has likely always occurred. These subspecies are able to naturally interbreed, allowing for natural intermixing of stocks, both historically and currently.

Genetic analyses have been conducted throughout the basin to better understand the extent and spatial distribution of hybridization with hatchery fish. Instream barriers were built to help isolate pure populations and prevent further upstream movement of non-native fish. Isolated streams with relatively pure populations of both Little Kern golden trout and California golden trout are limited. The majority of their respective historic ranges are currently occupied by hybridized fish, a principal threat to their continued existence. The identification of genetically “pure” Kern River rainbow trout is quite difficult, for reasons noted above; however, populations in a few isolated tributaries in the upper portions of the Kern River appear to have retained unique genetic traits or were undocumented transplants.

Orange and yellow hues make the three golden trout subspecies distinctive to the human eye. Although outward ap-





pearances make them very unique, it is interesting to note that primitive morphometric traits (number of scales, vertebrae and pyloric caeca) between Little Kern golden trout and McCloud River redband trout from Sheepheaven Creek are nearly identical. Considering these fish are separated by over 400 miles, it supports the concept that an ancestral form of trout entered California's interior rivers via the Sacramento-San Joaquin River system, dispersing both north and south into headwater tributary streams and later becoming isolated. During the last ice age, large portions of both the Mount Shasta region and Kern basin (except the upper Kern River mainstem) served as glacial refugia. Both regions share some "glacial relict" species of animals and plants that sur-

vived and continue to occupy these non-glaciated areas through modern times, which may include the unique trout found in these areas.

The origins of trout and their relationships to one another has long been a topic of interest and debate. Researchers and biologists continue to investigate these biogeographic and evolutionary mysteries with the assistance of increasingly powerful and refined analytical tools. The field of genetics is particularly applicable and is rapidly expanding to allow for huge advances in our understanding of the interrelationships between organisms and the evolutionary paths they have followed.



## CHAPTER 10

# Kern River Rainbow Trout

*Oncorhynchus mykiss gilberti*

## Overview

*The subspecies name gilberti honors Charles Gilbert, a taxonomist who first described many western fish species. The Kern River drains an enormous watershed (approximately 1.5 million acres) and the river's size and volume reflects the scale of this drainage. Most of the upper river flows through an expansive U-shaped glacially-carved valley, surrounded by towering walls and seasonal waterfalls. Kern River rainbow trout in the mainstem Kern River reach lengths up to 28 inches and specimens weighing eight pounds were reported in the early 1900s. This is unique for an interior drainage in California.*

The large size of the Kern River and associated habitat allows for greater maximum size than the relatively smaller streams that support the other two golden trout subspecies. Locations such as “21-inch Camp,” a popular camping site along the Kern River in Sequoia National Park, allude to the potential for trophy-sized trout.

### **Identification**

Kern River rainbow trout tend to have a more typical “rainbow trout” appearance than the other two forms of golden trout. This could be a natural phenomenon or influenced by hatchery rainbow trout planted in the Kern River over many decades. Their coloration, at least in some portions of the watershed, may also

be influenced by natural hybridization and intermixing with the other golden trout subspecies. While they generally resemble rainbow trout, the coloration tends to be brighter, with a slight tinge of gold to the body and, often, orange on the belly. One of the most distinguishing features is the fine, peppery spotting that is profuse over most of the body and fins. Compared to the other two golden trout that have round spots, those on Kern River rainbow trout are more irregular in shape. On many larger fish, there is a broad rosy-red band along the sides.

A description of Kern River rainbow trout from the 1905 Bulletin of the Bureau of Fisheries describes an 18-inch specimen that was profusely spotted with





rich rosy sides, the lower half slightly pink and bluish and with a slight wash of gold.

### ***Distribution***

Kern River rainbow trout are endemic to the Kern River and tributaries, from Lake Isabella upstream to the headwaters (Tulare County). Some streams within this drainage have barriers to upstream fish movement and do not contain populations of Kern River rainbow trout above these barriers. These include: the Little Kern River, South Fork Kern River and Golden Trout Creek. Genetic analyses have revealed that trout located in the lower portion of the Kern River are highly introgressed with hatchery or

coastal rainbow trout, likely from a long history of stocking this portion of the river. In the upper watershed, they appear to share genes with California golden trout.

Given the complex history of fish movement in this basin (natural and human-influenced, including hatchery stocking) and uncertainties about what remains of genetically “pure” Kern River rainbow trout, if such a thing ever existed, identifying best representative specimens is problematic. For the Challenge, any rainbow trout caught in the Kern River that exhibits the morphologic, or outward, characteristics of Kern River rainbow trout qualifies.

However, due to hatchery stocking and hybridization with rainbow trout in the lower portions of the river, your chances of catching a Kern River rainbow trout without hatchery influence increase as you move upstream in the watershed. If fishing in the vicinity of the Forks of the Kern, it is also possible to catch a qualifying Kern River rainbow trout in the lower few miles of the Little Kern River, below a series of natural waterfalls that separate them from Little Kern golden trout.

### **Conservation**

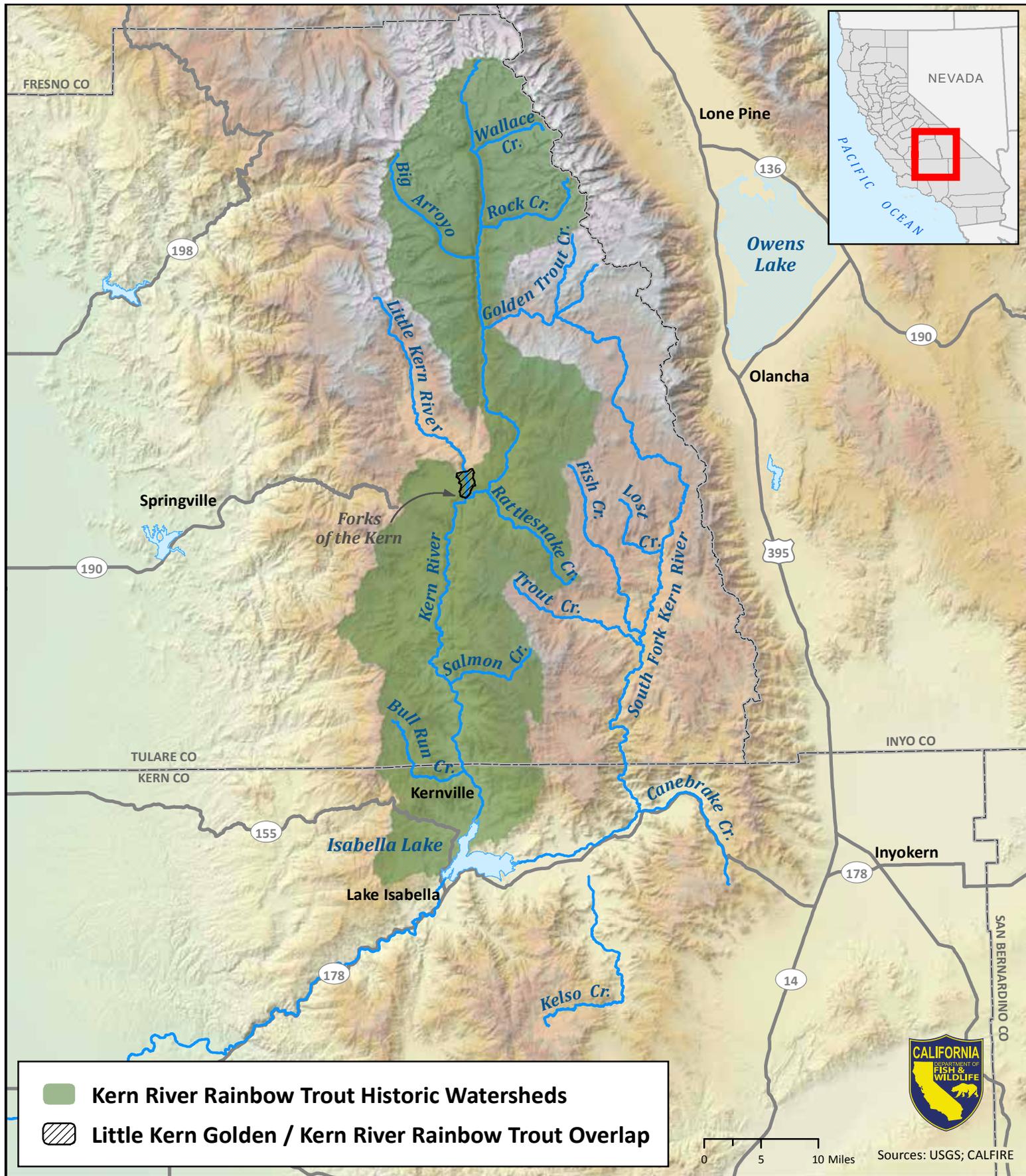
Kern River rainbow trout are classified by the U.S. Fish and Wildlife Service as a candidate species for listing under the Endangered Species Act. This means they may warrant additional protection but there is inadequate information to make a determination. Kern River rainbow trout are also listed as a California Species of Special Concern.

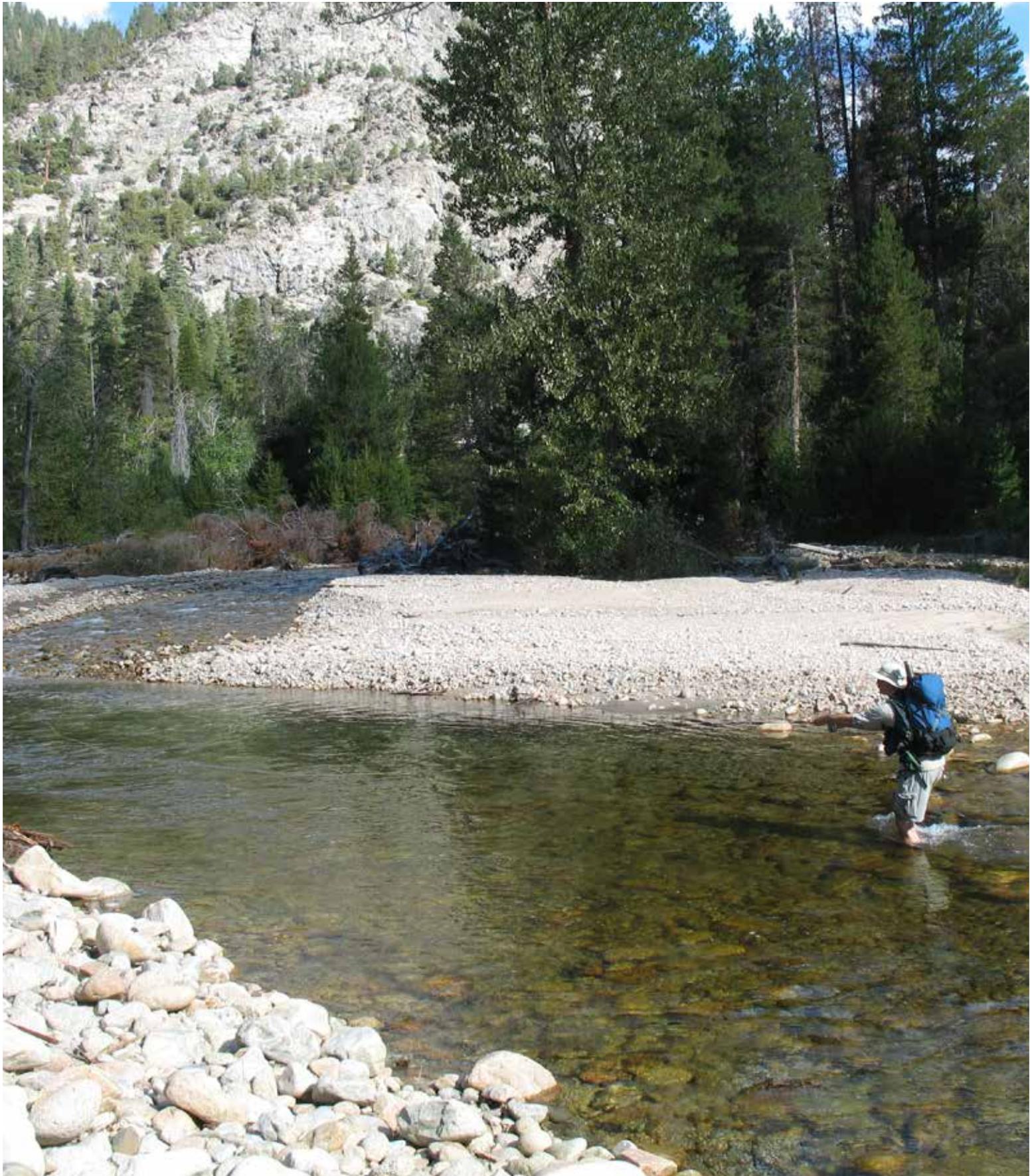
With the ongoing uncertainties about their taxonomic status and how best to conserve and restore a subspecies that exists in a watershed where natural and human movement of fishes has occurred,

the conservation of Kern River rainbow trout is a complicated endeavor. The subspecies was thought to have disappeared through hybridization with introduced, non-native rainbow trout, although one or more historic natural invasions of coastal rainbow trout may have occurred.

CDFW recently conducted surveys throughout the watershed in search of “pure” Kern River rainbow trout. Genetic studies found a population in a headwater lake to Big Arroyo. Steps are being taken to capture a portion of this population and rear them in a hatchery. If successful, these fish may be used to support sport fisheries in the lower Kern River and replace stocking of hatchery-strain coastal rainbow trout. To further protect the genetic integrity of Kern River rainbow trout, all hatchery rainbow trout stocked into the Kern River have undergone a process to make them sterile. An Upper Kern basin Fishery Management Plan was written to restore, protect and enhance the native Kern River rainbow trout populations and its ongoing implementation will be central to the long-term persistence and protection of this enigmatic fish.











### **Angling Notes**

*The upper Kern River, from the Forks of the Kern upstream to Tyndall Creek in Sequoia National Park, comprises approximately 41 miles of perennial stream habitat and is a designated Heritage and Wild Trout Water. Nine miles of fishable stream exists from the Forks of the Kern downstream to Johnsondale Bridge and there are an additional 17 miles from Johnsondale Bridge downstream to the mouth at Lake Isabella. In total, anglers have access to 70 miles of qualifying stream habitat (not including tributaries) for the Challenge.*

*Recreational angling is popular at Johnsondale Bridge due to the roadside nature of this portion of the river and ease of access. However, those anglers who want to catch and document a Kern River rainbow trout that best exemplifies the physical traits that make them unique should focus their efforts upstream of Johnsondale Bridge and, preferably, upstream of the Forks of the Kern. There are also a few small roadside tributaries that can be targeted by those who wish to camp and fish close to their car.*

*The upper Kern River is surrounded by both the Golden Trout Wilderness Area and Sequoia National Park. Access is limited to hiking and horseback riding trails as mechanical transport, i.e. vehicles, is not allowed. While the hiking distances involved to access this area can be challenging, there is relatively moderate elevation change and the valley bottom is flat. This makes angling access very good throughout much of its length.*

*Stream access is plentiful in many areas, both by road (Johnsondale) and via a network of well-established and maintained trails. Given the large size of the mainstem Kern River, with boulders that dominate much of the river bottom, wading and river crossings can be treacherous, even in low flow conditions.*

*Angling techniques are similar to those in other Sierra Nevada rivers and streams, for both lures and flies. Dry and dropper fly combinations or double nymph rigs dead drifted under an indicator are top choices for fly anglers. Fishing with lures can be especially effective, given the large size of the river, opportunity to get the tackle down in the water column, and relative ease of casting. The entire river from Johnsondale Bridge upstream has special angling regulations. Be sure to check the California Freshwater Sport Fishing Regulations for the area you intend to fish. The Kern River is a much-celebrated fishery with outstanding scenery. Coupled with the opportunity to catch trophy native trout, within their historic range, the Kern River is a truly unique fishing destination in California.*



## CHAPTER 11

# Little Kern Golden Trout

*Oncorhynchus mykiss whitei*

## Overview

*Little Kern golden trout are endemic to one watershed in California and were given the name whitei to recognize naturalist and writer Stewart Edward White, who wrote about golden trout in the early 1900s.*

*Historic stocking of non-native trout, including rainbow trout, California golden trout, brown trout, and brook trout, has threatened this subspecies.*

As early as 1941, biologist Bill A. Dill noticed hybridization between the stocked trout and Little Kern golden trout. He raised concerns and stocking was ceased in this watershed in 1944.

Many surveys were conducted throughout the Little Kern River basin in the 1960s and 1970s, at which point it was believed that pure populations existed in only six small streams in the Little Kern River basin. This was approximately 10 percent of their original habitat. In 1978, Little Kern golden trout were listed as Threatened under the Federal Endangered Species Act.

### ***Identification***

Little Kern golden trout are similar in appearance to California golden trout. Both are brightly colored, with vibrant bellies and pronounced lateral lines,

although Little Kern golden trout tend to be darker and more subdued in color. In addition, spotting is more profuse on Little Kern golden trout and typically extends across the upper body, head, tail and below the lateral line. The back is olive green and transitions into a mixture of yellow, bright gold and cadmium white on the sides. The sides are further accented with a red-orange lateral band and up to 10 parr marks, which are generally retained into adulthood. The red-orange color is also on the belly and opercula, and can sometimes be a darker shade of red. The pectoral, pelvic and anal fins are orange and tipped with white.

### ***Distribution***

Little Kern golden trout are native to the Little Kern River and tributaries in the southern Sierra Nevada (Tulare County), mostly within Sequoia National



Forest and Sequoia National Park. The Little Kern River is a tributary to the Kern River. These trout have been isolated from more recent invasions of coastal rainbow trout by a series of impassable waterfalls created by mountain uplift in the lower portion of the drainage. Stocking drastically altered the distribution of Little Kern golden trout. Early anglers and ranchers moved fish to waters outside their historic range, such as Coyote Creek in the 1880s. Later stocking and transplants of non-native trout into the Little Kern River basin displaced the subspecies from much of its historic habitat through competition and hybridization.

Due to considerable conservation and restoration efforts, genetically pure populations are currently found in a majority of the tributaries within the Little Kern basin. Secure pure populations are located upstream of barriers that provide protection from non-native trout. Other streams within the drainage have populations with relatively low levels of introgression.

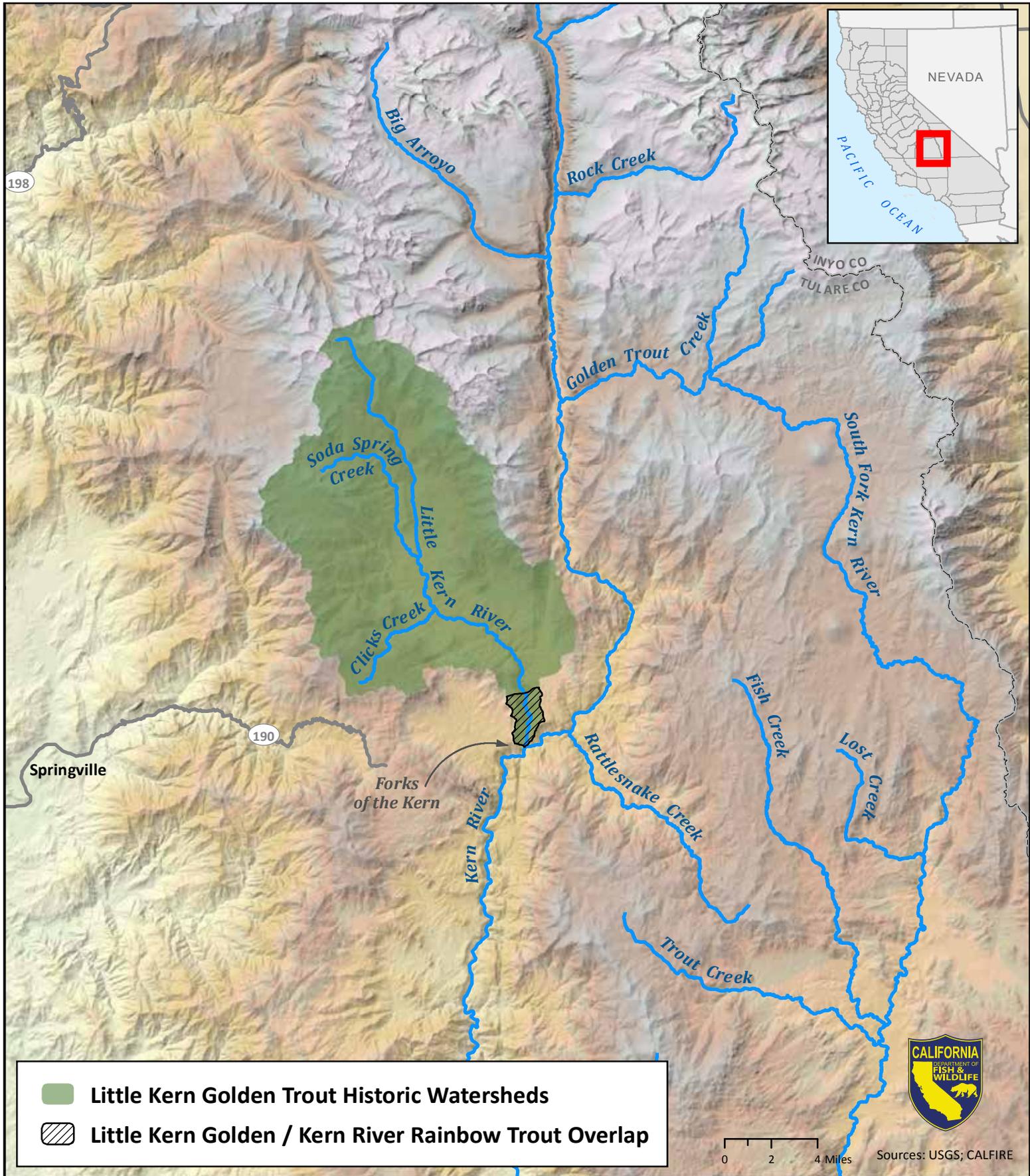
### **Conservation**

Many projects have been implemented to conserve and restore Little Kern golden trout to their historic habitat within the Little Kern River basin, spanning a number of decades. After stocking of hatchery trout into the Little Kern River watershed was ceased, CDFW began surveys to determine if any “pure” populations remained. Based on external characteristics and a uniform appearance, the fish in upper Soda Spring Creek were believed to be the principal remaining pure population. Efforts were undertaken to expand this population.

Further surveys and genetic analyses began in the early 1970s to better understand the distribution of remaining genetically “pure” Little Kern golden trout. Artificial barriers were constructed during this time to establish refuge areas within the Little Kern River basin. These barriers were built to protect existing populations in the tributaries and to create new habitat where non-native fish could be removed and pure trout restored. Chemical treatments to remove non-native trout occurred at multiple locations throughout the basin from the mid-1970s through mid-1980s. A Fishery Management Plan for the Little Kern golden trout was written in 1978 and a revised version was adopted in 1984. Critical habitat was defined and conservation measures developed to restore populations to levels that will merit delisting under the Federal Endangered Species Act.







In spite of past chemical treatments, introgressed populations still exist in the mainstem Little Kern River and some tributaries, although levels of introgression are relatively low. The 2011 Lion Fire burned portions of the Little Kern River basin, including several streams with key conservation populations of Little Kern golden trout. In 2012, CDFW, in collaboration with the U.S. Forest Service (Sequoia National Forest) and U.S. Fish and Wildlife Service, implemented a comprehensive basin-wide assessment to evaluate population status, habitat condition and barrier integrity. Tissue samples were collected throughout the basin for an updated genetic analysis. Results from this study will provide updates to the Fishery Management Plan and help prioritize future restoration and recovery actions.



### **Angling Notes**

*The entire Little Kern River drainage is a designated Heritage and Wild Trout Water and all waters in the basin are open to recreational angling. Any trout caught in the Little Kern River basin that possesses physical traits of Little Kern golden trout will qualify for the Challenge, including trout captured in the lowest portion of the Little Kern River, near the Forks of the Kern. Since hybridized populations occupy portions of the basin, anglers who wish to capture a Little Kern golden trout that best represents the subspecies (and has more vibrant coloration) should target tributaries and upper portions of the mainstem. Well-established trails exist throughout Golden Trout Wilderness and give access to the majority of the basin, although high elevations, steep terrain and long hiking distances make travel difficult. Outfitters are available to provide pack-in services using mules or horses, and some limited road-side fishing opportunities also exist.*

*When fishing smaller tributaries use a stealthy approach, especially in meadow habitats where trout can be easily spooked. Consider reducing your profile by crouching or use bushes as cover when approaching streams. Many Little Kern River tributaries are lined with dense willows, making effective presentation difficult for those who are used to long, unobstructed casts. Try different casting techniques to help avoid tangles and get your fly where you want it: use the rod to dap the fly on the water, release slack leader and line downstream under overhanging brush to present the fly first, cast more vertically in a “steeple” fashion to avoid hanging up in vegetation, or use a “bow and arrow” cast to get the fly underneath overhanging bushes.*

*Using short leaders and minimal casting is often the best approach. Deeper pools with abundant cover often have numerous fish schooled up and, if conditions are right, catching one may not spook the others. Focus on working from the tail of the pool upstream and play fish quickly down to the tail to avoid scaring others at the head of the pool. Don't overlook the shallow water at the tail of the pool as, quite often, a few smaller fish will be holding in this area.*

*Although the majority of Little Kern golden trout are small, 14 inch trout have been caught in streams less than two feet wide. Dry flies work very well, particularly in small meadow streams, but all types of flies and small lures are effective when angling for Little Kern golden trout.*



## CHAPTER 12

# California Golden Trout

*Oncorhynchus mykiss aguabonita*

## Overview

*California golden trout are the official state freshwater fish of California and have long been recognized and prized for their unparalleled beauty. Golden Trout Wilderness was established in 1978, specifically to protect California golden trout. The subspecies name aguabonita means beautiful water and “is the name of a cascade on Volcano Creek, near which this trout abounds,” as described by David Starr Jordan and Barton Evermann in The Fishes of North and Middle America (1896).*

The name “Volcano Creek golden trout” historically referred to the population in Golden Trout Creek. Prior to 1904, Golden Trout Creek was known as Volcano Creek. For more than a century, Volcano Creek golden trout have been mistakenly associated with the golden trout in Volcanic Creek (a small disconnected tributary to Golden Trout Creek). Adding to the confusion, Volcanic Creek is often erroneously referenced as Volcano Creek. The result is that anglers from all over the world make a pilgrimage to Volcanic Creek to catch a “Volcano Creek golden trout” when they should be targeting Golden Trout Creek.

### **Identification**

California golden trout are widely regarded as one of the most beautiful trout in the world. Their coloration is spectacularly bright, with the belly, opercula and lower jaws a vivid red to red-orange. The lower sides are bright gold, a central lateral band is red-orange and deep olive-green hues color the back. About ten parr marks are centered on the lateral line and are usually present through adulthood. Body spots are large, round and dark. They are concentrated on the upper body behind the dorsal fin and on the dorsal and caudal fins themselves. Spots are generally not present below the lateral line. The pectoral, pelvic and anal fins are orange, the latter fins having white to yellow tips preceded by a black band. The dorsal fin also has a white or orange tip.

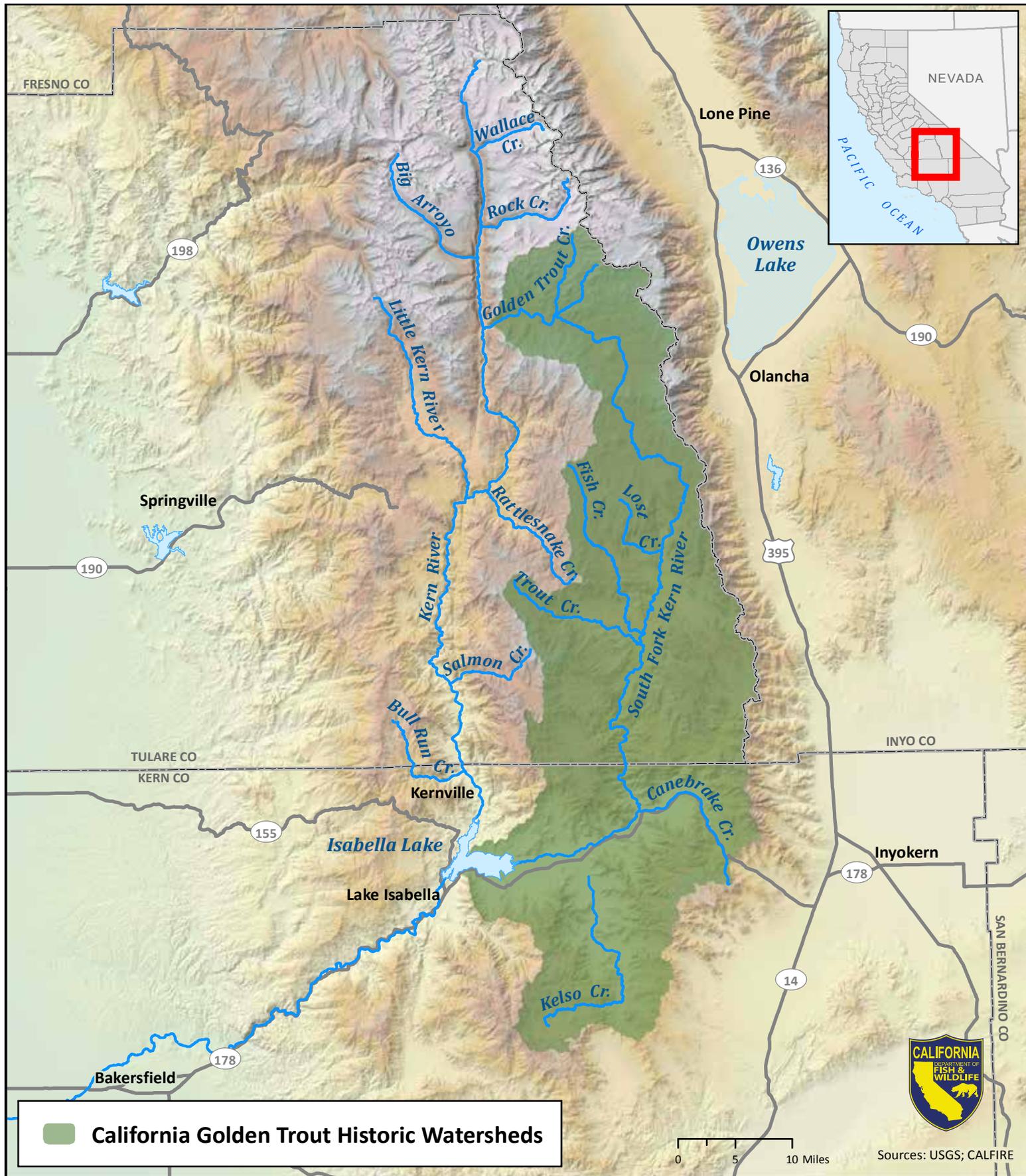
### **Distribution**

California golden trout are native to two stream systems on the eastern side of the Kern River: Golden Trout Creek and the South Fork Kern River (Tulare County). Golden Trout Creek is thought to have once formed the headwaters of the South Fork Kern River but, due to volcanic activity thousands of years ago, it was diverted west near Tunnel Meadow and now flows directly to the Kern River.

The South Fork Kern River is quite large and flows from the western crest of the Sierra Nevada near Cottonwood Pass downstream to the Kern River where Isabella Lake now exists. It is unknown how far downstream California golden trout were historically found and the only documentation is from longtime Kernville resident, Ardis Walker. As a boy, fishing the South Fork Kern River in 1913, he reported catching California golden trout in the “gorge” just upstream of the Bloomfield Ranch, near the southern boundary of the Domeland Wilderness. It is possible that California golden trout may have existed downstream of Isabella Lake prior to the construction of Isabella Dam. The lower limits of their range probably changed, depending on climatic conditions and seasonal water temperature. It is unknown whether California golden trout naturally occurred in the Kern River, although it is likely that some level of movement occurred between these formerly connected rivers.

Due to their singular beauty and popularity as a unique sport fish, California golden trout have been widely distributed outside their native range, mostly in high elevation lakes and streams in the Sierra Nevada. They were also transplanted to numerous lakes in the Wind River Range in Wyoming. In about 1872, according to an old newspaper account, a transplant was made from Golden Trout Creek into the headwaters of Mulkey Creek. Although Mulkey Creek is a tributary to the South Fork Kern River, a natural barrier prevented movement of California golden trout into the headwaters. This area, Mulkey Meadows, was probably fishless until the 1872 transplant.

In 1876, 13 golden trout from Mulkey Creek were put into a “coffee can,” carried over the divide (presumably what is now called Trail Pass), and stocked into Cottonwood Creek; 12 survived the trip. Cot-





tonwood Creek drains the eastern side of the Sierra Nevada to the Owens Valley and was fishless prior to the transplant. Later, trout from Cottonwood Creek were transplanted into Cottonwood Lakes, creating broodstock for almost all subsequent propagation and distribution of California golden trout throughout California and beyond.

### **Conservation**

California golden trout were petitioned for listing under the Federal Endangered Species Act in 2000 but were determined to not merit listing. This was mainly due to the many conservation actions and protections afforded under a multi-agency conservation strategy. They are currently a California Species of Special Concern.

California golden trout are threatened by non-native trout and land use impacts from long-term and historically-intensive grazing activities. Major efforts were undertaken, beginning in the 1960s, to create refuge areas in the upper reaches of the South Fork Kern River. Three barriers were built (Ramshaw, Templeton and Schaeffer) and a piscicide was applied to the river to kill all non-native fish above or between these barriers. From 1969 through 2000, 10 chemical treatments were performed, with varying degrees of success.

In addition, gill netting of select headwater lakes such as Chicken Spring and Rocky basin lakes occurred to remove hybridized fish. This was successful and these lakes are now fishless. A Conservation Assessment and Strategy for California Golden Trout (2004) was adopted to protect and restore California golden trout

populations, expand their distribution within their native range, improve habitat and raise public awareness about the status and threats to this iconic trout. Cattle grazing allotments were reduced in recent decades and, in some cases, they were rested or eliminated to protect sensitive habitats. Cattle exclusion fencing is maintained in several areas to keep cows out of the stream. Other habitat improvement projects are underway and scientists are studying the meadow ecosystems and water conditions throughout the Kern Plateau. Population and habitat monitoring for California golden trout and other fishes is an ongoing management activity.

Multiple genetic analyses were conducted on California golden trout throughout their range and levels

of introgression with rainbow trout vary, depending on location. In general, a hybridization gradient exists in the South Fork Kern River, with introgression levels increasing as you move downstream through the watershed. The highest genetic integrity occurs in Mulkey Creek, in the South Fork Kern River drainage, and in Golden Trout Creek and its tributaries. A great deal of conservation focus and funding has been appropriated to California golden trout and the potential to prevent future listing under either federal or state endangered species acts is high. While California golden trout in Golden Trout Creek are relatively secure, the population in the South Fork Kern River continues to be threatened by non-native trout and associated hybridization, predation and competition.





### **Angling Notes**

*Golden Trout Creek (from the confluence with the Kern River upstream to its headwaters, including tributaries) is a designated Heritage and Wild Trout Water. The South Fork Kern River (from the southern boundary of the South Sierra Wilderness Area upstream to its headwaters, including tributaries) is a designated Wild Trout Water.*

*All waters on the Kern Plateau are open to angling, though many are accessible only by trail since both watersheds are largely encompassed within the Golden Trout Wilderness. A few South Fork Kern River tributaries are adjacent to forest roads, particularly in the lower portion of the watershed near Kennedy, Troy and Monache meadows. However, because intermixing with rainbow trout is highest in this downstream portion of the drainage, these trout may not exhibit the bright coloration of fish caught in the upper watershed. Targeting Golden Trout Creek or the headwaters of the South Fork Kern will provide the best opportunity to catch fish that exhibit the spectacular colors that make them unique.*

*Angling techniques are not complicated; most creeks abound with California golden trout and they are known to readily take flies of all types, particularly dries and terrestrials. Small lures may also be effective but casting in these small waters, often lined with riparian or meadow vegetation, can be difficult.*



## CHAPTER 13

### **Bull Trout** *Salvelinus confluentus*

#### **Overview**

*The last documented sighting of a bull trout in California was in 1975. They are believed to have been extirpated from this state because of habitat loss from dams and direct competition from introduced brown trout. They are not extinct, however, as bull trout can still be found in other parts of their historic range in the western United States.*

Bull trout are listed as Threatened under the Federal Endangered Species Act and, although it is assumed they are no longer present in California, are included in this handbook because they are a heritage trout species that historically occurred here in the southern-most part of their range. Although they are lost as a resource to this state, it is important to consider factors that led to their demise in order to prevent further localized extinctions.

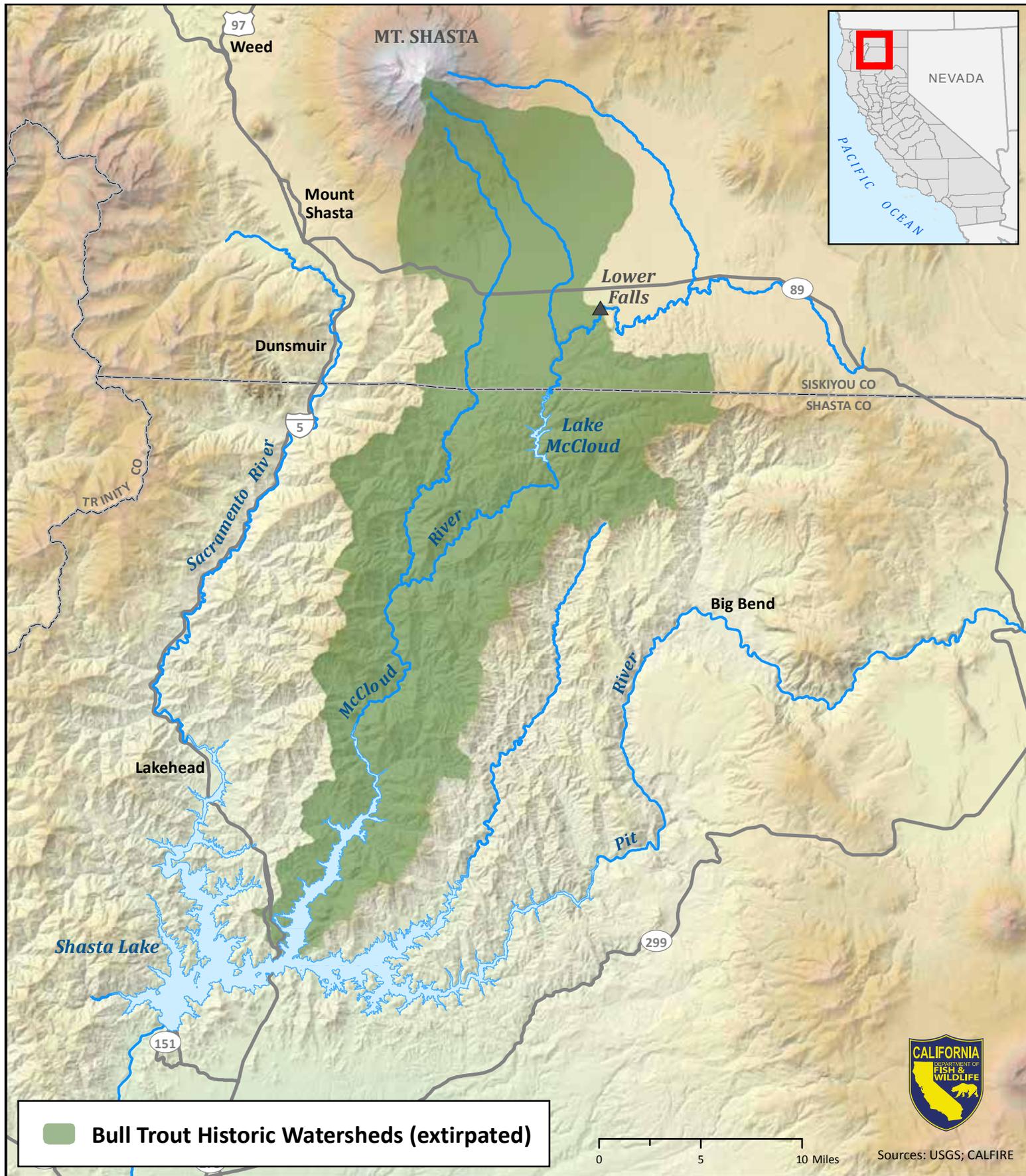
The common name, bull trout, refers to the species' characteristically broad head. *Confluentus* roughly translates to flowing together or confluence, in reference to the habitat these large-sized, stream-res-

ident trout occupy. Bull trout prefer cold, pristine water such as spring-fed streams. In other parts of their range, there are some populations that inhabit lakes, as well as those that migrate to the ocean. These wide-ranging habitat preferences reflect their predatory life history and movement patterns to seek areas of abundant prey fish.

### **Identification**

Bull trout are commonly misidentified as brook trout (*S. fontinalis*) and, since they are both members of the char family and are closely related, they can be easily confused. They were also historically lumped with Dolly Varden (*S. malma*), an anadromous char





that shares similar coloration. Confusion clouded their taxonomy until genetic analyses determined they are, indeed, different species. Perhaps the best way to distinguish them from other trout or char species is the lack of black spots on the dorsal fin.

While variable, bull trout body coloration is primarily grayish-green, fading to a white or orange belly. They have vibrantly-colored spots along the body, which may range from white to pale-yellow spots, or even pink to red. Fins are spotless except for a few yellow dots at the base of the tail. The lower fins contain orange and red hues with a white leading edge. Bull trout have broad, long heads compared to other char and trout. The flattened head with eyes positioned towards the top is assumed to help bull trout observe prey located above them, as they generally hold at or near the bottom under cover and are ambush predators.

### *Distribution*

As with many western native trout species, bull trout populations have declined substantially from historic levels. One of the principal limiting factors is their need for very cold and non-polluted water. The historic distribution of bull trout extended from northern California to British Columbia. Bull trout historically inhabited the McCloud River and tributaries (Shasta and Siskiyou counties) from the mouth of the river (now inundated by Lake Shasta) to Lower Falls. Bull trout may have also inhabited cold spring-fed portions of the upper Sacramento and Pit rivers, but only anecdotal evidence exists to support this idea.

### *Conservation*

The decline of bull trout in California is directly attributed to the construction of Shasta Dam. The dam, which created Shasta Lake (Reservoir), blocked historically abundant salmon and steelhead runs that utilized the upper Sacramento and McCloud rivers for spawning and juvenile rearing. This eliminated the primary food base for bull trout. Consumption of juvenile salmon and other fishes was likely key to the bull trout's life history and ability to grow to large size (upwards of 15 pounds).

Introduced brown trout also played a pivotal role in their decline. The impoundment of Shasta Lake increased water temperatures that helped these non-native trout proliferate and out-compete bull trout in their highly specialized niche. Introduced brook trout interbred with bull trout, potentially changing their genetic attributes and ability to adapt.

Angler harvest may have further reduced this isolated population. Habitat loss associated with dams, coupled with the presence of brown trout, may inhibit recovery of bull trout in California. However, restoration actions within the McCloud River watershed may someday allow for their limited reestablishment in California. Although recovery of this species in California would be a significant challenge, hopefully anglers will someday have an opportunity to qualify for the Challenge with a bull trout from California!



## CHAPTER 14

# Frequently Asked Questions

### ***Do I have to catch all six fish in one year?***

There are no rules about how long it takes to complete the Challenge. Any heritage trout legally captured in your lifetime qualifies for the Challenge. If you have the appropriate documentation, even fish captured decades ago may qualify. However, you may only submit one application per year.

### ***May I submit more than one Challenge application?***

You can submit multiple Challenge applications, but not in the same year. The award letter will state the year in which you are eligible for another certificate. You may not use the same fish or picture for multiple applications. You may use the same species but, to qualify, it must be caught

in either a different water body or on a different date. If you are going for your Master Certificate (see Chapter 15), it may be submitted together with your regular Challenge application, or at a later date.

***Do I have to submit six trout if I am submitting my second application for the Master Angler recognition?***

You can submit the remaining five trout as long as you already submitted your initial six. Please clearly note at the top of your application you are applying for a Master Certificate.

***I love my Challenge hat, but it is worn out. Can I get a replacement?***

Yes, but you will have to complete another Challenge.

There are a limited number of hats in our inventory.

***How many people have completed the Challenge?***

As of 2016, 300 people completed the Challenge, a dozen of which also received a Master Angler certificate.

***What happens to applications once they are approved?***

All application materials, including photographs, become property of CDFW. They are kept on file to use as outreach and all personal information is protected.

***Do you have to catch each species in a designated Heritage Trout Water to qualify?***

No. The California Fish and Game Commission



designates waters to be managed as wild trout fisheries. Wild Trout Waters are those that support self-sustaining trout populations, are aesthetically pleasing and environmentally productive, provide adequate catch rates in terms of numbers or size of fish and are open to public angling. Heritage Trout Waters are a sub-set that exemplifies native trout still present in the watershed(s) that comprise their historic range. To qualify for the Challenge, a fish does not have to be caught in designated waters, although Heritage Trout Waters are a good place to start and certainly qualify.

***How long will it take to receive my certificate and hat?***

Applications are processed approximately four times a year, so it could take anywhere from two to four months to receive your certificate and hat.

***How can we verify our application has been received?***

Call or email the Heritage and Wild Trout Program; our contact information can be found at:

[wildlife.ca.gov/Conservation/Inland Fisheries/Wild-Trout/Staff-Directory](http://wildlife.ca.gov/Conservation/InlandFisheries/Wild-Trout/Staff-Directory).

***In locations where historic stocking occurred and the native trout may be hybridized, how can I tell if a particular fish qualifies?***

The only way to determine whether a trout is hybridized is through laboratory testing and this is beyond the level of verification required for the Challenge. A trout will qualify if it exhibits the physical traits described in the “Identification” section of this guide. When

documenting your catch with photographs, try to highlight any unique features that can assist our staff with validating your catch. For instance, if you catch a coastal cutthroat trout and it has a similar outward appearance to a rainbow trout but has the classic cutthroat marks, try to include those in your photographs, or include a written note with your application describing any unique attributes. If we



have any questions, we will call or email to confirm. In general, if a particular fish has enough of the key physical characteristics of the species or subspecies in question and was captured in the right drainage(s), you will be given the benefit of the doubt and we will qualify your application.

***I'm not very familiar with what areas comprise the native range and the watersheds which qualify for the Challenge across the state. Where can I learn more to ensure I am fishing in the right place for a particular species?***

Contact Heritage and Wild Trout Program staff at [HeritageTroutChallenge@wildlife.ca.gov](mailto:HeritageTroutChallenge@wildlife.ca.gov) and see the section on additional resources in this guide.





## CHAPTER 15

# How to Complete the Challenge

### *Qualifying waters*

To qualify for the Challenge, six different native trout must be caught within their respective historic ranges. The historic range, for the purpose of the Challenge, includes the trout's native distribution in California, prior to human influence on fish distribution (pre-19th century), and all waters that feed into any watersheds within this range. For example, catching a Lahontan cutthroat trout in Heenan Lake (Alpine County) qualifies for the Challenge. Although historically fishless, the lake outlet flows into the East Fork Carson River, where Lahontan cutthroat trout were once the only trout to inhabit this system. Therefore, Heenan Lake is within a watershed that feeds into their native historic range and qualifies. Conversely, there are numer-

ous instances where a heritage species was stocked in waters outside their native range to provide sport fishing opportunities. California golden trout can now be caught in many high-elevation streams and lakes across much of the Sierra Nevada; however, only those from the South Fork Kern River or Golden Trout Creek drainages qualify for the Challenge.

### ***Document your catch***

The requirements to document your catch include where, when and how each fish was caught, along with a photograph of the trout. Fish caught within their historic range will qualify as long as sport fishing regulations were followed and the fish has the outward appearance that confirms the target species. It is important that CDFW can identify the trout, so clear pictures of the entire fish are im-

portant for validation. You may even keep and eat the trout if harvest is allowed in that water. Please check the current fishing regulations to ensure your fishing activities comply with the legal open season and any gear restrictions. Any fish captured illegally, such as outside the open season, will not qualify for the Challenge.

Since this is a recognition program with no time limit, old photographs can be used as long as the trout can be identified. The angler doesn't need to be in the picture; the main goal is to capture a clear close-up photo of the fish itself, in order to verify the species or form. To minimize stress and potential injury to fish during handling, please refer to the section of this handbook on safe landing and handling practices.





Applications and supporting photographs may be submitted electronically or via mail and, once submitted, become property of the state. The name listed on the application is how it will appear on the certificate and the address is where it will be mailed if approved. Including your email address is a great way for our staff to contact you if we have any questions or if there are exciting new developments in the program to be shared. Your personal information will be kept private.

### **Apply**

Applications can be found online at [wildlife.ca.gov/Fishing/Inland/HTC](http://wildlife.ca.gov/Fishing/Inland/HTC) and can be completed electronically or hand written. Send your application with supporting photographs to the Heritage and Wild Trout Program at either [heritagetroutchallenge@wildlife.ca.gov](mailto:heritagetroutchallenge@wildlife.ca.gov) or the address listed on the application. Only one certificate per calendar year may be earned. Anglers may apply in subsequent years with different combinations of

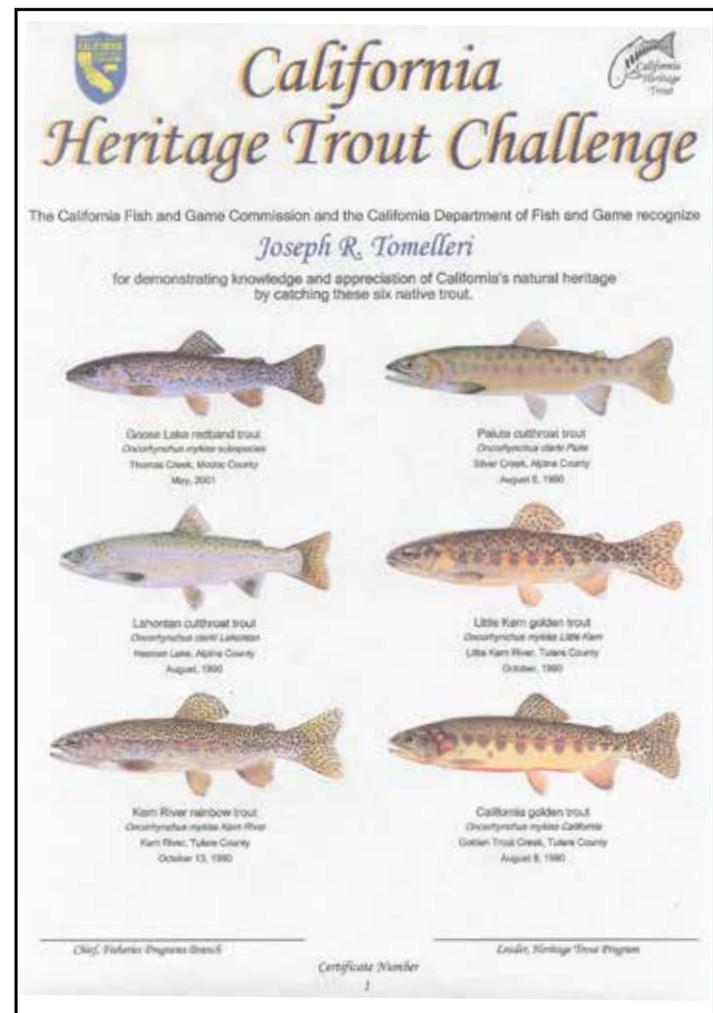
native trout. If the same species is captured, it must be from a different location or date to count. If we have any questions when reviewing your application, a staff member from the Heritage and Wild Trout Program may call to ask detailed questions (we also enjoy hearing your fishing stories).

### Master Angler Challenge

For the native trout fanatic or for those who want to extend their pursuit of the Challenge, we created the elite Master Angler recognition for those who capture and document all 11 subspecies currently recognized in California. One can either submit two applications for all 11 species at one time or, more commonly, receive your first certificate and then go after the final five and submit a second application. In this case, if applying for the Master Angler certificate, you may submit two applications in one calendar year. If you choose the latter route, please indicate on your second application that you are applying for the master achievement as you will be awarded a certificate which highlights this special endeavor. You do not have to provide a sixth “repeat” fish for your master certificate, but may do so if you choose.

### Commemorative certificate and hat

After your application is reviewed and approved, you will receive a commemorative, personalized certificate featuring illustrations from renowned artist Joseph Tomelleri. Each certificate features images of the trout species, dates and locations where you captured your fish and will fit a standard 16” x 20” matted frame. While supplies last, you will receive a hat embroidered with “Heritage Trout Challenge” and our program logo. For those who capture all 11 subspecies, the second certificate and hat will include the specialized recognition of “Master Angler.”





## CHAPTER 16

# Fish Handling and Release

If you plan to catch, photograph and then release your trout for the Challenge, practicing a few basic techniques will help minimize stress and potential injury to the fish. First and foremost, try to play the fish quickly and use a net to reduce stress and associated metabolic responses that can lead to injury or death. Using a little heavier test line or tippet is helpful in this regard. Once landed, always hold the fish with wet hands underneath the pectoral fins (near the head) and at the caudal peduncle (narrow part just forward of the caudal or tail fin) to avoid injury to the vital organs in the belly. Avoid “holding” the fish by handling the line and letting it dangle from the fly or lure.



Try to limit the fish's time out of water. A good rule of thumb is to hold your breath when you lift the fish and get it back in the water before you run out of breath. Wetting hands before handling a fish is probably the most effective method to minimize damage to the slime coating. Handling fish with dry hands generally removes at least some areas of this protective barrier, subjecting the fish to increased risk of fungal or other infection.

If extra time is needed to set up your photo or make adjustments to correct for lighting problems, etc. the fish should be retained under water in a net for as much time during the photo session as possible. Assuming you have a fishing partner that will serve as photographer, have them get the camera settings ready and set up the frame while the fish is retained underwater in the net. Quickly remove the fish from water for a picture and return it to the net to rest and respire for some time, then lift it again for another shot (only if necessary to get a good photo). Better yet, exercise your photographic creativity and try to get representative shots while keeping the fish in the water as much as possible, particularly the mouth

and gills. Using the underwater mode on waterproof cameras can create striking images that show fish in a more natural state and reduces risk of injury. Try to remove the fly or lure while the fish remains underwater.

Recover the fish before releasing to the point that it can swim of its own accord and remain upright. If necessary, hold the fish with the mouth facing upstream in an area with adequate flow to ensure thorough oxygenation of the gills.





## CHAPTER 17

# Aquatic Invasive Species

### *Why should you care about aquatic invasive species?*

Aquatic invasive species (AIS) are non-native, aquatic organisms that negatively impact our state's environment, economy or human health. AIS threaten the abundance and diversity of California's native species, including heritage trout, by competition for resources, predation, parasitism, interbreeding with native populations, transmitting diseases or causing physical or chemical changes to habitats. New Zealand mudsnails (NZMS) are one example of an AIS with the potential to negatively impact California's wild trout. NZMS are tiny ( $\leq 6$  mm) snails capable of reaching in-stream densities of over 750,000 individuals per square meter.

Because they are parthenogenic, meaning offspring develop from unfertilized eggs, all it takes is one snail to start a new infestation. They can consume up to 75 percent of the food resources in a stream and have been linked to reduced populations of native aquatic insects, including mayflies, caddisflies, chironomids and other insects important to trout and salmon, but are themselves an inferior food source for trout. Over half of NZMS consumed by rainbow trout pass through their digestive tract alive, and trout fed exclusively NZMS lose weight at a rate nearly equivalent to starved trout.

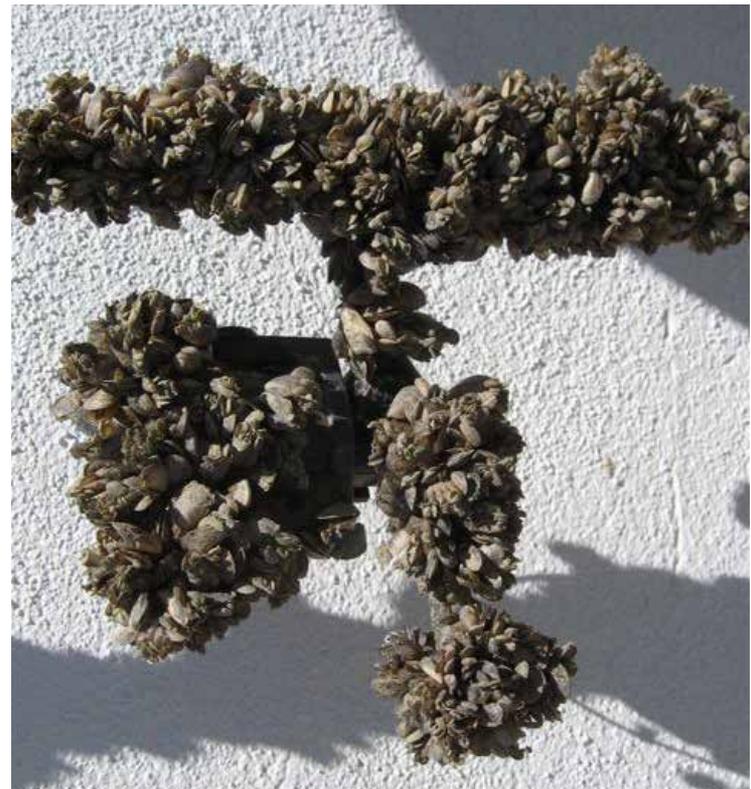
Second only to habitat loss, invasive species are the greatest threat to native species. A very small number of individuals can multiply rapidly into a large population, and early in an infestation those individuals can be difficult to see, so they may easily go unnoticed. The longer infestations are allowed to progress, the more extensive the damage and control costs will be. Preventing spread is the most effective

and cost-efficient strategy for managing invasive species, while “early detection and rapid response” efforts may be successful to control or eradicate if a population is detected early enough.

For more information about invasive species in California, visit [wildlife.ca.gov/Conservation/Invasives](http://wildlife.ca.gov/Conservation/Invasives).

### ***What you can do to prevent spreading AIS***

In general, following a few “best management practices” can help prevent the spread of AIS. When angling in flowing water, if possible, begin upstream and work downstream. This avoids transporting AIS to non-infested upstream areas. Plan to fish in only one body of water each day and always decontaminate your gear after each fishing trip. If you do visit multiple waters during a single day, either decontaminate your gear (and other equipment) on site before fishing a different waterbody, or use separate gear for each site and decontaminate it all at the end of the day. If you don’t decontaminate your gear and



other equipment on site, transport the gear in sealed plastic bags and keep separate from clean gear. If you can, avoid using felt-soled waders and wading boots. Felt can trap moisture for more than a month, can easily transport undetected AIS, and is difficult to effectively decontaminate. Instead, use rubber-soled waders and wading boots, which dry quickly and are much easier to decontaminate. Finally, if you plan to fish with live bait, don't dump unused bait or water from your bait bucket. Instead, throw unused bait in the trash and drain water where it will be treated (into a drain connected to a municipal sewer system, septic tank, etc.). If you do use live bait, the best practice is to catch it in the same water that you use it. Always check the sport fishing regulations to en-

sure that live bait is legal to use in the waterbody you are fishing.

### ***Equipment Decontamination***

Many AIS are difficult to see in the environment, with several being invisible to the naked eye (e.g. quagga mussel veligers, chytrid fungus and the fungus that causes Sudden Oak Death). These AIS can be easily and unknowingly transported to new locations on gear, other equipment and in water. Therefore, decontamination is necessary to prevent the spread of AIS between angling locations. Gear and other equipment should be decontaminated between use in different waterbodies. All equipment and gear, including but not limited to wading gear, angling

gear and watercraft, should be decontaminated using one or more of the following protocols. Use your judgment and angling needs to select the method(s) that are appropriate for your equipment and frequency of angling or recreational activities. If you would like training on implementing these protocols, please contact the Invasive Species Hotline at (866) 440-9530 or email [invasives@wildlife.ca.gov](mailto:invasives@wildlife.ca.gov).

Regardless of which decontamination method(s) you choose for your equipment, the first step is always to scrub equipment with a stiff-bristled brush to remove all organisms. Thoroughly brush small crevices such as boot laces, seams, net corners, etc. Next, choose one or more of the three decontamination options.



**Option 1: Dry**

Allow equipment to thoroughly dry (i.e., until there is complete absence of moisture), preferably in the sun. Keep dry for a minimum of 48 hours to ensure any organisms are desiccated and dead.

**Option 2: Hot Water Soak**

Immerse equipment in 140°F or hotter water. If necessary, weigh it down to ensure it remains submerged. Soak for a minimum of five minutes, ensuring that the water temperature does not drop below 140°F during this time.

**Option 3: Freeze**

Place equipment in a freezer 32°F or colder for a minimum of eight hours.

**Watercraft Decontamination**

Prior to leaving the launch area, remove all plants, mud, and debris from your watercraft, trailer, equipment, and gear. Dispose of all removed material in the trash. Drain all water from your watercraft and dry all areas, including motor, motor cooling system, live wells, bilges and lower end unit. The best watercraft decontamination practice is to completely dry your watercraft and trailer. Depending on location, time of year and weather conditions, dry times necessary to desiccate and kill AIS in California range

from three to 46 days. To estimate your necessary dry time, use the 100th Meridian Initiative's Quarantine Estimator, available at: <http://www.100thmeridian.org/Emersion.asp>.

If you don't have time to allow your boat to dry for the specified period, pressure wash all exterior surfaces of your watercraft and trailer with 140°F water\*, including all of the boat equipment (i.e. ropes, anchors, etc.) that came into contact with the water. Flush the engine with hot water, gradually increasing the temperature until the water exits the engine at 140°F. Run 120°F water through the live wells, bilges and all other areas that could contain water for at least 130 seconds.

\*To ensure 100 percent mortality, the water needs to be 140°F at the point of contact or 155°F at the nozzle.

**How to report invasive species**

If you suspect you have found New Zealand mudsnails, quagga or zebra mussels or other AIS, immediately notify the CDFW Invasive Species Program at (866) 440-9530 or email [invasives@wildlife.ca.gov](mailto:invasives@wildlife.ca.gov). Please provide your contact information, specific location of discovery and digital photographs of the organisms (if possible).





## CHAPTER 18

### **Special Considerations**

This handbook is intended to provide background information on the 12 recognized forms of native trout in California, serve as a reference for those pursuing the California Heritage Trout Challenge, and highlight the ecological and recreational values of these fishes and their habitats. While a core function of the CDFW Heritage and Wild Trout Program is to promote recreational angling for wild and/or native trout, another core function is to manage and conserve these special fisheries, to ensure their long-term persistence and enjoyment by future generations. As such, we encourage anglers to use caution and common sense when pursuing the Challenge. Given the stressors some of these populations face, discretion should be used to avoid fishing when circumstances may negatively affect a particular fishery.

This is underscored by the unprecedented and severe drought California has experienced in recent years. Drought conditions have had a disproportionate impact on coldwater-dependent fishes and it is up to all of us to be responsible stewards of the fisheries they support. CDFW has been performing extensive state-wide drought monitoring and, in some cases, fish rescues. We will continue to do so as conditions require.

In situations where elevated water temperatures and/or low flow conditions may be stressing fish populations, consider seeking alternate fishing opportunities or avoid fishing a particular area altogether until conditions improve. Spawning periods (spring into early summer months, depending on location and elevation) are also times to employ restraint. If fish

are observed paired-up or actively spawning, angling may disrupt the spawning process, lead to decreased spawning success, increase stress levels and potentially lead to mortality. If you have questions about current conditions in specific waters or areas of the state, please contact our Heritage and Wild Trout Program staff. In short, enjoy your pursuit of the Challenge and California's native trout but do so with the best interest of your quarry in mind. While harvest may be appropriate and have no perceptible impact on the overall population in some waters, when in doubt practice good catch and release techniques (see the chapter on fish handling and release) to minimize impacts to small, isolated or otherwise vulnerable populations.







## **Watercolor Artist**

Mark Jessop

## **Photo Credits**

Blanchard, Clark: 64

Bloom, Roger: 6, 7, 21, 40, 47, 58, 71, 92, 93, 96, 101, 111

Bloom, Valary: 97

Crump, Eric: 5, 104

Duckwall, Lee: 98

Erickson, Jon: 75, 77

fishyeguyphotography: 19

Graybrook, Michael: 27

Kubaki, Glenn: 44

Matalvo, Angie: 107

Myers, Matt: 16

Weaver, Jeff: iii, 11, 14, 73, 74, 99, 112, 114

All other images CDFW file photo

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## Additional Resources

Please refer to the following sources of information to learn more about the native trout of California, ensure you are targeting them in qualifying waters and to inform your travel and fishing plans.

### **Heritage and Wild Trout Program Website:**

[wildlife.ca.gov/Conservation/Inland-Fisheries/Wild-Trout](http://wildlife.ca.gov/Conservation/Inland-Fisheries/Wild-Trout)

### **Related publications:**

Moyle, P.B., R.M. Quinones, J. V. Katz and J. Weaver. 2015. Fish Species of Special Concern in California. California Department of Fish and Wildlife.

[wildlife.ca.gov/Conservation/SSC/Fishes](http://wildlife.ca.gov/Conservation/SSC/Fishes)

Behnke, Robert J. 2002. Trout and Salmon of North America. The Free Press.

Moyle, Peter B. 2002. Inland Fishes of California. University of California Press.

DeLORME California Atlas and Gazetteer. 2015.

Benchmark California Road and Recreation Atlas. 9th ed. 2016.

U.S.D.A. Forest Service national forest maps:  
[fs.fed.us/visit/maps](http://fs.fed.us/visit/maps)





## **An Angler's Guide to the California Heritage Trout Challenge**