

## “KNOW YOUR TROUT”

### THE COASTAL RAINBOW TROUT

*Oncorhynchus mykiss irideus*

#### Introduction

This initial essay of “Know Your Trout” discusses the iconic Coastal Rainbow Trout. If you grew up in California, it is likely that the first trout you caught was the Coastal Rainbow since it has been the most common species of rainbow trout raised in fish culture (i.e. hatcheries) and widely planted throughout the state.

The coastal rainbow is just one of several “rainbow trout” subspecies found in California, including the steelhead, three redband of the northern Sacramento River basin, two redband of the northern Great Basin and three subspecies of “golden trout” in the Kern River basin. The steelhead, redband, golden and other California trout, e.g. brown trout, brook trout, coastal cutthroat trout, Paiute cutthroat, Lahontan cutthroat, will be discussed in future essays.

#### Classification

For most of the 20<sup>th</sup> century, the rainbow trout was known as *Salmo gairdneri* because scientists believed they were more closely related to brown trout and Atlantic salmon in the genus *Salmo*. The change to *Oncorhynchus mykiss* came in 1989 based on evidence that all the species of Pacific trout, and cutthroat trout, were more closely related to Pacific salmon. Subsequently, each species of rainbow trout was given a unique subspecies designation.

#### What’s In a Name?

The scientific name of the coastal rainbow trout is *Oncorhynchus* (genus) *mykiss* (species) *irideus* (subspecies). The name of the genus is from the Greek *onkos* (“hook”) and *rhynchos* (“nose”) in reference to the hooked jaws (the “kype”) of males during the mating season. The species name, “*mykiss*”, was derived from the local Kamchatkan (Siberia) name used for the trout, *mykizha*, and the subspecies, “*irideus*”, is from Iris, the Greek goddess of the rainbow.

#### Description

There are two basic forms of the coastal rainbow trout: the stream/lake-resident form, which spends its entire life in fresh water and the sea-run (anadromous) form, commonly known as the steelhead. The steelhead trout will be discussed in a future essay of “Know Your Trout”.

The adult coastal rainbow is heavily spotted with irregularly shaped black spots above and below the mid-lateral line. The spots are small and are densely scattered over the sides of the body, on top of the head, and on the dorsal (top) and caudal (tail) fins. A small, fleshy adipose fin, found on all trout and salmon, is in front of the tail fin. Most hatchery trout and salmon have their adipose fin removed so they can be distinguished from wild fish. The body coloration is generally silvery or brassy. The characteristic band of color along the lateral line and on the cheek (gill cover) can vary from pink to deep red. Mature males have the brightest coloration, particularly during spawning. Parr marks along the lateral lines are characteristic of all juvenile trout, and fade as the fish matures.

The length and weight of resident coastal rainbows are generally dependent on the availability of food. In small streams adult rainbows typically average 6-8 inches and less than one pound. In larger rivers fish can average 12-20” and 1-5 lbs., while lake-dwelling trout can get much larger.

#### Biology

The resident coastal rainbow usually inhabits and spawns in small to moderately large, well-oxygenated, shallow rivers/streams with gravel bottoms.

Spawning generally takes place in early to late spring in the Northern Hemisphere, but the exact timing is dependent on the water temperature, with 42 to 44 degrees Fahrenheit being the lowest suitable temperature. They are native to the freestone (no dams) streams that are typical tributaries of the Pacific basin; however, introduced (i.e. planted) rainbow trout have established wild, self-sustaining populations in other river types (e.g. tail waters below dams and spring creeks). Lake populations generally require access to feeder streams to be self-sustaining. Since cutthroat and golden trout are also spring spawners, there is always a chance for hybrid offspring with the coastal rainbow.

The fertilized eggs usually hatch in about 4 to 7 weeks, but this is generally dependent on the water temperature. The newly hatched trout is the larval stage and is called a sac-fry or alevin. In approximately 10 to 20 days the yolk sac of the alevin is completely absorbed, and the juvenile (fry) stage begins. The fry begin feeding on zooplankton and gradually develop the characteristic "parr" marks of the trout.

### Natural Distribution

The range of natural distribution for the coastal rainbow trout is from Rio Santo Domingo in Baja, California to the Kuskokwim River in Alaska. In the Sacramento River basin, the coastal rainbow occur inland to the McCloud and Pit Rivers, where a transition is found between the coastal rainbow and the interior redband trout of the northern Sacramento River basin.

### Artificial Propagation and Controversy

The coastal rainbow trout has been the primary and most successful form of rainbow trout raised in fish culture and, therefore, has been introduced in waters all over the world. The combination of hardiness, beautiful coloration and acrobatics when hooked, has made this species a favorite of anglers everywhere.

For more than 100 years, it was generally believed that the origin of all hatchery rainbow trout could be traced to resident "Shasta" redband rainbow trout of the McCloud River. The late Dr. Robert Behnke, notably one of the greatest fish biologist and trout taxonomist of our time, refutes this theory in his book, "Trout and Salmon of North America". The earliest artificial propagation of the coastal rainbow began in 1870 near San Francisco Bay on San Leandro Creek. The hatchery was stocked with local native coastal rainbow trout and likely steelhead, which spawned in the small stream entering San Francisco Bay. The fish from this hatchery were initially shipped to New York and Michigan. In 1877 the first federal fish hatchery was established on Campbell Creek, a tributary of the McCloud River. This federal hatchery indiscriminately mixed coastal rainbow eggs with the eggs of the local redband species and McCloud steelhead. These eggs were eventually shipped to other states and countries. Eggs from the McCloud hatchery were also provided to the San Leandro hatchery, thus making the origin and genetic history of hatchery-bred rainbow trout complex and confusing.

*Keith Pfeifer*

*Director for conservation Policy*