

What Is a Rainbow Trout?

A large variety of common names exist for this unique fish with which we are all so familiar: from rainbow to Kamloops, steelhead to redband, Shasta to Donaldson; so just what are they and what characteristics differentiate the “strains”?

Even for taxonomists, the classification of rainbow trout has been an area of confusion for nearly as long as scientists have been interested in examining this fish. At various points in time over 30 “species” of this animal have been described in the scientific literature. Some of you may even remember some of the more interesting Latin names that have been assigned to this fish: *Salmo iridea*, *Salmo kamloops*, *Salmo gairdneri*, *Salmo gilberti*, etc. In 1988 the use of the generic name *Oncorhynchus* was adopted for all Pacific salmon and trout species, primarily to distinguish them from Atlantic trout and salmon. The species name of *mykiss* was chosen to replace *gairdneri* because it was shown that rainbow trout and Kamchatka trout were the same species, and Kamchatka trout had been described first. So now, when we talk about the rainbow trout in any of its forms as scientists, we must refer to it as *O. mykiss*.

The rainbow trout is highly adaptable to a wide variety of environmental conditions, which is one of the main reasons it can be raised in such a wide variety of conditions. It can be capable of tolerating full strength seawater after reaching a minimum size (known as steelhead), and for many years this life history difference was thought to be the major distinction between populations. While scientists still debate this issue, it is now generally thought that rainbow

trout consist primarily of two forms, identified as subspecies, based upon geography (coastal or inland, also known as redband) rather than behavior (anadromy or non-anadromy).

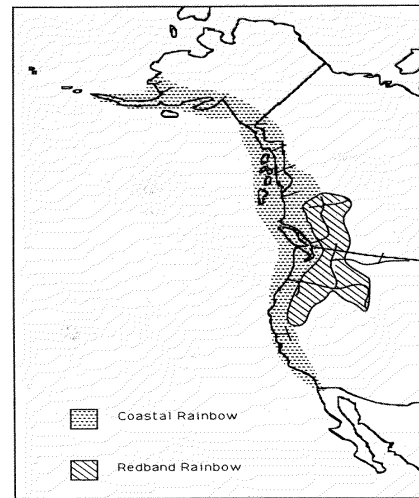


Fig. 1. Major genetic subdivisions among rainbow trout in its native range. Adapted from Allendorf and Utter, 1973. In: *Genetics* (74): 647.

A Story of Fish Culture Expansion

Rainbow trout are native to the Pacific coast of North America, as shown in Figure 1. The evidence indicates that the original, native range of rainbow trout extended from an isolated area of the Sierra Madre Range (Mexico) in the south to the Kuskokwim River system of Alaska in the north. But, as we all are well aware, today they are found throughout the world: in fact on every continent except Antarctica. Believe it or not, over 450,000 metric tons of rainbow trout were produced in the year 2000 as foodfish (according to the FAO). So how did they get such a wide distribution? The history of the worldwide introduction of rainbow trout is quite interesting. Recorded history suggests that many stocks of

rainbow trout found in areas of the world today where they are not native may have originated from a small river (the McCloud) in northern California. In 1872, Mr. Spencer Baird (then Commissioner of Fish and Fisheries in Washington D.C.) sent Mr. Livingston Stone, a renown fish culturist of the day, to California to find out where the Pacific salmon native to the region spawned and to establish a breeding station there that would take eggs from these species for shipment throughout the US and to foreign countries. He indeed accomplished this task, establishing the Baird Station that actually continued to ship Chinook salmon eggs for many years. Then, in 1879, Mr. Stone was asked to develop a similar station for rainbow trout and subsequently established a series of ponds (on land acquired from a neighbor who had been recently killed by Indians) that became the center for rainbow trout egg production in the region until 1888. Only a little over 2 million eggs were taken from this site, but were used to found broodstocks at many Federal hatcheries of the US, which in turn supplied fish farmers both domestically and internationally. Other records suggest that there may have been additional shipments from other egg producers in this area (notably from rancher J.B. Campbell to Seth Green, a private aquaculturist in the state of New York). The first international shipments recorded were to Tokyo in 1877 (again by J. B. Campbell) and to the United Kingdom at the Delaford Hatchery near Iwer, Buckinghamshire and the Howietown Hatchery near Stirling, Scotland. The actual farming of rainbow trout as food animals in Europe is recorded as having begun in Denmark in the 1890's, likely a result of these early shipments from California.

This notion that a small, founding population was used to found a large portion of many of today's commercial and public hatchery stocks is supported by genetic evidence that indicates low genetic variability may exist in many hatchery stocks of trout, particularly in Europe. Additionally, it is not clear whether or not these trout were derived from inland or coastal stocks,

as there are overlapping populations in this area of California.

A Unique Position

The above information is certainly of fascinating historical interest, but how does it affect trout farmers today? Of particular concern should be the origin of the stocks being reared on your farm. Ask your supplier where their stocks of rainbow trout came from, and how the parent populations have been managed to maximize genetic variability. Are these stocks unique, or are they derived from a brood stock that was established long ago and may offer little in the way of genetic potential? These are crucial aspects of the ultimate performance of the market animals on your farm.

The rainbow trout eggs produced by Troutlodge offer you what we believe to be a rather unique set of characters. First of all, our breeding and rearing centers are located in the heart of the native range of the rainbow trout. We have historically made good use of the available indigenous rainbow trout in our region, offering rainbow trout stocks developed from both the coastal (steelhead) and inland (Kamloops) types, in addition to some of the original domesticated California strains. Performance traits in these stocks are constantly monitored and improved through our integrated genetic improvement program, and mating designs assure low levels of accumulated inbreeding. We have proven performance records under a variety of environmental conditions, and likely have recommendations for stocks that will fit your needs.

We believe the choice is clear. Troutlodge was founded on rainbow trout, in the heart of the "home" of rainbow trout. We work hard at understanding how to use the inherently great characteristics of rainbow trout and adapt them to farm situations like yours, for your advantage. Who better to partner with than someone who understands the animal so well?