

History of the Discovery of the Cutthroat Trout

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Abstract.—The cutthroat trout *Salmo clarki* was possibly the first trout to be recorded in writing from the New World, although the first scientific specimens were not collected until almost 300 years after its presence in western North America was noted. The initial record of a native trout was made in 1541 by a member of Coronado's army near the headwaters of the Pecos River in the Sangre de Cristo Mountains of New Mexico. In 1776, further mention of native western trout from Utah Lake and the Provo River was made by two Franciscan priests seeking to establish an overland route to the California missions from Santa Fe. Meriwether Lewis wrote of trout caught near the Great Falls of the Missouri River, as did other early Louisiana Territory explorers in different parts of the Great Basin. The first scientific specimens were taken by a young Hudson Bay Company physician, Meredith Gairdner, near Fort Vancouver, Washington, in late 1833 or early 1834. Two specimens were sent to Sir John Richardson in England, who named them in honor of Captain William Clark, coleader of the Lewis and Clark expedition. Owing to uncertainty over the identity of the Indian name for the river in which cutthroat trout were first collected, the Cathlapootl, the type locality of the species has remained conjectural for some time. Historical records, however, indicate that the Cathlapootl is the Lewis River in southwestern Washington.

The cutthroat trout *Salmo clarki* is the most widespread and polytypic salmonid native to western North America. Not surprisingly, it was encountered by a number of explorers of the region. Nearly all of the early explorers had little or no knowledge of fish systematics or zoogeography, but many of them kept handwritten records of their travels that later served as the basis of their expedition reports. These diaries, notes, and letters often contained references to unusual flora or fauna that were observed during the explorations. This paper recounts some of the very first references to cutthroat trout in the journals of the early explorers and concludes with a discussion of the circumstances surrounding the initial scientific description of the species. Additional references to early ichthyological observations and collections that include cutthroat trout can be found in Behnke (1979, 1981, and 1988, this volume) and Minckley et al. (1986).

Early Records

Coronado Expedition

An early record of native western trout is found in the chronicles of Pedro de Castaneda de Nájera, a member of Coronado's army that explored what is now the southwestern USA from 1540 to 1542 searching for the legendary Seven Cities of Cibola. In the late spring of 1541, the army camped in a valley near the headwaters of the Pecos River in the Sangre de Cristo Mountains of northern New Mexico. The valley contained a

large pueblo settlement called Cicuye, about which Castaneda wrote:

Cicuye is located in a small valley between snowy mountain ranges and mountains covered with big pines. There is a little stream which abounds in excellent trout and otters. . . . [From Hammond 1940.]

The stream mentioned in the chronicle is most likely Glorieta Creek (J. V. Bezy, Pecos National Monument, personal communication), which flowed near the western edge of the pueblo complex but is now a sandy wash. The fish were almost certainly cutthroat trout because they occurred near the southernmost limit of the species' inland range, and no other trout are known to have lived in that region. (Smith and Miller 1986; Behnke 1988). The observation of trout in the headwaters of the Pecos River was apparently the first time any native trout had been recorded in writing from the New World.

Shortcut to the Missions

As western North America opened to European exploration, new routes were sought from the Great Plains to the Pacific Coast. One such route was a direct overland passage from Santa Fe (in present-day New Mexico) to the newly established Spanish missions in southern California. In 1776, two Franciscan priests, Father Silvestre Velezda Escalante and Father Francisco Anastasio Dominguez, left Santa Fe to locate a suitable trail. Their expedition traveled north of the Grand

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Canyon into western Colorado, where they crossed the Colorado River and continued north to the White River. After turning westward, they eventually reached the Green River (which they called San Buenaventura) and continued west following the southern foothills of the Uinta Mountains to the Wasatch Range (northern Utah). A high pass led them to a river that Indians called the Timpanogus, which they followed to a large lake. At this point they abandoned their goal of finding a direct route to the missions, but before returning to Santa Fe they spent some time with the Indians that lived by the lake. The lake-dwellers relied heavily on aquatic resources, of which Father Escalante wrote:

The Lake of the Timpanogitizes has great quantities of various kinds of food fish, geese, beaver and other amphibious animals which we had no opportunity to see. Round about it are a great number of these Indians who live on the abundant supply of fish in the lake. For this reason the Yutas Sabnaganas call them "fish eaters" [From Tanner 1936.]

The lake described by Father Escalante was Utah Lake, and the Timpanogus was the Provo River. Subsequent settlers of the area would also make great use of the fish populations in this drainage system and would seine cutthroat trout, some up to "a yard in length" (Suckley 1874) out of the lake by the ton.

Lewis and Clark Expedition

When Thomas Jefferson dispatched a small party of explorers in 1805 to examine the lands within the Louisiana Purchase, the expedition followed the Missouri River upstream to an area in present-day Montana called the Great Falls. The party halted to set up camp when they reached a fork in the river. With their Indian guide Sacajawea ill, Meriwether Lewis led a small contingent along the southernmost stream, which the two captains agreed was most likely the mainstem Missouri River. It was Lewis' contingent that first came upon the series of huge cataracts. A young member of the party named Silas Goodrich was an avid fisherman and often supplied the explorers with fish for dinner. Already he had caught two new species (probably mountain whitefish *Prosopium williamsoni* and Arctic grayling *Thymallus arcticus*) that had been recorded in the expedition journal. On the afternoon of the discovery of the Great Falls, Goodrich returned to camp with several trout in addition to whitefish. The trout were sufficiently different to cause

Lewis to describe them in some detail in his daily record. Lewis' 1805 description was remarkably accurate and included the first references to a distinguishing cutthroat trout feature, the "cut" marks under the lower jaw.

These trout are from 16 to 23 inches in length, precisely resemble our mountain or speckled trout in form and the position of their fins, but the specks on these are of a deep black instead of the red or gold of those common in the U' States. These are furnished with long teeth on the pallet and tongue and have generally a small dash of red on each side behind the front ventral fins; the flesh is of a pale yellowish red, or when in good order, of a rose red. [From Thwaites 1904.]

Expedition coleader William Clark went into even more detail in describing native fauna. In his notes there is a reference to cutthroat trout; however, at this early date it was easy to confuse the various kinds of salmon and trout, and it is not clear from this narrative whether the fishes he described were two color variations of the same species or two different species.

Of the salmon-trout we observe two species differing only in colour. They are seldom more than two feet in length, and much narrower in proportion than the salmon or red char. The jaws are nearly of the same length and are furnished with a single series of small, subulate, straight teeth, not so long nor so large as those of the salmon. The mouth is wide, and the tongue is also furnished with small, subulate teeth, in a single series on each side; the fins are placed much like those of the salmon. One of the kinds, of a silvery-white colour on the belly and sides, and a bluish light brown on the back and head, is found below the Great Falls, and associates with the red char in little rivulets and creeks. It is about two feet eight inches long, and weighs ten pounds. The eye is moderately large, the pupil black, with a small admixture of yellow, and the iris of a silvery-white, and a little turbid near its border. . . . The fins are small in proportion to the size of the fish. Fins—D. 10-0; P. 13; V. 10; A. 12 — The other kind is of a dark colour on the back, and its sides and belly are yellow, with transverse stripes of dark brown; sometimes a little red is intermixed with these colours on the belly and sides toward the head. The eye, flesh, and roe are like those of the salmon. Neither this fish nor the salmon are caught with the hook, and we know not on what they feed. The white kind, found below the falls, is in excellent order when the salmon are out of season and unfit for use. [From Thwaites 1904.]

Part of this description was taken from Clark's handwritten journal, which included a reference to "white salmon trout" of large size taken near the Great Falls, not of the Missouri River but of the Columbia River (possibly Celilo Falls). From

the sketch drawn in the journal and from additional notes it would appear that "white salmon trout" were steelhead *Salmo gairdneri*, while the smaller fish not illustrated in Clark's journal but elsewhere referred to as "dark salmon trout" was later taken by Richardson (1836) to be the cutthroat trout.

Other Early Explorers

A number of other 19th century explorers mentioned trout in diaries of their travels around western North America. From 1808 to 1812, David Thompson, a trader for the British Northwest Fur Company, made notes of several catches of trout from the northern Rocky Mountains. Included in Thompson's notes were records of trout from Mission Creek in Montana; a tributary of Kootenay River near Rexford, Montana; the Kootenay River between Bonner's Ferry and Lake Pend Oreille, Idaho; and Windemere Lake, British Columbia (White 1950). Early explorers of the Oregon Trail system from 1812 to 1821 relied heavily on trout and other fishes for subsistence during the winter in Montana and Idaho, according to the chronicles of Robert Stuart (Rollins 1935). Notes from the Great Basin explorations of Peter Skene Ogden included Indian accounts of large "salmon" from the Truckee River (Cline 1963), a reference to Lahontan cutthroat trout *Salmo clarki henshawi* that ascended this tributary of Pyramid Lake to spawn. Further accounts of large Pyramid Lake cutthroat trout are found in the writings of John C. Fremont (1845), who also gave excellent descriptions of the dams used by the Indians to trap adult fish on their way upstream.

Almost without exception, these early records of cutthroat trout refer to the populations as being extremely abundant. For example, in the journals of John Kirk Townsend, who traveled in a party under the leadership of Nathaniel Wyeth to deliver trade goods to mountain fur trappers, there appears a passage describing the abundance of trout in the Bear River of Wyoming.

In this little stream, the trout are more abundant than we have yet seen them. One of our *sober* men took, this afternoon, upward of thirty pounds. These fish would probably average fifteen or sixteen inches in length, and weight three-quarters of a pound; occasionally, however, a much larger one is seen. [Townsend 1839.]

Edward Hewitt, while a boy of 15, wrote of accompanying his father in 1881 to the recently

established Yellowstone National Park where he often supplied trout from the Yellowstone River for the camp. His writings included a story of fishing a small stream one afternoon to feed 40 soldiers.

The stream was just alive with trout, which seemed to run from three to four pounds apiece. I was not sorry to quit as I was really tired out. For once I had caught all the fish I could take out in one day. There must have been between four hundred and fifty and five hundred pounds of cleaned trout, but the soldiers polished them off in two meals. . . . [Hewitt 1948.]

First Scientific Description

Although the coastal cutthroat trout *Salmo clarki clarki* may have been one of the last forms of the species to be encountered by early explorers of the region, it was the first form to be given official scientific recognition. In the first half of the 19th century, naturalists roamed the New World seeking unusual flora and fauna for scientific study. Many of the specimens were shipped back to Europe where they were described in books or journals such as the *Publications of the Royal Society of London*. William Jackson Hooker, director of the Kew Botanic Garden, encouraged a number of talented young naturalists, including Charles Darwin, to travel abroad and bring back new discoveries. At almost the same time that Darwin departed on his fateful scientific voyage, Hooker received word that physicians were needed to help fight an outbreak of "intermittent fever" (malaria) at an outpost of the Hudson Bay Company near the Columbia River in western North America. Acting on the advice of Sir John Richardson, Hooker recommended W. F. Tolmie and Meredith Gairdner. The two young doctors sailed from London in September 1832, and arrived at Fort Vancouver on the lower Columbia River in late April 1833. Although Gairdner was highly respected by Richardson, Hooker, and local naturalist David Douglas, he had very little time to travel the nearby countryside searching for interesting plants and animals. After only 11 months at Fort Vancouver he contracted symptoms of a serious respiratory infection, possibly tuberculosis. In late March 1834, Gairdner left Fort Vancouver to convalesce, but the illness was too severe. On March 26, 1837, he died in Hawaii at age 28 (Harvey 1945).

One of Gairdner's projects at Fort Vancouver had been to study the salmon of the Columbia River. In 1834, a container with six specimens of salmon and two small trout was sent to Richard-

son to be described in his comprehensive treatise *Fauna Boreali-Americana* (Richardson 1836). The specimens were wrapped, preserved in alcohol, and soldered in a tin case that was placed in a protective cask. Despite these precautions, the container was damaged during the long sea voyage to England, and much of the preservative was lost. According to Richardson "... six specimens of salmon were incorporated into one mass by the continued motion of the vessel. The other fish, being of a smaller size, less oily, and perhaps more indurated by longer immersion in spirits, arrived in better condition." Thus, in 1836, Richardson named the new trout *Salmo clarkii* "... as a tribute to the memory of Captain Clarke, who notices it in the narrative prepared by him of the proceedings of the Expedition to the Pacific, of which he and Captain Lewis had a joint command, as a dark variety of Salmon-trout. ..."

Richardson's description of the coloration of the specimens reflects the poor condition in which they had arrived.

Back generally brownish purple-red, passing on the sides into ash-grey, and into reddish-white on the belly. Large patches of dark purplish-red on the back. Dorsals and base of the caudal ash-grey, end of caudal pansy-purple. Back, dorsal, and caudal studded with small semilunar spots. A large patch of arterial-red on the opercle and margin of the preopercle. Pectorals, ventrals, and anal greyish-white tinged with rose-red. [Richardson 1836.]

The type locality of the cutthroat trout has remained somewhat of a mystery. In his original description, Richardson stated, "Dr. Gairdner does not mention the Indian name of this trout, which was caught in the Katpootle, a small tributary of the Columbia on its right bank. . . ." At the time of the Lewis and Clark expedition, all lower Columbia River tributaries had small fishing villages that marked the better fishing spots, but the malaria epidemics of 1829–1832 decimated as many as 90% of the Wappato area Indians living in the vicinity of Fort Vancouver (Jones 1972). The available evidence, however, points to the Lewis River as being the stream in which the first scientific specimens were collected. One of the first records of the stream is found in the journals of Gabriel Franchere, who arrived at the mouth of the Columbia River with John Jacob Astor in 1811. While investigating a report of white settlers in the area upstream from the mouth of the Columbia, Franchere wrote:

A.M. of May 6. Entered a "little river" to the village of Kalama, where young chief "Keassen" was residing at the time. They then proceeded to the large

village of "Katlapoutle", situated at the mouth of a small river that seemed to flow down from a snow covered mountain. . . ." [From Franchere 1967.]

The snow-covered mountain was Loo-Wit (Mount St. Helens), and the river was most likely the Lewis. An early map of the region drawn by Alexander Ross between 1810–1814 has the name "Cattla puttlet tribe" inscribed near what is apparently the Lewis River drainage. Hodge (1907) reported the following information regarding an Indian settlement at the mouth of the river:

Cathlapotle ("people of Lewis R."). A Chinookian tribe formerly living on the lower Lewis River—on the SE side of the Columbia in Clarke Co., Washington. . . . Other names and spellings listed: Cath-lah-poh-tle, Cathlapootle, Cathlapoutles. . . . The people of this village and perhaps all others of this particular group residing along the Lewis R. were wiped out completely by the "intermittent fever" outbreak. . . .

The first European settlement along the river was made in 1845 by Adolphus Lee Lewis, an Englishman employed by the Hudson Bay Company (Parsons 1983). When George McClellan conducted his Pacific Railroad survey in 1853, he went overland to the river from the U.S. military post at Fort Vancouver. McClellan then referred to the river as both the Cathlapootle and the Lewis in his diary (McClellan 1853). Two weeks later the Dryer party followed McClellan's trail enroute to the first ascent of Mount St. Helens. It was in Dryer's account of this journey, published in his newspaper, the *Portland Oregonian*, that he referred to the same river as the Lewis. After that, the name Lewis River was generally used.

The actual location on the Lewis River where Gairdner's specimens were taken is unknown. They could have been captured near the confluence of the Lewis and Columbia rivers if the Lewis River had been reached by canoe from Fort Vancouver, or they could have been collected from an upstream reach if an overland route through Chelatchie Prairie had been tried. It is also not known whether Gairdner himself collected the fish or whether the specimens were brought to him. In any case, Gairdner's efforts to obtain specimens in the face of formidable difficulty were not scientifically unrewarded; a variety of downy woodpecker *Dendrocopos pubescens gairdneri* was named after him, as well as the rainbow trout.

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