

A DESCRIPTION OF THE GOLDEN TROUT OF KERN RIVER, CALIFORNIA, *SALMO MYKISS AGUA-BONITA*.

By DAVID STARR JORDAN.

I have lately received from Mr. W. H. Shockley, of San Francisco, three specimens, each about 7 inches in length, of the Golden Trout of Kern River. These specimens were taken by Mr. Harvey, of Lone Pine, Cal., in a stream called by him Whitney Creek (more correctly Volcano Creek), on the west side of the Sierra Nevada, near Mount Whitney. The specimens were sent in ice to Mr. George T. Mills, fish commissioner of the State of Nevada, who forwarded them to Mr. Shockley. The following is a detailed description:

Salmo mykiss agua-bonita, new subspecies.

Head, $3\frac{3}{4}$ in length; depth, $4\frac{1}{3}$. D. 2, 12. A. 1, 10. Scales, 180 to 200 rows; 121 to 124 pores. Length, 7 inches.

Body formed about the same as usual in *Salmo mykiss* and its varieties. Head rather long, bluntish at tip; mouth moderate, the maxillary extending a little beyond the eye, $1\frac{1}{5}$ in head; hyoid teeth not evident; opercle moderate, its greatest length $4\frac{1}{3}$ in head, its posterior margin moderately convex; eye, $4\frac{2}{3}$ in head; snout, $4\frac{1}{2}$; gill rakers not very short, X + 11 or 12 in number.

Scales extremely small, smaller than in any other species of *Salmo*. Fins moderate; the anal high; the caudal moderately emarginate. Pectoral, $1\frac{1}{4}$ in head; ventral, 2; caudal, $1\frac{2}{5}$.

Olive above; sides and belly light golden. About twelve dark cross-bars on middle of sides; these the usual parr-marks. Middle of sides along lateral line with a deep scarlet lateral stripe, broadest under the dorsal, where it is about as wide as the eye; thence narrowing to either end and not reaching either head or caudal. Middle line of belly with a broad scarlet band, extending from chin to anal fin, equally bright all the way; a fainter shade along lower side from anal fin to tip of caudal. No crimson dash at throat between branches of lower jaw; the whole region uniform bright orange. Opercle largely orange.

Dark spots chiefly posterior as in *S. spilurus* and *pleuriticus*; large and well marked, some on tail and posterior part of body as large as pupil; smaller and well marked on dorsal; a few small ones scattered along forward to the head in two specimens; none on body before adipose fin in the other.

Upper anterior angle of dorsal abruptly yellowish white; this color edged by a dark oblique streak, made by coalescent spots; the rest of

the fin light olive with four or five rows of small black spots; pectorals light orange; ventrals deep orange, with a faint blackish tip; the anterior edge of the fin conspicuously and abruptly whitish, as in *Salvelinus fontinalis*. Anal dusky orange, the tips of the last rays blackish, the outer anterior corner abruptly white, the white stripe wider than the pupil and separated from the color of the fin by a dusky shade.

Caudal olive, tinged with orange on its lower edge, and profusely spotted with black. Inside of mouth pink; of gill cavity, light orange.

Of the three typical specimens two have been sent to the U. S. National Museum and one remains in the museum of the Leland Stanford Junior University.

This trout is evidently an off-shoot or descendant of the widely distributed Cut-Throat Trout, *Salmo mykiss*, which is found in all the rivers suitable for trout between the Sierra Nevada and the Rocky Mountains. It differs, however, from any known specimens of any of the many varieties of *Salmo mykiss* in its pattern of coloration and the absence of the deep red patch between the branches of the lower jaw, from which *Salmo mykiss* receives its common name—the Cut-Throat Trout—and in the small size of its scales, which are more numerous than in any of the forms of *Salmo mykiss*. Matters of less importance, which are, however, comparatively distinct, are the presence of white and black edges to the fins, and in the absence of teeth on the hyoid bone. The name *agua-bonita*, suggested for the species, is that of Agua Bonita Falls, the cataract in Volcano Creek, near which these specimens were found.

The earliest record of this trout is that of Jordan and Henshaw in Appendix NN of the Annual Report of the Chief of Engineers for 1878, p. 199. The specimen collected by Mr. H. W. Henshaw, in 1875, from the south fork of the Kern River, and No. 17107 in the National Museum collection, are referred to *Salmo pleuriticus* Cope. With this reference is the remark that “the extension of its range west of the Sierra Nevada is rather unexpected. The prevalent theory that most of the species of trout have a narrow local range is hardly supported by a study of our western forms.” This trout, Mr. Henshaw says, was “abundant in the South Fork of the Kern River, beyond which statement nothing can be said of its distribution on the western coast, or of its abundance as compared with *S. irideus*, the distinctness of the forms not having been recognized at the time of the collection.”

On page 195 of the same paper is a reference by Mr. Henshaw to the “Golden Trout” which apparently belongs to the species here described, although Mr. Henshaw identifies his specimens taken from near Mount Whitney with the *Salmo irideus*. Mr. Henshaw says:

This is the common “Brook Trout” of the small mountain streams of the Pacific slope, and up to an altitude of 9,000 feet it is the rare exception to find a suitable stream that is not well stocked with it. Upon many of them, as the tributaries of the South Fork of the Kern River, these trout are found in very great abundance, each pool and rapid numbering its finny denizens by the score. They may be taken in any sort of weather, at any hour of the day, by almost any kind of bait. During

the heat of the day they frequent almost entirely the deeper pools, lying under overshadowing rocks or in the shade of some convenient log. In early morning or late afternoon they come out and run more into the shallows and rapids, under which circumstances they bite best and furnish the finest sport. Like the average brook trout, the species rarely attains any considerable size, ranging from 4 to 8 or more inches in length. Their colors are usually very bright, and for beauty this species takes rank among the foremost of its kind, and has been well called the "Golden Trout." In this respect, however, it is subject to the usual variations obtaining in the family, the change of color not only accompanying a difference in locality, but being plainly discernible in individuals taken in different parts of the same stream not far distant. In fact, as a specific character, color in this family seems to be at its lowest value. The character of the bottom and water itself has much to do with this, and I remember to have fished in a small rivulet on one of the subalpine meadows not far from Mount Whitney, whose sluggish waters flowed over a bottom of dark mud, in which the color of the trout simulated very closely its hue; they had lost nearly all the flashing iridescent tints characterizing the same species caught but a few hours before in another stream, and had become dull and somber hued. Accompanying this change of color was a correspondingly noticeable difference in habits and motions, and the several dozen trout caught that evening for supper were taken out with the hook with the display of very little more gameness than would be noticed in so many Horned Pout. On the contrary, in the clear rapid current of the mountain stream, a flash of sunlight is scarcely quicker than the gleam of gold and silver seen for a single instant as the whirling waters are cut by one of these trout as he makes a rush from his lurking place for some chance morsel which is being borne past him. The western trout are rarely as shy as their relatives of eastern waters, and because of their numbers and the consequent scarcity of food are apt to be less fastidious; yet, even when most abundant, due caution must be used if one would be successful, and not every one can catch trout, even in the West. With the proper care in concealing one's self, a pool may be almost decimated ere the alarm will be taken, and I have seen fifteen fair-sized trout taken from a single small pool in quick succession.

During the present year other specimens have been sent to the museum of the Leland Stanford Junior University, but in such very bad condition that nothing could be made of them, except that they were evidently small-sealed trout of the *mykiss* type, nearest to the subspecies *pleuriticus* of the Colorado River, and not in any way related to the Rainbow trout, which inhabits most of the streams of the basin of California.

The question of the relation of this trout to others in Kern River must be settled by further investigations, as also the question whether the *Salmo agua-bonita* itself is confined, as has been asserted, to the space in Volcano Creek between the two waterfalls, or whether in that part of the stream is found a variety different from the ordinary form.