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Fish Remains from the Karlo Site (CA-Las-7), Lassen County, California

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THIS paper describes fish remains included among the archaeological materials recovered from the Karlo site (CA-Las-7), Lassen County, California, during the summer of 1955 by Francis A. Riddell and his associates, of the University of California Archaeological Survey (Riddell 1956*b*:63, 1960*a*:3). In using this designation rather than Las-7, which was used for the Karlo site by Riddell (1960*a*:2), I follow Heizer (1968).

THE SITE

The Karlo site is in Secret Valley, somewhat more than 24 km. north of Honey Lake, in the western part of the Lake Lahontan hydrographic basin (see Russell 1885:Pl. IV). The site is located in Section 7, Township 31 North, Range 15 East, Mount Diablo meridian (U.S. Geological Survey, Karlo Quadrangle, 1954); its elevation is about 1357 m. Secret Valley is within the Upper Sonoran Zone (Grinnell, Dixon, and Linsdale 1930:Fig. 2) in a sandy flat among Western Juniper (*Juniperus occidentalis* Hook.), extensive stands of Sagebrush (*Artemisia tridentata* Nutt.), considerable Rabbitbrush (*Chrysothamnus nauseosus* [Pall.] Britton), and occasional Greasewood (*Sarcobatus vermiculatus* [Hook.] Torr.).

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Traversing the flat is a small tributary of Secret Creek that originates in two small springs on the south side of Snowstorm Mountain. This tributary apparently carries permanent water for a distance of 1.8 km. from its source and then becomes intermittent for a distance of 3.4 km. to its junction with Secret Creek. Downstream from that junction, Secret Creek joins Willow Creek, which, originating in large springs a little more than 1.6 km. east of Eagle Lake, flows into Susan River, the major tributary of intermittent Honey Lake. Dense submerged beds of aquatic herbs, including Leafy Pondweed (*Potamogeton foliosus* Raf.) and Segoe Pondweed (*P. pectinatus* L.), provide cover for numerous small fishes in Secret Creek and its tributary.

A radiocarbon age of 2350±150 ¹⁴C years B.P. (=150-775 B.C.; computed from a schedule correlating ¹⁴C years B.P. with Bristlecone Pine dates in calendar years) was based on charcoal recovered in 1955 from the Karlo site at a depth of *ca.* 60 to 90 cm. below the surface (see Hubbs, Bien, and Suess 1960:211).

The archaeology of the Karlo site was discussed by Riddell (1956*a*:45-47, 1956*b*, 1958:44, 1960*a*; see also Meighan 1959:295; Lanning 1963:275.) The site was within the ethnographic territory of the *wadádkadi* Northern Paiute (Riddell 1960*a*:1, as *Wadátkut*).

Fish remains from the Karlo site are deposited in the Lowie Museum of Anthropology, University of California, Berkeley.

FISHES REPRESENTED

Fishes of five species, four genera, and three families appear to be represented.

The fish remains comprise 35 disarticulated vertebrae and one lower pharyngeal; nearly all are incomplete or fragmentary. Twenty remains (representing 5 species) were recovered from a depth of 0-30 cm.; 12 (4 species) from 30-61 cm.; and 4 (2 species) from 61-91 cm.

The length of a fish indicates total length (tip of snout to tip of longest caudal ray). The width of a vertebra (or its centrum) indicates the horizontal diameter.

Common and scientific names of California fishes follow those listed by Hubbs, Follett, and Dempster (1979). The spelling "Kuyui" has been used for *Chasmistes cujus* by anthropologists, at least since 1881 (see Hodge 1907:743); the spelling "Cui-ui," used by ichthyologists, may have originated with Snyder (1917:50).

Trouts—Salmonidae

The **Lahontan Cutthroat Trout** (*Salmo clarkii henshawi* Gill and Jordan), an excellent food fish (see Holder 1912:Fig. 54, as *Salmo henshawi tahoensis*), was known to the Northern Paiute as *agái* (Loud and Harrington 1929:157).

Material. Six vertebral centra (one shown in Fig. 1), 4.6 to 8.0 mm. long and 6.5 to 12.0 mm. wide, representing trout *ca.* 46 to 84 cm. in length and perhaps 0.7 to 8.5 kg. in weight; 5 centra from a depth of 0-30 cm., 1 from 61-91 cm. Two other centra, *ca.* 7.2 and *ca.* 8.0 mm. long and 9.5 and 10.7 mm. wide, from a depth of 0-30 cm., are doubtfully referred to this trout.

Provenience. Lahontan Cutthroat Trout

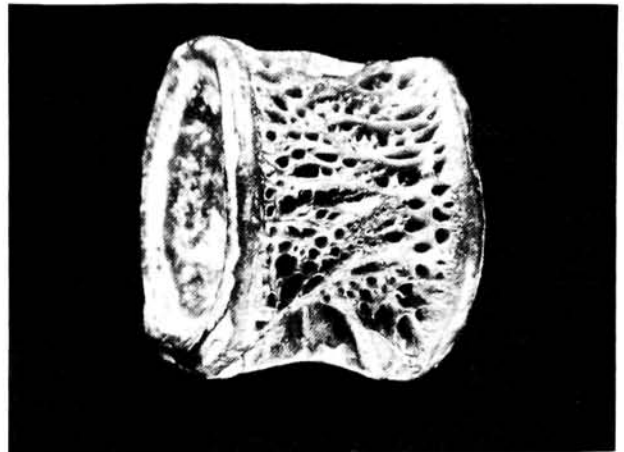


Fig. 1. Vertebral centrum (thoracic), 8.0 mm. long and 12.0 mm. wide, of Lahontan Cutthroat Trout (*Salmo clarkii henshawi*); representing a fish *ca.* 84 cm. in length and perhaps 8.5 kg. in weight; from a depth of 61-91 cm.

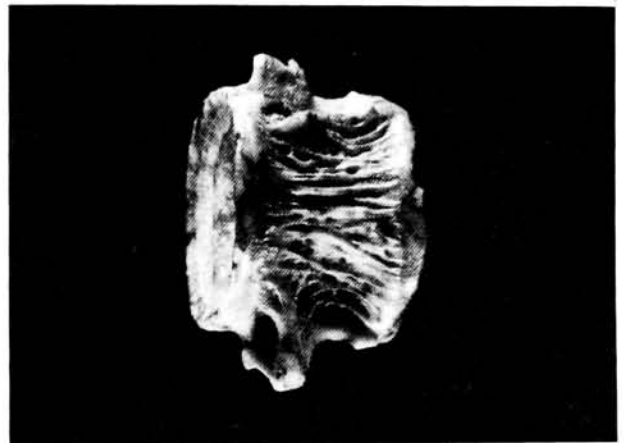


Fig. 2. Vertebral centrum (caudal), 6.2 mm. long and 8.8 mm. wide, of Eagle Lake Rainbow Trout (*Salmo gairdnerii aquilarum*); representing a fish *ca.* 61 cm. in length and perhaps 2.6 kg. in weight; from a depth of 30-61 cm.

were presumably captured in the lower Truckee River or in Pyramid Lake or in Winnemucca Lake, where this trout was once abundant.

The **Eagle Lake Rainbow Trout** (*Salmo gairdnerii aquilarum* Snyder), an excellent food fish (see Snyder 1917:Fig. 7, as *Salmo aquilarum*), may have been known to the Northern Paiute as *agái*, as was the Lahontan Cutthroat Trout.

Material. Two vertebral centra (the larger shown in Fig. 2), 5.3 and 6.2 mm. long and *ca.* 6.8 and 8.8 mm. wide, representing trout *ca.* 51 and 61 cm. in length and perhaps 1.5 and 2.6 kg. in weight; from depths of 0-30 cm. and 30-61 cm. (An adult male Eagle Lake Rainbow Trout 61 cm. long that I snagged with a weighted treble hook on May 9, 1931, in Eagle Lake at the mouth of Pine Creek, weighed 2.6 kg.) The ridges extending more or less horizontally along the sides of these two centra agree in shape and arrangement with those on four centra of a paratype (Stanford Nat. Hist. Mus. Cat. No. 13575, now on deposit with the California Academy of Sciences).

Provenience. Eagle Lake Rainbow Trout were presumably captured in Pine Creek on their spawning migration from Eagle Lake, where this trout was endemic.

Minnows—Cyprinidae

The **Tui Chub** (*Gila bicolor* [Girard]), photographed by Follett (1967:Pl. 5), was known to the Northern Paiute as *tui pak^{wi}* (Loud and Harrington 1929:156, as *tui-pagw^f*). Although bony, this minnow is well regarded as a food fish if cooked immediately after being caught (Kimsey 1954:406).



Fig. 3. Lower pharyngeal (left), 14.3 mm. long, of Tui Chub (*Gila bicolor*); representing a fish *ca.* 19 cm. in length and perhaps 90 g. in weight; from a depth of 0-30 cm.

Material. A left lower pharyngeal (Fig. 3), 14.3 mm. long, represents a Tui Chub *ca.* 19 cm. in length and perhaps 90 g. in weight; from a depth of 0-30 cm. A vertebra, 4.5 mm. long and 5.0 mm. wide, from a depth of 30-61 cm., is doubtfully referred to the Tui Chub.

Provenience. Tui Chub could presumably have been captured in nearly any of the lakes or streams of the Lahontan basin, including Susan River (see Snyder 1917:84, as *Siphateles obesus* and as *Leucidius pectinifer*) and Willow Creek (see Rutter 1903:147, as *Rutilus olivaceus*).

Suckers—Catostomidae

The **Tahoe Sucker** (*Catostomus tahoensis* Gill and Jordan), figured by Snyder (1917:Fig. 1, as *Catostomus arenarius*), was known to the Northern Paiute as *a^wáagu* (Loud and Harrington 1929:156, as *awago*). It is a good-tasting and easily prepared fish (La Rivers 1962:357).

Material. A first vertebra (Fig. 4), 2.0 mm. long and 8.2 mm. wide, represents a sucker *ca.* 41 cm. in length and perhaps 0.7 kg. in weight; from a depth of 0-30 cm. Three vertebrae 5.1 to 5.3 mm. long and 6.0 to 7.7 mm. wide, from depths of 0-30 cm. and 30-61 cm., are doubtfully referred to the Tahoe Sucker.

Provenience. The Tahoe Sucker could presumably have been captured in nearly any of the lakes or streams of the Lahontan basin (see Snyder 1917:84). Of these, however, the most likely would seem to be Secret Creek or its tributary that passes but a short distance from the Karlo site. During periods of high water, Tahoe Suckers presumably ascended into that tributary from Secret Creek, or perhaps from as far downstream as Willow Creek or Susan River (see Rutter 1903:147). (On May 24, 1958, I dipnetted a Tahoe Sucker 17 cm. long [Calif. Acad. Sci. Cat. No. 26318] in that tributary.)

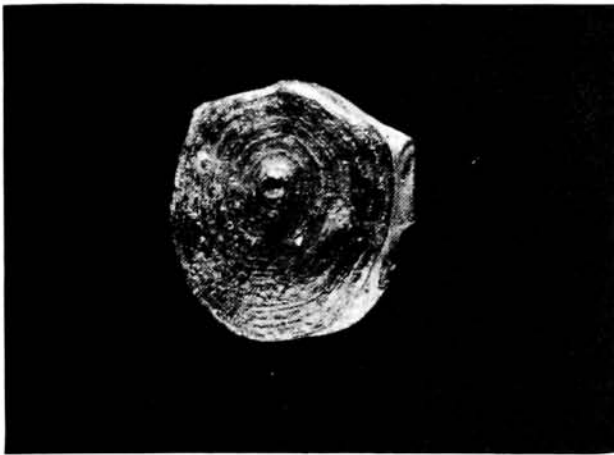


Fig. 4. First vertebra, 2.0 mm. long and 8.2 mm. wide, of Tahoe Sucker (*Catostomus tahoensis*); representing a fish *ca.* 41 cm. in length and perhaps 0.7 kg. in weight; from a depth of 0-30 cm.

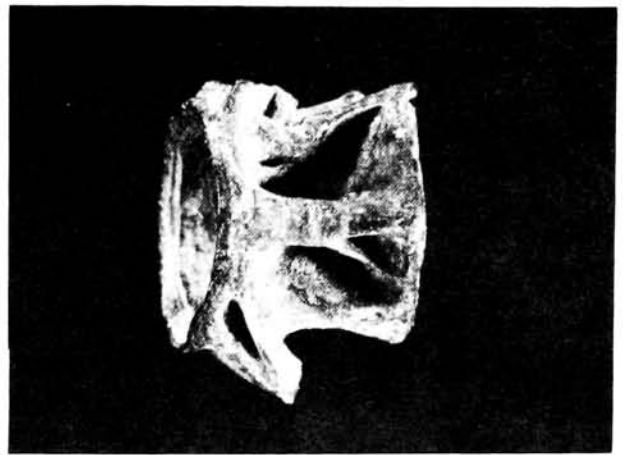


Fig. 5. Vertebra (caudal), 7.5 mm. long and 9.3 mm. wide, of Kuyui (*Chasmistes cujus*); representing a fish *ca.* 58 cm. in length and perhaps 2.3 kg. in weight; from a depth of 30-61 cm.

The **Kuyui** (*Chasmistes cujus* Cope), figured by Snyder (1917:Fig. 2), is a fine food fish. It constituted the principal food supply of the Northern Paiute of the region of Pyramid and Winnemucca lakes according to Powers (1877:450).

Material. Twenty vertebrae (one shown in Fig. 5), 5.3 to 7.8 mm. long and 8.7 to 11.8 mm. wide, representing fish *ca.* 54 to 64 cm. in length and perhaps 1.5 to 3.3 kg. in weight; 8 from a depth of 0-30 cm., 9 from 30-61 cm., and 3 from 61-91 cm.

Provenience. Kuyui were presumably captured in the lower Truckee River on their spawning migration from Pyramid Lake or Winnemucca Lake, where this fish was endemic.

RECORDS FROM OTHER ARCHAEOLOGICAL SITES

Other archaeological sites where remains of Lahontan Cutthroat Trout, Tui Chub, Tahoe Sucker, or Kuyui have been found were noted by Follett (1967, 1970, 1974, and 1977). I have found no published record of archaeological material of the Eagle Lake Rainbow Trout.

DISCUSSION

Lahontan Cutthroat Trout

This trout formerly ascended the lower Truckee River from October to March on its spawning migration from Pyramid and Winnemucca lakes, appearing in "incredible numbers" as the run reached its maximum (Snyder 1917:71). Of several hundred that were taken from Pyramid Lake as recently as 1924, none weighed less than 1.4 kg. and several weighed 10 kg. (Hall 1925:147).

The distance to be traveled on foot from the Karlo site to the lower Truckee River was some 137 km.

A possible source of Lahontan Cutthroat Trout as large as some that were represented in the Karlo material would presumably have been Lake Tahoe, at a distance of some 161 km. from the Karlo site. But from the viewpoint of the Karlo people, Lake Tahoe may have been within hostile territory: in ethnographic time it was within the territory of the Washo (Kroeber 1925:570, Pl. 1), who were said to be "traditional enemies of the Paiute" (Steward 1933:235).

Walker Lake, some 258 km. from the Karlo site—121 km. farther than the lower Truckee River—would seem a less likely source of the Karlo material of Lahontan Cutthroat Trout.

Eagle Lake Rainbow Trout

In times past, the entire adult trout population of Eagle Lake apparently attempted to move up Pine Creek during the annual spawning migration, which occurred early in May; large numbers were then readily captured by the Indians (Snyder 1917:78). The Atsugewi (Atsuge), western neighbors of the Apwaruge (Aporige), caught trout in their hands and threw them out on the bank of Pine Creek (Garth 1953:135-136).

Possibly the Karlo people obtained trout by virtue of friendly relations with people then living at Eagle Lake. During ethnographic time, the Aporige of Eagle Lake were said to be friendly with the Northern Paiute and with the Atsuge (Kniffen 1928:316-317).

The distance to be traveled on foot from the Karlo site to the mouth of Pine Creek was some 68 km.

Tui Chub

The left lower pharyngeal, originally bearing five teeth (two had been lost), is not identifiable to subspecies. Both the Lahontan Creek Tui Chub (*Gila bicolor obesa* [Girard]) and the Lahontan Lake Tui Chub (*G. b. pectinifer* [Snyder]) normally have five teeth on the left lower pharyngeal (Snyder 1917:62, as *Siphateles obesus*; 65, as *Leucidius pectinifer*).

Large individuals of the Tui Chub from Pyramid Lake were 30.5 to 35.5 cm. long; they were readily caught on a hook baited with angleworms or by a gill net set at night (Snyder 1917:62, as *Siphateles obesus*).

Tahoe Sucker

In the spring, suckers were caught by the

Honey Lake Northern Paiute as these fish swam up Long Valley Creek (a southeasterly tributary of Honey Lake) to spawn; they were caught in nets, often at night by torchlight, and were then laid out on the surrounding sagebrush to dry in the sun (Riddell 1960b:34).

Kuyui

Most of the Karlo vertebrae that are referable to the sucker family are presumably those of Kuyui.

Their size agrees with that of vertebrae of adult Kuyui but exceeds the size of vertebrae of most Tahoe Suckers. Although an occasional Tahoe Sucker in Pyramid Lake exceeded 61 cm. in length (Snyder 1917:43), such large individuals were exceptional; most of those captured in that region ranged from *ca.* 23 to 38 cm. in length (Snyder 1917:44-45; Loud and Harrington 1929:156; Follett 1977:72). A Tahoe Sucker (Calif. Acad. Sci. Cat. No. 26323) that I snagged with a weighted treble hook on May 31, 1958, at the mouth of the Truckee River was 33.6 cm. in length and 0.45 kg. in weight.

Only adult Kuyui, which ranged from *ca.* 48 to more than 65 cm. in length, were captured; see Snyder (1917:52, 54). Eight Kuyui (Calif. Acad. Sci. Cat. Nos. 25839 and 26324) that I snagged with a weighted treble hook at the mouth of the Truckee River (4 each on May 2, 1936, and May 31, 1958) ranged from 50.2 to 65.4 cm. in length and 1.4 to 3.5 kg. in weight.

Being plankton feeders, Kuyui were not caught by a baited hook; they were gaffed, snagged, or speared as they ascended the lower Truckee River on their spawning migration from Pyramid Lake or Winnemucca Lake. The migration occurred from about April 15 to May 31 or later, depending on rainfall and temperature. According to Snyder (1917:52),

At times [they] appeared in such large and densely packed schools that considerable numbers were crowded out of the water in

shallow places, especially on the gently sloping river bars. Once several hundred were observed stranded near the mouth of the river. In some places they were jammed together in masses two or three deep.

Experimental gill net sampling in Pyramid Lake during 1976 and 1977 showed that most Kuyui occurred in depths less than 15 m. (Vigg 1980:52). This sampling, however, was made after extensive ecological devastation of Pyramid Lake by the white man (cf. Koch 1973:146), and does not necessarily reflect the vertical distribution of Kuyui during aboriginal times.

Northern Paiute preferred the Kuyui to the Tahoe Sucker because "the *kuyúí* had a better flavor than the *aʷáagu*" (Harry Winnemucca, personal communication, July 18, 1968). A collection recovered from Thea Heye Cave, near the southern end of Pyramid Lake, contained the desiccated remains of nine or more Kuyui but of only one Tahoe Sucker (Follett 1977:60).

So important was Kuyui to the Northern Paiute band of the lower Truckee hydrographic basin that the band was known as the *kuyúid̥kad̥i* 'the Kuyui eaters'. The name of that band was "familiar to Indians from Burns, Oregon, to Owens Lake, California, a distance of more than 500 miles [805 km.]; among all the Northern Paiute no other band was as widely known" (Stewart 1939:138, as *Kuyuidökadö*).

Whether the Karlo people journeyed to the lower Truckee River and captured Kuyui themselves, or whether they obtained Kuyui by trade, presumably from the people of the lower Truckee region, kinship ties may have facilitated their fishing or trading. Possibly, the people of the Karlo site lived in the same tribal territory as the people then living along the lower Truckee.

The distance to be traveled on foot from the Karlo site to the lower Truckee River, some

137 km., was not an exceptional distance over which to import Kuyui. Northern Paiute living at Surprise Valley, Modoc County, California—more than 241 km. from the lower Truckee River—obtained Kuyui through trade (Kelly 1932:97, 151).

MINNOWS NOT REPRESENTED IN THE KARLO MATERIAL

Another edible minnow, the Lahontan Speckled Dace (*Rhinichthys osculus robustus* [Rutter]), though presumably available to the Karlo people, is not represented in the Karlo material. It was, however, used by the inhabitants of Lovelock Cave, Nevada (Follett 1967:96)—ethnographically within Northern Paiute territory as was the Karlo site. Also, the Lahontan Redside (*Richardsonius egregius* [Girard]), which likewise was presumably available to the Karlo people, is not represented in the Karlo material. These minnows, presumably abundant at a short distance from the Karlo site, may well have been used by the Karlo people.

Within historic time, Lahontan Speckled Dace and Lahontan Redsides were abundant in the tributary of Secret Creek near the Karlo site as well as in Secret Creek itself. On two field trips during 1957 and 1958, I netted in that tributary and in a nearby stretch of Secret Creek—on each occasion within an hour or so—a total of 35 Lahontan Speckled Dace (Calif. Acad. Sci. Cat. Nos. 26299, 26319, and 26321) and 85 Lahontan Redsides (Calif. Acad. Sci. Cat. Nos. 26300, 26320, and 26322). The Lahontan Redsides that I captured so near the Karlo site were larger than a number of Tui Chubs that were used by the Lovelock Cave people (see Follett 1967:105).

The reason for the absence of remains of these two minnows may be that the 9-mm. wire mesh used in excavating the Karlo site (Riddell 1960a:6) was inadequate for the recovery of small fish remains. A convincing demonstra-

tion of the inadequacy of mesh even as small as 3 mm. for the recovery of small fish remains was published by Fitch (1969:56-60).

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