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Source: Northwestern Naturalist, 100(3) : 208-210

Published By: Society for Northwestern Vertebrate Biology

URL: <https://doi.org/10.1898/1051-1733-100.3.208>

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REOCCURRENCE OF THE UMPQUA CHUB (*OREGONICHTHYS KALAWATSETI*) IN THE NORTH UMPQUA AFTER ALMOST A CENTURY

BROOKE E PENALUNA AND LORETTA ELLENBURG

ABSTRACT—We document the 1st record in 93 y of Umpqua Chub (*Oregonichthys kalawatseti*) in the North Umpqua River. Although the North Umpqua River has been surveyed for Umpqua Chub over the past 3 decades without success, we captured 34 Umpqua Chub on 14 May 2019, using baited minnow traps, 5.8 km downstream from Winchester Dam on the North Umpqua River. We vouchered 1 specimen for confirmation of field identification at the Oregon State University Ichthyology Collection (OSUIC). Our unexpected capture of Umpqua Chub in the North Umpqua River supports an almost century-old record of the species presence in the river and marks a significant extension of its known range in the Umpqua River basin.

Key words: minnow, Oregon, *Oregonichthys kalawatseti*, Umpqua Chub, Umpqua River, voucher specimens

The Umpqua Chub *Oregonichthys kalawatseti* is a small-bodied minnow endemic to the Umpqua River basin, which occupies rivers and streams, including slow-moving backwater sloughs, sand- and gravel-bottomed runs, and pools typically associated with vegetation (Markle and others 1991). The genus *Oregonichthys* is the only vertebrate genus endemic to Oregon (<https://fw.oregonstate.edu/150-species/umpqua-chub>). Both species of this genus have a heart-shaped cranium that is darker in color than surrounding coloring and can be seen from a dorsal view (Fig. 1). Umpqua Chub have a slightly subterminal mouth relative to their sister species the Oregon Chub (*O. crameri*), and usually have a naked or partially scaled breast (Markle and others 1991).

The Umpqua River basin was intensively surveyed in 1987 to evaluate the status of chub species on public lands. Following that work, Markle and others (1991) redescribed chub captured throughout the Umpqua River basin as Umpqua Chub. Umpqua Chub were captured in the mainstem of the Umpqua River, Smith River, Elk Creek, Calapooya Creek, Ollala Creek, South Umpqua River, and Cow Creek, but was not reported in the North Umpqua River.

Subsequent surveys to the same sites throughout the basin in 1998 (Simon and Markle 1999), and other monitoring efforts were also unsuccessful in locating Umpqua Chub. Accordingly, Umpqua Chub have been considered locally extinct from the North Umpqua River following the only known capture of a chub on the North Umpqua River from 1926 (Fig. 2). That vouchered specimen was captured “near Roseburg Dam on the North Umpqua River” and is currently archived in the University of Michigan Ichthyology Collection (UMMZ 94165). Consequently, the North Umpqua River has been dropped from recent surveys for chub (Simon 2008), and from state and federal monitoring plans.

A comparison of the 1987 survey to the 1998 survey revealed declines in abundance and contractions in distribution of Umpqua Chub leading to elevated protections of the species as threatened on the IUCN Red List, sensitive-critical species by Oregon Department of Fisheries and Wildlife, and special status species by the Bureau of Land Management and US Forest Service. Declines are generally attributed to predation by exotic Smallmouth Bass (*Micropterus dolomieu*), which apparently push chub populations into isolated enclaves upstream of the bass (Simon and Markle 1999; O'Malley and others 2013).

In 2019, we conducted a range-wide survey of the Umpqua River basin to understand the current distribution of Umpqua Chub in the basin. As part of this effort, we set minnow traps at 55 of the same sampling sites used in the 1987 and 1998 surveys, although we had to move a few sites slightly because either the original sites were no longer on public land or we did not have permission to use the sites. One of the alternative sites that we sampled was on the North Umpqua River, where we had moved the site from the original location near Cherokee Avenue to Hestness Park. At Hestness Park, which is 5.8 km downstream from Winchester Dam, we set 3 minnow traps 5–10 m upstream of

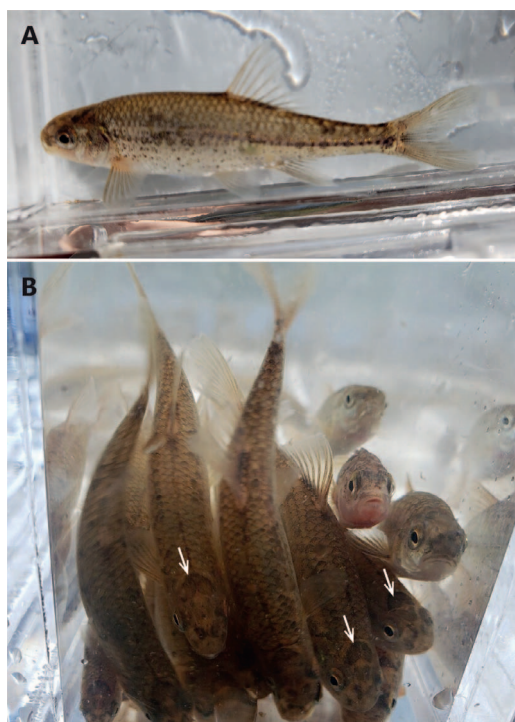


FIGURE 1. Dorsal (A) and lateral (B) view of live Umpqua Chub (*Oregonichthys kalawatseti*) captured 14 May 2019 at Hestness Park on the North Umpqua River, 5.8 km downstream from Winchester Dam.

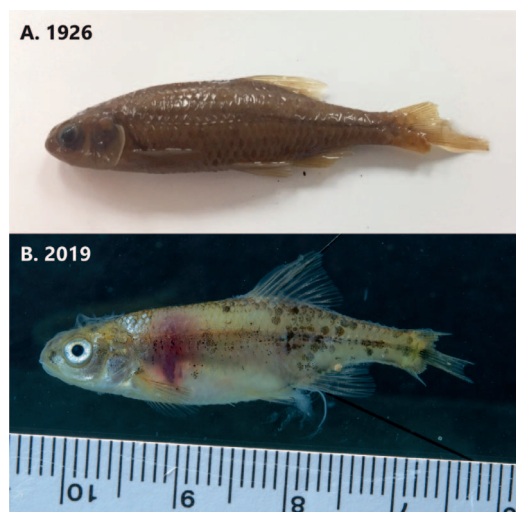


FIGURE 2. Vouchered specimens of: (A) 1926 Umpqua Chub, University of Michigan Ichthyology Collection 94165; and (B) 2019 Umpqua Chub, Oregon State University Ichthyology Collection 2019-IC-02.

the boat ramp on the left bank, looking upstream (UTM: Zone 10T, 0468240E, 4792409N, WGS84). We placed the traps under overhanging roots and limbs from streamside brush and trees where the substrate was sand and fine sediment. We baited the traps with steelhead (*Oncorhynchus mykiss*) roe from the Rock Creek Fish Hatchery in Glide, Oregon, cat food, and a slice of wheat bread. On 14 May 2019, we captured 34 individuals in the minnow traps. One specimen died during trapping and was placed into succession at the Oregon State University Ichthyological Collection as number 2019-IC-02 (Fig. 2). The size distribution of the captured individuals ranged from 42 to 65 mm TL, and wet mass ranged from 0.37 to 2.91 g. The length values generally matched sizes reported by Markle and others (1991; 36.2 to 49.2 mm SL) and O'Malley and others (2013; 23 to 65 mm FL). During subsequent sampling trips to Hestness Park, we captured 1 chub on 31 July 2019, but none in October 2019.

The unexpected capture of these Umpqua Chub in the North Umpqua River during our survey supports a vouchered record from 1926, which had remained uncorroborated for 93 y until the capture of the current individuals. This capture also documents an extension of the known range of the species in the Umpqua River basin. Currently, we are exploring hypotheses to explain the reoccurrence of Umpqua Chub in the North Umpqua River and why the species has been apparently absent since 1926. For example: (1) were the chub always there, but not captured; (2) do they move seasonally, which could help explain why we captured many chub in May, but few to none in summer and autumn months; or (3) have they moved into the North Umpqua River as invasive fish such as Smallmouth Bass establish downstream? Time will tell, but hopefully before another century passes. Our work will help inform current range-wide distribution efforts related to understanding the status of Umpqua Chub for conservation plans, and highlight the utility of museum collections in providing evidence from historical points in time.

Acknowledgements.—We thank D Markle for identifying OSUIC 2019-IC-02 as Umpqua Chub and to B Sidlauskas for taking photos and preserving the OSUIC specimen. Thanks to S Clark, J McEnroe, and S Lightcap of BLM for supporting and funding our

current resurvey efforts. P Quinn helped with field work and took the photo in Fig. 1. E Leonetti of the Oregon Department of Fish and Wildlife (ODFW) donated Steelhead that were used to obtain the roe. Fish collections were authorized by ODFW scientific take permit #22518, which includes state 4(d) coverage and USFS Institutional Animal Care and Use Committee permit #2019-10.

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