



Validity of *Lampetra pacifica* (Petromyzontiformes: Petromyzontidae), a brook lamprey described from the lower Columbia River Basin

STEWART B. REID¹, DAVID A. BOGUSKI², DAMON H. GOODMAN³ & MARGARET F. DOCKER²

¹Western Fishes, 2045 East Main Street, Ashland, Oregon 97520, USA. E-mail: WesternFishes@opendoor.com

²Department of Biological Sciences, University of Manitoba, Winnipeg, Manitoba R3T 2N2, Canada.
E-mail: dockerm@cc.umanitoba.ca

³U.S. Fish and Wildlife Service, 1655 Heindon Road, Arcata, California 95521. E-mail: damon_goodman@fws.gov

Abstract

The Pacific Brook Lamprey, *Lampetra pacifica* Vladykov, 1973 was described from the lower Columbia River Basin near Portland, Oregon. Subsequently, *L. pacifica* has generally been treated as a junior synonym of the Western Brook Lamprey, *L. richardsoni* Vladykov and Follett, 1965, a species described from the Fraser River Drainage east of Vancouver, British Columbia. We reexamine the available morphological data used by previous authors (trunk myomere counts), report on recent collections from the Columbia Basin, and reinterpret the trunk myomere data in the context of recent genetic sampling from the same populations. Populations of *L. pacifica* are distinguished from those of *L. richardsoni* by trunk myomere counts of 53–60 (means <58) versus 57–67 (means >59), respectively, and by genetic sequence divergence (cyt *b*) of 2.85 to 3.20%. We find no support for placing *L. pacifica* in the synonymy of *L. richardsoni* and recognize *L. pacifica* as a valid species. However, we recognize that there is considerable unresolved diversity in the western North American lampreys and recommend restriction of *L. pacifica* to the Columbia Basin, suggesting that unresolved populations of *Lampetra* brook (non-parasitic) lampreys outside the basin with mean trunk myomere counts below 59 be referred to as *L. cf. pacifica*, until further systematic information is available.

Key words: Pacific Brook Lamprey, Western Brook Lamprey, myomeres

Introduction

The Pacific Brook Lamprey, *Lampetra pacifica*, was described by Vladykov (1973) from the lower Columbia River Basin near Portland, Oregon. Subsequent to the original description, *L. pacifica* has frequently been treated as a junior synonym of the Western Brook Lamprey, *L. richardsoni*, a species described from near Vancouver, British Columbia (Vladykov & Follett 1965). Its questioned validity and exclusion from the recent editions of “Common and Scientific Names of Fishes from the United States, Canada, and Mexico” (Robins *et al.* 1991; Nelson *et al.* 2004) has resulted in its exclusion from regional guides to freshwater fishes (Bond 1994; Moyle 2002; Wydoski & Whitney 2003; McGinnis 2006) and a lack of consideration by management agencies. In a recent petition to the U.S. Fish and Wildlife Service for conservation action to protect a suite of western lampreys under the Endangered Species Act, *L. pacifica* was not mentioned (Siskiyou Regional Education Project *et al.* 2003; USFWS 2004). However, *L. richardsoni* was petitioned for protection throughout its range, which was given as California to Alaska, a distribution that far exceeds the described range of *L. richardsoni* and includes that described for *L. pacifica* (Vladykov & Follett 1965; Vladykov 1973). Furthermore, *L. pacifica* does not appear on species lists for state agencies within its range (California and Oregon).

Vladykov’s original diagnosis distinguishing *L. pacifica* from *L. richardsoni*, the only other brook lamprey recognized under *Lampetra* (*sensu stricto*, Gill *et al.* 2003) in western North America at the time, depended primarily on fewer trunk myomeres in *L. pacifica* (53–58 vs. 60–67 for transformed individuals) and, to a lesser degree, on other morphological and pigmentation characters. Beamish (2010) has recently established additional gill pore characters that apparently distinguish the two species. The type locality is on the Clackamas River, a tributary of