

ARTICLE

Seasonal Migration Behaviors and Distribution of Adult Pacific Lampreys in Unimpounded Reaches of the Snake River Basin

Brian J. McIlraith*

Columbia River Inter-Tribal Fish Commission, 700 Northeast Multnomah Street, Suite 1200, Portland, Oregon 97232, USA

Christopher C. Caudill

Department of Fish and Wildlife Sciences, College of Natural Resources, University of Idaho, 875 Perimeter Drive, Moscow, Idaho 83844-1136, USA

Brian P. Kennedy

Department of Fish and Wildlife Sciences, College of Natural Resources, University of Idaho, 875 Perimeter Drive, Moscow, Idaho 83844-1136, USA; and Departments of Biological and Geological Sciences, College of Science, University of Idaho, 875 Perimeter Drive, Moscow, Idaho 83844-1136, USA

Christopher A. Peery

U.S. Fish and Wildlife Service, Idaho Fisheries Resource Office, 276 Dworshak Complex Drive, Orofino, Idaho 83544, USA

Matthew L. Keefer

Department of Fish and Wildlife Sciences, College of Natural Resources, University of Idaho, 875 Perimeter Drive, Moscow, Idaho 83844-1136, USA

Abstract

Complex life histories render anadromous fishes particularly susceptible to environmental and anthropogenic change. Adult Pacific Lampreys *Entosphenus tridentatus* migrating in the Columbia River and its tributaries must ascend a series of dams to reach interior spawning sites. While considerable research has focused on improving dam passage for lampreys, little is known about adult Pacific Lamprey behavior and distribution patterns within free-flowing environments, particularly within the interior portions of their distribution. In this 3-year study, we monitored the movements of 146 adult Pacific Lampreys in the Snake River and its tributaries upstream from Lower Granite Dam, the eighth dam from the Pacific Ocean. Our objectives were to characterize migration and test several hypotheses about adult upstream movement after dam passage. A majority of radio-tagged adults, released above Lower Granite Dam, migrated upstream after release and many moved hundreds of kilometers upstream into Snake River tributaries. Of those with telemetry records after release, 59–70% were recorded in the Clearwater River, 16–25% were in the Snake River, and 13–16% were in the Salmon River. Lampreys that passed the Snake River–Clearwater River confluence were significantly more likely, in most years, to enter the lower-discharge Clearwater River. Adults moved primarily at night during the summer–fall migration and did not exhibit a consistent response to changes in water temperature or discharge. These findings highlight the importance of the Clearwater River to Pacific Lampreys in the lower Snake River basin and indicate that adults that successfully pass through the Columbia–Snake hydrosystem can continue upstream migration into many Snake River subbasins. This distribution suggests that improved passage efficiency at dams may increase the number of adult Pacific Lampreys available for spawning within the interior portions of their distribution.

*Corresponding author: mcib@critfc.org

Received May 12, 2014; accepted November 5, 2014