

# Foreword

Welcome to the Lamprey Inn! I feel some attachment to lampreys, recognized at least in part by the photograph I took in Gloucester, England. That was purely an academic interest, of course. By the authority vested in me as Editor of this series, it seems that I have defined lampreys as “fishes” and resolved a question that my students in ichthyology courses frequently posed to me. This monumental work must surely bring these remarkable creatures to the attention of a much broader audience. How could anyone not be interested in lampreys after reading this compilation? There is a room for everyone at the Lamprey Inn. They offer incredible opportunities for research on virtually any aspect of biology you might imagine. Perhaps the most striking feature yet to be resolved in lampreys is the so-called “paired species” phenomenon. Anyone interested in speciation must study these lampreys, particularly this question of the origin of parasitic and non-parasitic species. The life history strategies and tactics, plasticity, and epigenetics of lampreys cry out for attention. Have there really been multiple evolutionary origins of these different species, or are they just life history forms? What could determine the developmental pathway of either form or species? You could study almost any aspect of their physiology, from their striking metamorphosis to the demands of anadromous spawning migrations. They have incredible shifts in feeding ecology, digestion, and metabolism during very complex life cycles. We already have a detailed understanding of the role of pheromones in lampreys, and the potential applications of that knowledge for management are quite astounding. Think about the feeding stages of anadromous lampreys, presumably being carried over distances by their hosts. How do they find their way back to spawning streams for their spawning migrations? Those of us preoccupied with management and conservation of salmonid fishes are only just beginning to appreciate the potential importance of lampreys as alternate prey to salmonids. Is zoogeography more of interest to you? Consider the antipodal distributions of the Northern and Southern Hemisphere lampreys! Conservation, management, and restoration of native species?—lampreys have those features as well. We would not likely consider lampreys as charismatic megafauna, but that itself seems like a wonderful challenge. How can you convince a skeptical public to devote conservation efforts to what most consider a writhing, blood-sucking vampire?

I have a rather long and detailed personal history with lampreys, which is greatly influenced by geography. For a number of years I collaborated with the Great Lakes Fishery Commission in and around the Laurentian Great Lakes in North America. We carried out a major study to investigate the installation and operation of low-head barrier dams as an alternative control for the invasive sea lamprey *Petromyzon marinus* in tributary streams to the Great Lakes. Everything about those dams was designed to prevent the passage of lampreys on their spawning migrations. Our study showed that the design of those dams was indeed effective in blocking spawning migrations of parasitic sea lamprey. Now I am in the Pacific Northwest, and we take pride in our claim that the fish ladder at the Oregon Hatchery Research Center is the first “lamprey friendly” fish ladder in Oregon. My efforts are now directed to ensure that as many lampreys as possible can pass upstream to complete their spawning migrations. One of my post-graduate students studied the lamprey ammocoetes in the Great Lakes basin in an attempt to define any characters that could be used to identify those larvae, and particularly to discriminate between the native species and the invasive parasitic sea lamprey. He found that existing morphological keys were of limited use, mostly because there are so few characters to study. The absence of characters, however, does not mean the absence of species. Genetic information was more useful for species recognition, but in turn that approach led to suggestions of intriguing patterns of speciation and life history patterns. Of course there is a very different and very serious interest in lampreys from the indigenous peoples who have had such an important social and cultural connection with them for the longest time. They have seen lamprey populations decline precipitously as a consequence of the construction and operation of dams, changes in watershed management, and habitat alterations. They are the people who are taking some of the immediate actions to rear lampreys in hatcheries, transfer adults to former spawning areas, and restore early rearing habitats.

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The Lamprey Inn, Gloucester, England (photo by David L. G. Noakes)

Lampreys: Biology, Conservation and Control

Volume 1

Docker, M.F. (Ed.)

2015, XX, 438 p. 51 illus., 14 illus. in color., Hardcover

ISBN: 978-94-017-9305-6