FOREWORD

Sea Lamprey Research: Balancing Basic and Applied Research, and Using Themes to Define Priorities

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INTRODUCTION

Sea lamprey (Petromyzon marinus) occupy a unique role in the ecology of the Great Lakes as a vertebrate parasite of other vertebrates. Because their favored prey in the Great Lakes is lake trout (Salvelinus namaycush) and other salmonids, sea lamprey are in direct competition with human uses of fisheries. The damage they caused to economically and ecologically important native fishes in the Great Lakes motivated ratification of an international Convention on Great Lakes Fisheries in 1954 and formation of the Great Lakes Fishery Commission (GLFC) in 1955 (Christie and Goddard 2003). The Commission was charged to “formulate and implement a comprehensive program” for the purpose of controlling sea lamprey populations in the Great Lakes. Initial control efforts focused on use of barriers and lamprey-specific piscicides that target sea lamprey at the larval stage. Within two decades, lamprey populations had significantly declined in each of the three upper Great Lakes (Superior, Michigan, Huron), and feral hatchery-origin lake trout were surviving to maturity. Two sea lamprey international symposia (SLIS I and II) were convened in 1979 and 2000 to review the state of sea lamprey science and management (Smith 1980, Jones et al. 2003). One of the more important conceptual advances resulting from the first symposium was the adoption of integrated pest management strategies, originally developed for agricultural insect pest control, for sea lamprey management (Sawyer 1980, Davis et al. 1982). The symposium also yielded recommendations to improve chemical treatments, identify alternative methods of control, investigate impacts of lamprey predation on important fisheries, and conduct research to better understand the biology of sea lamprey. Advances in these areas, and progress in sea lamprey control in each of the lakes since 1979, were presented at SLIS II (Jones et al. 2003).

Much of the sea lamprey management program depends on a lampricide (TFM; 3-trifluoromethyl-4-nitrophenol) which targets lamprey ammocoetes in streams. An objective of the Commission, as described in their Strategic Vision (GLFC 2001), is to “accomplish at least 50% of sea lamprey suppression with alternative technologies while reducing TFM use by 20% through use of at least one new alternative-control method, and increased use of current methods such as sterile-male-release, trapping, and barrier deployment.” This objective has provided a broad statement of priority for the Commission’s research program, which supports research to improve current lamprey management strategies and to develop alternative control measures. In order to focus proposals on topical areas

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