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A Quantitative Evaluation of Growth in *Leptodea Fragilis* Before and After the Arrival of Zebra Mussels in Lake Erie

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A quantitative evaluation of growth in *Leptodea fragilis* before and after the arrival of zebra mussels in Lake Erie

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Abstract

The arrival of zebra mussels in the Great Lakes in the 1980's marked several environmental changes, most notably in freshwater mussels in the Unionidae. There are no studies of population demographics of native Great Lake species before this period of time. In this study, several recent shell collections of *Leptodea fragilis*, a fast-growing freshwater mussel, were made on various beaches along Lake Erie. To compare the effects of the zebra mussels on *L. fragilis*, we compared growth rates, determined from size and estimated age of shells, to additional collections of *L. fragilis* from 1941 to 1967 available at the Cleveland Museum of Natural History. The growth rates of this species are exceptional for their speed among freshwater mussels. A modern comparison of growth rates and age are presented with a sexually dimorphic unionid river species, *Lampsilis siliquoidea*, that were collected in Summer 2013. We hypothesized that the arrival of zebra mussels could affect the growth rate of *L. fragilis* by selecting on age of reproduction or growth to reach a minimum size for reproduction, results that could shift growth curves and/or age demography of current populations, and help them persist where zebra mussels remain abundant.