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Foraging and Size Selection of Zebra Mussels, *Dreissena Polymorpha*, by the Crayfish, *Procambarus Clarkii*

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FORAGING AND SIZE SELECTION OF ZEBRA MUSSELS, *DREISSENA*
POLYMORPHA, BY THE CRAYFISH, *PROCAMBARUS CLARKII*

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The Zebra mussel, *Dreissena polymorpha*, a species native to Europe was first discovered in Lake St. Clair of the Great Lakes Basin in June 1988. By September 1991, *Dreissena* was found in all five of the Great Lakes and had spread through many connecting waterways and inland rivers. Due to their dispersal abilities and reproductive strategy, *Dreissena* are continuing to rapidly expand their populations. *Dreissena* have been documented to have negative effects on the ecological equilibrium of ecosystems. In addition, *Dreissena* have become an important fouling organism on water intake pipes and boats. Little is known about the ecological role of *Dreissena* in the United States. Much research is needed in order to understand and control this rapidly spreading species. Zbigniew (1974) reported an incidence of the crayfish, *Orconectes limosus*, leading to the extinction of *Dreissena* in a water supply channel in Poland.

My study examined the foraging and size selection of *Dreissena* by the crayfish, *Procambarus clarkii*. Five crayfish were tested in the laboratory in individual two gallon tanks. The profitabilities of *Dreissena* and two other food items (earthworm pieces and plant detritus) were determined by comparing handling times with prey digestible organic matter. Experiments were conducted to determine the size of mussels preferred by *Procambarus* and the amount of mussels consumed in a day. An optimal foraging model was utilized to determine whether *Procambarus* prey selectively in order to maximize their net energy gain and to determine their preference for *Dreissena* in relation to other food items. Optimal foraging theory predicts that most animals are capable of distinguishing between prey types of different profitability and selecting the most profitable ones in terms of energetic gain per unit handling time (Charnov 1976). The results of this study will be presented at the conference and will be important to further understanding of the possible impact crayfish will have as predators on *Dreissena* in the United States.