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COLONIZATION OF THE DRAGONFLY, *GOMPHUS VASTUS* WALSH, BY THE ZEBRA MUSSEL, *DREISSENA POLYMORPHA* (PALLAS) (ANISOPTERA: GOMPHIDAE; – BIVALVIA, EULAMELLIBRANCHIA: DREISSENIDAE)

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A larval specimen of *G. vastus* from the Mississippi River in Illinois, USA, was found entrapped by *D. polymorpha*. Such events may be rare. However, they may be more common than presently recognized and represent an overlooked source of mortality in late instar larvae of odonates and other sedentary insects in areas where zebra mussels are abundant.

INTRODUCTION

The zebra mussel, *Dreissena polymorpha*, was first discovered in the Great Lakes Basin in southern Lake Saint Clair in June 1988 (HEBERT et al., 1989). It has since spread widely throughout the Great Lakes and Mississippi River drainage and has largely colonized the area that GRIFFITHS et al. (1991) projected as the eventual distribution of this exotic species in the United States. The zebra mussel differs from other North American bivalves in that it attaches to various substrates by the use of byssal threads throughout its life time (NALEPA & SCHLOESSER, 1993). Many inorganic substrates are utilized but the mussel also attaches to the shells of other bivalves and gastropods. It is this ability to attach to living substrates that makes the introduction of the zebra mussel a threat to the North American aquatic biota. In fact, great concern has been expressed about the possible negative impact of zebra mussels on native unionids (HEBERT et al., 1989; MACKIE, 1991; SCHLOESSER & KOVALAK, 1991; HUNTER & BAILEY, 1992, NALEPA & SCHLOESSER, 1993; TUCKER et al., 1993).

However, interactions between the zebra mussel and other aquatic invertebrates have received no attention. We report for the first time an instance of colonization of a larval odonate (*Gomphus vastus* Walsh) by this mussel.

MATERIAL

On 23 October 1993, we collected a 27 cm long twig that was completely encircled by living zebra mussels from the Mississippi River, 0.8 km E of Grafton, Jersey County, Illinois, USA (NW¼ Sec. 14, T6N, R12W). The twig and associated organisms had been washed ashore by wakes from passing boats. Attention was drawn to it by the movements of the legs of the larval odonate as it tried to escape the byssal threads of the mussels. This larva identified as *Gomphus vastus* Walsh (HUGGINS & BRIGHAM, 1982) was firmly attached to the twig and the encrusting zebra mussels by byssal threads of the mussels. Upon preservation the larva and two associated specimens of zebra mussels that had been holding the larva onto the twig were freed from the twig (Fig. 1). These specimens are deposited in the collections of the Illinois Natural History Survey. The *G. vastus* larva measured 29 mm in length. Maximum shell lengths for the two attached zebra mussels were 15 and 16 mm. The byssal threads of the zebra mussels were attached to the dorsal surface of the third and fourth abdominal segment of the larval *G. vastus*.

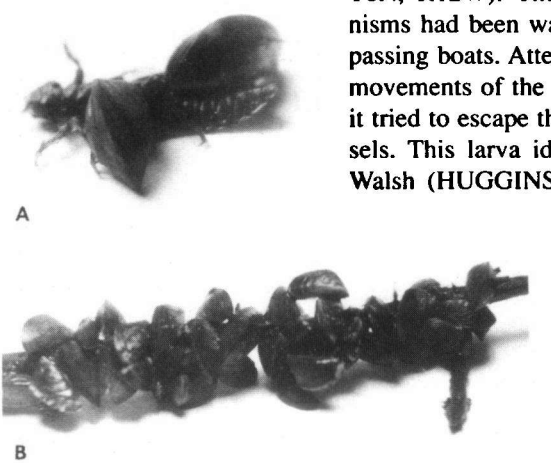

Fig. 1. Colonization of *Gomphus vastus* by *Dreissena polymorpha*: (A) dragonfly larva with two mussels attached; – (B) twig with other attached mussels to which the dragonfly larva was attached when found.

DISCUSSION

The exact mechanism by which a mobile organism such as a larval odonate becomes entrapped by zebra mussels is not known. It seems unlikely that the zebra mussels settled as veligers upon the larva because they would have been shed each time the larva molted. We speculate instead that the larva was hiding under the twig awaiting prey when temporary byssal threads (sensu ECKROAT et al., 1993) from the zebra mussels on the twig entangled the larva. It is also

not known whether this is a common and previously overlooked phenomena or a rare event. At the site where we collected the twig, numerous druses of zebra mussels were washed ashore. The fact that we found no other entrapped larval odonates suggests but does not prove that this is not a common event.

Other workers who study odonate biology may be better able to determine the impact of this sort of event on populations of odonates. If this is of more frequent occurrence than at present known, entrapment of late instar larvae by zebra mussels may be a significant source of mortality among populations of odonates.

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