



Great Lakes Science Center

Coexistence of Zebra Mussels and Native Clams in a Lake Erie Coastal Wetland

Native clam populations can coexist with zebra mussels in specialized habitats such as wetlands. Native clams in the open waters of Lake Erie have been severely reduced, almost eliminated, by zebra mussels. However, in 1996 a population of native clams was discovered in a coastal wetland, Metzger Marsh, just west of Toledo, Ohio.



Metzger Marsh dewatered.

Metzger Marsh is a 908 acre embayment, 2.4 km wide, shallow in depth (~1-2 m deep), with a substrate dominated by a series of sand ridges, with some soft silt areas and sparse patches of submergent and emergent vegetation along the landward edges. In the fall of 1994, zebra mussels were found colonizing all emergent vegetation and rocks in this wetland, with an extensive mat of mussels covering the troughs between the sandy ridges. The zebra mussel population consisted of several year classes, ranging in size from 2-39 mm, indicating at least some overwintering in the area.

In 1996, as part of a wetlands restoration project, a 2.4 km stone dike was built across the mouth of the bay, isolating the marsh from Lake Erie, and then Metzger Marsh was dewatered. During dewatering, twenty-two species of native clams were discovered (and relocated), including thin-shelled clams such as *Leptodea fragilis* and *Pyganadon grandis*, as well as thick-shelled species such as *Amblema plicata*, *Potamilus alatus*, and *Quadrula quadrula*. Several state threatened species were also found--*Obliquaria reflexa*, *Truncilla donaciformis* and *T. truncata*.

This clam population showed excellent production of young clams. Multiple year classes were collected for 18 of the 22 species; e.g., *A. plicata* (6 year classes, size range 10-147 mm),

Lampsilis r. luteola (3 year classes, size range 47-123 mm), *L. fragilis* (5 year classes, size range 12-223 mm), *P. alatus* (4 year classes, size range 57-210 mm).

Many of the clams, such as *A. plicata* and *L. fragilis* were pregnant when collected. Less than 1% of the 7000 clams collected showed any degree of zebra mussel colonization, either actual mussels or attachment threads. Zebra mussel infestation was usually limited to the presence of only one or two mussels.

We theorize that native clams are surviving at this site, in spite of the presence of zebra mussels, due to the specific sediment type and water temperatures characteristics of this wetland habitat. The native clams were collected mostly in the soft, silty sediments, not the sandy areas, and the clams were often burrowed deep in the muck (up to 40 cm). Native clams would be up at the surface moving at night, as indicated by the length of their sand trails, but by mid-day when water temperatures were nearing 30°C, were not found at the surface. Burrowing would kill any attached zebra mussels.

The survival and continuing successful reproduction of native clams at this Lake Erie coastal wetland indicates that such sites may provide a refuge for native clam populations. We are in the process of examining other coastal wetlands in the area and have found live native clams at two other sites.



Some of the native clams relocated during dewatering of Metzger Marsh.

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