



MUSSELS OF THE PAST AND PRESENT AT INDIANA DUNES NATIONAL LAKESHORE

During the summer of 2009 two aquatic biologists, Jim Bland and Roger Klocek, scouted portions of the Little Calumet River and Salt Creek in the Indiana Dunes National Lakeshore for presence of a little-studied group, mollusks. Mollusks include mussels, clams, snails, and limpets. Limpets are salt water species. In addition to conducting their surveys for the park, they utilized the Illinois Natural History Survey Mollusk Database, the most comprehensive online dataset for Midwestern mollusks.

The two scientists found living mollusks such as fingernail clams (*Sphaeriidae spp.*), gastropods (snails), and several species of partially fossilized mollusks (sub-fossils). The sub-fossil shells were found buried in compacted clay along the river and stream banks. Many of them are relic shells of present-day species and may possibly still exist in the aquatic system. Some of the specimens could have been dead for a season or more than a decade. One group of sub-fossil mussels, the unionids, was commonly found. Unionidae is a family of freshwater mussels found world-wide that live buried in mud, silt or sand in rivers, streams and lakes. The mussel has asymmetrical symmetry and consists of two valves (shells) attached by an organic hinge. The interior surface of the shells is distinguished by a series of "teeth" which in reality serve to articulate the two halves. All unionids live half-buried in the sediment, their siphons sticking out. They pump water through the inflow and outflow siphons, obtaining oxygen and food. Unionids have a remarkably complex life history. Each one is male or female (some other mussels like snails have both male and female sex organs). The



Winged Mapleleaf, *Quadrula quadrula*

young larvae after hatching from eggs ripen into glochidia. These attach to the gills, fins or skin of a host fish. A cyst is quickly formed around the glochidia and they stay on the fish for several weeks or months before they fall off as juvenile mussels which bury themselves in the sediment. Bland and Klocek found four unionid sub-fossils not previously recorded by an earlier investigator (Nichols et al. 2002). These were the white heelsplitter, creek heelsplitter, fluted shell, and the mapleleaf.

In Conclusion:

The scientists concluded that the Dunelands sandy soils provide the streambeds with large quantities of sand, which are inherently unstable. The mussel fauna is reminiscent of unique habitats in headwater streams of the Midwest, where they adapted to rapidly shifting substrate. The sub-fossil species represent a potential species suite for the Little Calumet River.

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The list of the unionid mussel species found in 2009 (*) and in historic collections(**) from the Indiana Dunes National Lakeshore includes:

Slippershell, *Alasmidonta viridis**
Threeridge, *Amblema plicata** **
Cylindrical papershell, *Anodontoides ferussacianus**
Spike, *Elliptio dilatata** **
Wabash pigtoe, *Fusconaia flava**
Plain pocketbook, *Lampsilis cardium** **
Fatmucket, *Lampsilis siliquoidea** **
White heelsplitter, *Lasmigona complanata***
Creek heelsplitter, *Lasmigona compressa***
Fluted shell, *Lasmigona costata***
Round Pigtoe, *Pleurobema sintoxia** **
Mapleleaf, *Quadrula quadrula***
Ellipse, *Venustaconcha ellipsiformis**

Total Number of Live Native Mussel Species = 0
Total Number of Relic Native Mussel Species = 13

Two exotic species known to occur in the area were NOT FOUND during the survey:
Asiatic clam - *Corbicula fluminea* - EXOTIC
Zebra mussel - *Dreissena polymorpha* - EXOTIC

References:

Midwest. Illinois Natural History Survey, Manual 5. 194 pp.

<http://www.museum.state.il.us/ismdepts/zoology/mussels/gallery.html?TopicID=Paleoheterodonta>
Illinois State Museum. Mussel Photo ID pages online database.

<http://www.inhs.uiuc.edu/cbd/collections/mollusk/molluskintro.html>
Illinois Natural History Survey Mollusk database

2002. S. J. Nichols, G. Kennedy, G. Black, J. Allen. Status of Freshwater Unionid Populations at Indiana Dunes National Lakeshore. 2002. U.S. Geological Survey, Great Lakes Science Center. Ann Arbor, MI. p1- 40.

2008. Klocek, Roger, Bland, James, Barghusen, Laura. Field Guide to the Mussels of the Chicago Wilderness. Chicago Wilderness Publications. P iii-84. and online at:
<http://fm2.fieldmuseum.org/plantguides/guideimages.asp?ID=360>