



Figure 2. SEM of the epiproct of *Alloperla delicata*, Nevada Co., California, Rock Creek, 24 May 2014.

Do Upper Great Lakes National Parks Protect Stoneflies, Mayflies, and Caddisflies Better Than Surrounding Areas?

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Over the past two years we have been sampling streams, lakes, and marshes in six upper Great Lakes national park units: Sleeping Bear Dunes National Lake Shore (Michigan), Indiana Dunes NLS (Indiana), Pictured Rock NLS (Michigan), Isle Royale National Park (Michigan), Voyageurs NP (Minnesota), and St. Croix & Namekagon National Scenic Waterway (Minnesota & Wisconsin). National parks were designed to protect the flora and fauna living within their boundaries and should protect sensitive species at a greater rate than found in the region species pool. The problem is how to define that region species pool. Some have used state checklists as a species pool, but this is too coarse and in some cases a park unit might have very different habitat from that across an entire state. We draw on two sources for regional species pool data: predicted pre-European settlement distributions for 427 Midwestern, USA EPT species and a

>200,000 record specimen database compiled over the past decade for a large portion of the Midwest. Preliminary data suggest that Isle Royale NP has only a subset of the mainland fauna, mostly smaller species that could fly or flow to the island or that were already present in Lake Superior such as *Arcynopteryx dichroa* (McLachlan) and *Capnia vernalis* (Newport). Indiana Dunes is dominated by caddisflies due to its sluggish streams and marshes. Sleeping Bear Dunes has a quite different fauna given to its abundance of glacial features that are porous, preventing the formation of small surface streams. A few larger streams traverse the park, but always enter groundwater fed lakes before flowing into Lake Michigan. EPT richness here is attuned to lake, marsh, and the thermally influenced streams of limited size range. St. Croix has a rich EPT fauna due to the combination of large rivers and small streams that form the waterway. Pictured Rocks has an abundance of small, high gradient streams that produce a rich fauna, influenced by cold, Lake Superior climate. The EPT fauna is similar to that in the Allegheny Plateau of eastern Ohio and Pennsylvania. Finally, Voyageurs NP is a series of very large, brown water lakes sitting on metamorphic bedrock. Here an abundance of caddisfly and mayfly species are found—a few stoneflies may be found in the outflows of these lakes. Sampling is ongoing, requiring another two years to complete. Soon, we will have an inventory of these remarkable habitats and know how their EPT fauna compare to various measures of the regional species pool.

RECENT PLECOPTERA LITERATURE (CALENDAR YEAR 2014 AND EARLIER). Papers made available after 1 February 2015 will be included in the next issue. **If papers were missed, please bring these to the attention of the Managing Editor.** Drs. Bill P. Stark, J. M. Tierno de Figueroa, and Peter Zwick are thanked for reviewing and providing additions to this present list.

Ab Hamid, S. and C. S. M. Rawi. 2014. Ecology of Ephemeroptera, Plecoptera and Trichoptera (Insecta) in rivers of the Gunung Jerai Forest Reserve: Diversity and distribution of functional feeding groups. *Tropical Life Sciences Research* 25(1): 61-73.

Abdelsalam, K. M. and K. Tanida. 2013. Diversity and spatio-temporal distribution of macro-invertebrates communities in spring flows of Tsuya Stream, Gifu Prefecture, central Japan. *Egyptian Journal of Aquatic Research* 39: 39–50.

Afanasyev, S., O. Lietytska and O. Marushevskaya. 2014. River re-naturalisation in the Tisza River Basin after forest cutting activities. *Acta Zoologica Bulgarica*, Supplement 7: 57-62.

Anbalagan, S., S. Dinakaran and M. Krishnan. 2014. Life cycle and secondary production of four species from functional feeding groups in a tropical stream of South India. *International Journal of Zoology*.
<http://dx.doi.org/10.1155/2014/191059>

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