

## Collecting Odonata Exuviae

You have probably seen them on bridge abutments, cattail stems, or rocks along the edge of the water. Those lifeless husks of dragonfly nymphs stuck to a stem like an ornament. Those shed skins of the final nymphal instar are called exuviae. If you are lucky, you might see a larva emerge from the water and then climb a safe distance from the surface. Within minutes, the back of the thorax splits open and the pale green or white adult slowly begins to unfold from its now useless larval exoskeleton. Metamorphosis has changed the aquatic nymph to the air-breathing winged adult. Within an hour, the adult's wings have hardened enough for it to fly off away from the water, leaving its lifeless shell behind. Those exuviae are useful means of recording what species are present at a locality, and if collected soon after the adults have emerged, they are reliable indicators of adult emergence times.

You can assist the Michigan Odonata Survey by collecting exuviae of dragonflies. Since they are non-living, you won't be killing anything to provide specimens. Yet, because they represent the final larval instar, all of the characters needed to identify them are present. You just never know — you may find very significant records in that farm pond down the road. The adventure is there if you are willing to peer through the reeds.

Odonata exuviae are found wherever larvae crawl from the water before adult emergence. Depending on the species of dragonfly and the habitat, certain situations are more likely to yield exuviae than others. In streams and rivers, bridge abutments are excellent places to search. Since larvae of various gomphids such as *Stylurus* and *Ophiogomphus* prefer well-oxygenated shallow riffle areas, the exuviae can



*Didymops transversa* adult emerging  
photo by L. Reich

be found on nearby rocks and debris. Emergent aquatic vegetation and tree snags are good places to look for exuviae. In ponds and lakes, cattail stems, as well as rushes, wooden posts, and branches are likely sites. Darners and skimmers (Aeshnidae and Libellulidae) are most likely to climb vegetation such as cattails and reeds prior to adult emergence. Most exuviae are found from 2-12 inches above the water, although some *Macromia* exuviae have been found at least 8 feet above lake level.

Many species emerge in the pre-dawn hours. By the time the sun has risen their soft wings have begun to harden and they can soon fly away. Although these teneral adults are flight worthy within an hour of emerging, it is several days before they are

sexually mature, and they often fly to upland areas to feed during this time. Once the adults have reached sexual maturity, they return to the breeding habitats.

*Exuviae of Anax longipes* on cattail - photo by Mark O'Brien



No special equipment is needed to collect exuviae - film cans, lozenge tins, pill bottles — anything that keeps the exuviae intact will suffice. They will eventually be transferred to vials with 70% ethanol when they arrive at the University of Michigan, Museum of Zoology (UMMZ). Make sure a label is placed inside the container that provides the following information: Locality (State, County, Township, body of water), date, and the name of the collector.

Remember that bridge abutments and pilings can be veritable bonanzas for exuviae collectors. If you wear waders or just decide to get your feet wet, you'll find more exuviae by looking from the water towards the shore.

Should you wish to conduct exuviae surveys, contact me and I can furnish additional supplies and arrange for shipping the specimens to the UMMZ. We especially need specimens from the following river systems and watersheds: St. Joseph River, Grand River, Au Sable River, Raisin River, Paw Paw River, Pigeon River, Tittabawassee River, Escanaba River, Manistique River and Ontonagon River. Streams with abundant riffle areas and streams skirting tamarack-dominated wetlands as well as creeks emerging from springs and seeps are desirable places to collect. Most areas in Michigan's Upper Peninsula are under-collected, and many river systems in the Lower Peninsula lack adequate sampling.

The Michigan Odonata Survey web site has more information of collecting techniques, literature resources, and keys. For more information, you can surf to:

<http://insects.ummz.lsa.umich.edu/michodo/mos.html>

### ADDITIONAL READING

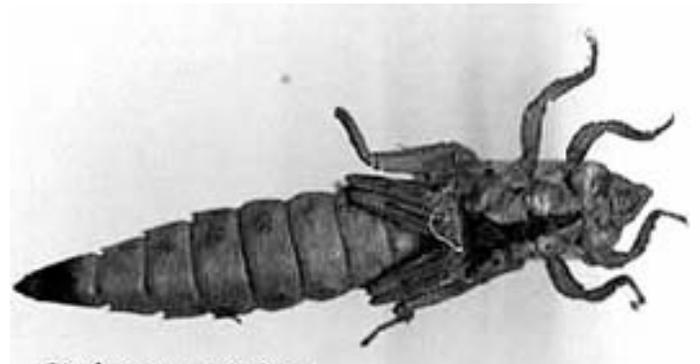
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*Exuviae of  
Macromia  
illinoiensis  
photo by  
Mark O'Brien*



*Exuviae of Stylurus notatus - photo by Mark O'Brien*

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