

Collection Guidelines for Odonate Exuviae Surveys



By Marla C. Garrison and
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In the pilot installment of Nymph Cove (*ARGIA* 32(3)), we introduced the idea of sampling dragonflies in a local habitat for a period of consecutive years. The idea is that by conducting quick annual surveys in a long-term effort, the data will serve as a baseline to assess changes in dragonfly communities. We encourage such grass-roots information gathering because there have been few or no long-term studies in most areas of North America. Hopefully, with enough people involved across the region, the bigger picture of species diversity and population increases and/or decreases will emerge.

Such simple surveys and data collection will be key to finding out what's going on with these beneficial insects, especially when it comes to climate change. Below we outline a basic protocol for collecting dragonfly exuviae in your chosen local habitat.

*Wisconsin Ode nymphs,
when the days shorten, the water chills,
where do you go?
-K.J. Tennesen, 2020*

*who but a nymph
truly offers
the skin off its back?
-M.C. Garrison, 2019*

(**Note:** Collecting odonate exuviae is a non-destructive approach for estimating population numbers and for determining which species are breeding at a specific site. Because exuviae are simply the skins cast off at emergence, no dragonflies are killed by this survey method.)

1. Where/when to sample

Choose a nearby pond, lake, stream, seep, or bog that you can navigate easily and safely. Collect exuviae at least once a year. For spring species, it is essential that sampling begin when emergence begins in order to capture data on phenology (to assess seasonal changes). So, keep an eye on things depending on your latitude. In northern states, spring is the time that early emergers start popping. Check weather forecasts for inclement weather that might blow or wash away exuviae. It's your choice on how often to sample — once each spring or periodically throughout the year.



Rhionaeschna multicolor exuvia; photograph by Ken J. Tennesen.

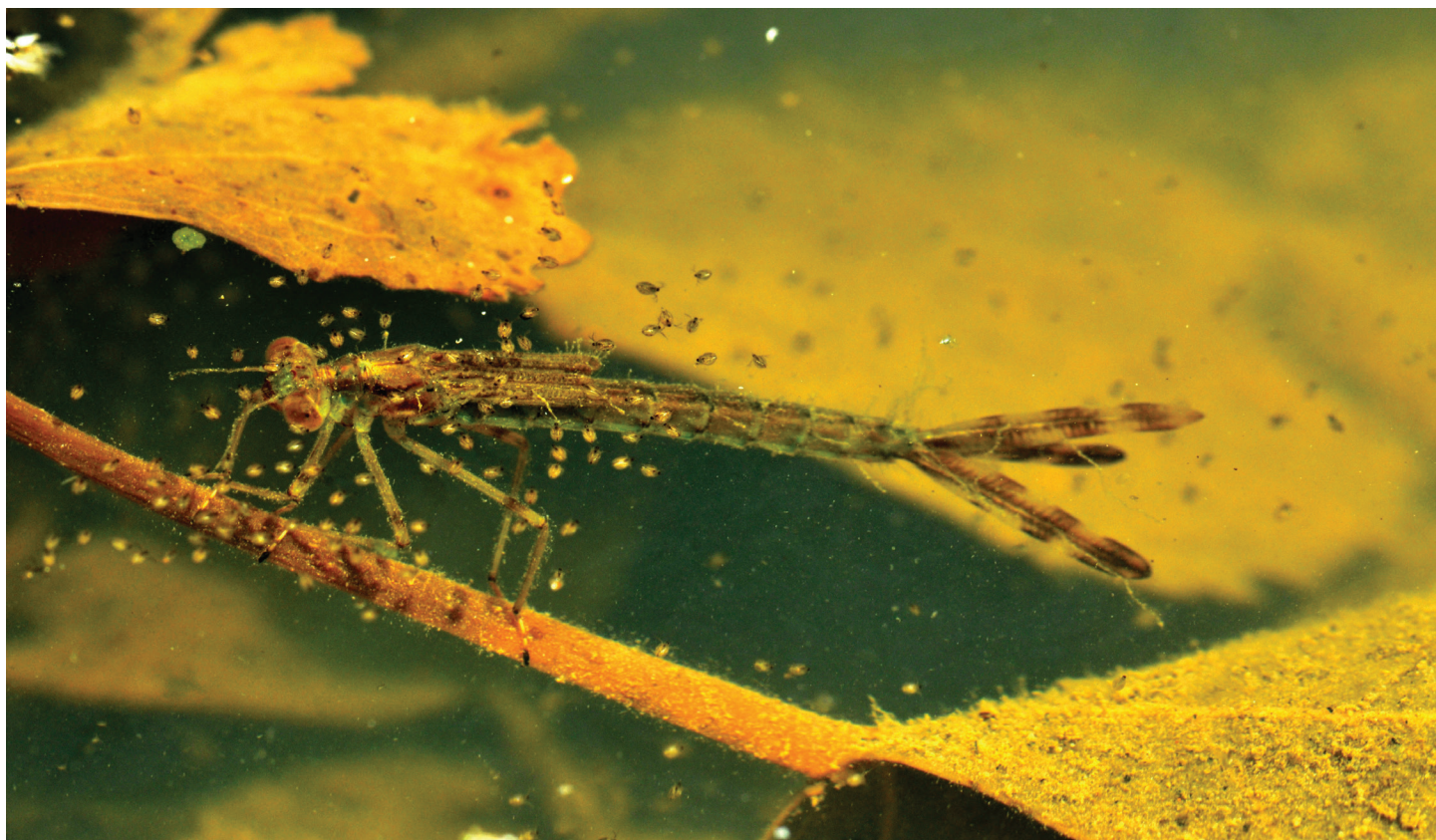
2. Field equipment

This is minimal. You will probably want to wear boots and take plastic containers in which to put your exuviae. That's it!

3. How to sample

Mark out a transect (a path along which you will sample) along the shoreline. For small ponds, the entire shoreline can be searched, but for large lakes and streams, we suggest several 10-meter transects. Walk each transect once and then back again, searching for exuviae on the open shore and on rocks, plants, stems, and exposed roots, whatever structure is present. Limiting the search to within 1 meter of the shoreline will expose the majority of exuviae present. Carefully pick off the exuviae and place them in a separate container for each transect; wetting with water makes them

Nymph Cove



Nymph Cove reader Dick Todd submitted this in situ shot of a *Lestes* nymph in a vernal pond in Princeton, Bureau County, Illinois, June 2011.

pliable and minimizes breakage.

4. Preservation/Identification

Place the exuviae from each field container into air-tight jars or vials filled with 70% isopropyl alcohol. Slip in a label (pencil or permanent ink) with date and locality. The exuviae can be identified to species later and tabulated for the number of individuals of each species; just be sure the alcohol doesn't evaporate. Tips on identification will be forthcoming in future Nymph Cove articles. Or, you can contact an expert who is willing to help with specimens and/or photos. No hurry, as long as the exuviae stay submerged in alcohol.

5. What to record/Your data

The most important data you will record are locality, species, number of exuviae for each species, and date of collection. Notes on habitat

type, shoreline structure, weather (air/water temperature), and water line (look for changes in shoreline location) can be included. Send data from each sampling occasion to us for archiving and see your contribution published in *ARGIA*'s Nymph Cove. We will also provide a summary comparing locations each year.

There have been a lot of observations and discussions on when the first adults of certain species (e.g. *Anax junius*) show up in spring in different areas around the country. However, such appearances are in response to weather (short-term effects) rather than to climate (over an extended period). Exuviae provide evidence that breeding has occurred.

We suggest continuing the survey for as many years as possible. We are already behind in assessing

any effects of climate change, so this next 10-year period will be critical. Let us know by email if you plan to participate.

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Ken Tennessen has published over 80 technical papers on Odonata. His recent book, Dragonflies Nymphs of North America, was published by Springer in 2019.