The Search Begins

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By Marla C Garrison and Ken J Tennessen

Here we are a year into our Nymph Cove voyage and we have not yet taken a 'deep dive' into its murky underworld to explain how, where, and when to find odonate nymphs and what to use. So, let's begin by first considering necessary equipment and supplies.

CONSTRUCTING A DIP NET

The first thing you will need is, of course, a dip net. Dip nets come in all shapes and sizes. The truth is, once you are hooked on nymphing you will want different styles and sizes of dip nets for different aquatic habitats. Finding the right dip net online or in a store can be frustrating. A standard net that can be purchased is the D-frame net (Fig. 1a). One drawback to the D-frame net is that the mesh is very small so the bag will bring up a lot of detritus and other material; this makes it difficult and time-consuming to find any nymphs hidden in the debris. Other problems are wear and tear of the canvas and mesh materials. Making your own customized dip net, while requiring some handiwork and the acquisition of proper materials, will give you the most satisfaction and will be time well-spent. Some of the nets that KJT has fashioned are shown in Figures 1b-d. For frames, racquetball racquets and tennis rackets come in handy. For larger nets, various sized aluminum bands can be purchased at a hardware store. Handles can be fashioned from old broom or mop handles. For mesh, aluminum window screen (hardware cloth) is easy to work with but will deteriorate with use; stainless steel mesh, although expensive and a little harder to find, will last a lifetime. A good mesh size has 8 to 12 openings per inch (each opening approximately 2–2.5 mm). These dimensions allow much of the extraneous material to sift through the mesh, making it easier to find nymphs. However, be aware that most very early instars will pass through the mesh with the water. The nets in Figure 1b and Figure 1d are designed for use in lentic habitats whereas the one in Figure 1c is designed more for stream sampling.

OTHER EQUIPMENT & SUPPLIES

These include: small plastic lightweight bottles (that won't break in your pocket or backpack) with holes in their lids for temporarily holding nymphs (Fig. 2); vials with alcohol (70–80% ethanol or isopropanol) for exuviae and/or damselfly nymphs; pop-up insect cages or lunch-size paper bags (for collecting emerging and teneral odes); backpack or fanny pack; boots or wading shoes; forceps; 10× magnifier loupe; insect repellent & sun screen.

COLLECTING AND TRANSPORTING NYMPHS

Techniques for stream sampling are a little different than in still waters. In flowing water, place the edge of your dip net down onto the substrate. Stand upstream of the net and kick

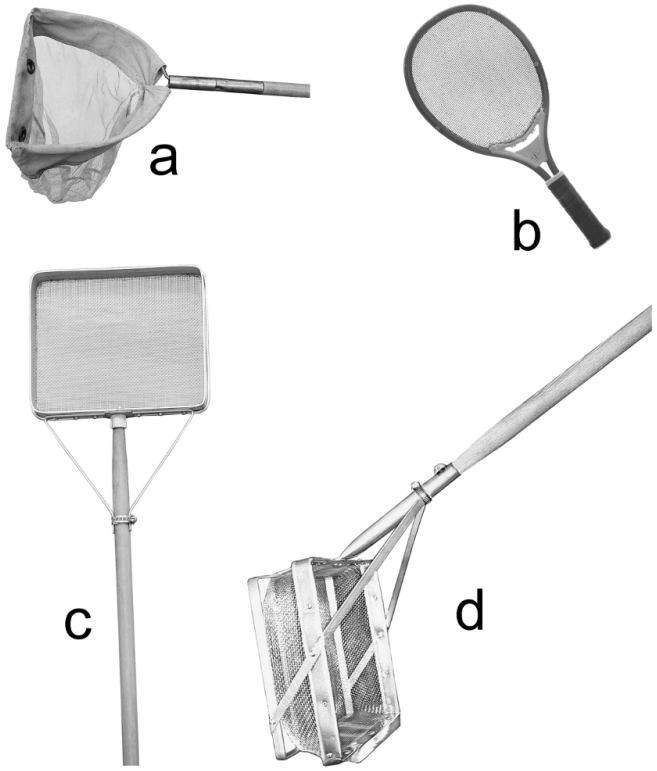

Figure 1. Dip nets: a) commercial D-frame; b) racquet ball racquet; c) home-designed box net; d) modified Needham scraper.

the substrate so that whatever is dislodged floats into the net. Bring the net up and carefully slosh it in the water to remove small particles. In lentic waters, drag the dip net through the top inch or so of sand, mud and/or debris and lift the net up out of the water. As in stream sampling, you may have to slosh the net in the water to wash out finer materials. Immediately inspect the screen and pick out the nymphs you want to examine (Fig. 3). Some species are active out of the water whereas others remain very still.

For a video demonstration showing stream sampling using two different types of dip nets click here.

When you find Anisoptera (dragonfly) nymphs, place them in plastic containers without excess water (this prevents injury due to turbulence and provides direct access to atmospheric oxygen). Rather than covering them with water, place some soaked Sphagnum Moss or other soft detritus in the containers to keep the nymphs moist. Do not let them get too warm. Do not put large aeshnids together or with other nymphs. Anisoptera nymphs will survive in damp moss for several days, but it is best to get them home or into the lab as soon as possible so you can put them in individual rearing containers and feed them. Be aware that many stream/river species will require flow tanks or aeration to keep them alive. We suggest that you practice collection and transport initially with common pond species in order to gain confidence and competence in handling nymphs.

To keep Zygoptera (damselfly) nymphs alive, put them in separate containers with a little water and a small piece of plant stem or sunken wood for them to cling to.

Future installments of Nymph Cove will provide more specific details on the sampling of habitats and the collecting and preserving of nymphs.

Figure 2. Holding containers for nymphs: spice jar on left, shell vial on right.

Figure 3. A river sample taken from a stretch of sand, silt and gravel using a customized dip net with stainless steel mesh. The sample contains two *Macromia illinoiensis* (Swift River Cruiser) nymphs, two *Ophiogomphus rupinsulensis* (Rusty Snaketail) nymphs and a single *Stylurus amnicola* (Riverine Clubtail) nymph, all of which became discernible after most of the grit had been sifted and rinsed through the mesh.

Marla Garrison is a faculty member in the Department of Biology at McHenry County College, Crystal Lake, Illinois. She is author of Damselflies of Chicagoland *published online by Chicago's Field Museum https://fieldguides.fieldmuseum.org/guides/guide/388. She may be contacted via email at mgarrison@mchenry.edu or by phone (815)479-7627.*

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