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Nymph Cove: IDENTIFICATION TO GENUS: Gomphidae (Part 1)



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In our first Nymph Cove article, we promised to present educational tips on nymph identification characters, starting with family distinctions and then working toward genus level. Given that family level identification in North America has been made relatively easy, especially using references such as Needham, Westfall & May (2010) and Tennessen (2019), over the next few installments we want to concentrate on the more problematic genera in the families Gomphidae, Aeshnidae, Corduliidae, and Libellulidae. We begin here with the Gomphidae, some of which are quite easy to recognize but many of which can be troublesome.

The Generic Plate at the end of this article shows



Figure 2. Image of *Aphylla williamsoni*, dorsal view.

representative body types for all North American genera in the family Gomphidae. Some of these gomphid genera can be recognized in the field based merely on body shape, even with minimal experience. For example, at a glance *Hagenius* can hardly be mistaken given that its leaf-mimic abdomen is nearly as wide as it is long (Fig. 1). *Progomphus* also stands out with its combination of divergent wing sheaths, contrasting dorsal color pattern, and elongate antennal segment 4 (Fig. 1). Then there are other pairs of genera that can be recognized quickly, although telling them from each other requires a closer look. Three such generic pairs are: *Aphylla/Phyllocycla*, *Erpetogomphus/Ophiogomphus*, and *Lanthus/Stylogomphus*.

Let's look at *Aphylla* and *Phyllocycla* first. We can call them the "tube butts." Both genera have a very elongate and tubular abdominal segment 10 that stands out immediately (Fig. 2). The most obvious difference between them is found in the mouthparts. Looking at the underside, you will see that the palp of *Aphylla* has three or four large teeth while that of *Phyllocycla* lacks distinct teeth, and the ligula of *Aphylla* is merely convex whereas that of *Phyllocycla* is markedly protruding (Fig. 3). Another difference is found on the



Figure 1. Images of *Hagenius* (left) and *Progomphus* (right), dorsal view.

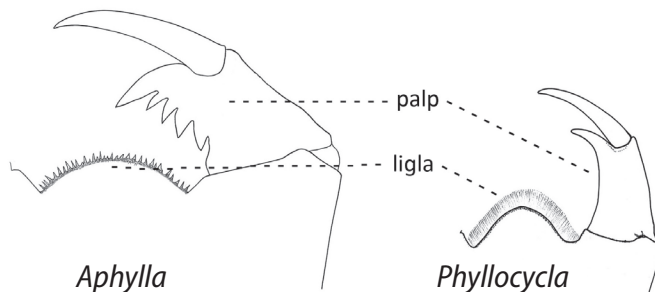


Figure 3. Labium of *Aphylla* and *Phyllocycla* comparing palpal teeth and convexity of ligula; F-0 shown.



Figure 4. Nymph of *Ophiogomphus australis*; F-0.

posterior abdominal segments: *Aphylla* lacks posterolateral spines on segments 8 and 9 (or if present, small and blunt) while *Phyllocycla* has small but sharp posterolateral spines on those segments.

Switching to *Erpetogomphus* and *Ophiogomphus*, these genera often occur together, and they resemble each other closely with a combination of divergent wing sheaths, stout bodies, and a rather wide, oval antennal segment 3 (Fig. 4). Distinguishing them requires comparing the relative lengths of the cerci and the epiproct: in *Erpetogomphus* the cerci are as long as or nearly as long as the epiproct, compared to *Ophiogomphus* in which the cerci are relatively shorter, about 0.6 to 0.8 times as long as the epiproct (Fig. 5). The distinction holds for instars as early as those in which wing sheaths first appear, about F-5 or 6. For other differences and further diagnosis of these two genera, see Tennesen (2019).

Now for the last pair of look-alikes in this installment: *Lanthus* and *Stylogomphus*, which occur in eastern North America, are similar in size and shape and can be mistaken for each other. They are the smallest of our gomphids, total length when full-grown not exceeding 21 mm; the only other gomphids that small are a few species of *Erpetogomphus* and *Ophiogomphus*, but they have divergent wing sheaths versus the parallel wing sheaths of *Lanthus* and *Stylogomphus*. *Octogomphus* is similar to *Lanthus* in habitus, however that genus is confined to the extreme western part of North America and so it is not considered further. The shape of antennal segment 3 serves to distinguish *Lanthus* and *Stylogomphus*. This enlarged segment is elongate oval in

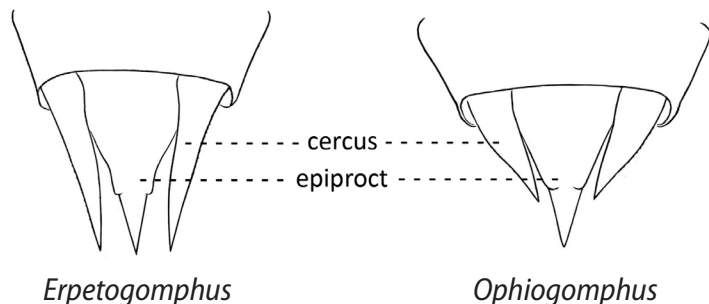


Figure 5. Apex of nymph abdomen of *Erpetogomphus* and *Ophiogomphus* comparing relative lengths of cerci and epiproct.

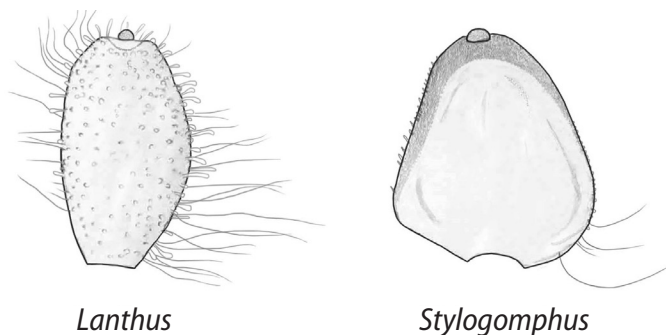


Figure 6. Antennal segments 3 and 4, dorsal view, of *Lanthus* (left) and *Stylogomphus* (right).

Lanthus and triangular in *Stylogomphus* (Fig. 6); note that the segment is much more widened basally in *Stylogomphus*. Instars earlier than F-4 present difficulty, as the shape of antennal segment 3 in *Stylogomphus* is more oval, not yet widened basally and not yet having acquired a definite triangular shape.

That's it for Part 1 of the Gomphidae, in which we have briefly (and hopefully adequately) diagnosed 9 of the 17 North American gomphid genera. Keep in mind that some characters work best with final instars and for the most part F-1; earlier instars often have not yet developed distinct character states. We welcome comments on how helpful the tips for distinguishing the genera considered in this installment have been. In the next issue, we'll respond to any comments and take a look at the remaining gomphid genera, those that are the most perplexing within the family, all the way from *Arigomphus* to *Stylurus*.

Citations

- Needham JG, Westfall MJ, Jr., May ML. 2014. *Dragonflies of North America: the Odonata (Anisoptera) fauna of Canada, the continental United States, northern Mexico and the Greater Antilles*. 3rd edn. Scientific Publishers, Gainesville. 657 pages.
- Tennesen KJ. 2019. *Dragonfly Nymphs of North America: An Identification Guide*. Springer Nature Switzerland. 620 pages.

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

North American Gomphidae

Habitus Images of the 17 Genera
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Aphylla



Phyllocycla



Hagenius



Progomphus



Erpetogomphus



Ophiogomphus



Lanthus



Stylogomphus



Octogomphus



Phyllogomphoides



Arigomphus



Stylurus



Dromogomphus



Phanogomphus



Gomphurus



Hylogomphus



Stenogomphus

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Caballito Escarlata (*Hetaerina caja*)
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