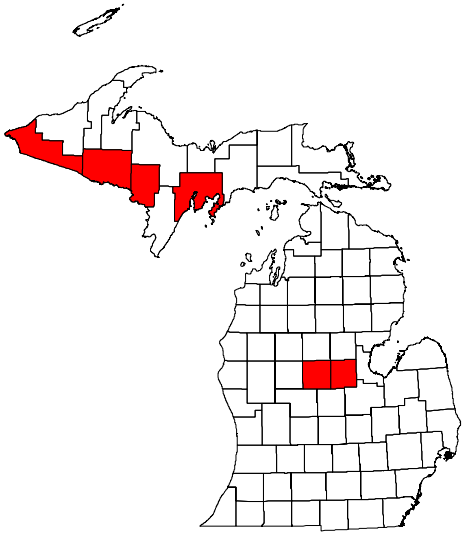
Gomphus quadricolor Walsh — rapids clubtail (dragonfly)

State Distribution



Best Survey Period

Status: State special concern

Global and state rank: G3G4/S2S3

Family: Gomphidae (clubtail dragonflies)

Range: The rapids clubtail is currently known from Massachusetts through extreme southern Ontario to Wisconsin, south to Ohio, Tennessee, and Illinois.

State distribution: The rapids clubtail, prior to MNFI inventory efforts in the late 1990's, was known from a single county (Midland) in Michigan. It is now known from eight sites and six counties in Michigan. The dragonfly is known from the upper peninsula counties of Delta, Dickinson, Iron, and Gogebic; and from the lower peninsula counties of Midland and Isabella. MNFI surveys found the dragonfly associated with five river systems including the Presque Isle, Paint, Menominee, Ford, and Chippewa. This species has not been systematically surveyed throughout the state, and may occur in additional counties in which suitable habitat is available.

Recognition: Rapids clubtail adults, like other members of its family, have eyes distinctly separated dorsally. *Gomphus quadricolor* is a **small (42-44mm, 1.7-1.8 inches) greenish dragonfly species, striped with blackish brown, and with a blackish abdomen.** Face hairy, light green with two transverse dark lines. **Abdomen little widened at end with last segments (8, 9, 10) dark on top; legs black.** Larvae of the rapids clubtail, like all gomphids, have four-segmented antenna with segment 3 large and robust, and segment 4 relatively small and sometimes inconspicuous.

Best survey time: Adult flight records in the Great Lake states range from late-May through mid-July and adults are best sampled during this period with the use of an aerial net. Larvae can be sampled with aquatic nets at any time of the year. We have had good success in early to mid-June searching the banks and protruding rocks of rapid streams for exuviae (cast skin of dragonfly larvae).

Habitat: Important habitat characteristics of rapids clubtail sites appear to include clean streams with rapids and projecting rocks, quiet water pools downstream from the rapids, and substrates of boulders, rocks, gravel, and sand (Walker 1958, personal observations). The quiet pools usually contain *Typha* and/or other emergent plants. It is believed that adults seek out running water or small rapids to lay their eggs. The eggs or young nymphs presumably drift downstream as exuviae have been found only on the quiet parts of streams (Walker 1958). Adults are usually found resting on the ground some distance removed from the river on bare sunny spots (Cook 1950).

Biology: The rapids clubtail exhibits a typical dragonfly life cycle with an aquatic egg, aquatic larva, and a terrestrial/aerial adult. Larvae of gomphids burrow in the sand, silt, or sometimes gravel of streams where they lie in wait of prey while partially buried

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(McCafferty 1981). The larvae are likely opportunistic feeders on small aquatic invertebrates. When the larva matures it climbs upon a cattail, rush, tree trunk, rock, or other vertical structures and sheds its exoskeleton (skin) and transforms into a winged adult. This emergence takes place in Michigan from late May through late June with adults on the wing until mid-July in most years. As an adult it feeds, establishes a territory, mates, and females lay eggs. Most adult dragonflies are general predators feeding primarily on insects in which they snare while flying (Corbet 1962). Adults likely remain fairly close to breeding sites.

Conservation/management: The most likely threats to the existence of this species have been identified as habitat alteration, and contamination. This may include clearcutting forests, building roads, railways, pipelines, and ditches; all of which may add to the sediment load in streams and affect the hydrologic integrity of sites. Clearcutting adjacent to occupied sites may also adversely impact the rapids clubtail and a number of invertebrate species by altering the site's microclimate and reducing the amount of feeding habitat and shelter during the maturation period prior to breeding. Maintaining a no-cut or selective cut buffer around the streams would help minimize the potential for adversely impacting this and associated species. Further research is needed before more specific management guidelines can be developed.

Research needs: Additional systematic surveys are needed throughout its range to locate new rapids clubtail populations. Known sites should be revisited and monitored. In Michigan, larval habitats within occupied stream reaches need to be identified and protected. Surveys to determine population sizes need to be undertaken at all Michigan sites. Information on the life history and ecology of the rapids clubtail is critical to understand its ecological requirements and to assess the potential for impacts on this species from various land use activities. Research should focus on the ecological requirements of both adults and larvae.

Related abstracts: Incurvate emerald (dragonfly), Hine's emerald (dragonfly), mesic northern hardwoods.

Selected references:

Cook, C. 1950. Notes on a collection of dragonflies (Odonata) from Nova Scotia. Can. Ent., 82: 190-194.

Corbet, P. S. 1962. A Biology of Dragonflies. H.F. & G. Witherby Ltd., facsimile reprint 1983 by E.W. Classey Ltd., Oxon, United Kingdom. 247 pp.

McCafferty, W. P. 1981. Aquatic Entomology: The fisherman's and ecologists' illustrated guide to insects and their relatives. Jones and Bartlett Publishers, Boston. 448 pp.

Walker, E. M. 1958. The Odonata of Canada and Alaska, Vol. 2: The Anisoptera- Four Families. Univ. Toronto Press, Toronto. 318 pp.

Abstract citation:

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