Stylurus notatus Rambur — Elusive clubtail

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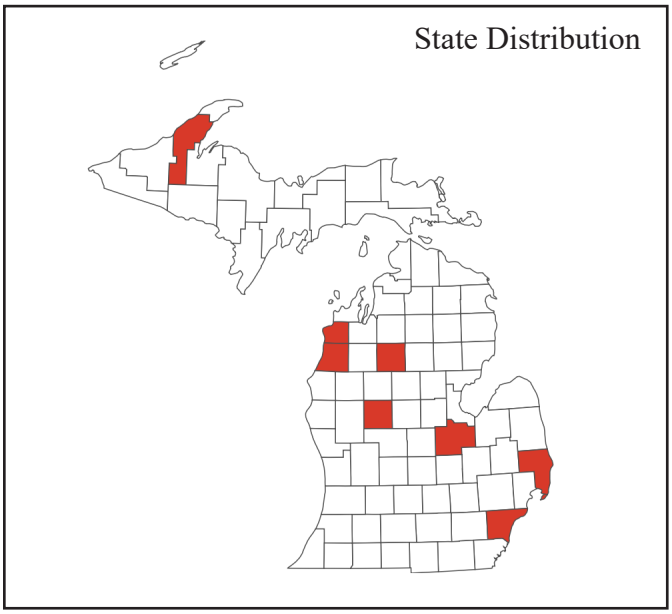

Best Survey Period

Legal status: State threatened

Global and state rank: G3 (Globally Vulnerable) / S1S2 (Critically Imperiled to Imperiled)

Family: Gomphidae (dragonflies)

Synonyms: *Gomphus notatus*

Total Range: Found scattered throughout the United States from South Dakota and Nebraska west through the Great Lakes states to New York, and from Minnesota south to Missouri and Tennessee (NatureServe 2025, OdonataCentral 2025). In Canada, there are found from Québec, Ontario, Manitoba, Saskatchewan, Alberta, and the Northwest Territories (NatureServe 2025).

State Distribution: Has been detected in Benzie, Houghton, Manistee, Mecosta, Missaukee, Saginaw, St. Clair, and Wayne counties. Likely present in other areas but undetected due to lack of dedicated surveys (Michigan Natural Features Inventory 2025).

Recognition: The elusive clubtail is a blue-eyed, slender dragonfly, that is mostly black with pale green to yellow lateral and dorsal abdominal spots. The dorsal spots are very small on segments 4-6, larger on 7 and 8, and reduced or absent on 9 and 10 (Mead 2021). The lateral spots are largest on segments 8 and 9. It has two complete green or yellow thoracic side stripes that angle away from the median. The abdomen is moderately clubbed, with segment 9 being as long as 8 (Walker 1958). Wings have black venation with dark reddish-brown pterostigmata when mature. Males have a black band above the upper suture on the face. Females have a paler green or yellow color on the abdomen.

Nymphs are slender and light colored, with darker paired blotches on the anterior half of the abdominal segments. Abdomen is long and slender, with segments 6-9 having lateral spines. Segment 9 is about 1.5x longer than the other segments (Walker 1958).

Riverine clubtails (*Stylurus amnicola*) and arrow clubtails (*Stylurus spiniceps*) are the most similar looking species. Arrow clubtails have longer hamules and a longer segment 9 than 8, with partly fused thoracic stripes (Dunkle 2000, Mead 2021).

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Riverine clubtails have yellow hind thighs, a three-pointed star in front of the wings, and nearly parallel stripes on top of the thorax, as opposed to the strongly diverging stripes of the elusive clubtail (Dunkle 2000, Mead 2021).

Best survey time/phenology: The best time to survey for elusive clubtails is from the first week of July to the second week of August when larvae emerge from the water to transition into flying adults (Walker 1958). Surveyors should search for exuviae, the final larval molt, on rocks, vegetation, or other structures near the water's edge along large lakes and rivers (Needham and Heywood 1929, O'Brien 1999). A D-frame net can be used to survey for aquatic larvae nearly year-round by disturbing the substrate into the net.

Visual surveys and aerial netting are less effective than exuviae surveys for the elusive clubtail (Walker 1958, Dunkle 2000, Mead 2021). Adults usually perch high up in trees overlooking open water (Mead 2021). When they do come close to ground level, they make long excursions over open water, rarely coming to land (Mead 2021). The adult flight period extends from the first week of July to the third week of October (Dunkle 2000, Mead 2021). Males tend to patrol between 1200 and 1500 hours (Dunkle 2000).

Habitat: Large, clear, sandy-bottomed rivers with moderate current and large sandy lakes, although silt and gravel substrates are also used (Dunkle 2000, NatureServe 2025). The adults frequent trees along valleys surrounding suitable aquatic habitat but also use lower vegetation like grass and shrubs (Dunkle 2000).

Biology: Little is known about the biology or ecology of the elusive clubtail. *Stylurus* dragonflies are known as "hanging clubtails", as they hang vertically when perched. The females drop their eggs into water without the male attached, and the eggs settle on the bottom (Needham and Heywood 1929). It is not known how long this species eggs take to hatch, but dragonfly eggs normally take between 10 days and several months to hatch (Dunkle 2000). The larvae are burrowers, remaining just below the surface of the substrate in ambush with the tip of their abdomen protruding for respiration (Needham and Heywood 1929). The amount of time for elusive clubtail larvae to mature is unknown. Dragonflies can take between one month and eight years to mature, depending on species and environment (Dunkle 2000). Larvae emerge from the water, attach themselves to a structure near the edge, and undergo their final molt. They must remain perched until their wings have dried enough to take flight.

Conservation/management: As dragonflies are dependent on aquatic systems for their life cycle, maintaining water quality and proper substrate in suitable habitat is critical. Changes to the shoreline, riverbed, or water quality may negatively impact the species. Dams, channelization, pollution, and sedimentation should be avoided. Upland habitat buffers are likely important for the adult elusive clubtails.

Research needs: A systematic survey for elusive clubtails in suitable habitats across Michigan is needed to understand its distribution and status. Little information exists on its life history in the state and information about larval and adult habitat use and phenology will be crucial in its conservation. Additional research is needed on the threats to this species.

Related abstracts: riverine clubtail, rapids clubtail, splendid clubtail, extra-striped snaketail, pygmy snaketail, incurvate emerald, Hine's emerald

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Abstract citation

Florkowski, J. T. 2025. Species Abstract for *Stylurus notatus* (Elusive Clubtail). Michigan Natural Features Inventory, Lansing, Michigan, USA. 3 pp.

Funding for this project was through the Michigan Department of Natural Resources' State Wildlife Grant T-9-T in cooperation with the U.S. Fish and Wildlife Service, Office of Conservation Investment.