Gray Petaltail

Tachoptery thoreyi

Photo credits: *Martha Reinhardt*

Scientific Name *Tachopteryx thoreyi* (Hagen in Selys, 1857)

Family Name Petaluridae
Petaltails

Did you know?
The gray petaltail is the only northeastern dragonfly species whose larvae may not be truly aquatic. The larvae live in the mud and vegetation of mucky, mossy, spring seeps which often contain very little standing water (Needham et al. 2000, Nikula et al. 2003).

Summary

Protection Special Concern Species in New York State, not listed federally.

This level of state protection means: those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York. Unlike the first two categories, species of special concern receive no additional legal protection un

Rarity G4, S2

A global rarity rank of G4 means: Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
A state rarity rank of S2 means: Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably make it very vulnerable in New York State.

State Ranking Justification

As of 2006, there are just 11 confirmed locations for this uncommon and local species. Several of the sites are in close proximity to one another and could be functioning as a single metapopulation. While additional, undiscovered populations are expected, the specific nature of the species' habitat suggests that the number of sites may not be large. Although most known populations are on protected lands, populations for this species are not thought to be particularly large and there are some potential threats to the species.

Conservation Issues

Threats

Since seepage areas are the key larval habitat for this species, any activities that alter the quality or quantity of groundwater seepage in an occupied area would pose a threat to gray petaltails. The most important likely negative impacts would come from changes in natural hydrology through the building of dams, increases in sediment load of the seepage (such as might occur should extensive logging take place in or adjacent to the seepage), changes in dissolved oxygen content, direct effects of pesticides, and chemical contamination by runoff or agricultural discharge. Direct, intentional killing by people is a possible threat to this species. In at least one state park, petaltails squashed by park visitors have been observed. Petaltails are not wary and occasionally land on people whose first reaction is probably to swat the insect.

Management Considerations

Consideration should be given to providing information to the public at state parks where this species occurs. The tame and harmless nature of the insects could be stressed in order to reduce the likelihood of the dragonflies being killed by startled hikers. For example, a photograph and brief information sheets could be provided at kiosks located near the entrances to trails during the late May-July flight period.

Research Needs

Although the larvae are known to be associated with seepage areas, and seepage areas are very apparent at some known sites, probable larval habitat is less apparent at some others. Efforts to locate larvae or exuviae to determine specific larval habitat is warranted for at least some of the known sites. A mark-recapture study similar to the study conducted by Dunkle (1981) in Florida would provide the basis for a better overall population estimate and long-term monitoring efforts for the species.

Short Term Trends

There is no information on population trends for this species at known locations, although several sites have been known for decades, indicating that they are viable and presumably stable. There is also the possibility that some sites have been lost in recent years due to new suburban and other development in at least the rapidly growing lower Hudson Valley portion of the species range.

Long Term Trends

Several sites have been known for decades indicating that they are viable and presumably stable over the long-term. Suburban and other development has been taking place in the lower Hudson Valley portion of the species range for decades and it is possible that some sites, including two represented by historical records, have been lost.

Habitat

The general habitat of the gray petaltail can be described as hillside seeps and fens in areas of deciduous forest (Dunkle 2000). In New York, all known populations are found at rocky gorges and glens with deciduous or mixed forests. Small shallow streams flow through the gorges and glens, and these streams are fed by hillside seepage areas, groundwater fed seepage streamlets or fens. The seepage areas represent the larval habitat for these populations, while the adults use both the seepage areas and the stream courses (New York Natural Heritage Program 2006).

Associated Ecological Communities

Appalachian Oak-hickory Forest

A hardwood forest that occurs on well-drained sites, usually on ridgetops, upper slopes, or south- and west-facing slopes. The soils are usually loams or sandy loams. This is a broadly defined forest community with several regional and edaphic variants. The dominant trees include red oak, white oak, and/or black oak. Mixed with the oaks, usually at lower densities, are pignut, shagbark, and/or sweet pignut hickory.

Appalachian Oak-pine Forest

A mixed forest that occurs on sandy soils, sandy ravines in pine barrens, or on slopes with rocky soils that are well-drained. The canopy is dominated by a mixture of oaks and pines.

Floodplain Forest

A hardwood forest that occurs on mineral soils on low terraces of river floodplains and river deltas. These sites are characterized by their flood regime; low areas are annually flooded in spring, and high areas are flooded irregularly.

Hemlock-northern Hardwood Forest

A mixed forest that typically occurs on middle to lower slopes of ravines, on cool, mid-elevation slopes, and on moist, well-drained sites at the margins of swamps. Eastern hemlock is present and is often the most abundant tree in the forest.

Oak-tulip Tree Forest

A hardwood forest that occurs on moist, well-drained sites in southeastern New York. The dominant trees include a mixture of five or more of the following: red oak, tulip tree, American beech, black birch, red maple, scarlet oak, black oak, and white oak.

Rich Sloping Fen

A small, gently sloping wetland that occurs in a shallow depression on a slope composed of calcareous glacial deposits. Sloping fens are fed by small springs or groundwater seepage. Like other rich fens, their water sources have high concentrations of minerals and high pH values, generally from 6.0 to 7.8. They often have water flowing at the surface in small channels or rivulets.

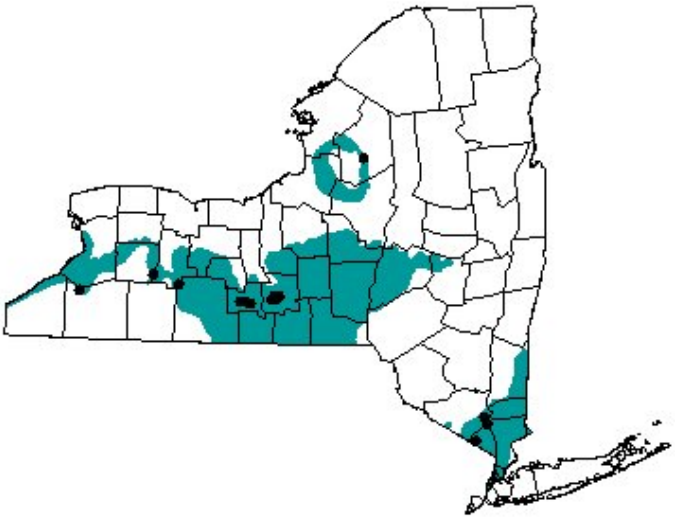
Rocky Headwater Stream

The aquatic community of a small- to moderate-sized perennial rocky stream typically with a moderate to steep gradient, and cold water that flows over eroded bedrock, boulders, or cobbles in the area where a stream system originates.

Other Probable Associated Communities

Marsh headwater stream

Range



The map shows the known locations for gray petaltail (black dots) based on the New York Natural Heritage Program database . A general approximation of the potential range (blue shading) throughout the state is based on the U.S. Forest Service Ecological Units (Keys et al. 1995).

Data Sources

- New York Natural Heritage Program (Natural Heritage Element Occurrences)
- NYS GIS Data Sharing Cooperative, simplified by NYS Department of Environmental Conservation, Habitat Inventory Unit (County Boundary for New York State)
- U.S. Department of Agriculture, Forest Service (Subregions of the conterminous United States)

Best Places to See

Enfield Glen in Robert Treman State Park (Tompkins County)
Stony Brook State Park (Steuben County)

New York State Distribution

Overall, the statewide range for this species is quite broad, with records coming from counties across the southern portion of the state including the Lower Hudson Valley, the southern portion of the Finger Lakes and the Lake Erie portion of the Great Lakes drainage. There is a fairly recent and reliable site record from one location on Tug Hill that may represent a disjunct portion of the range for this primarily southern species.

Global Distribution

This is principally a southern species whose range extends from northern Florida west to eastern Texas and Oklahoma, and north to southern Michigan, southern New York, and southern New England (Dunkle 2000, Nikula et al. 2003).

Identification Comments

Identifying Characteristics

Gray petaltails are large black and gray dragonflies that are often seen perching on tree trunks. While they resemble some of the species of mosaic darners (genus Aeshna), they are easily distinguished from them by their well-separated eyes,and the long, parallel-sided stigma on the wing. The eyes are dark brown to gray. The thorax is mainly gray, while the abdomen is gray with black markings. Adult gray petaltails are approximately 7.1-8.0 cm in length. Females are similar to males, but have a well-developed blade-like ovipositor. The larvae can be recognized by their short, thick, and hairy 7-jointed antennae and by the quadrate form of the prementum and the strongly- angulated side margins of the abdominal segments (Needham et al. 2000).

Characteristics Most Useful for Identification

The well-separated eyes and the long, parallel-sided stigmas on the wings are important characters for this species, although its large size and black and gray color make it difficult to confuse with any other northeastern dragonfly species.

Best Life Stage for Identifying This Species

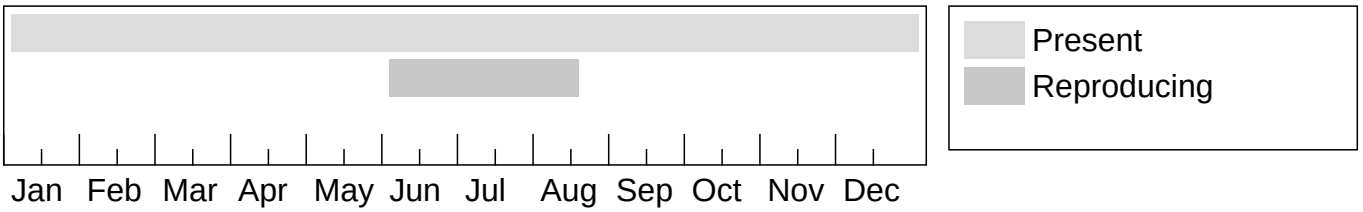
Mature adults are the best life stage for the identification of all dragonflies. Although the identification of larval dragonflies requires the use of detailed taxonomic keys, can be very difficult, and can be very unreliable, especially in the case of larvae that are not yet mature, the larva of this species is easier to distinguish than the larva of many other species. Larval identification is best done by people with a great deal of expertise in this area.

Behavior

The behavior of adult gray petaltails is quite interesting. They frequent sunny openings at, or near, the hillside seepages where males chase one another and wait for females to enter the habitat, mate and oviposit. Males also will fly up the length of large tree trunks searching for females and both sexes frequently perch on tree trunks. Adult petaltails are easy to approach, not wary of people and in fact will frequently land on people. At the same time, they are swift of flight and are difficult to follow when they do take flight (Dunkle 1981, Needham et al. 2000, Nikula et al. 2003).

The Best Time to See

The majority of the New York records and observations for this early-season species are from mid June through mid July, although there are also records from early June and into early August (New York Natural Heritage Program 2006, Donnelly 1999).



The time of year you would expect to find Gray Petaltail in New York.

Taxonomy

Kingdom Animalia
└ **Phylum** Mandibulates (Mandibulata)
└ **Class** Insects (Insecta)
└ **Order** Dragonflies and Damselflies (Odonata)
└ **Family** Petaluridae (Petaltails)

Additional Resources

Links

NatureServe Explorer
http://natureserve.org/explorer/servlet/NatureServe?searchName=TACHOPTERYX+THOREYI

Google Images
http://images.google.com/images?q=TACHOPTERYX+THOREYI

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New York Natural Heritage Program
625 Broadway, 5th Floor,
Albany, NY 12233-4757
Phone: (518) 402-8935
acris@nynhp.org

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