

Mocha Emerald



Somatochlora linearis



Photo credits: *Blair Nikula*

Scientific Name *Somatochlora linearis*
(Hagen, 1861)

Family Name Corduliidae
Emeralds

Did you know?

Most species of Striped Emeralds, dragonflies of the genus *Somatochlora*, have a metallic green wax coating their thorax (Dunkle 2000). The females of our species of interest, the Mocha Emerald, are slightly larger than the males (Natural Heritage Endangered Species Program 2003).

Summary

Protection Not listed in New York State, not listed federally.

This level of state protection means: The species is not listed or protected by New York State.

Rarity G5, S2

A global rarity rank of G5 means: Demonstrably 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.

Conservation Status in New York

The Mocha Emerald is known to occur in eight counties in New York State, with no population estimates determined. Further survey efforts may result in the identification of additional populations or range expansions, and may enable population size estimations.

Short-term Trends

No estimate of population size for the Mocha Emerald has been made between the early-1990s to 2002 (New York Natural Heritage Program 2007). Information prior to this time frame is even more limited. New location information on the Mocha Emerald in New York may reflect heightened interest in surveying for this species rather than a population increase or a range expansion (Holst 2005).

Long-term Trends

While recent observations of Mocha Emeralds have been made from the early-1990s to 2002 in Westchester, Rockland, and Orange counties, they are known to occur in Cattaraugus, Dutchess, Erie, Oswego, and Tompkins counties, as well as New York City based on earlier observations (Donnelly 2004, New York Natural Heritage Program 2007). Since the full extent and size of the populations have not been determined, long-term trends are unclear.

Conservation and Management

Threats

Any activity that might lead to water contamination or the alteration of natural hydrology could impact Mocha Emeralds and other stream dwelling odonates (Holst 2005). Such threats might include chemical contamination from agricultural run-off, changes in dissolved oxygen content, flow alteration, increases in sediment load, development near their habitats, and the building of dams (Natural Heritage Endangered Species Program 2003, Holst 2005).

Conservation Strategies and Management Practices

Any measures to reduce water contamination or hydrological alteration such as agricultural run-off, upland development, and damming that would affect flow of small forested streams should be considered when managing for this species (Holst 2005).

Research Needs

Further research is needed to define the distribution and population size of the Mocha Emerald. In addition, research is required to understand the habitat requirements and threats to this species, and to create appropriate management guidelines for its persistence in known locations (Holst 2005).

Habitat

Mocha Emeralds inhabit small, shaded streams in forested areas that are about 1-3 yards wide with sand, gravel, or rocky substrates (Dunkle 2000, Nikula et al. 2003, Holst 2005). Larvae are aquatic and found in the water during this lifestage, whereas adults are terrestrial and are found in habitats surrounding forested streams.

Associated Ecological Communities

Other Probable Associated Communities

Intermittent stream
Marsh headwater stream
Rocky headwater stream

Associated Species

Sable Clubtail (*Gomphus rogersi*)
Ocellated Emerald (*Somatochlora minor*)

Identification Comments

Identifying Characteristics

Adult members of the family Corduliidae, or emeralds, have emerald green jewel-like eyes which come together to form a seam on top of their heads. Mocha Emeralds are large (2.3-2.6 inches), slender, and elegant dragonflies with black legs, a chocolate or mocha-colored thorax that has a greenish iridescence, and sometimes brown-tinted wings. They have a black abdomen with a whitish-yellow lateral (side) spot on abdominal segment 2 and pale orange-brown lateral (side) spots at the proximal ends (closest to the thorax) of segments 3-8. Male terminal appendages and female subgenital plates are distinctive among *Somatochlora* species when examined under magnification. Females (2.6-2.7 inches) are larger than males (2.3-2.4 inches), and their ovipositors are thorn-shaped and perpendicular from their abdomen. They are usually distinguished from other species of emeralds by their large size, elegant shape, brown-tinted wings, lack of markings on their thorax, and forested stream habitat.

Behavior

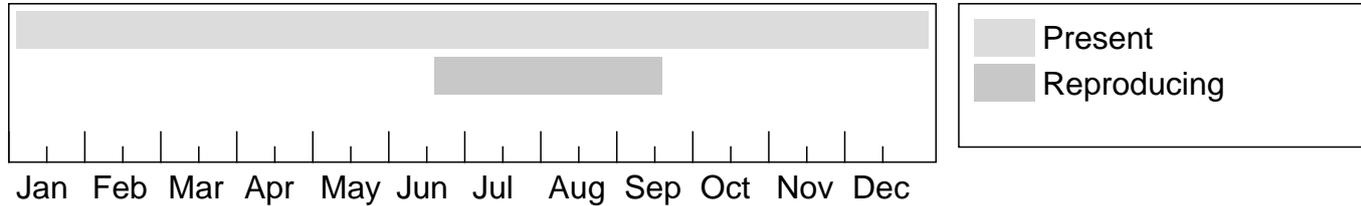
Adult Mocha Emeralds hunt and feed in nearby fields or forest undergrowth, sometimes hunting in pairs. Flight behavior can be rapid with up-and-down and side-to-side undulations or slower with gliding movements. Males patrol up to 20-30 yards of stream looking for females (Dunkle 2000). Females oviposit (lay eggs) alone after mating by tapping the tip of their abdomen directly into wet mud or shallow water at the edges of the stream (Natural Heritage Endangered Species Program 2003, Nikula et al. 2003).

Diet

Mocha Emerald larvae feed on smaller aquatic invertebrates and adults feed on insects which they capture in flight.

The Best Time to See

Somatochlora linearis are active from late June through early September in the northeast (Nikula et al. 2003). They are most active in early morning, beginning at dawn, and in the late afternoon to dusk (Dunkle 2000). Larvae may be found in appropriate habitats year-round.



The time of year you would expect to find Mocha Emerald in New York.

Similar Species

Williamson's Emerald(*Somatochlora williamsoni*): Male Williamson's Emeralds are darker brown than Mocha Emerald males. Females have ovipositors (modified appendages used to pierce a substrate and lay eggs) that are longer than the length of abdominal segment 9, while the female Mocha Emerald's ovipositor is about as long as her abdominal segment 9. Both sexes of the Clamp-Tipped Emerald have thoracic stripes, while the Mocha Emerald is lacking of any markings on its thorax.

Clamp-Tipped Emerald(*Somatochlora tenebrosa*): If you look at the terminal appendages of a male Clamp-tipped Emerald from the side, there will be a circular gap between the appendages. This is distinctive from the Mocha Emerald and other emerald species. Female Clamp-tipped Emerald's have ovipositors (modified appendages used to pierce a substrate and lay eggs) that are longer than the length of abdominal segment 9, while the female Mocha Emerald's ovipositor is about as long as her abdominal segment 9. Both sexes of the Clamp-tipped Emerald have thoracic stripes, while the Mocha Emerald is lacking of any markings on its thorax.

Taxonomy

Kingdom Animalia

└ Phylum Mandibulates (Mandibulata)

└ Class Insects (Insecta)

└ Order Dragonflies and Damselflies (Odonata)

└ Family Corduliidae (Emeralds)

Additional Resources

Links

NatureServe Explorer

<http://natureserve.org/explorer/servlet/NatureServe?searchName=SOMATOCHLORA+LINEARIS>

Google Images

<http://images.google.com/images?q=SOMATOCHLORA+LINEARIS>

References

- Abbott, J.C. 2007. OdonataCentral: An online resource for the odonata of North America. Austin, Texas. Available at <http://odonatacentral.com> (accessed February 28, 2007).
- Donnelly, T. W. 1992. The odonata of New York State. Bulletin of American Odonatology. 1(1):1-27.
- Donnelly, T.W. 1999. The dragonflies and damselflies of New York. Prepared for the 1999 International Congress of Odonatology and First Symposium of the Worldwide Dragonfly Association. July 11-16, 1999. Colgate University, Hamilton, New York. 39 pp.
- Donnelly, T.W. 2004. The Odonata of New York State. Unpublished data. Binghamton, NY.
- Dunkle, S.W. 2000. Dragonflies Through Binoculars. A Field Guide to Dragonflies of North America. Oxford University Press: New York, New York. 266 pp.
- Keys, Jr.,J.; Carpenter, C.; Hooks, S.; Koenig, F.; McNab, W.H.; Russell, W.;Smith, M.L. 1995. Ecological units of the eastern United States - first approximation (cd-rom), Atlanta, GA: U.S. Department of Agriculture, Forest Service. GIS coverage in ARCINFO format, selected imagery, and map unit tables.
- Mead, K. 2003. Dragonflies of the North Woods. Kollath-Stensaas Publishing, Duluth, MN. 2003 pp.
- Natural Heritage Endangered Species Program. 2003. Mocha emerald dragonfly (*Somatochlora linearis*). Massachusetts Division of Fisheries and Wildlife, Westborough, MA. Available <http://www.state.ma.us/dfwele/dfw/nhesp> (accessed February 28, 2007).
- NatureServe. 2005. NatureServe Central Databases. Arlington, Virginia. USA
- NatureServe. 2007. NatureServe Explorer: An online encyclopedia of life [web application]. Version 6.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: January 11, 2007).
- Needham, J.G., M.J. Westfall, Jr., and M.L. May. 2000. Dragonflies of North America. Revised edition. Scientific Publishers, Gainesville, Florida. 939 pp.
- New York Natural Heritage Program. 2007. Biotics Database. Albany, NY.
- New York State Department of Environmental Conservation. 2005. Comprehensive Wildlife Conservation Strategy Planning Database. New York State Department of Environmental Conservation. Albany, NY.
- Nikula, B., J.L. Loose, and M.R. Burne. 2003. A field guide to the dragonflies and damselflies of Massachusetts. Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program, Westborough, MA. 197 pp.
- Walker, E.M. 1958. The odonata of Canada and Alaska. Vol 2. The Anisoptera-four families. Univ. Toronto Press 318 pp.

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