

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 Unprotected in New York State, not listed federally.

This level of state protection means: the species may be taken at any time without limit; however a license to take may be required.

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.

State Ranking Justification

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.

Conservation Issues

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).

Management Considerations

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).

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.

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

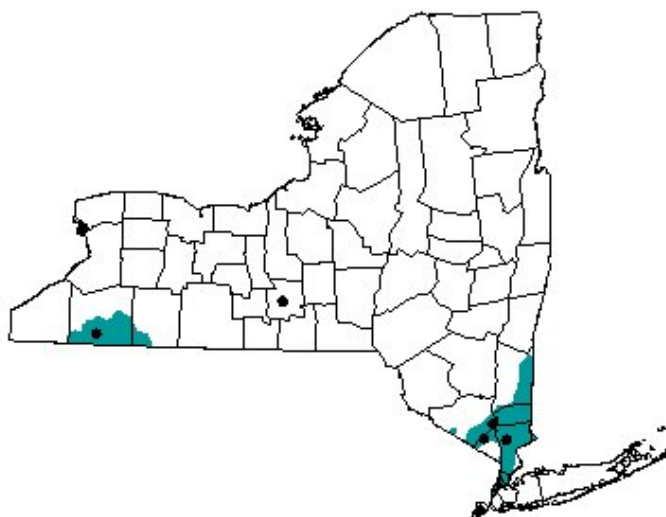
Other Probable Associated Communities

Intermittent stream
Marsh headwater stream
Rocky headwater stream

Associated Species

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

Range



The map shows the known locations for mocha emerald (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

Beaver Pond Brook (Rockland County)

New York State Distribution

The Mocha Emerald is confirmed in locations from eight counties in the eastern, central, and western parts of the state (Donnelly 2004, New York Natural Heritage Program 2007).

Global Distribution

The Mocha Emerald is distributed across North America from Ontario and the northeastern United States south to Florida, then west to the midwest and south to Texas (Dunkle 2000). It has a total known range from New York, New Jersey, Massachusetts, Connecticut, Rhode Island, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Florida, Georgia, Alabama, Louisiana, Mississippi, Missouri, Arkansas, Oklahoma, Kansas, Texas, Illinois, Indiana, Michigan, Iowa, and Ohio.

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

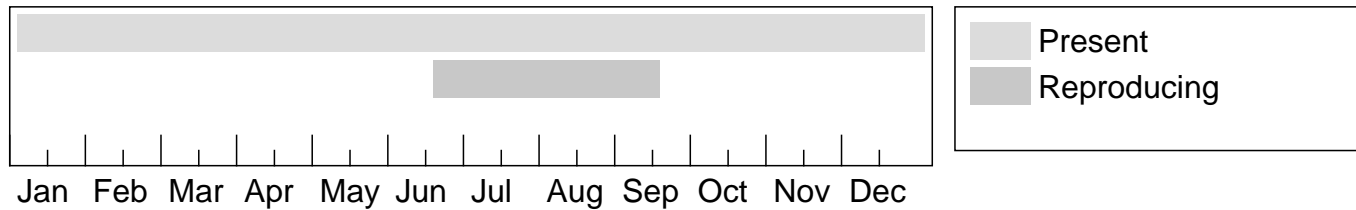
Adult Mocha Emeralds hunt and feed in nearby fields or forest undergrowth, sometimes hunting in pairs. Flight behavior can be rapid with up-and-down and side-to-side undulations or slower with gliding movements. Males patrol up to 20-30 yards of stream looking for females (Dunkle 2000). Females oviposit (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>

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