

Hine's Emerald Dragonfly

Somatochlora hineana

Guidelines for Landowners Using Conservation Practices

Missouri Department of Conservation

Common name ▪ Hine's emerald dragonfly
Scientific name ▪ *Somatochlora hineana*
State status ▪ Endangered
Federal status ▪ Endangered

Ecology

Hine's Emerald Dragonfly is a critically imperiled odonate and the only dragonfly on the Federal Endangered Species List. The largest known breeding population occurs in Door County, Wisconsin. Other populations have been located in northern Michigan, northeastern Illinois, and in scattered locations throughout the Missouri Ozarks. The dragonfly has brilliant emerald-green eyes, a metallic green body, and yellow striping on its sides. Its body is approximately 2.5 inches long, and its wingspan reaches about 3.3 inches. Hine's emerald dragonfly lives in calcareous (high in calcium carbonate) spring-fed marshes, sedge meadows, and Ozark fens overlaying dolomite bedrock. Adult males defend small breeding territories, pursuing and mating with females who enter. The female lays eggs by repeatedly plunging the tip of her abdomen into shallow water. Later in the season or the following spring, immature dragonflies, called nymphs, hatch from the eggs. The nymph lives in the water for 2 to 4 years, eating smaller aquatic insects and shedding its skin many times. The nymph then crawls out of the water, molts a final time, and emerges as a flying adult. The adults may live only 4 to 5 weeks. The adult flight season in Missouri is limited to the months of June and July. Dragonflies play an important role in nature. They catch and eat small flying insects, including mosquitoes, biting flies, and gnats. In its immature stage (nymph), a dragonfly is an important food

source for aquatic wildlife including many fish species.

Reasons for Decline

The greatest threat to Hine's emerald dragonfly is habitat destruction. Many wetland habitats that this dragonfly depends on for survival have been drained, filled, or degraded in some way by urban or industrial development, agricultural land uses, spring development, or a host of other destructive influences. Contamination of wetlands by pesticides or other pollutants certainly poses a threat; as do developments that decrease the amount or quality of ground water flowing to this dragonfly's habitat. Hine's emerald dragonfly is dependent on clean spring-fed shallow water to breed and develop. Wetland habitat destruction across the Ozarks takes on many forms, the following are recommendations for managing wetlands that may support Hine's emerald dragonfly and which wetland destroying adverse practices should be avoided.



Photo Credit: Missouri Department of Conservation

Recommendations

In Missouri, Hine's emerald dragonfly occupies habitats often referred to as Ozark fens. Fens are subtle natural communities and are often very small (regularly less than an acre in size) seeps in a pasture, a mucky grassy area near a spring, or a location on your land that stays wet year round may all provide habitat for Hine's emerald dragonfly and may classify as a fen or a fen-like wetland. Fens typically have saturated soils, are often fed by a nearby spring, and have a host of plant species indicative of wetlands.

Conserving Hine's emerald dragonfly populations includes managing and protecting the wetland habitats that support them. Fens, unfortunately, are readily disturbed and recover very slowly if at all if they are damaged. Maintaining the hydrologic integrity of fens or seeps on your property is paramount. Drainage or inundation of fens will assuredly damage them irreparably. Maintaining connectivity of the spring system with the fen, ensuring riparian and wetland areas are protected from stressors, and eliminating exotic species all help to ensure your wetland feature will remain healthy and possibly support Hine's emerald dragonfly.

Promote land management activities that restore sinkhole ponds and other wetland or karst communities. Areas adjacent to existing Hine's emerald dragonfly sites should be managed in such a way as to prevent the introduction of nonnative species or possible degradation of the native plant community.

A survey of the project area should be conducted by a trained biologist in order to identify occurring populations of this species.

Refer to Management Recommendations for Construction Projects Affecting Missouri Karst Habitat and Management Recommendations for Construction Projects Affecting Missouri Streams and Rivers.

Consider the balance between adverse and beneficial practices when determining the overall effect of a conservation practice. The following are practices that will benefit this unique insect:

Beneficial Practices

- ☐ Exclude livestock from fens, seeps, wetlands, sedge meadows, and streams or intermittent stream pools.

- ☐ Restore habitats listed above by controlling invasive species, minimizing woody brush invasion, and restoring hydrology to impacted wetlands.

- ☐ Nutrient and pest management should be conducted on adjacent agricultural fields in order to reduce opportunities for runoff into wetlands.

- ☐ Utilize grazing programs that reduce overgrazing pressures.

- ☐ Implement practices that control erosion, prevent stream downcutting, and prevent the delivery of sediment to aquatic systems.

- ☐ Prohibit all-terrain vehicle, off-highway vehicle, and/or harvesting equipment operation in wetlands, spring branches, and streams.

- ☐ Apply pesticides in a manner consistent with labeling, and utilize herbicides labeled for wetlands when conducting vegetation management in wetland communities.

Adverse Practices

- ☐ Changing the hydrology of the fen, sedge meadow, stream, or intermittent stream pools by:

- ☐ Diverting, altering, or collecting the flow through ditching, underground tile, or "spring developments."

- ☐ Impounding the habitat or inundating it with a berm or other structure.

- ☐ Dredging or deepening of the habitat to create a pool or pond.

- ☐ Uncontrolled livestock access that destroys or degrades habitat structure.

- ☐ Altering the landscape surrounding a spring or wetland to a degree in which a change in hydrology or increased sediment delivery is anticipated.

- ☐ Removing or degrading riparian corridors near springs, creeks, or streams.

- ☐ Application of pesticides and inorganic fertilizers that alter aquatic vegetation and/or macroinvertebrates.

- ☐ Introducing nonnative species or encouraging their spread.

- ☐ Operating all-terrain vehicles, off-highway vehicles, and/or harvesting equipment in a manner that willfully or wantonly disregards the natural and ecological balance of a wetland.

- Developing, blazing, utilizing, or encouraging the use of trails that adversely impact wetland communities.
- Damaging sensitive wetland communities through trampling, wallowing, or other soil disturbances when horseback riding, trail riding, or other equestrian activities.

Information Contacts

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<http://www.mdc.mo.gov/nathis/endangered/>

U.S. Fish and Wildlife Service
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Columbia, MO 65203
Telephone: 573-234-2132
<http://www.fws.gov/midwest/partners/missouri.html>

Legal

The Missouri Department of Conservation prepared these guidelines for conservation practices with assistance from other state agencies, contractors, and others to provide guidance to those people who wish to voluntarily act to protect wildlife and habitat.

Compliance with these management guidelines is not required by the Missouri wildlife and forestry law or by any regulation of the Missouri Conservation Commission. Other federal, state or local laws may affect construction practices.

“State Endangered Status” is determined by the Missouri Conservation Commission under constitutional authority, and specific requirements for impacts to such species are expressed in the Missouri Wildlife Code, rule 3 CSR 10-4.111.

Species listed under the Federal Endangered Species Act must be considered in projects receiving federal funds or requiring permits under the Clean Water Act, with compliance issues resolved in consultation with the U.S. Fish and Wildlife Service.