Hine's Emerald Dragonfly

(*Somatochlora hineana* Williamson)

Recovery Plan

U.S. Department of the Interior
United States Fish and Wildlife Service
Great Lakes--Big Rivers Region (Region 3)
Fort Snelling, Minnesota

HINE'S EMERALD DRAGONFLY
(*Somatochlora hineana* Williamson)

RECOVERY PLAN

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for

Region 3
U.S. Fish & Wildlife Service
Fort Snelling, MN

Approved

Regional Director, Region 3
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DISCLAIMER

This recovery plan has been prepared by the Hine's emerald dragonfly Recovery Team under the leadership of Dr. Dan M. Johnson with assistance in writing the document by Deanna Zercher of the Illinois Natural History Survey in Champaign, Illinois. The purpose of the plan is to delineate reasonable actions needed to restore and/or protect the endangered Hine's emerald dragonfly (*Somatochlora hineana*). Recovery objectives will be attained and funds made available subject to budgetary and other constraints affecting the parties involved, as well as the need to address other priorities.

The plan does not necessarily represent the views or official position of any individuals or agencies involved in plan formulation, other than the U.S. Fish and Wildlife Service (USFWS). The approved recovery plan will be modified as dictated by new findings, changes in species status, and the completion of recovery tasks.

Literature citations should read as follows:

U.S. Fish and Wildlife Service. 2001. Hine's Emerald Dragonfly (*Somatochlora hineana*) Recovery Plan. Fort Snelling, MN. 120 p.

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EXECUTIVE SUMMARY
Hine's Emerald Dragonfly Recovery Plan

Current Status: The Hine's emerald dragonfly, *Somatochlora hineana,* was listed as endangered in January 1995. Extant Hine's emerald dragonfly populations are currently known to persist in Illinois, Wisconsin, Michigan, and Missouri. The Illinois population is the most genetically diverse, and the Wisconsin populations are the largest and presumably most secure. Information on the status of the Michigan and Missouri populations is limited because of their recent discoveries. Historically known from Ohio and Indiana, it is thought to be extirpated from these states.

Habitat Requirements and Limiting Factors: The Hine's emerald dragonfly occupies marshes and sedge meadows fed by calcareous groundwater seepage and underlain by dolomite bedrock. In general, these areas are characterized by the presence of slowly flowing water and nearby or adjacent forest edges. Known occupied habitats are currently restricted to the lower Des Plaines River valley, in Illinois; northeastern Door County and Cedarburg Bog, Wisconsin; areas of the Hiawatha National Forest, in the Upper Peninsula of Michigan, three areas in the Lower Penninsula of Michigan, and at three fens in Missouri. Loss of this already rare and restricted habitat to agriculture, commercial and industrial development is the primary cause of the species' decline. Loss of remaining habitat from the same pressures, combined with successional change in the existing habitats and disruption of ecological and hydrological processes, are threats to surviving populations.

Recovery Objectives: The objective of this recovery plan is to restore the Hine's emerald dragonfly to viable populations so that it may be removed from the Federal list of *Endangered and Threatened Wildlife and Plants.*

Recovery Criteria: Each of the two Recovery Units contains a minimum of three populations composed of at least three subpopulations. Each subpopulation contains a minimum of 500 reproductive adults for 10 consecutive years. Within each subpopulation, there are at least two breeding habitat areas, each fed by separate seeps and/or springs. For each population, the habitat supporting at least three subpopulations should be legally or formally protected and managed for Hine's emerald dragonfly, using long-term protection mechanisms such as watershed protection, deed restrictions, land acquisition, or nature preserve dedication. In addition, mechanisms protecting the up gradient groundwatershed should also be in place.

Actions Needed:
1. Protect and manage extant populations
2. Conduct studies
3. Conduct searches for additional Hine's emerald populations
4. Conduct an information and education program
5. Conduct a reintroduction and augmentation program
6. Review and track recovery progress

Total Cost of Recovery: The total estimated cost for the recovery actions outlined in this plan is $13,163,000. These recovery actions will benefit not only the Hine's emerald dragonfly, but entire natural communities and other environmental amenities such as drinking water. Many of the actions described in this recovery plan are already funded by existing programs in agency and private organization budgets. The cost estimate represents expenditures over a 20 year time period.

Date of Recovery: Full recovery of this species could occur within 10 years of initially meeting the recovery criteria for delisting. It is anticipated that recovery could occur as soon as 2019.

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