**Baseline**

The first recorded occurrence of this species in Illinois was a collection from 1983 that was not confirmed until 1987. Adult surveys began shortly thereafter, while larval survey techniques were not developed until 1999. The Illinois population consists of 10 sites that may each constitute a subpopulation. Some sites have estimates of adult populations, some have larval population estimates, and many have only presence confirmed. Severe drought in 2005 resulted in apparent sharp decreases in numbers at most Illinois sites.

**Recovery**

Illinois is in the northern recovery unit which must have a minimum of 3 populations, each composed of at least 3 subpopulations, each containing a minimum of 500 reproductive adults for 10 consecutive years. Within each subpopulation there must be at least two separate breeding habitat areas fed by separate springs or seeps. Each area of breeding habitat must be formally protected.

<table>
<thead>
<tr>
<th>Illinois sites</th>
<th>most recent adult estimate</th>
<th>most recent larval estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lockport</td>
<td>p</td>
<td>73±5 only 2N</td>
</tr>
<tr>
<td>River South</td>
<td>36</td>
<td>low</td>
</tr>
<tr>
<td>Middle</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Long Run</td>
<td>p</td>
<td>52±29</td>
</tr>
<tr>
<td>Romeoville</td>
<td>p</td>
<td>nd</td>
</tr>
<tr>
<td>Keepataw</td>
<td>p</td>
<td>21</td>
</tr>
<tr>
<td>Black Partridge</td>
<td>p</td>
<td>nd</td>
</tr>
<tr>
<td>Waterfall</td>
<td>p</td>
<td>p</td>
</tr>
<tr>
<td>McMahon</td>
<td>p</td>
<td>?</td>
</tr>
<tr>
<td>Crest Hill</td>
<td>p</td>
<td>p</td>
</tr>
<tr>
<td>Total Illinois pop estimate (Soluk)</td>
<td></td>
<td>1849±925</td>
</tr>
</tbody>
</table>

*p=* presence confirmed but no good quantitative data  
*nd=* no data

**Adult Population Estimates for HMS Sites in Illinois**

**Threats** (loss of resource quantity, quality, or disruption of a process needed for species survival)

- Habitat loss and degradation
- Prey base reduction
- Barriers to movement
- Fragmentation of feeding, breeding, and sheltering habitat patches
- Disruption of hydrologic cycle including groundwater recharge
**Stressors** (clear descriptors of what can be avoided, minimized, or mitigated)

- Sedimentation
- Groundwater depletion
- Substrate removal [quarrying]
- Vegetation removal
- Invasive species
- Road salt
- Nutrients / biological pollutants
- Pesticides, Herbicides
- Increased water levels/flooding
- Prolonged drought
- Increased impervious surfaces
- Vehicle strikes
- Wetland fill
- Physical alteration of habitat
- Air pollution
- Aerial obstructions

**Avoidance and minimization of effects** (to HED during project activities)

- Control soil erosion and sedimentation
- Reduce/minimize groundwater withdrawals
- Avoid or reduce acreage of quarrying within habitat
- Manage for suitable native vegetation within habitat
- Reduce road salt usage in tributary areas
- Redirect contaminated runoff away from habitat
- Restrict use of pesticides within and upgradient of habitat
- Promote infiltration BMPs in recharge area
- Avoid and minimize wetland fill within habitat areas
- Reduce/avoid new impervious surfaces in recharge and habitat area
- Develop methods to reduce HED mortality from train/vehicular collisions

**Mitigation opportunities**

- Create or restore larval/breeding habitat areas within or near 10 known sites
- Promote infiltration and recharge to offset groundwater withdrawals to maintain hydrology of known and restored/created habitats
- Manage landscape to improve adult travel corridors to offset or reduce vehicular strikes
- Improve condition of existing habitat – remove invasives, improve groundwater flow and quality

**Short-term objectives (2010)**

1. Monitor created HED habitat at Keepataw and Water Fall Glen for successful additions to baseline in Illinois population
2. Complete next phase of genetic research to determine population/subpopulation status and gene flow in Illinois population
3. Survey larval and adult populations to document baseline numbers at Lockport Prairie, River South, Keepataw, Water Fall Glen, Black Partridge, and Middle Parcel
4. Initiate population estimates to determine baseline at Crest Hill WWTP, Long Run Seep, McMahon Woods, and Romeoville Prairie
5. Complete habitat restoration efforts at McMahon Woods to add X acres of habitat and potentially increase baseline in Illinois
6. Complete draft HCP to address stressors at Lockport Prairie, River South and Long Run Seep and maintain baseline.

**HINE’S EMERALD DRAGONFLY CRITICAL HABITAT**

<table>
<thead>
<tr>
<th>HED LARVAL PRIMARY CONSTITUENT ELEMENTS</th>
<th>HED ADULT PRIMARY CONSTITUENT ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic soils (hestosols, or with organic surface horizon overlying calcareous substrate (predominantly dolomit and limestone bedrock).</td>
<td>Natural plant communities near the breeding/larval habitat which may include fen, marsh, sedge meadow, dolomite prairie, and the fringe (up to 328 ft (100m)) of bordering shrubby and forested areas with open corridors for movement and dispersal.</td>
</tr>
<tr>
<td>Calcareous water from intermittent seeps and springs and associated shallow, small, slow flowing streamlet channels, rivulets, and/or sheet flow within fens.</td>
<td>Prey base of small flying insect species like dipterans.</td>
</tr>
<tr>
<td>Emergent herbaceous and woody vegetation for emergence facilitation and refugia.</td>
<td></td>
</tr>
<tr>
<td>Occupied burrows maintained by crayfish for refugia.</td>
<td></td>
</tr>
<tr>
<td>Prey base of aquatic macroinvertebrates, including mayflies, aquatic isopods, caddisflies, midge larvae, and aquatic worms.</td>
<td></td>
</tr>
</tbody>
</table>