

HEADWATERS OF GREAT LAKES DRAINAGE HABITAT NARRATIVE

Habitat description

The Great Lakes drainage of Indiana includes waters that flow into Lake Michigan and Lake Erie and are located in extreme northern Indiana and northeast Indiana. Headwater streams are those having a drainage area of < 20 mi². Headwater streams of the Great Lakes drainage of Indiana are of low to medium gradient, with sandy/rocky bottoms and are highly associated with the extensive natural lakes and wetlands of the region. Many have been channelized and highly modified for drainage to maintain agricultural lands.

Problems affecting species and habitats

Species threats

Respondents ranked the following threats to wildlife in headwaters of Great Lakes drainage habitat:

| Rank | Threats to wildlife in headwaters of Great Lakes drainage habitat |
|---------|---|
| 1 (tie) | Invasive/non-native species |
| 1 (tie) | High sensitivity to pollution |
| 2 (tie) | Habitat loss (breeding range) |
| 2 (tie) | Habitat loss (feeding/foraging areas) |
| 3 | Predators (native or domesticated) |

Respondents offered no additional threats to wildlife in headwaters of Great Lakes drainage habitat.

Respondents listed top threats for wildlife in headwaters of Great Lakes drainage habitat (not ranked):

- Exotic species competition, specifically the round goby
- Habitat degradation
- Pollution
 - Non-point source run-off resulting from loss of riparian buffers due to development
 - High sediment loads during spring rains

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the threats to wildlife in headwaters of Great Lakes drainage habitat. There were no responses.

Habitat threats

Respondents ranked threats to headwaters of Great Lakes drainage habitat:

| Rank | Threats to headwaters of Great Lakes drainage habitat |
|---------|---|
| 1 | Stream channelization |
| 2 (tie) | Commercial or residential development (sprawl) |

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- 2 (tie) Habitat degradation
- 2 (tie) Invasive/non-native species
- 2 (tie) Nonpoint source pollution (sedimentation and nutrients)
- 3 Habitat fragmentation
- 4 (tie) Agricultural/forestry practices
- 4 (tie) Successional change
- 4 (tie) Drainage practices (stormwater runoff)
- 5 (tie) Impoundment of water/flow regulation
- 5 (tie) Residual contamination
- 5 (tie) Point source pollution (continuing)

Respondents noted no additional habitat threats to headwaters of Great Lakes drainage habitat.

Respondents listed top threats to headwaters of Great Lakes drainage habitat (not ranked):

- Invasive species competition, specifically round goby interactions
- Stream channelization
- Nonpoint source pollution
- Sedimentation
- Loss of habitat due to development

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the threats to headwaters of Great Lakes drainage habitat. There were no responses.

Additional research and survey efforts

Current body of research

Species research

One third of respondents stated that the current body of science is non-existent for wildlife in headwaters of Great Lakes drainage habitat; two-thirds indicated "other" including that it is "Unknown in the larger scale" or "Under development. Survey completed but data not processed yet."

Respondents identified the following citations (title, author, date, publisher) that would give the best overview of wildlife in headwaters of Great Lakes drainage habitats in Indiana.

Title = Fisheries Survey of the East Branch of the Little Calumet River Watershed;

Author = Neil Ledet;

Date = 1978;

Publisher = IDNR Fisheries Section

Title = Stream Survey of the East Arm of the Little Calumet River;

Author = Edward Braun;

Date = 1974;

Publisher = IDNR Division of Fish and Wildlife

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Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the current body of science for wildlife in headwaters of Great Lakes drainage habitat. There were no responses.

Habitat research

One third of respondents stated that the current body of science is non-existent for headwaters of Great Lakes drainage habitat, one third indicated that it was Inadequate; one-third indicated that it is "Unknown in the larger scale".

Respondents identified the following citations (title, author, date, publisher) that would give the best overview of the headwaters of Great Lakes drainage habitats in Indiana.

Title = Fisheries Survey of the East Branch of the Little Calumet River Watershed;
Author = Neil Ledet;
Date = 1978;
Publisher = IDNR-Fish and Wildlife

Title = Stream Survey-Little Calumet River East Arm;
Author = Edward Braun;
Date = 1974;
Publisher = IDNR-Fish and Wildlife

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the current body of science for headwaters of Great Lakes drainage habitat. There were no responses.

Research needs

Species research

Respondents ranked research needs for wildlife in headwaters of Great Lakes drainage habitat:

| Rank | Research needs for wildlife in headwaters of Great Lakes drainage habitat |
|-------------|--|
| 1 | Threats (predators/competition, contamination) |
| 2 (tie) | Distribution and abundance |
| 2 (tie) | Limiting factors (food, shelter, water, breeding sites) |
| 2 (tie) | Relationship/dependence on specific habitats |
| 3 | Life cycle |
| 4 | Population health (genetic and physical) |

Respondents noted no additional research needs for wildlife in headwaters of Great Lakes drainage habitat.

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the additional research needs for wildlife in headwaters of Great Lakes drainage habitat. There were no responses.

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Habitat research

Respondents ranked research needs for headwaters of Great Lakes drainage habitat:

| Rank | Research needs for headwaters of Great Lakes drainage habitat |
|---------|---|
| 1 (tie) | Threats (land use change/competition, contamination/global warming) |
| 1 (tie) | Relationship/dependence on specific site conditions |
| 1 (tie) | Growth and development of individual components of the habitat |
| 2 | Distribution and abundance (fragmentation) |

Respondents noted no additional research needs for headwaters of Great Lakes drainage habitat.

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the additional research needs for headwaters of Great Lakes drainage habitat. There were no responses.

Conservation actions necessary

Species actions

The respondents noted the following conservation efforts that address threats to wildlife in forested wetland habitats in Indiana:

- Habitat protection (use below for details)
- Limiting contact with pollutants/contaminants
- Exotic/invasive species control

Respondents noted no other conservation practices for wildlife in headwaters of Great Lakes drainage habitat.

Respondents recommended these practices for more effective conservation of wildlife in headwaters of Great Lakes drainage habitat (not ranked):

- Land use planning and education
- Habitat protection through land use regulation
- Agricultural run-off protection through education and land use planning

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the practices for more effective conservation of wildlife in headwaters of Great Lakes drainage habitat. There were no responses.

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Habitat actions

The respondents recommended these practices to address threats to headwaters of Great Lakes drainage habitat:

- Habitat protection through regulation
- Land use planning
- Corridor development/protection
- Pollution reduction
- Protection of adjacent buffer zone
- Habitat restoration on public lands
- Managing water regimes
- Restrict public access and disturbance
- Habitat protection on public lands
- Cooperative land management agreements (conservation easements)

Respondents listed no additional current conservation practices for headwaters of Great Lakes drainage habitat.

Respondents recommended the following conservation practices for more effective conservation of headwaters of Great Lakes drainage habitat:

- Protection of habitat through land use planning. Currently most headwaters run through agricultural areas and need to maintain riparian buffer strips

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the conservation practices for headwaters of Great Lakes drainage habitat. There were no responses.

Proposed plans for monitoring

Current monitoring

Species monitoring

Respondents were aware of the following monitoring efforts by state agencies for wildlife in headwaters of Great Lakes drainage habitat:

- Occasional regional or local (less than once a year and not regularly scheduled) monitoring

Respondents were aware of the following monitoring efforts by other organizations for wildlife in headwaters of Great Lakes drainage habitat:

- Periodic regional or local (less than once a year but still regularly scheduled) monitoring

Respondents ranked monitoring efforts by state agencies based on their importance for conservation of wildlife in headwaters of Great Lakes drainage habitat:

| Rank | Monitoring efforts by state agencies for conservation of wildlife in headwaters of |
|-------------|---|
|-------------|---|

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| Great Lakes drainage habitat | |
|------------------------------|---|
| 1 | Occasional regional or local (less than once a year and not regularly scheduled) monitoring |
| 2 | Periodic regional or local (less than once a year but still regularly scheduled) monitoring |
| 3 | Regional or local once-a-year monitoring |
| 4 | Regional or local year-round monitoring |
| 5 (tie) | Statewide year-round monitoring |
| 5 (tie) | Periodic statewide (less than once a year but still regularly scheduled) |
| 5 (tie) | Occasional statewide (less than once a year and not regularly scheduled) |

A respondent ranked the following monitoring effort by other organizations as “slightly crucial” for conservation of wildlife in headwaters of Great Lakes drainage habitat:

- Periodic regional or local (less than once a year but still regularly scheduled) monitoring

Respondents listed regional or local monitoring by state agencies for wildlife in headwaters of Great Lakes drainage habitat (not ranked):

- Headwater streams surveys were conducted in 2001 through 2004 by IDNR – Division of Fish and Wildlife, Lake Michigan Fisheries Office
- IDEM ecoregion sampling

Respondents listed regional or local monitoring by other organizations for wildlife in headwaters of Great Lakes drainage habitat:

- City of Elkhart (Elkhart and St. Joseph counties)

Respondents listed organizations that monitor wildlife in headwaters of Great Lakes drainage habitat:

- IDNR – Division of Fish and Wildlife

Respondents considered monitoring techniques for wildlife in headwaters of Great Lakes drainage habitat:

| Monitoring techniques for wildlife in headwaters of Great Lakes drainage habitat | Used | Not used but possible with existing technology and data | Not economically feasible |
|--|------|---|---------------------------|
| Radio telemetry and tracking | -- | -- | X |
| Modeling | -- | X | X |

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| | | | |
|--|----|----|----|
| Coverboard routes | -- | -- | X |
| Spot mapping | -- | X | X |
| Driving a survey route | -- | -- | X |
| Reporting from harvest, depredation, or unintentional take (road kill, by-catch) | -- | -- | X |
| Mark and recapture | -- | X | X |
| Professional survey/census | X | X | -- |
| Volunteer survey/census | -- | -- | X |
| Trapping (by any technique) | X | X | -- |
| Representative sites | X | X | -- |
| Probabilistic sites | -- | X | -- |

Respondents noted no other monitoring techniques for wildlife in headwaters of Great Lakes drainage habitat.

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the monitoring techniques for wildlife in headwaters of Great Lakes drainage habitat. There were no responses.

Habitat inventory and assessment

Respondents were aware of the following inventory and assessment efforts by state agencies for headwaters of Great Lakes drainage habitat (not ranked):

- Regional or local once-a-year inventory and assessment
- Periodic regional or local (less than once a year but still regularly scheduled) inventory and assessment
- Occasional regional or local (less than once a year and not regularly scheduled) inventory and assessment

Respondents were aware of the following inventory and assessment efforts by other organizations for headwaters of Great Lakes drainage habitat:

- Periodic regional or local (less than once a year but still regularly scheduled) inventory and assessment

Respondents ranked inventory and assessment efforts by state agencies based on their importance for conservation of headwaters of Great Lakes drainage habitat:

| Rank | Inventory and assessment for conservation of headwaters of Great Lakes drainage habitat |
|------|---|
| 1 | Occasional regional or local (less than once a year and not regularly scheduled) inventory and assessment |

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- 2 Periodic regional or local (less than once a year but still regularly scheduled) inventory and assessment
- 3 Regional or local once-a-year inventory and assessment
- 4 Regional or local year-round inventory and assessment
- 5 Statewide annual inventory and assessment

Respondents ranked inventory and assessment efforts by other organizations based on their importance for conservation of headwaters of Great Lakes drainage habitat:

| Rank | Inventory and assessment for conservation of headwaters of Great Lakes drainage habitat |
|------|---|
| 1 | Occasional regional or local (less than once a year and not regularly scheduled) inventory and assessment |
| 2 | Periodic regional or local (less than once a year but still regularly scheduled) inventory and assessment |
| 3 | Regional or local once-a-year inventory and assessment |

Respondents listed regional or local inventory and assessment by state agencies for headwaters of Great Lakes drainage habitat (not ranked):

- Trail Creek
- East Branch of Little Calumet River
- West Branch of Little Calumet River
- Reynolds Creek
- Salt Creek
- Deep River
- IDEM ecoregion surveys

Respondents listed regional or local inventory and assessment by other organizations agencies for headwaters of Great Lakes drainage habitat:

- City of Elkhart

Respondents listed organizations that monitor headwaters of Great Lakes drainage habitat (not ranked):

- IDNR – Division of Fish and Wildlife (Lake Michigan Fisheries Office)
- IDEM (ecoregion surveys)
- U.S. Fish and Wildlife Service

Respondents considered inventory and assessment techniques for headwaters of Great Lakes drainage habitat:

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| Inventory and assessment techniques for headwaters of Great Lakes drainage habitat | Used | Not used but possible with existing technology and data | Not economically feasible |
|---|-------------|--|----------------------------------|
| GIS mapping | X | X | -- |
| Aerial photography and analysis | X | -- | -- |
| Systematic sampling | X | X | -- |
| Participation in land use programs | -- | X | -- |
| Modeling | -- | X | X |
| Voluntary landowner reporting | -- | -- | X |

Respondents listed additional inventory and assessment techniques for headwaters of Great Lakes drainage habitat (not ranked):

- IBI
- QHEI

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the inventory and assessment techniques for headwaters of Great Lakes drainage habitat. There were no responses.

Recommended monitoring

Species monitoring

Respondents recommended the following monitoring techniques for effective conservation of wildlife in headwaters of Great Lakes drainage habitat (not ranked):

- Stream sampling using electrofishing techniques and seining: This should be done every five years to get a clear picture of changes that occur to habitat, water quality and invasive species introductions and distribution
- Rotational sampling at reference sites along the headwaters: Historical comparisons from the early 80's will be compared with the sampling that was completed 2001 through 2004

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the monitoring techniques for effective conservation of wildlife in headwaters of Great Lakes drainage habitat. There were no responses.

Habitat inventory and assessment

Respondents recommended the following inventory and assessment techniques for effective conservation of headwaters of Great Lakes drainage habitat (not ranked):

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- Sampling using electrofishing and seining in headwater areas
- Completing IBI, QHEI and water quality analysis for these sites

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the inventory and assessment techniques for effective conservation of headwaters of Great Lakes drainage habitat. There were no responses.