

## EPHEMERAL WETLAND HABITATS NARRATIVE

### Habitat description

Wetlands Ephemeral: Areas temporarily flooded often supporting aquatic plants and animals.

### Problems affecting species and habitats

#### Species threats

Respondents ranked the following threats to wildlife in ephemeral wetland habitats in Indiana:

Rank	Threats to wildlife in ephemeral wetland habitats
1	Habitat loss (breeding range)
2	Habitat loss (feeding/foraging areas)
3	Dependence on irregular resources (cyclical annual variations) (e.g., food, water, habitat limited due to annual variations in availability)
4	Degradation of movement/migration routes (overwintering habitats, nesting and staging sites)
5	Diseases/parasites (of the species itself)
6	High sensitivity to pollution
7 (tie)	Bioaccumulation of contaminants
7 (tie)	Near limits of natural geographic range
7 (tie)	Predators (native or domesticated)
7 (tie)	Genetic pollution (hybridization)
7 (tie)	Invasive/non-native species
8 (tie)	Unintentional take/ direct mortality (e.g., vehicle collisions, power line collisions, by-catch, harvesting equipment, land preparation machinery)
8 (tie)	Viable reproductive population size or availability
9	Small native range (high endemism)
10	Specialized reproductive behavior or low reproductive rates
11	Unregulated collection pressure
12	Species overpopulation
13	Large home range requirements

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Respondents offered no additional threats to wildlife in ephemeral wetland habitats in Indiana.

Respondents listed top threats to wildlife in ephemeral wetland habitats in Indiana (not ranked):

- Habitat loss and degradation
  - Causes increase to migration breeding sites
  - Loss of ephemeral wetlands
  - Loss of upland forested habitat
  - Invasive species like reed canary grass are proliferating in remaining habitats, decreasing plant diversity, cover and overall wetland health
  - Extreme rarity of ephemeral wetlands

A respondent noted, "Unfortunately, most existing ephemeral wetlands have been destroyed in Indiana. Even more unfortunately, many of them were destroyed with the misguided notion that deep water was better for wildlife - landowners were advised to dredge out the ephemeral wetlands to provide duck habitat. These fish-infested deep waters have no habitat for Plains leopard frog."

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the threats to wildlife in ephemeral wetlands habitats. Their responses included:

- Loss of ephemeral wetlands may also affect waterfowl. Ephemeral wetlands are used as pair ponds by mallards and may be used by migrating waterfowl as rest stops.

### Habitat threats

Respondents ranked threats to ephemeral wetland habitats in Indiana:

Rank	Threats to ephemeral wetland habitats
1	Habitat degradation
2	Habitat fragmentation
3	Agricultural/forestry practices
4 (tie)	Commercial or residential development (sprawl)
4 (tie)	Drainage practices (stormwater runoff)
5	Nonpoint source pollution (sedimentation and nutrients)
6	Point source pollution (continuing)
7 (tie)	Invasive/non-native species
7 (tie)	Residual contamination (persistent toxins)
7 (tie)	Mining/acidification
8 (tie)	Impoundment of water/flow regulation
8 (tie)	Successional change
9	Stream channelization
10	Counterproductive financial incentives or regulations

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Respondents noted no additional threats to ephemeral wetland habitats in Indiana.

Respondents listed top threats to ephemeral wetland habitats in Indiana (not ranked):

- Habitat loss, degradation and fragmentation
- Invasion of wetlands by species like reed canary grass, cattails, purple loosestrife or other invasives that create monocultures
- Agricultural practices that destroy ephemeral wetlands

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the threats in ephemeral wetlands habitats. Their responses included:

- A big threat to these wetlands is people generally do not consider them wetlands unless they hold water year round. Education on wetlands would be beneficial.

## **Additional research and survey efforts**

### **Current body of research**

#### Species research

All respondents stated that the current body of science is either inadequate or nonexistent for wildlife in Ephemeral wetland habitats in Indiana.

Respondents identified the following citations (title, author, date, publisher) that would give the best overview of wildlife in Ephemeral wetland habitats in Indiana.

Title = Amphibians and reptiles from 23 counties of Indiana.;

Author = Robert Brodman;

Date = 2003;

Publisher = Proceedings of the Indiana Academy of Science, 112: 43-54.

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 ephemeral wetlands habitats. There were no responses.

#### Habitat research

All respondents stated that the current body of science is inadequate for Ephemeral wetland habitats in Indiana.

Respondents did not identify citations (title, author, date, publisher) that would give the best overview of Ephemeral wetland habitats in Indiana.

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 ephemeral wetlands habitats. There were no responses.

## Research needs

### Species research

Respondents ranked research needs for wildlife in ephemeral wetland habitats in Indiana:

Rank	Research needs for wildlife in ephemeral wetlands habitats
1 (tie)	Limiting factors (food, shelter, water, breeding sites)
1 (tie)	Threats (predators/competition, contamination)
2	Relationship/dependence on specific habitats
3	Population health (genetic and physical)
4	Distribution and abundance
5	Life cycle

Respondents noted additional research needs for wildlife in ephemeral wetland habitats in Indiana (not ranked):

- Information on metapopulation dynamics and migration distances to and from ephemeral wetlands
- Information on how many ephemeral wetland habitats within the landscape are needed to maintain healthy populations of wildlife species
- Information on buffer size and vegetation

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the additional research for wildlife in ephemeral wetlands habitats. There were no responses.

### Habitat research

Respondents ranked research needs for ephemeral wetland habitats in Indiana:

Rank	Research needs for ephemeral wetland habitats
1	Threats (land use change/competition, contamination/global warming)
2 (tie)	Distribution and abundance (fragmentation)
2 (tie)	Relationship/dependence on specific site conditions
3 (tie)	Successional changes
3 (tie)	Growth and development of individual components of the habitat

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Respondents noted additional research needs for ephemeral wetland habitats in Indiana (not ranked):

- Information on metapopulation dynamics and migration distances to and from ephemeral wetlands
- Information on how many ephemeral wetland habitats within the landscape are needed to maintain healthy populations of wildlife species
- Information on buffer size and vegetation

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the additional research needs for ephemeral wetlands habitats. Their responses included:

- Need to know what species are using these wetlands. Are they stopover points for waterfowl? Permanent home for amphibians?

## Conservation actions necessary

### Species actions

Respondents ranked conservation efforts by how well they address threats to wildlife in ephemeral wetland habitats in Indiana:

Rank	Conservation efforts for wildlife in ephemeral wetland habitats
1	Threats reduction
2	Habitat protection (use below for details)
3 (tie)	Exotic/invasive species control
3 (tie)	Regulation of collecting
3 (tie)	Public education to reduce human disturbance

Respondents noted other current conservation practices for wildlife in ephemeral wetland habitats in Indiana:

- Wetland restoration

Respondents recommended these practices for more effective conservation of wildlife in ephemeral wetland habitats in Indiana:

- Wetland and forested habitat protection and restoration
  - Within the range of species

A respondent noted, "Ephemeral wetlands are not protected or valued as much as other wetlands via regulation."

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 ephemeral wetlands habitats. There were no responses.

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### Habitat actions

Respondents ranked conservation efforts by how well they address threats to ephemeral wetland habitats in Indiana:

<b>Rank</b>	<b>Conservation efforts for ephemeral wetland habitats</b>
1	Habitat protection on public lands
2	Habitat protection through regulation
2	Habitat protection incentives (financial)
3 (tie)	Protection of adjacent buffer zone
3 (tie)	Habitat restoration on public lands
3 (tie)	Land use planning
3 (tie)	Habitat restoration through regulation
3 (tie)	Habitat restoration incentives (financial)
3 (tie)	Artificial habitat creation (artificial reefs, nesting platforms)
3 (tie)	Corridor development/protection
3 (tie)	Managing water regimes
3 (tie)	Pollution reduction
3 (tie)	Technical assistance

Respondents listed no additional current conservation practices for ephemeral wetland habitats in Indiana. One respondent commented, "Many current conservation practices promoted by biologists seem to be aimed at ducks and actually manage against some wildlife species."

Respondents recommended the following practices for more effective conservation of ephemeral wetland habitats in Indiana (not ranked):

- Wetland, forest and buffer restoration and protection
  - Buffers needed for migrating amphibians for breeding
  - When creating wetlands under a landowner incentive program, create ephemeral wetlands whenever possible, rather than duck ponds
  - Protection on private and public lands

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the conservation needs for ephemeral wetlands habitats. Their responses included:

- The landowner incentive programs do not create ponds. They usually create emergent wetlands. Are wildlife species using ephemeral wetlands not also using the edges of emergent wetlands?

### **Proposed plans for monitoring**

## Current monitoring

### Species monitoring

Respondents were aware of the following monitoring efforts by state agencies for wildlife in ephemeral wetland habitats in Indiana (not ranked):

- Statewide once-a-year monitoring
- Occasional statewide (less than once a year and not regularly scheduled) monitoring
- 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 ephemeral wetland habitats in Indiana (not ranked):

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

Respondents ranked monitoring efforts by state agencies based on their importance for conservation of wildlife in ephemeral wetland habitats in Indiana:

Rank	Monitoring efforts by state agencies for conservation of wildlife in ephemeral wetland habitats
1 (tie)	Occasional regional or local (less than once a year and not regularly scheduled) monitoring
1 (tie)	Statewide once-a-year monitoring
1 (tie)	Occasional statewide (less than once a year and not regularly scheduled) monitoring
1 (tie)	Regional or local once-a-year monitoring
1 (tie)	Periodic regional or local (less than once a year but still regularly scheduled) monitoring
2	Periodic statewide (less than once a year but still regularly scheduled) monitoring
3 (tie)	Statewide year-round monitoring
3 (tie)	Regional or local year-round monitoring

Respondents ranked monitoring efforts by other organizations based on their importance for conservation of wildlife in ephemeral wetland habitats in Indiana:

Rank	Monitoring efforts by other organizations for conservation of wildlife in ephemeral wetland habitats
1 (tie)	Occasional statewide (less than once a year and not regularly scheduled) monitoring
1 (tie)	Regional or local once-a-year monitoring
1 (tie)	Statewide once-a-year monitoring
1 (tie)	Periodic regional or local (less than once a year

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

Respondents listed regional or local monitoring by state agencies for wildlife in ephemeral wetland habitats in Indiana (not ranked):

- IDNR – Division of Fish and Wildlife
  - Nongame herpetologist incorporates this as part of annual field season
  - NAAMP frog monitoring program

Respondents listed regional or local monitoring by other organizations for wildlife in ephemeral wetland habitats in Indiana (not ranked):

- Spencer Cortwright, IUN
- Robert Brodman, Saint Joseph's College
- University professors and members of the Herpetology TAC for the State of Indiana as part of their annual field season
- NW Indiana (Newton, Jasper, Pulaski, Lake, Porter counties)

Respondents listed organizations that monitor wildlife in ephemeral wetland habitats in Indiana (not ranked):

- Spencer Cortwright, IUN
- Robert Brodman, Saint Joseph's College

Respondents considered monitoring techniques for wildlife in ephemeral wetland habitats in Indiana:

Monitoring techniques for wildlife in ephemeral wetland habitats	Used	Not used but possible with existing technology and data	Not economically feasible
Radio telemetry and tracking	--	X	--
Modeling	X	X	--
Coverboard routes	X	X	--
Spot mapping	--	X	--
Driving a survey route	X	--	--
Mark and recapture	--	X	--
Professional survey/census	X	--	--

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Volunteer survey/census	X	X	--
Trapping (by any technique)	X	X	--
Representative sites	X	--	--
Probabilistic sites	X	--	--

Respondents noted other no other monitoring techniques for wildlife in ephemeral wetland habitats in Indiana.

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 ephemeral wetlands habitats. There were no responses.

### Habitat inventory and assessment

Respondents were aware of the following inventory and assessment efforts by state agencies for ephemeral wetland habitats in Indiana (not ranked):

- Occasional statewide (less than once a year and not 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 ephemeral wetland habitats in Indiana (not ranked):

- Occasional statewide (less than once a year and not regularly scheduled) inventory and assessment
- Regional or local year-round inventory and assessment
- 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 ranked inventory and assessment efforts by state agencies based on their importance for conservation of ephemeral wetland habitats in Indiana:

Rank	Inventory and assessment by state agencies for conservation of ephemeral wetland habitats
1 (tie)	Statewide once-a-year inventory and assessment
1 (tie)	Periodic statewide (less than once a year but still regularly scheduled) inventory and assessment
1 (tie)	Regional or local once-a-year inventory and assessment
1 (tie)	Periodic regional or local (less than once a

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- year but still regularly scheduled) inventory and assessment
- 1 (tie) Occasional regional or local (less than once a year and not regularly scheduled) inventory and assessment
- 1 (tie) Occasional statewide (less than once a year and not regularly scheduled) inventory and assessment
- 2 (tie) Regional or local year-round inventory and assessment
- 2 (tie) Statewide annual inventory and assessment

Respondents ranked inventory and assessment efforts by other organizations based on their importance for conservation of ephemeral wetland habitats in Indiana:

Rank	Inventory and assessment by other organizations for conservation of ephemeral wetland habitats
1 (tie)	Occasional statewide (less than once a year and not regularly scheduled) inventory and assessment
1 (tie)	Regional or local once-a-year inventory and assessment
1 (tie)	Periodic regional or local (less than once a year but still regularly scheduled) inventory and assessment
1 (tie)	Statewide once-a-year inventory and assessment
1(tie)	Periodic statewide (less than once a year but still regularly scheduled) inventory and assessment
2	Regional or local year-round inventory and assessment
3 (tie)	Statewide year-round inventory and assessment
3 (tie)	Occasional regional or local (less than once a year and not regularly scheduled) inventory and assessment

Respondents listed no regional or local inventory and assessment by state agencies for ephemeral wetland habitats in Indiana.

Respondents listed regional or local inventory and assessment by other organizations agencies for ephemeral wetland habitats in Indiana (not ranked):

- Cortwright monitors populations in Brown and Porter counties

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- Kankakee Sands and other Conservancy preserves: Staff evaluate restored/created habitat to judge its ability to support plains leopard frog and other species of concern
- Robert Brodman, Saint Joseph's College in NW Indiana; Owens County
- Northwest Indiana (Newton, Jasper, Pulaski, Lake & Porter Counties)

Respondents listed organizations that monitor ephemeral wetland habitats in Indiana (not ranked):

- IDNR (nongame herpetologist)
- University professors
- Indiana Herpetology Technical Advisory Committee
- Robert Brodman, St. Joseph's College

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Respondents considered inventory and assessment techniques for ephemeral wetland habitats in Indiana:

<b>Inventory and assessment techniques for ephemeral wetland habitats</b>	<b>Used</b>	<b>Not used but possible with existing technology and data</b>	<b>Not economically feasible</b>
GIS mapping	X	X	--
Aerial photography and analysis	X	X	--
Systematic sampling	X	X	--
Modeling	X	X	--
Voluntary landowner reporting	--	X	--

Respondents listed additional inventory and assessment techniques for ephemeral wetland habitats in Indiana (not ranked):

- Pit-fall trapping and coverboard objects adjacent to ephemeral wetlands; mark and recapture
- Visual estimate of amount of appropriate habitat being provided in restored areas

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 ephemeral wetlands habitats. There were no responses.

### **Recommended monitoring**

#### Species monitoring

Respondents recommended the following monitoring techniques for effective conservation of wildlife in ephemeral wetland habitats in Indiana (not ranked):

- Professional survey, mark and recapture, radio telemetry
- Pit-fall traps, coverboard objects
- Fall surveys at breeding sites
- Call surveys and systematic sampling
- Minnow trapping, mark and recapture or radio telemetry

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 ephemeral wetlands habitats. There were no responses.

#### Habitat inventory and assessment

Respondents recommended the following inventory and assessment techniques for effective conservation of ephemeral wetland habitats in Indiana (not ranked):

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- Pit-fall traps and coverboards to assess population size and use of ephemeral wetlands for breeding; mark and recapture to determine migration patterns and use of specific ephemeral wetlands for breeding
- Systematic survey/sampling and GIS

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 in ephemeral wetlands habitats. There were no responses.