

## VEGETATED DUNES AND SWALES GRASSLANDS HABITATS NARRATIVE

### Habitat description

Ridge and valley topography developed by wind blown sand deposits. These deposits are near Lake Michigan. Vegetative cover progresses the further the dunes are from the lakeshore.

### Problems affecting species and habitats

#### Species threats

The respondent listed the following as “critical threat” to wildlife in vegetated dunes and swales grasslands habitat in Indiana (not ranked):

- Habitat loss (breeding range)
- Habitat loss (feeding/foraging areas)
- Viable reproductive population size or availability

The respondent listed the following as “serious threat” to wildlife in vegetated dunes and swales grasslands habitat in Indiana:

- Specialized reproductive behavior or low reproductive rates

The respondent listed the following as “somewhat of a threat” to wildlife in vegetated dunes and swales grasslands habitat in Indiana (not ranked):

- Unintentional take/direct mortality (e.g., vehicle collisions, power line collisions, by-catch, harvesting equipment, land preparation machinery)
- Unregulated collection pressure

The respondent listed the following as “slight threat” to wildlife in vegetated dunes and swales grasslands habitat in Indiana (not ranked):

- Invasive/non-native species
- Predators (native or domesticated)

The respondent listed no other threats to wildlife in vegetated dunes and swales grasslands habitat in Indiana.

The respondent listed the top threat to wildlife in vegetated dunes and swales grasslands habitat in Indiana as: “Populations seem to be in steep decline due to habitat fragmentation (from land use change and inappropriate management, e.g., fire suppression.) Most known populations seem to occur at such low densities that mating seems a remote possibility. All the problems associated with small population size and low reproductive rate seem likely to be plague the Ornate box turtle. Most populations seem likely to be in a slow-motion death spiral at the moment.”

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the threats to wildlife in vegetated dunes and swales grasslands habitats. There were no responses.

#### Habitat threats

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The respondent listed the following as “critical threat” to vegetated dunes and swales grasslands habitat in Indiana (not ranked):

- Habitat fragmentation
- Successional change
- Habitat degradation

The respondent listed no “serious threats,” but listed the following as “somewhat of a threat” to vegetated dunes and swales grasslands habitat in Indiana (not ranked):

- Invasive/non-native species
- Agricultural/forestry practices

The respondent listed the following as “slight threat” to vegetated dunes and swales grasslands habitat in Indiana (not ranked):

- Commercial or residential development (sprawl)
- Counterproductive financial incentives or regulations
- Impoundment of water flow/regulation

The respondent offered no other threats to vegetated dunes and swales grasslands habitat in Indiana.

The respondent described top threats to vegetated dunes and swales grasslands habitat in Indiana (not ranked):

- Fragmentation and small habitat size: Most habitats are small remnants of native grassland, surrounded by either agriculture or fire-suppressed oak-savannah. Habitat size needs to be expanded at sites that support seemingly salvageable populations of the Ornate box turtle
- Much potentially suitable habitat has been lost through succession to exotic species and oak woodland. This turtle requires expansive open grassland. Lack of habitat management (or in the case of invasive species because of purposeful introduction of native shrubs) has resulted in open, native grassland being lost to shrubland and oak woodland

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the threats to vegetated dunes and swales grasslands habitats. There were no responses.

## **Additional research and survey efforts**

### **Current body of research**

#### Species research

The respondent stated that the current body of science for wildlife in vegetated dunes and swales grasslands habitat in Indiana is inadequate.

The respondent did not identify citations (title, author, date, publisher) that would give the best overview of wildlife in vegetated dunes and swales grasslands 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 wildlife in vegetated dunes and swales grasslands habitats. There were no responses.

## Appendix F-58: Vegetated Dunes and Swales

### Habitat research

The respondent stated that the current body of science vegetated dunes and swales grasslands habitat in Indiana is inadequate.

The respondent did not identify citations (title, author, date, publisher) that would give the best overview of vegetated dunes and swales grasslands 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 vegetated dunes and swales grasslands habitats. There were no responses.

### **Research needs**

#### Species research

The respondent stated that the following research is “urgently needed” for wildlife in vegetated dunes and swales grasslands habitat in Indiana (not ranked):

- Distribution and abundance
- Population health (genetic and physical)

The respondent stated that the following research is “greatly needed” for wildlife in vegetated dunes and swales grasslands habitat in Indiana:

- Limiting factors (food, shelter, water, breeding sites)

The respondent stated that the following research is “needed” for wildlife in vegetated dunes and swales grasslands habitat in Indiana (not ranked):

- Life cycle
- Threats (predators/competition, contamination)
- Relationship/dependence on specific habitats

The respondent listed no other research needs for wildlife in vegetated dunes and swales grasslands habitat in Indiana.

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the research needs for wildlife in vegetated dunes and swales grasslands habitats. There were no responses.

### Habitat research

The respondent stated that the following research is “greatly needed” for vegetated dunes and swales grasslands habitat in Indiana (not ranked):

- Successional changes
- Distribution and abundance (fragmentation)
- Threats (land use change/competition, contamination/global warming)
- Relationship/dependence on specific site conditions
- Growth and development of individual components of the habitat

The respondent listed no other research needs for vegetated dunes and swales grasslands habitat in Indiana.

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Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the research needs for vegetated dunes and swales grasslands habitats. There were no responses.

### **Conservation actions necessary**

#### Species actions

The respondent stated that “exotic/invasive species control” addresses threats to wildlife in vegetated dunes and swales grasslands habitat in Indiana “very well.” The respondent listed the following as addressing threats “somewhat” (not ranked):

- Habitat protection
- Regulation of collecting

The respondent listed no other current conservation practices for wildlife in vegetated dunes and swales grasslands habitat in Indiana.

The respondent recommended the following for more effective conservation of wildlife in vegetated dunes and swales grasslands habitat in Indiana (not ranked):

- Restoration of grassland habitats adjacent to known population sites would be a great start. Restoration could involve creation of native grassland systems from adjacent agricultural fields, with the restoration designed to create habitat specifically for this and other species
- Restoration of oak-savannah at known sites would involve opening the canopy in oak woodlands to ~50 percent cover and controlling invasive exotic shrubs. This would restore connectivity between potentially occupied habitat patches at larger public lands and expand potential habitat

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the conservation practices of wildlife in vegetated dunes and swales grasslands habitats. There were no responses.

#### Habitat actions

The respondent stated that the following conservation efforts address threats to vegetated dunes and swales grasslands habitat in Indiana “very well” (not ranked):

- Habitat restoration on public lands
- Succession control (fire, mowing)
- Corridor development/protection

The respondent stated that the following efforts address threats “somewhat” (not ranked):

- Habitat protection through regulation
- Protection of adjacent buffer zones

The respondent listed no other current conservation practices for vegetated dunes and swales grasslands habitat in Indiana.

The respondent recommended no specific practices for more effective conservation of vegetated dunes and swales grasslands habitat in Indiana.

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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 vegetated dunes and swales grasslands habitats. There were no responses.

### Proposed plans for monitoring

#### Current monitoring

##### Species monitoring

The respondent listed current monitoring efforts by state agencies for wildlife in vegetated dunes and swales grasslands habitat in Indiana:

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

The respondent was not aware of monitoring efforts by other organizations for wildlife in vegetated dunes and swales grasslands habitat in Indiana.

The respondent listed the following monitoring efforts by state agencies as “very crucial” for wildlife conservation in vegetated dunes and swales grasslands habitat in Indiana:

- Occasional statewide (less than once a year and not regularly scheduled) monitoring

The respondent listed the following as “somewhat crucial”:

- Statewide-year round monitoring

The respondent listed the following monitoring efforts by state agencies as “slightly crucial” for wildlife conservation in vegetated dunes and swales grasslands habitat in Indiana (not ranked):

- Statewide once-a-year monitoring
- Periodic statewide (less than once a year but still regularly scheduled) monitoring

The respondent listed no monitoring efforts by other organizations as crucial for wildlife conservation in vegetated dunes and swales grasslands habitat in Indiana.

The respondent cited no local or regional monitoring by state agencies or other organizations for wildlife in vegetated dunes and swales grasslands habitat in Indiana. The respondent listed no organizations that do monitoring work for wildlife in vegetated dunes and swales grasslands habitat in Indiana.

The respondent ranked the following monitoring technique as “not used but possible with existing technology and data” for wildlife in vegetated dunes and swales grasslands habitat in Indiana:

- Radio telemetry and tracking

The respondent did not indicate that any of the listed monitoring techniques are “frequently used,” but listed the following as “occasionally used” (not ranked):

- Spot mapping
- Professional survey/census

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The respondent listed no other monitoring techniques for wildlife in vegetated dunes and swales grasslands habitat 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 vegetated dunes and swales grasslands habitats. There were no responses.

### Habitat inventory and assessment

The respondent listed no current inventory and assessment methods by state agencies or other organizations for vegetated dunes and swales grasslands habitat in Indiana.

The respondent listed the following efforts by state agencies as “very crucial” for conservation of vegetated dunes and swales grasslands habitat in Indiana (not ranked):

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

The respondent listed no efforts by other organizations as “very crucial” for conservation of vegetated dunes and swales grasslands habitat in Indiana. The respondent listed the following as “somewhat crucial”:

- Occasional statewide (less than once a year and not regularly scheduled) inventory and assessment

The respondent listed the following as “slightly crucial” for conservation of vegetated dunes and swales grasslands habitat in Indiana (not ranked):

- Statewide year-round inventory and assessment
- Statewide once-a-year inventory and assessment

The respondent listed no regional or local inventory and assessment by state agencies or other organizations for vegetated dunes and swales grasslands habitat in Indiana. The respondent listed no organizations involved in such efforts.

The respondent rated the current inventory and assessment techniques for vegetated dunes and swales grasslands habitat in Indiana as “not used but possible with existing technology and data” (not ranked):

- GIS mapping
- Aerial photography and analysis
- Systematic sampling

The respondent did not indicate that any of the listed inventory and assessment techniques are “frequently used” or “occasionally used.” The respondent listed no techniques as “not economically feasible.”

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 vegetated dunes and swales grasslands habitats. There were no responses.

## **Recommended monitoring**

### Species monitoring

The respondent recommended the following monitoring technique for wildlife in vegetated dunes and swales grasslands habitat in Indiana: "I'm not sure if a salvageable population exists in Indiana. It would be critical to survey known populations to determine population structure, density and potential for recruitment. This information could be used to plan and implement a conservation effort geared toward the Ornate box turtle."

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 vegetated dunes and swales grasslands habitats. There were no responses.

### Habitat inventory and assessment

The respondent recommended no inventory and assessment techniques for effective conservation of vegetated dunes and swales grasslands habitat in Indiana.

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 vegetated dunes and swales grasslands habitats. There were no responses.