UPLAND FOREST HABITATS NARRATIVE

Habitat description

Upland forest habitats are areas characterized by tree cover (natural or semi-natural woody vegetation, generally greater than 6 meters tall); tree canopy accounts for 25 to 100 percent of the cover. Upland forest habitats include the following sub-habitat types:

- *Deciduous forest habitats* are dominated by trees where 75 percent or more of the tree species shed foliage simultaneously in response to seasonal change.

- *Evergreen forest habitats* are dominated by trees where 75 percent or more of the tree species maintain their leaves all year. Canopy is never without green foliage.

- *Mixed forest habitats* are dominated by trees where neither deciduous nor evergreen species represent more than 75 percent of the cover present.

Problems affecting species and habitats

Species threats

The respondent listed the following as "serious threat" to wildlife in upland forest habitats in Indiana (not ranked):

- Unintentional take/ direct mortality (e.g., vehicle collisions, power line collisions, by-catch, harvesting equipment, land preparation machinery)
- Habitat loss (breeding range)
- Habitat loss (feeding/foraging areas)
- Small native range (high endemism)
- Near limits of natural geographic range

The respondent listed the following as "somewhat of a threat:"

- Specialized reproductive behavior or low reproductive rates

The respondent listed the following as "slight threat" (not ranked):

- Predators (native or domesticated)
- Unregulated collection pressure
- Dependence on irregular resources (cyclical annual variations) (e.g., food, water, habitat limited due to annual variations in availability)

The respondent listed no "critical threat" to wildlife in upland forest habitats in Indiana.

The respondent noted no additional threats to wildlife in upland forest habitats in Indiana.

The respondent listed top threats to wildlife in upland forest habitats in Indiana:

- Crowned snake: Little is known about the crowned snake in Indiana. Top threats include (not ranked):
  - Habitat destruction
  - Habitat fragmentation
  - Accidental take

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

Habitat threats

The respondent listed the following as "serious threat" to upland forest habitats in Indiana:

- Invasive/non-native species

The respondent listed the following as "somewhat of a threat" (not ranked):

- Habitat fragmentation
- Successional change

The respondent listed no "critical threat" or "slight threat" to upland forest habitats in Indiana.

The respondent noted no additional threats to upland forest habitats in Indiana.

The respondent listed top threats to upland forest habitats in Indiana (not ranked):

- Invasive species encroachment
- Habitat destruction

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the threats to upland forest 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 is inadequate for wildlife in upland forest habitats in Indiana.

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

Title = Amphibians and Reptiles of Indiana;
Author = Minton;
Date = 2001;
Publisher = Indiana Academy of Science

Title = Snakes of the United States and Canada;
Author = Ernst and Ernst;
Date = 2003;
Publisher = Smithsonian Institute

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 upland forest habitats. There were no responses.

Habitat research

The respondent was unaware of the current body of science for upland forest habitats in Indiana.

Respondents did not identify citations (title, author, date, publisher) that would give the best overview of upland forest 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 upland forest habitats. There were no responses.

Research needs

Species research

The respondent listed the following research as "urgently needed" for wildlife in upland forest habitats in Indiana:

- Distribution and abundance

The respondent listed the following research as "greatly needed:"

- Population health (genetic and physical)

The respondent listed the following research as "needed" (not ranked):

- Life cycle
- Limiting factors (food, shelter, water, breeding sites)
- Threats (predators/competition, contamination)

The respondent listed the following research as "slightly needed:"

- Relationship/dependence on specific habitats

The respondent noted other research needs for wildlife in upland forest habitats in Indiana:

- General life history is needed for the Southeastern crowned snake in Indiana. Due to this species' secretive nature, little is known about Indiana's populations

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 upland forest habitats. There were no responses.

Habitat research

The respondent did not answer questions regarding research needs for upland forest habitats 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 upland forest habitats. There were no responses.

Conservation actions necessary

Species actions

The respondent ranked conservation efforts by how well they address threats to wildlife in upland forest habitats in Indiana:

Rank	Conservation efforts for wildlife in upland forest habitats
1	Habitat protection (use below for details)
2 (tie)	Exotic/invasive species control
2 (tie)	Regulation of collecting

The respondent noted no other current conservation practices for wildlife in upland forest habitats in Indiana.

The respondent recommended these practices for more effective conservation of wildlife in upland forest habitats in Indiana:

- For the Southeastern crowned snake:
  - Habitat protection
  - Research of general life history requirements

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the conservation practices for wildlife in upland forest habitats. There were no responses.

Habitat actions

The respondent did not answer questions about conservation efforts for upland forest habitats in Indiana.

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the conservation practices for upland forest habitats. There were no responses.

Proposed plans for monitoring

Current monitoring

Species monitoring

The respondent was aware of the following monitoring efforts by state agencies for wildlife in upland forest habitats in Indiana:

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

The respondent was aware of no monitoring efforts by other organizations for wildlife in upland forest habitats in Indiana.

The respondent listed the following monitoring efforts by state agencies and other organizations as "somewhat crucial" for conservation of wildlife in upland forest habitats in Indiana (not ranked):

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

The respondent listed regional or local monitoring by state agencies for wildlife in upland forest habitats in Indiana:

- IDNR occasionally monitors this species (crowned snake)

The respondent listed regional or local monitoring by other organizations for wildlife in upland forest habitats in Indiana:

- TNC occasionally monitors this species (crowned snake)

The respondent listed no organizations that monitor wildlife in upland forest habitats in Indiana.

The respondent considered monitoring techniques for wildlife in upland forest habitats in Indiana:

Monitoring techniques for wildlife in upland forest habitats	Used	Not used but possible with existing technology and data	Not economically feasible
Modeling	--	X	--
Coverboard routes	--	X	--
Spot mapping	--	X	--
Driving a survey route	--	X	--
Reporting from harvest, depredation, or unintentional take (road kill, by-catch)	--	X	--
Mark and recapture	--	X	--
Professional survey/census	X	--	--
Volunteer survey/census	X	--	--
Trapping (by any technique)	--	X	--
Representative sites	--	X	--
Probabilistic sites	--	X	--

The respondent noted no other monitoring techniques for wildlife in upland forest 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 upland forest habitats. There were no responses.

Habitat inventory and assessment

The respondent was aware of the following inventory and assessment efforts by state agencies for upland forest habitats in Indiana (not ranked):

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

The respondent was not aware of inventory and assessment efforts by other organizations for upland forest habitats in Indiana. Therefore the respondent did not rank any organizational efforts.

The respondent listed the following inventory and assessment efforts by state agencies as "somewhat crucial" for conservation of upland forest habitats in Indiana:

- Statewide annual inventory and assessment

The respondent listed regional or local inventory and assessment by state agencies for upland forest habitats in Indiana:

- I am not sure how often state agencies survey crowned snake habitat. IDNR – Division of Nature Preserves monitors these habitats

The respondent listed organizations that monitor upland forest habitats in Indiana:

- IDNR – Division of Nature Preserves
- TNC

The respondent listed "systematic sampling" as a "frequently used" inventory and assessment technique for upland forest habitats in Indiana. The respondent did not comment on other level of use and feasibility for other inventory and assessment techniques.

The respondent listed additional inventory and assessment techniques for upland forest habitats in Indiana:

- I believe this habitat "siltstone glade in upland forest" is monitored through surveys performed in this habitat

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 upland forest habitats. There were no responses.

Recommended monitoring

Species monitoring

The respondent recommended the following monitoring techniques for effective conservation of wildlife in upland forest habitats in Indiana:

- I would recommend the use of professional surveys and test the effectiveness of cover objects for trapping Southeastern crowned snake.

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 upland forest habitats. There were no responses.

Habitat inventory and assessment

The respondent recommended no inventory and assessment techniques for effective conservation of upland forest habitats 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 upland forest habitats. There were no responses.