

SAVANNA GRASSLAND HABITATS NARRATIVE

Habitat description

Savanna is the name given to the transitional area that bridges the boundary between Prairie and Forest and is characterized by grassland interspersed with widely spaced trees with a canopy cover of less than 50% - 80%. Once thought to be merely a meeting of the Prairie and Forest communities it has recently been shown to be a distinct biological community in its own right - as different from Forest or Prairie communities as Forest and Prairie communities are from each other - with its own unique set of plants and animals.

Problems affecting species and habitats

Species threats

Respondents ranked threats to wildlife in savanna grassland habitats in Indiana:

Rank	Threats to wildlife in savanna grassland habitats
1 (tie)	Habitat loss (breeding range)
1 (tie)	Habitat loss (feeding/foraging areas)
2 (tie)	Dependence on irregular resources (cyclical annual variations) (e.g., food, water, habitat limited due to annual variations in availability)
2 (tie)	Diseases/parasites (of the species itself)
3 (tie)	Invasive/non-native species
3 (tie)	Viable reproductive population size or availability
3 (tie)	Small native range (high endemism)

Respondents listed "fire suppression" as an additional threat to wildlife in savanna grassland habitats in Indiana.

Respondents described top threats to wildlife in savanna grassland habitats in Indiana (not ranked):

- This species is more of an obligate to open areas with scattered dead trees than most Indiana species. Outright loss of this habitat is probably the leading threat to the red-headed woodpecker. West Nile virus is probably the second leading threat
- Fire suppression

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

Habitat threats

Respondents ranked threats to savanna grassland habitats in Indiana:

Rank	Threats to savanna grassland habitats
1 (tie)	Successional change
1 (tie)	Agricultural/forestry practices
1 (tie)	Habitat degradation
2 (tie)	Commercial or residential development (sprawl)
2 (tie)	Invasive/non-native species
3 (tie)	Habitat fragmentation
3 (tie)	Diseases (of plants that create habitat)
3 (tie)	Climate change
4 (tie)	Counterproductive financial incentives or regulations
4 (tie)	Drainage practices (stormwater runoff)
5	Nonpoint source pollution (sedimentation and nutrients)

Respondents listed other threats to savanna grassland habitats in Indiana (not ranked):

- Loss of disturbance regimes that maintained open structure of savannas (and swamp forests) where the red-headed woodpecker resides
- Fire suppression is a major threat. Lack of fire also results in an increase of shade-tolerant invasive species like garlic mustard and Asian bush honeysuckle, further degrading savanna habitat

Respondents described top threats to savanna grassland habitats in Indiana (not ranked):

- Conversion of savanna to agricultural and development uses
- Fire suppression results in loss of open structure in existing savannas. It also results in successional change to more shade-tolerant forests

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

Additional research and survey efforts

Current body of research

Species research

One respondent indicated that current body of science for wildlife in savanna grassland habitats in Indiana is adequate. An other respondent mentioned that we know quite a bit about habitat use patterns of the Red-headed Woodpecker but much less about the effects of landscape fragmentation.

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

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Title = Red-headed Woodpecker (*Melanerpes erythrocephalus*). In *The Birds of North America*, No. 518;

Author = Smith, K. G., J. H. Withgott, and P. G. Rodewald.;

Date = 2000;

Publisher = The Birds of North America, Inc., Philadelphia, PA.

Title = 1998. *Atlas of Breeding Birds of Indiana*

Author = Castrale, John S., Edward M. Hopkins, and Charles E. Keller.;

Date = 1998;

Publisher = Indiana Department of Natural Resources

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 savanna grasslands habitat. There were no responses.

Habitat research

Both respondents said that the current body of research for savanna grassland habitats in Indiana is adequate.

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

Title = *Surviving where ecosystems meet: ecotonal animal communities of midwestern oak savannas and woodlands*;

Author = Temple, Stanley A.;

Date = 1998;

Publisher = *Transactions of the Wisconsin Academy of Sciences, Arts and Letters* 86: 206-222

Title = *Savannas, barrens, and rock outcrop plant communities of North America*;

Author = Anderson, Roger C., Fralish, James S. , and Baskin, Jerry M.;

Date = 1999;

Publisher = Cambridge University Press

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 savanna grasslands habitat. There were no responses.

Research needs

Species research

Respondents ranked research needs for wildlife in savanna grassland habitats in Indiana:

Rank	Research needs for wildlife in savanna grassland habitats
1 (tie)	Limiting factors (food, shelter, water, breeding sites)
1 (tie)	Distribution and abundance

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- 2 Threats (predators/competition, contamination)
- 3 (tie) Relationship/dependence on specific habitats
- 3 (tie) Population health (genetic and physical)
- 3 (tie) Life cycle

A respondent listed the following research needs for wildlife in savanna grassland habitats in Indiana: "Detailed demographic data needs to be gathered and the effects of habitat structure and fragmentation on those demographic patterns understood."

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 savanna grasslands habitat. There were no responses.

Habitat research

Respondents ranked research needs for savanna grassland habitats in Indiana:

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

A respondent listed other research needs for savanna grassland habitats in Indiana: "Relationship of fire to habitat structure needs to be better elucidated."

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

Conservation actions necessary

Species actions

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

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Rank	Conservation efforts for wildlife in savanna grassland habitats
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- 1 Habitat protection
- 2 (tie) Exotic/invasive species control
- 2 (tie) Protection of migration routes
- 2 (tie) Public education to reduce human disturbance

Respondents listed current conservation practices for wildlife in savanna grassland habitats in Indiana (not ranked):

- Fire management
- Water level management in swamp forests

Respondents recommended these practices for more effective conservation of wildlife in savanna grassland habitats in Indiana (not ranked):

- Restoration of former savanna sites
- Long-term fire management of existing savanna sites/prescribed fire

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 savanna grasslands habitat. There were no responses.

Habitat actions

Respondents ranked conservation efforts by how well they address threats to savanna grassland habitats in Indiana:

Rank	Conservation efforts for savanna grassland habitats
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- 1 Succession control (fire, mowing)
- 2 (tie) Habitat protection through regulation
- 2 (tie) Habitat protection on public lands
- 2 (tie) Habitat restoration on public lands
- 2 (tie) Habitat restoration through regulation
- 2 (tie) Corridor development/protection
- 2 (tie) Managing water regimes
- 2 (tie) Protection of adjacent buffer zone
- 2 (tie) Technical assistance

Respondents listed no other conservation practices for savanna grassland habitats in Indiana.

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

- Purchase of remnant savannas
- Restoration of savannas that have undergone succession to forest or have been farmed
- Fire management
- Get rid of invasive species degrading savanna habitats, including those deliberately planted by wildlife agencies

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 savanna grasslands habitat. There were no responses.

Proposed plans for monitoring

Current monitoring

Species monitoring

Respondents were not aware of current monitoring efforts by state agencies for wildlife in savanna grassland habitats in Indiana.

One of two respondents were aware of the following monitoring efforts by other organizations for wildlife in savanna grassland habitats in Indiana (not ranked):

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

Respondents listed no monitoring efforts by state agencies as “crucial” for conservation of wildlife in savanna grassland habitats in Indiana.

Respondents listed the following monitoring efforts by other organizations as “somewhat crucial” for conservation of wildlife in savanna grassland habitats in Indiana:

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

Respondents listed no techniques as “very crucial.”

Respondents did not list or were not aware of regional or local monitoring efforts by state agencies for wildlife in savanna grassland habitats in Indiana.

A respondent listed the following regional or local monitoring by other organizations for wildlife in savanna grassland habitats in Indiana:

- National Breeding Bird Survey includes routes in Indiana that incorporate sites occupied by red-headed woodpeckers. This annual survey will therefore potentially count red-headed woodpeckers at a few sites annually

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A respondent listed the following organizations that monitor wildlife in savanna grassland habitats in Indiana:

- USGS in Porter, Indiana, has conducted studies of oak-savanna birds, including the red-headed woodpecker

Half of respondents rated the current monitoring efforts for wildlife in savanna grassland habitats in Indiana as “not used but possible with existing technology or data” (not ranked):

- Radio tracking and telemetry
- Spot mapping
- Mark and recapture
- Trapping (by any technique)

No respondents listed current monitoring efforts that are “frequently used.” None listed techniques as “not economically feasible.”

A respondent listed “distance sampling” as another monitoring technique for wildlife in savanna grassland habitats in Indiana.

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the monitoring efforts for wildlife in savanna grasslands habitat. There were no responses.

Habitat inventory and assessment

A respondent was aware of the following inventory and assessment activities by state agencies for savanna grassland 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

One of two respondents was aware of the following inventory and assessment activities by other organizations for savanna grassland habitats in Indiana:

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

Half of respondents listed the following inventory and assessment efforts by state agencies as “somewhat crucial” for conservation of savanna grassland habitats in Indiana (not ranked):

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

No respondents listed efforts as “very crucial.”

Half of respondents listed the following inventory and assessment efforts by other organizations as “somewhat crucial” for conservation of savanna grassland habitats in Indiana:

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

No respondents listed efforts as “very crucial.”

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A respondent listed the following regional or local inventory and assessment efforts by state agencies for savanna grassland habitats in Indiana:

- Indiana DNR Division of Nature Preserves has inventoried habitats across the state over the past three decades. Savannas mainly occur in the northern third of the state

A respondent listed the following regional or local inventory and assessment efforts by other organizations for savanna grassland habitats in Indiana:

- In the northern third of the state

A respondent listed the following organizations that conduct inventory and assessment activities for savanna grassland habitats in Indiana (not ranked):

- Indiana DNR Division of Nature Preserves
- The Nature Conservancy
- Chicago Wilderness
- U.S. Geological Survey
- National Park Service
- U.S. Fish and Wildlife Service

Respondents noted that the following inventory and assessment techniques are used for savanna grassland habitats in Indiana (not ranked):

- GIS mapping
- Aerial photography and analysis
- Systematic sampling
- Regulatory information
- Modeling

Respondents listed no techniques that are “not used but possible with existing technology or data”. They listed no techniques as “not economically feasible.”

Respondents did not list other inventory and assessment techniques for savanna grassland 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 savanna grasslands habitat. There were no responses.

Recommended monitoring

Species monitoring

A respondent recommended the following monitoring techniques for effective conservation of wildlife in savanna grassland habitats in Indiana:

- Point counts in potential habitats using distance sampling. This technique is relatively simple to implement and provides density information rather than an index. Observers count birds from points randomly located in the studied habitat and measure or estimate distance to observed birds. Calculation of density from data, however, does require some technical expertise. (Buckland, S.T., D.R. Anderson, et al. (2001). Introduction to distance sampling. Oxford, UK, Oxford University Press)

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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 savanna grasslands habitat. There were no responses.

Habitat inventory and assessment

Respondents did not recommend any inventory and assessment techniques for effective conservation of savanna grassland 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 savanna grasslands habitat. There were no responses.