

## EARLY SUCCESSIONAL GRASSLAND HABITATS NARRATIVE

### Habitat description

These habitats are composed primarily of grasses and other early successional non-woody vegetation. Relatively frequent disturbances are required for their maintenance.

### Problems affecting species and habitats

#### Species threats

Respondents ranked the following threats to wildlife in early successional grassland habitats in Indiana:

Rank	Threats to wildlife in early successional grassland habitats
1	Habitat loss (breeding range)
2	Habitat loss (feeding/foraging areas)
3	Invasive/non-native species
4 (tie)	Predators (native or domesticated)
4 (tie)	Dependence on irregular resources (cyclical annual variations) (e.g., food, water, habitat limited due to annual variations in availability)
5	Unintentional take/ direct mortality (e.g., vehicle collisions, power line collisions, by-catch, harvesting equipment, land preparation machinery)
6 (tie)	Viable reproductive population size or availability
6 (tie)	Diseases/parasites (of the species itself)
7 (tie)	Regulated hunting/fishing pressure (too much)
7 (tie)	Unregulated collection pressure
8	Bioaccumulation of contaminants

Respondents offered additional threats to wildlife in early successional grassland habitats in Indiana (not ranked):

- Cold wet weather when first litters appear (late March and early April)
- Cottontail rabbits:
  - Numbers are proportional to available habitats. To increase or decrease in number depends on available habitats.
  - Agricultural policy, i.e. production without supply side considerations influence the availability of the habitats.
  - The tradeoff concerning the cottontail is that we, the American public, want beef, corn and related foodstuffs at a low cost. The cottontail will not prevail here as being necessary under those societal needs

## Appendix F-50: Early Successional Areas

- Habitat loss to natural succession is a critical threat to cottontail populations in Indiana

Respondents listed top threats for wildlife in early successional grassland habitats in Indiana (not ranked):

- Invasive/non-native vegetative species such as fescue do not provide cover, nutrition and are thought to be toxic
- Habitat loss to uncontrolled vegetative succession/agriculture
- Agricultural policy
- Domestic predators
- Short-tailed shrew: Habitat Loss in this relatively specialized habitat is the primary threat to the short-tailed shrew. Early successional grassland habitats provide marginal habitat requirements for this specialized species. The short-tailed shrew is an insectivore/vermivore. Early successional grassland habitat occurs in abandoned land associated with either agricultural, industrial or urban land uses. Only in isolated situations do grasslands develop as a dominant habitat type in Indiana. Most grasslands will eventually be dominated by shrub or tree cover. By definition, early successional grassland habitat is a temporary habitat type.

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the threats for wildlife in early successional grassland habitat. There were no responses.

### Habitat threats

Respondents ranked threats to early successional grassland habitats in Indiana:

<b>Rank</b>	<b>Threats to in early successional grassland habitats</b>
1 (tie)	Commercial or residential development (sprawl)
1 (tie)	Habitat degradation
2	Successional change
3	Invasive/non-native species
4 (tie)	Habitat fragmentation
4 (tie)	Agricultural/forestry practices
5 (tie)	Counterproductive financial incentives or regulations
5 (tie)	Nonpoint source pollution (sedimentation and nutrients)
6 (tie)	Drainage practices (stormwater runoff)
6 (tie)	Stream channelization

Respondents noted additional threats to early successional grassland habitats in Indiana:

- No financial incentive to develop/maintain/manage these habitats

## Appendix F-50: Early Successional Areas

Respondents listed top threats to early successional grassland habitats in Indiana (not ranked):

- Successional change results in habitat degradation as grasslands are invaded by woody vegetation
- Invasion by tall fescue
- Agricultural policy
- Competing products (food)

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

## Additional research and survey efforts

### Current body of research

#### Species research

Fifty percent of respondents stated that the current body of science is adequate; the other half listed it as inadequate for wildlife in early successional grassland habitats in Indiana.

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

Title = A 14-year study of BLARINA BREVICAUDA in east-central Illinois.;

Author = Getz, L. L.;

Date = 1989;

Publisher = J. Mammalogy 70:58-66.

Title = Blarina bravicauda;

Author = George, S. B., J. R. Choate, and H. H. Genoways;

Date = 1986;

Publisher = Mammalian Species 261:1-9

Title = Population Ecology and Harvest of the Cottontail Rabbit;

Author = Heraold A. Demaree, Jr.;

Date = 1978;

Title = Population ecology and harvest of the cottontail rabbit on the Pigeon River fish and wildlife area, 1962-1970;

Author = Harold Demaree Jr.;

Date = 1978;

Publisher = Indiana Division of 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 wildlife in early successional grassland habitat. There were no responses.

#### Habitat research

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## Appendix F-50: Early Successional Areas

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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 early successional grassland habitat. There were no responses.

### Research needs

#### Species research

Respondents ranked research needs for wildlife in early successional grassland habitats in Indiana:

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

Respondents noted additional research needs for wildlife in early successional grassland habitats in Indiana:

- Determine what affect feral cats have on a local cottontail population

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 early successional grassland habitat. There were no responses.

#### Habitat research

Respondents ranked research needs for early successional grassland habitats in Indiana:

Rank	Research needs for early successional grassland habitats
1	Distribution and abundance (fragmentation)
2 (tie)	Successional changes
2 (tie)	Threats (land use change/competition, contamination/global warming)

## Appendix F-50: Early Successional Areas

- 3 (tie) Relationship/dependence on specific site conditions
- 3 (tie) Growth and development of individual components of the habitat

Respondents noted no additional research need for early successional grassland 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 early successional grassland habitat. There were no responses.

## Conservation actions necessary

### Species actions

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

Rank	Conservation efforts for wildlife in early successional grassland habitats
1 (tie)	Habitat protection (use below for details)
1 (tie)	Population management (hunting, trapping)
1 (tie)	Exotic/invasive species control
3	Food plots
4 (tie)	Native predator control
4 (tie)	Threats reduction
4 (tie)	Regulation of collecting

Respondents noted other current conservation practices for wildlife in early successional grassland habitats in Indiana (not ranked):

- Vegetative succession control
- Provide additional habitats through programs, agricultural and other. Rabbits are a by-product of the economy. The more human needs placed on the landscape, the less amount of by products will be produced. If we select for beef and corn there will be less rabbits. By selecting for something, you simultaneously select against something else.

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

- Promote early succession/protect early succession habitat
  - Associated with structure similar to *L. japonica*
  - Would require land use change every three to five years to setback natural succession

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the effective conservation of wildlife in early successional grassland habitat. There were no responses.

## Appendix F-50: Early Successional Areas

### Habitat actions

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

<b>Rank</b>	<b>Conservation efforts for early successional grassland habitats</b>
1	Selective use of functionally equivalent exotic species in place of extirpated natives
2	Succession control (fire, mowing)
3	Habitat protection on public lands
4 (tie)	Habitat restoration incentives (financial)
4 (tie)	Corridor development/protection
4 (tie)	Technical assistance
5	Habitat restoration on public lands
6 (tie)	Cooperative land management agreements (conservation easements)
6 (tie)	Habitat protection incentives (financial)
6 (tie)	Land use planning
6 (tie)	Habitat protection through regulation
6 (tie)	Artificial habitat creation (artificial reefs, nesting platforms)
6 (tie)	Restrict public access and disturbance
6 (tie)	Habitat restoration through regulation

A respondent listed other current conservation practices for early successional grassland habitats in Indiana:

- Strip spraying/interseeding

Respondents recommended the following conservation practices for early successional grassland habitats in Indiana (not ranked):

- Successional control/prescribed burning
  - Best method to maintain usable rabbit habitat
  - Uncontrolled vegetative succession eventually excludes rabbits and makes future management difficult due to concerns for the Indiana Bat. (Stribling, H.L. and Speake, D. W. 1991. Responses of Bobwhite Quail and Eastern Cottontail Rabbit Populations to Prescribed Burning, Cover Enhancement and Food Plots. Alabama Game & Fish Division/Auburn University)
  - Maintenance would require restarting succession. Disturbance of a magnitude to create bare ground, such as a complete burn and plowing, would be required.

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the conservation practices for early successional grassland 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 early successional grassland habitats in Indiana (not ranked):

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

Respondents were aware of no monitoring efforts by other organizations for wildlife in early successional grassland habitats in Indiana.

Respondents ranked monitoring efforts by state agencies based on their importance for conservation of wildlife in early successional grassland habitats in Indiana:

Rank	Monitoring efforts by state agencies for conservation of wildlife in early successional grassland habitats
1 (tie)	Statewide once a year monitoring
1 (tie)	Periodic statewide (less than once a year but still regularly scheduled) monitoring

Respondents listed no monitoring efforts by other organizations that were crucial for conservation of wildlife in early successional grassland habitats in Indiana.

Respondents listed regional or local monitoring by state agencies for wildlife in early successional grassland habitats in Indiana (not ranked):

- Indiana DFW logged rabbit sightings during quail whistle counts
- DNR property harvest data
- Annual/biennial small game surveys of licensed hunters

Respondents listed no regional or local monitoring by other organizations for wildlife in early successional grassland habitats in Indiana.

Respondents listed organizations that monitor wildlife in early successional grassland habitats in Indiana:

- Indiana Division of Fish and Wildlife

Respondents considered monitoring techniques for wildlife in early successional grassland habitats in Indiana:

## Appendix F-50: Early Successional Areas

Monitoring techniques for wildlife in early successional grassland habitats	Used	Not used but possible with existing technology and data	Not economically feasible
Radio telemetry and tracking	--	X	X
Modeling	--	X	--
Coverboard routes	X	--	--
Spot mapping	X	X	--
Driving a survey route	X	X	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	--	--
Representative sites	X	--	--
Probabilistic sites	X	--	--

Respondents noted no other monitoring techniques for wildlife in early successional 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 techniques for wildlife in early successional grassland habitat. There were no responses.

### Habitat inventory and assessment

Respondents were aware of no following inventory and assessment efforts by state agencies or other organizations for early successional grassland habitats in Indiana.

Respondents ranked inventory and assessment efforts by state agencies based on their importance for conservation of early successional grassland habitats in Indiana:

Rank	Inventory and assessment for conservation of early successional
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### grassland habitats

- 1 Occasional statewide (less than once a year and not regularly scheduled) inventory and assessment
- 2 Periodic statewide (less than once a year but still regularly scheduled) inventory and assessment

Respondents noted no inventory and assessment efforts by other organizations for early successional grassland habitats in Indiana.

Respondents listed regional or local inventory and assessment by state agencies for early successional grassland habitats in Indiana:

- DNR property evaluations

Respondents listed regional or local inventory and assessment by other organizations agencies for early successional grassland habitats in Indiana:

- Farm Bill/CRP type inventories, but none specifically for cottontail rabbits

Respondents listed no organizations that monitor early successional grassland habitats in Indiana.

Respondents considered inventory and assessment techniques for early successional grassland habitats in Indiana:

Inventory and assessment techniques for early successional grassland habitats	Used	Not used but possible with existing technology and data	Not economically feasible
GIS mapping	X	--	--
Aerial photography and analysis	X	--	--
Systematic sampling	X	X	--
Participation in land use programs	--	X	X
Modeling	--	X	--
Voluntary landowner reporting	--	--	X

Respondents listed no additional inventory and assessment techniques for early successional grassland habitats in Indiana.

## Appendix F-50: Early Successional Areas

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the inventory and assessment for early successional grassland habitat. There were no responses.

### **Recommended monitoring** Species monitoring

Respondents recommended the following monitoring techniques for effective conservation of wildlife in early successional grassland habitats in Indiana (not ranked):

- Trapping and visual surveys (McWheter, Gary Randolph, 1991, Estimating abundance of cottontail rabbits using live trapping and visual surveys, Master's thesis, University of Tennessee)
- Monitoring specifically for the cottontail is not warranted. However, an analysis of vegetative structure by specie or species group in early successional habitats and then correlated with selected early successional species would be relevant!
- I would like to see a rural mail carrier survey initiated that would be useful for monitoring rabbits and several other wildlife species. Another method to monitor rabbit populations would be to include rabbit observations on the division's annual bobwhite whistle counts.

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 early successional grassland habitat. There were no responses.

### Habitat inventory and assessment

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

- Cottontails are a mid to late early successional habitat resident. We do not know the amount of structure required to maintain optimum populations. We don't know what an optimum population is! We do know that it cycles, but we don't know why!
- The best habitat inventory technique would be creating a GIS with Landsat data from different time periods.

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 early successional grassland habitat. There were no responses.