

Appendix E-50: Early Successional Areas

11. Other HABITAT threats to the Wildlife in Early Successional Grassland Habitats in Indiana.

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

Total Respondents 1

12. Please briefly describe the top two HABITAT threats to the Wildlife in Early Successional Grassland Habitats in Indiana identified above.

1. successional change results in habitat degradation as grasslands are invaded by woody vegetation.

2. 1)Agricultural policy
2)Competing products (food)

3. I believe invasion of early successional grasslands by tall fescue is probably the top threat followed closely by successional change.

Total Respondents 3

13. What current monitoring efforts by state agencies are you aware of for the Wildlife in Early Successional Grassland Habitats in Indiana?

	Yes, these efforts occur	Not aware of these efforts occurring	Response Total
Statewide year-round monitoring conducted by state agencies	25% (1)	75% (3)	4
Statewide once a year monitoring conducted by state agencies	25% (1)	75% (3)	4
Periodic statewide (less than once a year but still regularly scheduled) monitoring conducted by state agencies	50% (2)	50% (2)	4
Occasional statewide (less than once a year and not regularly scheduled) monitoring conducted by state agencies	0% (0)	100% (4)	4
Regional or local year-round monitoring conducted by state agencies	25% (1)	75% (3)	4
Regional or local once a year monitoring conducted by state agencies	25% (1)	75% (3)	4
Periodic regional or local (less than once a year but still regularly scheduled) monitoring conducted by state agencies	0% (0)	100% (4)	4
Occasional regional or local (less than once a year and not regularly scheduled) monitoring conducted by state agencies	0% (0)	100% (4)	4
		Total Respondents	32

14. What current monitoring efforts by other organizations are you aware of for the Wildlife in Early Successional Grassland Habitats in Indiana?

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	Yes, these efforts occur	Not aware of these efforts occurring	Response Total
Statewide year-round monitoring conducted by other organizations	0% (0)	100% (4)	4
Statewide once a year monitoring conducted by other organizations	0% (0)	100% (4)	4
Periodic statewide (less than once a year but still regularly scheduled) monitoring conducted by other organizations	0% (0)	100% (4)	4
Occasional statewide (less than once a year and not regularly scheduled) monitoring conducted by other organizations	0% (0)	100% (4)	4
Regional or local year-round monitoring conducted by other organizations	0% (0)	100% (4)	4
Regional or local once a year monitoring conducted by other organizations	0% (0)	100% (3)	3
Periodic regional or local (less than once a year but still regularly scheduled) monitoring conducted by other organizations	0% (0)	100% (4)	4
Occasional regional or local (less than once a year and not regularly scheduled) monitoring conducted by other organizations	0% (0)	100% (4)	4
		Total Respondents	31

15. How crucial are these monitoring efforts by state agencies for the conservation of the Wildlife in Early Successional Grassland Habitats in Indiana?						
	Very crucial	Somewhat crucial	Slightly crucial	Not crucial	Unknown	Response Total
Statewide year-round monitoring conducted by state agencies	0% (0)	0% (0)	0% (0)	75% (3)	25% (1)	4
Statewide once a year monitoring conducted by state agencies	25% (1)	0% (0)	0% (0)	50% (2)	25% (1)	4
Periodic statewide (less than once a year but still regularly scheduled) monitoring conducted by state agencies	25% (1)	0% (0)	0% (0)	50% (2)	25% (1)	4
Occasional statewide (less than once a year and not regularly scheduled) monitoring conducted by state agencies	0% (0)	0% (0)	0% (0)	75% (3)	25% (1)	4
Regional or local year-round monitoring conducted by state agencies	0% (0)	0% (0)	0% (0)	75% (3)	25% (1)	4
Regional or local once a year monitoring conducted by state agencies	0% (0)	0% (0)	0% (0)	75% (3)	25% (1)	4
Periodic regional or local (less than once a year but still regularly scheduled) monitoring conducted by state agencies	0% (0)	0% (0)	0% (0)	75% (3)	25% (1)	4
Occasional regional or local (less than once a year and not regularly scheduled) monitoring conducted by state agencies	0% (0)	0% (0)	0% (0)	75% (3)	25% (1)	4

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Total Respondents 32

16. How crucial are these monitoring efforts by other organizations for the conservation of the Wildlife in Early Successional Grassland Habitats in Indiana?

	Very crucial	Somewhat crucial	Slightly crucial	Not crucial	Unknown	Response Total
Statewide year-round monitoring conducted by other organizations	0% (0)	0% (0)	0% (0)	75% (3)	25% (1)	4
Statewide once a year monitoring conducted by other organizations	0% (0)	0% (0)	0% (0)	75% (3)	25% (1)	4
Periodic statewide (less than once a year but still regularly scheduled) monitoring conducted by other organizations	0% (0)	0% (0)	0% (0)	75% (3)	25% (1)	4
Occasional statewide (less than once a year and not regularly scheduled) monitoring conducted by other organizations	0% (0)	0% (0)	0% (0)	75% (3)	25% (1)	4
Regional or local year-round monitoring conducted by other organizations	0% (0)	0% (0)	0% (0)	75% (3)	25% (1)	4
Regional or local once a year monitoring conducted by other organizations	0% (0)	0% (0)	0% (0)	75% (3)	25% (1)	4
Periodic regional or local (less than once a year but still regularly scheduled) monitoring conducted by other organizations	0% (0)	0% (0)	0% (0)	75% (3)	25% (1)	4
Occasional regional or local (less than once a year and not regularly scheduled) monitoring conducted by other organizations	0% (0)	0% (0)	0% (0)	75% (3)	25% (1)	4
				Total Respondents		32

17. Regional or local state agency monitoring for the Wildlife in Early Successional Grassland Habitats in Indiana.

1. In the past, I believe the DFW logged rabbit sightings during quail whistle counts.
2. DNR property harvest data
Annual small game survey of licensed hunters!

Total Respondents 2

18. Regional or local monitoring by other organizations for the Wildlife in Early Successional Grassland Habitats in Indiana.

Not aware of any!

Total Respondents 1

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19. Please list organizations that are monitoring the Wildlife in Early Successional Grassland Habitats in Indiana.

1. Not aware of any!

2. The biennial small game harvest survey is the only method currently being used by the division of fish and wildlife to monitor the statewide rabbit population. I am not aware of any other monitoring occurring in the state.

Total Respondents 2

20. What are the current monitoring techniques for the Wildlife in Early Successional Grassland Habitats in Indiana?

	Frequently used	Occasionally used	Not used but possible with existing technology and data	Not used and not possible with existing technology and data	Not economically feasible	Unknown	Response Total
Radio telemetry and tracking	0% (0)	0% (0)	33% (1)	0% (0)	33% (1)	33% (1)	3
Modeling	0% (0)	0% (0)	50% (1)	0% (0)	0% (0)	50% (1)	2
Coverboard routes	0% (0)	50% (1)	0% (0)	0% (0)	0% (0)	50% (1)	2
Spot mapping	0% (0)	50% (1)	50% (1)	0% (0)	0% (0)	0% (0)	2
Driving a survey route	0% (0)	33% (1)	33% (1)	0% (0)	33% (1)	0% (0)	3
Reporting from harvest, depredation, or unintentional take (road kill, bycatch)	50% (2)	50% (2)	0% (0)	0% (0)	0% (0)	0% (0)	4
Mark and recapture	0% (0)	50% (1)	50% (1)	0% (0)	0% (0)	0% (0)	2
Professional survey/census	0% (0)	50% (1)	50% (1)	0% (0)	0% (0)	0% (0)	2
Volunteer survey/census	0% (0)	0% (0)	50% (1)	0% (0)	0% (0)	50% (1)	2
Trapping (by any technique)	33% (1)	67% (2)	0% (0)	0% (0)	0% (0)	0% (0)	3
Representative sites	50% (1)	0% (0)	0% (0)	0% (0)	0% (0)	50% (1)	2
Probabilistic sites	0% (0)	50% (1)	0% (0)	0% (0)	0% (0)	50% (1)	2
Other (please specify below)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	0
							Total Respondents 17

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21. Other monitoring techniques for the Wildlife in Early Successional Grassland Habitats in Indiana.

Not aware of any!

Total Respondents 1

22. What one or two monitoring techniques would you recommend for effective conservation of the Wildlife in Early Successional Grassland Habitats in Indiana?

1. Trapping and visual surveys.

Trapping is expensive and visual surveys are less expensive and can be combined with other surveys.

McWheter, Gary Randolph, 1991, Estimating Abundance of Cottontail Rabbits using live trapping and visual surveys, Master's thesis, University of Tennessee

2. Specifically being done for the cottontail is not warranted. However, an analysis of vegetative structure by species or species group in early successional habitats and then correlated with selected early successional species would be relevant!

3. 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.

Total Respondents 3

23. What current HABITAT inventory and assessment efforts or activities by state agencies are you aware of for the Wildlife in Early Successional Grassland Habitats in Indiana?

	Yes, these efforts occur	No effort that I'm aware of	Response Total
Statewide annual inventory and assessment conducted by state agencies	0% (0)	100% (4)	4
Statewide once a year inventory and assessment conducted by state agencies	0% (0)	100% (4)	4
Periodic statewide (less than once a year but still regularly scheduled) inventory and assessment conducted by state agencies	0% (0)	100% (4)	4
Occasional statewide (less than once a year and not regularly scheduled) inventory and assessment conducted by state agencies	0% (0)	100% (4)	4
Regional or local year-round inventory and assessment conducted by state agencies	0% (0)	100% (4)	4
Regional or local once a year inventory and assessment conducted by state agencies	0% (0)	100% (4)	4
Periodic regional or local (less than once a year but still regularly scheduled) inventory and assessment conducted by state agencies	0% (0)	100% (4)	4
Occasional regional or local (less than once a year and not regularly scheduled) inventory and assessment conducted by state agencies	0% (0)	100% (4)	4
		Total Respondents	32

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24. What current HABITAT inventory and assessment efforts or activities by other organizations are you aware of for the Wildlife in Early Successional Grassland Habitats in Indiana?

	Yes, these efforts occur	No effort that I'm aware of	Response Total
Statewide year-round inventory and assessment conducted by other organizations	0% (0)	100% (4)	4
Statewide once a year inventory and assessment conducted by other organizations	0% (0)	100% (4)	4
Periodic statewide (less than once a year but still regularly scheduled) inventory and assessment conducted by other organizations	0% (0)	100% (4)	4
Occasional statewide (less than once a year and not regularly scheduled) inventory and assessment conducted by other organizations	0% (0)	100% (4)	4
Regional or local year-round inventory and assessment conducted by other organizations	0% (0)	100% (4)	4
Regional or local once a year inventory and assessment conducted by other organizations	0% (0)	100% (4)	4
Periodic regional or local (less than once a year but still regularly scheduled) inventory and assessment conducted by other organizations	0% (0)	100% (4)	4
Occasional regional or local (less than once a year and not regularly scheduled) inventory and assessment conducted by other organizations	0% (0)	100% (4)	4
	Total Respondents		32

25. How crucial are these HABITAT efforts by state agencies for the conservation of the Wildlife in Early Successional Grassland Habitats in Indiana?

	These efforts are very crucial for this HABITAT	These efforts are somewhat crucial for this HABITAT	These efforts are slightly crucial for this HABITAT	These efforts are not crucial for this HABITAT	Unknown	Response Total
Statewide annual inventory and assessment conducted by state agencies	0% (0)	0% (0)	0% (0)	25% (1)	75% (3)	4
Statewide once a year inventory and assessment conducted by state agencies	0% (0)	0% (0)	0% (0)	33% (1)	67% (2)	3
Periodic statewide (less than once a year but still regularly scheduled) inventory and assessment conducted by state agencies	0% (0)	25% (1)	0% (0)	25% (1)	50% (2)	4
Occasional statewide (less than once a year and not regularly scheduled)	25% (1)	0% (0)	0% (0)	25% (1)	50% (2)	4

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conducted by other organizations							
Occasional regional or local (less than once a year and not regularly scheduled) inventory and assessment conducted by other organizations							
	0% (0)	0% (0)	0% (0)	50% (2)	50% (2)		4
Total Respondents							32

27.	Regional or local state agency HABITAT inventory and assessment for the Wildlife in Early Successional Grassland Habitats in Indiana.						
DNR property evaluations, but I know of nothing organized!							
Total Respondents							1

28.	Regional or local HABITAT inventory and assessment by other organizations for the Wildlife in Early Successional Grassland Habitats in Indiana.						
There are Farm Bill/CRP type inventories but none done specifically for the Cottontail!							
Total Respondents							1

29.	Please list organizations that are monitoring this HABITAT for the Wildlife in Early Successional Grassland Habitats in Indiana.						
1. None specifically for the Cottontail!							
2. I am not aware of any scheduled monitoring of early successional habitat in Indiana. I would suspect that one of the universities has remotely sensed data but their objective probably isn't specifically to monitor early successional habitat.							
Total Respondents							2

30.	What are the current monitoring techniques for the Wildlife in Early Successional Grassland Habitats in Indiana?						
If a technique is not applicable to the Wildlife in Early Successional Grassland Habitats, do not select a response in that row.							
	Frequently used	Occasionally used	Not used but possible with existing technology and data	Not used and not possible with existing technology and data	Not economically feasible	Unknown	Response Total
GIS mapping	0% (0)	67% (2)	0% (0)	0% (0)	0% (0)	33% (1)	3
Aerial photography and analysis	33% (1)	33% (1)	0% (0)	0% (0)	0% (0)	33% (1)	3
Systematic sampling	0% (0)	33% (1)	33% (1)	0% (0)	0% (0)	33% (1)	3
Property tax estimates	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	100% (3)	3

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State revenue data	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	100% (3)	3												
Regulatory information	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	100% (3)	3												
Participation in landuse programs	0% (0)	0% (0)	50% (2)	0% (0)	25% (1)	25% (1)	4												
Modeling	0% (0)	0% (0)	50% (2)	25% (1)	0% (0)	25% (1)	4												
Voluntary landowner reporting	0% (0)	0% (0)	0% (0)	0% (0)	67% (2)	33% (1)	3												
Other (please specify below)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	100% (1)	1												
Total Respondents							30												

31. Other HABITAT inventory and assessment techniques for the Wildlife in Early Successional Grassland Habitats in Indiana.

No responses were entered for this question.

Total Respondents 0

32. What one or two HABITAT inventory and assessment techniques would you recommend for effective conservation of the Wildlife in Early Successional Grassland Habitats in Indiana?

1. 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! That isn't a good answer, I don't know a good answer for that!

2. The best habitat inventory technique would be creating a GIS with Landsat data from different time periods.

Total Respondents 2

33. What is the current body of science for the Wildlife in Early Successional Grassland Habitats in Indiana?

		Response Total	Response Percent
Complete, up to date and extensive		0	0%
Adequate		2	50%
Inadequate		2	50%
Nonexistent		0	0%
Other (please explain below)		0	0%
Total Respondents		4	

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34. Please provide a citation (title, author, date, publisher) that would give the best overview of the Wildlife in Early Successional Grassland Habitats in Indiana, if available. This resource may be used if further detail is needed.

Title = Population Ecology and Harvest of the Cottontail Rabbit
 Author = Heraold A.Demaree, Jr
 Date = 1978
 Publisher = Indiana DFW

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

**Response
Total Response
Percent**

Title = A 14-year study of BLARINA BREVICAUDA in east-central Illinois.
 Author = Getz, L. L.
 Date = 1989
 Publisher = J. Mammalogy 70: 58-66.

35. If possible, please provide a second citation (title, author, date, publisher) that would give another good overview of the Wildlife in Early Successional Grassland Habitats in Indiana. This resource may also be used if further detail is needed.

Title = Blarina bravicauda
 Author = George,S. B., J. R. Choate, and H. H. Genoways
 Date = 1986
 Publisher = Mammalian Species 261: 1-9

**Response
Total Response
Percent**

36. What is the current HABITAT body of science for the Wildlife in Early Successional Grassland Habitats in Indiana?

	Response Total	Response Percent
Complete, up to date and extensive	0	0%
Adequate 	2	50%
Inadequate 	2	50%
Nonexistent	0	0%
Other (please explain below)	0	0%
Total Respondents	4	

37. Please provide a citation (title, author, date, publisher) that would give the best HABITAT overview of the Wildlife in Early Successional Grassland Habitats in Indiana, if available. This resource may be used if further detail is needed.

Title = A4-year study study of BLARINA BREVICAUDA un east-central Illinois
 Author = Getz, L. L.
 Date = 1989
 Publisher = J. Mammalogy 70: 58-66.

**Response
Total Response
Percent**

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- 38.** If possible, please provide a second citation (title, author, date, publisher) that would give another good HABITAT overview of the Wildlife in Early Successional Grassland Habitats in Indiana. This resource may also be used if further detail is needed.

		Response Total	Response Percent
Title	I can't	1	100%
Author		0	0%
Date		0	0%
Publisher		0	0%
Total Respondents		1	

- 39.** What are the research needs for the Wildlife in Early Successional Grassland Habitats in Indiana?

	Urgently needed	Greatly needed	Needed	Slightly needed	Not needed	Unknown	Response Total
Life cycle	0% (0)	0% (0)	50% (2)	0% (0)	50% (2)	0% (0)	4
Distribution and abundance	0% (0)	0% (0)	25% (1)	0% (0)	75% (3)	0% (0)	4
Limiting factors (food, shelter, water, breeding sites)	25% (1)	25% (1)	0% (0)	0% (0)	50% (2)	0% (0)	4
Threats (predators/competition, contamination)	0% (0)	25% (1)	25% (1)	0% (0)	50% (2)	0% (0)	4
Relationship/dependence on specific habitats	0% (0)	25% (1)	0% (0)	25% (1)	50% (2)	0% (0)	4
Population health (genetic and physical)	0% (0)	25% (1)	25% (1)	0% (0)	50% (2)	0% (0)	4
Other (please specify below)	0% (0)	0% (0)	0% (0)	0% (0)	100% (1)	0% (0)	1
Total Respondents							25

- 40.** Other research needs for the Wildlife in Early Successional Grassland Habitats in Indiana.

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

Total Respondents 1

- 41.** What are the HABITAT research needs for the Wildlife in Early Successional Grassland Habitats in Indiana?

	Urgently needed	Greatly needed	Needed	Slightly needed	Not needed	Unknown	Response Total
Successional changes	0% (0)	25% (1)	50% (2)	25% (1)	0% (0)	0% (0)	4
Distribution and abundance (fragmentation)	25% (1)	25% (1)	25% (1)	0% (0)	25% (1)	0% (0)	4
Threats (land use							

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Total Respondents 64

44. Other current conservation practices for the Wildlife in Early Successional Grassland Habitats in Indiana.

1. vegetative succession control

2. Provide additional habitats through programs, agricultural and other. Rabbits are a by product of an economy. The more human needs placed on the landscape the less amount of by products will be produced. As I mentioned above: If we select for beef and corn there will be less rabbits. By selecting for you simultaneously select against something else. Maybe we need to find out how many steaks we need will determine how many rabbits we have!

Total Respondents 2

45. What one or two specific practices would you recommend for more effective conservation of the Wildlife in Early Successional Grassland Habitats in Indiana?

1. Promote early succession associated with structure similar to *L. japonica*.

2. The best strategy would be to protect as much early successional habitat as possible but that habitat must be manipulated periodically to set back natural succession.

3. Manage lands for early successional grassland habitat - would require land use change every 3 to 5 years.

Total Respondents 3

46. How well do the following conservation efforts address the HABITAT threats to the Wildlife in Early Successional Grassland Habitats in Indiana?

	Very well	Somewhat	Not at all	Not used	Unknown	Response Total
Habitat protection through regulation	0% (0)	50% (2)	25% (1)	0% (0)	25% (1)	4
Habitat protection on public lands	50% (2)	50% (2)	0% (0)	0% (0)	0% (0)	4
Habitat protection incentives (financial)	0% (0)	75% (3)	0% (0)	25% (1)	0% (0)	4
Habitat restoration through regulation	0% (0)	25% (1)	0% (0)	75% (3)	0% (0)	4
Habitat restoration on public lands	25% (1)	75% (3)	0% (0)	0% (0)	0% (0)	4
Habitat restoration incentives (financial)	25% (1)	50% (2)	0% (0)	25% (1)	0% (0)	4
Artificial habitat creation (artificial reefs, nesting platforms)	0% (0)	50% (2)	0% (0)	50% (2)	0% (0)	4
Selective use of functionally equivalent exotic species in place of extirpated natives	25% (1)	0% (0)	25% (1)	50% (2)	0% (0)	4
Succession control (fire, mowing)	75% (3)	25% (1)	0% (0)	0% (0)	0% (0)	4
Corridor development/protection	25% (1)	50% (2)	0% (0)	25% (1)	0% (0)	4
Managing water regimes	0% (0)	0% (0)	0% (0)	50% (2)	50% (2)	4
Pollution reduction	0% (0)	0% (0)	0% (0)	75% (3)	25% (1)	4
Protection of adjacent buffer zone	0% (0)	0% (0)	0% (0)	75% (3)	25% (1)	4

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Restrict public access and disturbance	0% (0)	50% (2)	0% (0)	50% (2)	0% (0)	4
Land use planning	0% (0)	50% (2)	25% (1)	25% (1)	0% (0)	4
Technical assistance	25% (1)	50% (2)	0% (0)	25% (1)	0% (0)	4
Cooperative land management agreements (conservation easements)	0% (0)	75% (3)	0% (0)	25% (1)	0% (0)	4
Other (please specify below)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	0
Total Respondents						68

47. Other current HABITAT conservation practices for the Wildlife in Early Successional Grassland Habitats in Indiana.

Strip spraying/interseeding

Total Respondents 1

48. What one or two specific HABITAT practices would you recommend for more effective conservation of the Wildlife in Early Successional Grassland Habitats in Indiana?

1. Prescribed burning, because it is useful in controlling vegetative succession. 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 Bobwhie WQuail and EAsern Cottontail Rabbit Populations to Prescribed Burning, Cover Enhancement and Food Plots. Alabama Game & Fish Divison/Auburn University

2. Maintenance of early successional components!

3. Successional control is the best method to maintail useable rabbit habitat.

4. Early successional grassland habitat maintenance would require "restart succession is areas. Disturbance of a magnitude to create bare ground, such as a complete burn, plowing, etc. would be required to accomplish this goal.

Total Respondents 4

49. Do you have any additional comments or information on the Wildlife in Early Successional Grassland Habitats that you feel would be useful in the development of the Indiana Comprehensive Wildlife Strategy?

No!

Total Respondents 1