

EARLY FOREST STAGE HABITATS

Habitat description

Early stage forests are typified by tree seedlings (less than 1-inch diameter breast height (dbh) and tree saplings (greater than 1-inch dbh but less than 5-inch dbh). The tree species often occur in combination with non-arborescent woody shrubs and perennial herbs/forbs.

Problems affecting species and habitats

Species threats

The respondent ranked threats to wildlife in early forest stage habitats in Indiana:

Rank	Threats to wildlife in early forest stage habitats in Indiana
1 (tie)	Habitat loss (breeding range)
1 (tie)	Habitat loss (feeding/foraging areas)
2 (tie)	Viable reproductive population size or availability
2 (tie)	Small native range (high endemism)
3	Predators (native or domesticated)
4 (tie)	Specialized reproductive behavior or low reproductive rates
4 (tie)	Genetic pollution (hybridization)
5 (tie)	Dependence on irregular resources (cyclical annual variations) (e.g., food, water, habitat limited due to annual variations in availability)
5 (tie)	Near limits of natural geographic range
6	Diseases/parasites (of the species itself)
7 (tie)	Large home range requirements
7 (tie)	Regulated hunting/fishing pressure (too much)
7 (tie)	Invasive/non-native species
8	Bioaccumulation of contaminants

Respondents noted other threats to wildlife in early forest stage habitats in Indiana (not ranked):

- Loss of early successional forest age class
 - Lack of periodic vegetative disturbance (man-made or natural every 5 to 10 years) that adequately opens the forest canopy, especially in contiguous forests under public ownership. These areas form the heart of residual and current grouse range
 - Potential habitat on private lands is fragmented due to small ownership and different ownership objectives. This situation does not provide a continuum of acceptable habitat for successful grouse population dispersal. A recent population model projects that ruffed grouse will potentially disappear as a viable species in much of

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their current range by 2007. Ruffed grouse population indices are now at the lowest levels recorded in over 40+ years

- Lack of public knowledge/information regarding the importance of disturbances and early successional habitat in forested areas. This is the main contributing factor to the near extirpation of the ruffed grouse.

Respondents noted top threats to wildlife in early forest stage habitats in Indiana (not ranked):

- Loss of early successional forest age class (see Q8 for possible reasons)
- Preservationist (anti-management) influences on politics of timber management and legal challenges to sound timber/wildlife management activities
- Lack of public knowledge/information regarding the importance of disturbances and early successional habitat in forested areas.

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

Habitat threats

The respondent ranked threats to early forest stage habitats in Indiana:

Rank	Threats to early forest stage habitats in Indiana
1	Successional change
2 (tie)	Habitat degradation
2 (tie)	Agricultural/forestry practices
3	Commercial or residential development (sprawl)
4	Habitat fragmentation
5	Counterproductive financial incentives or regulations
6 (tie)	Invasive/non-native species
6 (tie)	Diseases (of plants that create habitat)
7 (tie)	Climate change
7 (tie)	Mining/acidification
8	Impoundment of water/flow regulation
9 (tie)	Drainage practices (stormwater runoff)
9 (tie)	Stream channelization
9 (tie)	Point source pollution (continuing)
9 (tie)	Nonpoint source pollution (sedimentation and nutrients)

Again, respondents indicated that other, top threats to early forest stage habitats in Indiana is lack of periodic vegetative disturbance in forested areas to maintain early forest stage habitat,

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especially in the large contiguous forested areas of the state in public ownership. (See Q8 and Q9 for more information.)

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

Additional research and survey efforts

Current body of research

Species research

Two-thirds of respondents indicated that the current body of research for wildlife in early forest stage habitats in Indiana is adequate. A third indicated that research is complete, up to date and extensive.

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

Title = Population status of ruffed grouse in Indiana;
Author = Steven E. Backs;
Date = Annual Progress Reports;
Publisher = Indiana Div. Fish and Wildlife

Title = The historic and present distribution of ruffed grouse in Indiana;
Author = Steven E. Backs;
Date = 1984;
Publisher = Ind. Acad. Sci. 93:161-166.

Title = Ruffed Grouse Restoration in IN;
Author = Steve Backs;
Date = 1984;
Publisher = N. Central Section of the Wildlife Soc.

Title = Characteristics of Drumming Habitat of Grouse in IN;
Author = Backs, Kelly, Major, Miller;
Date = 1984;
Publisher = Proceedings of Indiana Academy of Science: 94:227-230

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the current body of research for wildlife in early forest stage habitats. There were no responses.

Habitat research

Two thirds of respondents indicated that research for early forest stage habitats in Indiana is adequate. A third of respondents indicated that research is inadequate.

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

Title = Statewide Forest Inventory;

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Author = ?;

Date = periodic;

Publisher = US Forest Service/IDNR

Title = same as earlier

Author = same as earlier

Technical experts and conservation organizations reviewed the above results and were asked if these were a reasonable representation of the current body of research for early forest stage habitats. There were no responses.

Research needs

Species research

Respondents ranked research needs for wildlife in early forest stage habitats in Indiana:

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

A respondent listed other research needs for wildlife in early forest stage habitats in Indiana (not ranked):

- Whether distribution of early successional habitat is now so poor and low that the disappearance of ruffed grouse from local areas will expand into a regional or complete extinction

A respondent stated, "We don't need more research. We need habitat management for early successional forest species, including but not limited to the ruffed grouse."

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 forest stage habitats. There were no responses.

Habitat research

Respondents ranked research needs for early forest stage habitats in Indiana:

Rank	Research needs for early forest stage habitats
1	Distribution and abundance (fragmentation)

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

A respondent commented on other research needs for early forest stage habitats in Indiana: “We do not need research on grouse habitat. We know what they need, it just needs to be provided before the ruffed grouse is extirpated.”

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

Conservation actions necessary

Species actions

Respondents ranked how well conservation efforts address threats to wildlife in early forest stage habitats in Indiana:

Rank	Conservation efforts for wildlife in early forest stage habitats in Indiana
1 (tie)	Habitat protection
1 (tie)	Population management (hunting, trapping)
2	Public education to reduce human disturbance

A respondent commented on current conservation practices for wildlife in early forest stage habitats in Indiana. The respondent indicated that “habitat enhancement” is needed, rather than protection. The respondent stated that, “ruffed grouse requires active vegetative management. While hunting is not responsible for the declining population trends and hunting pressure is self-limiting/regulated by diminishing returns, the question does eventually come to the point (with the continuous decline of habitat and subsequently low populations) where one must ask if there is an available surplus or are we shooting the last grouse in an area that was doomed anyway due to the lack of habitat.”

Respondents recommended the following conservation practices to enhance wildlife in early forest stage habitats in Indiana (not ranked):

- Active timber management, especially on the larger blocks of public forest lands; timber management practices that remove at least 75 percent of the overhead canopy
- Production of early successional stages of vegetation on public lands using practices such as clear-cutting and certain select cutting methods

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

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Habitat actions

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

Rank	Conservation efforts for early forest stage habitats
1 (tie)	Habitat restoration through regulation
1 (tie)	Habitat restoration on public lands
1 (tie)	Habitat restoration incentives (financial)
1 (tie)	Succession control (fire, mowing)
2 (tie)	Land use planning
2 (tie)	Corridor development/protection
3 (tie)	Cooperative land management agreements (cooperative easements)
3 (tie)	Habitat protection through regulation
3 (tie)	Habitat protection on public lands
3 (tie)	Habitat protection incentives (financial)
3 (tie)	Technical assistance
3 (tie)	Protection of adjacent buffer zone

Respondents noted other current conservation practices for early forest stage habitats in Indiana:

- Some states mandate that a certain percentage of public lands be maintained in early successional and transitional forest types

Respondents recommended the following for more effective conservation of early forest stage habitats in Indiana (not ranked):

- Active timber management that removes at least 75 percent of the existing forest canopy on a portion of the forested landscape every 5 to 10 years on an 80- to 120-year rotation is needed
- Educate the public to understand that habitat management is necessary to provide habitat for specialist species whose populations are in peril

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

Proposed plans for monitoring

Current monitoring

Species monitoring

Respondents indicated that the following monitoring efforts are conducted by state agencies for wildlife in early forest stage habitats in Indiana (not ranked):

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- Statewide once-a-year monitoring
- Regional or local once-a-year monitoring

Respondents indicated that the following monitoring efforts are conducted by other organizations for wildlife in early forest stage 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 ranked monitoring efforts by state agencies based on their importance in conserving wildlife in early forest stage habitats in Indiana:

Rank	Monitoring efforts by state agencies for wildlife in early forest stage habitats
1	Statewide once a year monitoring conducted by state agencies
2	Regional or local once-a-year monitoring conducted by state agencies
3	Periodic regional or local (less than once a year but still regularly scheduled) monitoring conducted by state agencies
4	Regional or local year-round monitoring conducted by state agencies
5	Statewide year-round monitoring conducted by state agencies
6	Occasional regional or local (less than once a year and not regularly scheduled) monitoring conducted by state agencies

Respondents ranked monitoring efforts by other organizations based on their importance in conserving wildlife in early forest stage habitats in Indiana:

Rank	Monitoring efforts by other organizations for wildlife in early forest stage habitats
1 (tie)	Regional or local year-round monitoring conducted by state agencies
1 (tie)	Regional or local once-a-year monitoring conducted by state agencies
2	Occasional regional or local (less than once a year and not regularly scheduled) monitoring conducted by state agencies
3	Periodic regional or local (less than once a year but still regularly scheduled) monitoring conducted by state agencies

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Respondents listed the following regional or local monitoring by state agencies for wildlife in early forest stage habitats in Indiana (not ranked):

- Roadside spring drumming survey (drumming indices) conducted in primarily in south-central Indiana
- Activity center counts on the 900-acre Maumee Grouse Study Area in Jackson/Brown counties

Respondents listed the following regional or local monitoring efforts by other organizations for wildlife in early forest stage habitats in Indiana (not ranked):

- Incidental observations on Christmas Bird Counts (extremely minor)
- Species occurrence noted during the Statewide Breeding Bird Atlas Project (only one ever done).

Respondents listed organizations involved in monitoring wildlife in early forest stage habitats in Indiana (not ranked):

- Audubon Society
- Indiana Department of Natural Resources

Respondents considered monitoring techniques for wildlife in early forest stage habitats in Indiana as follows:

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

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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 wildlife in early forest stage habitats. There were no responses.

Habitat inventory and assessment

Respondents were aware of following inventory and assessment efforts by state agencies for early forest stage habitats in Indiana:

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

Respondents indicated that no inventory and assessment efforts are conducted by other organizations for early forest stage habitats in Indiana.

Respondents ranked inventory and assessment efforts by state agencies based on their importance to conserving early forest stage habitats in Indiana:

Rank	Inventory and assessment efforts by state agencies for early forest stage habitats
1	Periodic statewide (less than once a year but still regularly scheduled) inventory and assessment conducted by other organizations
2	Statewide annual inventory and assessment conducted by other organizations
3 (tie)	Statewide once-a-year inventory and assessment conducted by other organizations
3 (tie)	Regional or local year-round inventory and assessment conducted by other organizations
3 (tie)	Regional or local once-a-year inventory and assessment conducted by other organizations
3 (tie)	Periodic regional or local (less than once a year but still regularly scheduled) inventory and assessment conducted by other organizations
4	Occasional regional or local (less than once a year and not regularly scheduled) inventory and assessment conducted by other organizations
5	Occasional statewide (less than once a year and not regularly scheduled) inventory and assessment conducted by other

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organizations

One-third of respondents *equally* ranked the following inventory and assessment efforts by other organizations as “slightly crucial” to conserving early forest stage habitats in Indiana:

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

Respondents listed regional or local inventory and assessment efforts for early forest stage habitats in Indiana:

- The Continuous Statewide Forest Inventory jointly conducted by the US Forest Service and the Indiana Div. of Forestry, IDNR

Respondents listed no habitat inventory and assessment efforts or organizations involved in monitoring for early forest stage habitats in Indiana.

Respondents considered the following inventory and assessment techniques for early forest stage habitats in Indiana:

Inventory and assessment techniques for early forest stage 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	--	--
Participation in land use programs	X	X	--
Modeling	X	--	--
Voluntary landowner reporting	--	X	--

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Respondents listed no other inventory and assessment efforts for early forest stage 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 early forest stage habitats. There were no responses.

Recommended monitoring

Species monitoring

Respondents recommended the following monitoring techniques for wildlife in early forest stage habitats in Indiana (not ranked):

- Spring drumming routes used nationally for spring breeding trend data
- On particular or "study areas," complete spring drumming counts for accurate breeding densities
- Hunter bag surveys

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 forest stage habitats. There were no responses.

Habitat inventory and assessment

Respondents recommended the following inventory and assessment techniques for early forest stage habitats in Indiana (not ranked):

- Statewide Forest Inventory
- GIS and current aerial photos

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 early forest stage habitats. There were no responses.