

B. KANKAKEE REGION

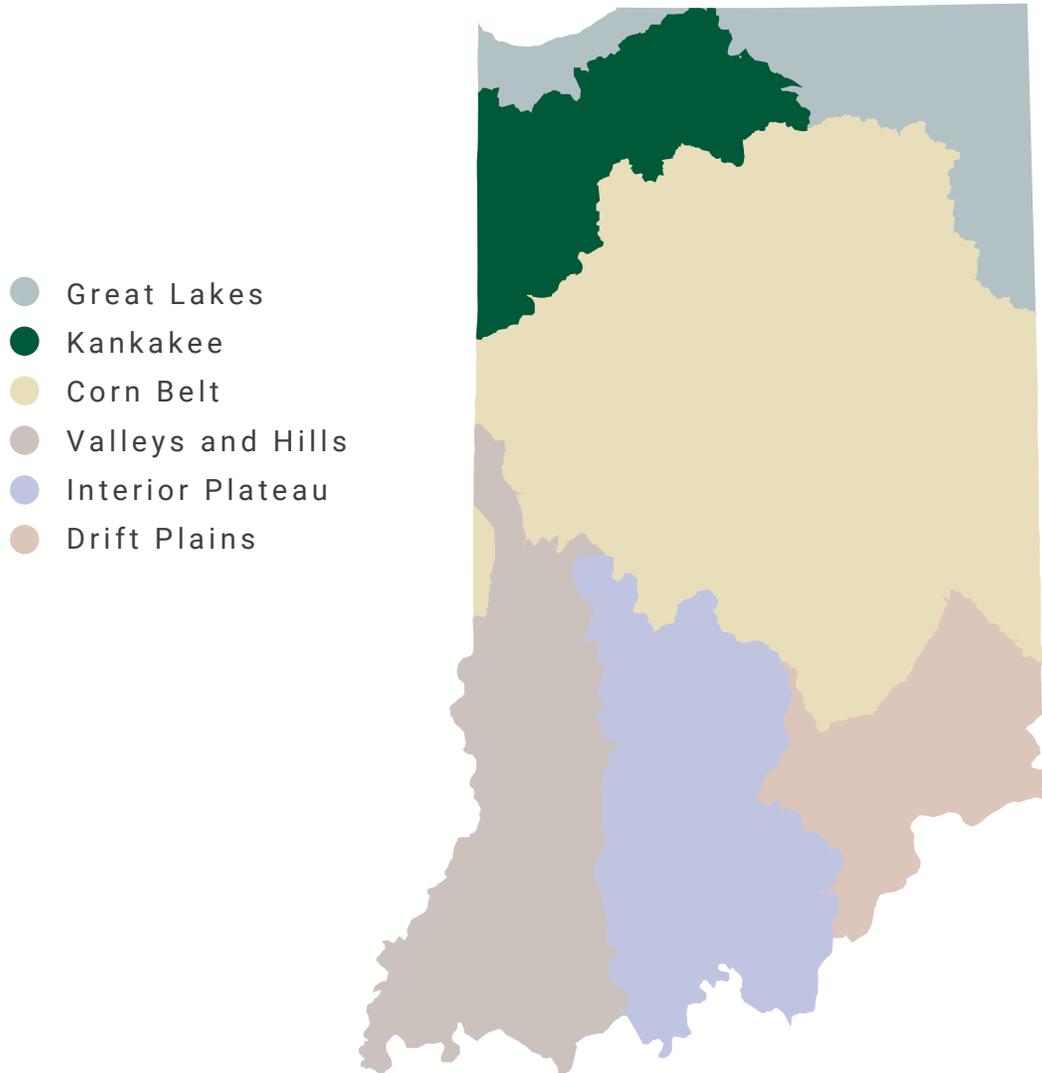


Figure 6-6. Outline of the Kankakee Region in Indiana.

Introduction

This section summarizes habitat conditions, threats to SGCN and their habitats, and conservation actions for species and habitats in the Kankakee Region. This section also reviews land cover changes over the past decade and identifies unique habitat types in this region. Summaries of threats to and conservation actions for SGCN and their habitats that were generated from two surveys can be found at the end of this section.

In addition to the threats and actions identified in the Habitat Survey and the Species Survey, the DFW recognized the need to identify threats aligned with specific actions. Several threats and actions were identified as ubiquitous across all six regions. These include:

- **Habitat Loss:** Develop and promote farming technologies and practices that have conservation benefits (e.g., cover crops, no-till).
- **Invasive Species:** Build external capacity (form and facilitate partnerships, alliances, and networks of organizations to address invasive species).
- **Law and Policy:** Develop, change, influence and help implement formal legislation, regulations and voluntary standards.
- **Dams and Water Management and Use:** Remove unnecessary dams and utilize necessary dams with effective fish passage structures.

The DFW also identified specific threats and actions for each SWAP region based on DFW priorities. These threats were identified due to their high level of relevancy to the specific region and the workability of the associated actions. These threats and actions for the Kankakee Region include:

- **Habitat Loss of Savannas and Prairies:** Build external capacity by forming partnerships and networks, raising and providing funds and resources for conservation organization to maintain and protect savannas.
- **Establish Natural Disturbance Regimes in Savannas and Prairies.**
- **Natural Systems Modifications:** Develop and promote farming technologies and practices that have conservation benefits for wetlands.

Current Habitat Conditions

During the Species Survey, respondents were asked to identify SGCN within the Kankakee Region. A full summary of the Species Survey results can be found in Appendix P.

Table 6-4. This table shows the distribution of SGCN across the Kankakee Region.

Taxa	Scientific Name	Common Name
Birds	<i>Grus americana</i>	Whooping Crane ¹
Birds	<i>Grus canadensis</i>	Sandhill Crane ²
Birds	<i>Ardea alba</i>	Great Egret ³
Birds	<i>Botaurus lentiginosus</i>	American Bittern
Birds	<i>Ixobrychus exilis</i>	Least Bittern
Birds	<i>Nycticorax nycticorax</i>	Black-crowned Night-heron
Birds	<i>Antrostomus vociferus</i>	Eastern Whip-poor-will
Birds	<i>Chordeiles minor</i>	Common Nighthawk
Birds	<i>Gallinula galeata</i>	Common Gallinule
Birds	<i>Laterallus jamaicensis</i>	Black Rail
Birds	<i>Rallus elegans</i>	King Rail
Birds	<i>Rallus limicola</i>	Virginia Rail
Birds	<i>Accipiter striatus</i>	Sharp-shinned Hawk
Birds	<i>Asio flammeus</i>	Short-eared Owl
Birds	<i>Buteo lineatus</i>	Red-shouldered Hawk
Birds	<i>Buteo platypterus</i>	Broad-winged Hawk
Birds	<i>Circus cyaneus</i>	Northern Harrier
Birds	<i>Falco peregrinus</i>	Peregrine Falcon
Birds	<i>Haliaeetus leucocephalus</i>	Bald Eagle
Birds	<i>Pandion haliaetus</i>	Osprey
Birds	<i>Tyto alba</i>	Barn Owl
Birds	<i>Arenaria interpres</i>	Ruddy Turnstone
Birds	<i>Bartramia longicauda</i>	Upland Sandpiper
Birds	<i>Calidris subruficollis</i>	Buff-breasted Sandpiper
Birds	<i>Charadrius melodus</i>	Piping Plover
Birds	<i>Limnodromus griseus</i>	Short-billed Dowitcher
Birds	<i>Phalaropus tricolor</i>	Wilson's Phalarope
Birds	<i>Pluvialis dominica</i>	American Golden-lover
Birds	<i>Tringa melanoleuca</i>	Greater Yellowlegs
Birds	<i>Tringa solitaria</i>	Solitary Sandpiper
Birds	<i>Ammodramus henslowii</i>	Henslow's Sparrow
Birds	<i>Cistothorus palustris</i>	Marsh Wren
Birds	<i>Cistothorus platensis</i>	Sedge Wren
Birds	<i>Helmitheros vermivorum</i>	Worm-eating Warbler
Birds	<i>Lanius ludovicianus</i>	Loggerhead Shrike
Birds	<i>Mniotilta varia</i>	Black-and-white Warbler
Birds	<i>Setophaga cerulea</i>	Cerulean Warbler
Birds	<i>Setophaga citrina</i>	Hooded Warbler

Taxa	Scientific Name	Common Name
Birds	<i>Sturnella neglecta</i>	Western Meadowlark
Birds	<i>Vermivora chrysoptera</i>	Golden-winged Warbler
Birds	<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird ⁴
Birds	<i>Chlidonias niger</i>	Black Tern
Birds	<i>Sternula antillarum athalassos</i>	Interior Least Tern
Birds	<i>Cygnus buccinator</i>	Trumpeter Swan
Mammals	<i>Lasionycteris noctivagans</i>	Silver-haired Bat
Mammals	<i>Lasiurus borealis</i>	Eastern Red Bat
Mammals	<i>Lasiurus cinereus</i>	Hoary Bat
Mammals	<i>Myotis lucifugus</i>	Little Brown Myotis
Mammals	<i>Myotis septentrionalis</i>	Northern Long-eared Myotis
Mammals	<i>Myotis sodalis</i>	Indiana Myotis
Mammals	<i>Nycticeius humeralis</i>	Evening Bat
Mammals	<i>Mustela nivalis</i>	Least Weasel
Mammals	<i>Taxidea taxus</i>	American Badger
Mammals	<i>Geomys bursarius</i>	Plains Pocket Gopher
Mammals	<i>Spermophilus franklinii</i>	Franklin's Ground Squirrel
Mammals	<i>Condylura cristata</i>	Star-nosed Mole
Amphibians	<i>Necturus maculosus</i>	Common Mudpuppy
Amphibians	<i>Acris crepitans</i>	Northern Cricket Frog
Amphibians	<i>Lithobates blairi</i>	Plains Leopard Frog
Amphibians	<i>Lithobates pipiens</i>	Northern Leopard Frog
Amphibians	<i>Ambystoma laterale</i>	Blue-spotted Salamander
Amphibians	<i>Hemidactylium scutatum</i>	Four-toed Salamander
Reptiles	<i>Clonophis kirtlandii</i>	Kirtland's Snake ⁶
Reptiles	<i>Ophedrys vernalis</i>	Smooth Greensnake
Reptiles	<i>Sistrurus catenatus</i>	Massasauga
Reptiles	<i>Thamnophis proximus</i>	Western Ribbonsnake
Reptiles	<i>Clemmys guttata</i>	Spotted Turtle
Reptiles	<i>Emydoidea blandingii</i>	Blanding's Turtle
Reptiles	<i>Kinosternon subrubrum</i>	Eastern Mud Turtle
Reptiles	<i>Terrapene carolina</i>	Eastern Box Turtle
Reptiles	<i>Terrapene ornata</i>	Ornate Box Turtle
Fish	<i>Notropis dorsalis</i>	Bigmouth Shiner
Fish	<i>Ichthyomyzon fossor</i>	Northern Brook Lamprey
Fish	<i>Moxostoma valenciennesi</i>	Greater Redhorse
Mollusks	<i>Venustaconcha ellipsiformis</i>	Ellipse
Mollusks	<i>Campeloma decisum</i>	Pointed Campeloma
Mollusks	<i>Lymnaea stagnalis</i>	Swamp Lymnaea

During the Habitat Survey, respondents were asked to evaluate the overall quality of fish and wildlife habitats in the Kankakee Region (Fig. 6-7), estimate changes in overall quality since 2005 (Fig. 6-8), and predict changes in overall quality over the next ten years (Fig. 6-9). Each respondent was asked to respond for one or more of the eight major habitat types within the region, and results were aggregated at the regional level. A full list of these survey results can be found in Appendix Q.



Figure 6-7. Overall quality of fish and wildlife habitats in the Kankakee Region.



Figure 6-8. Estimated change in the overall quality of fish and wildlife habitats since 2005 for each of the major habitat types in the Kankakee Region.

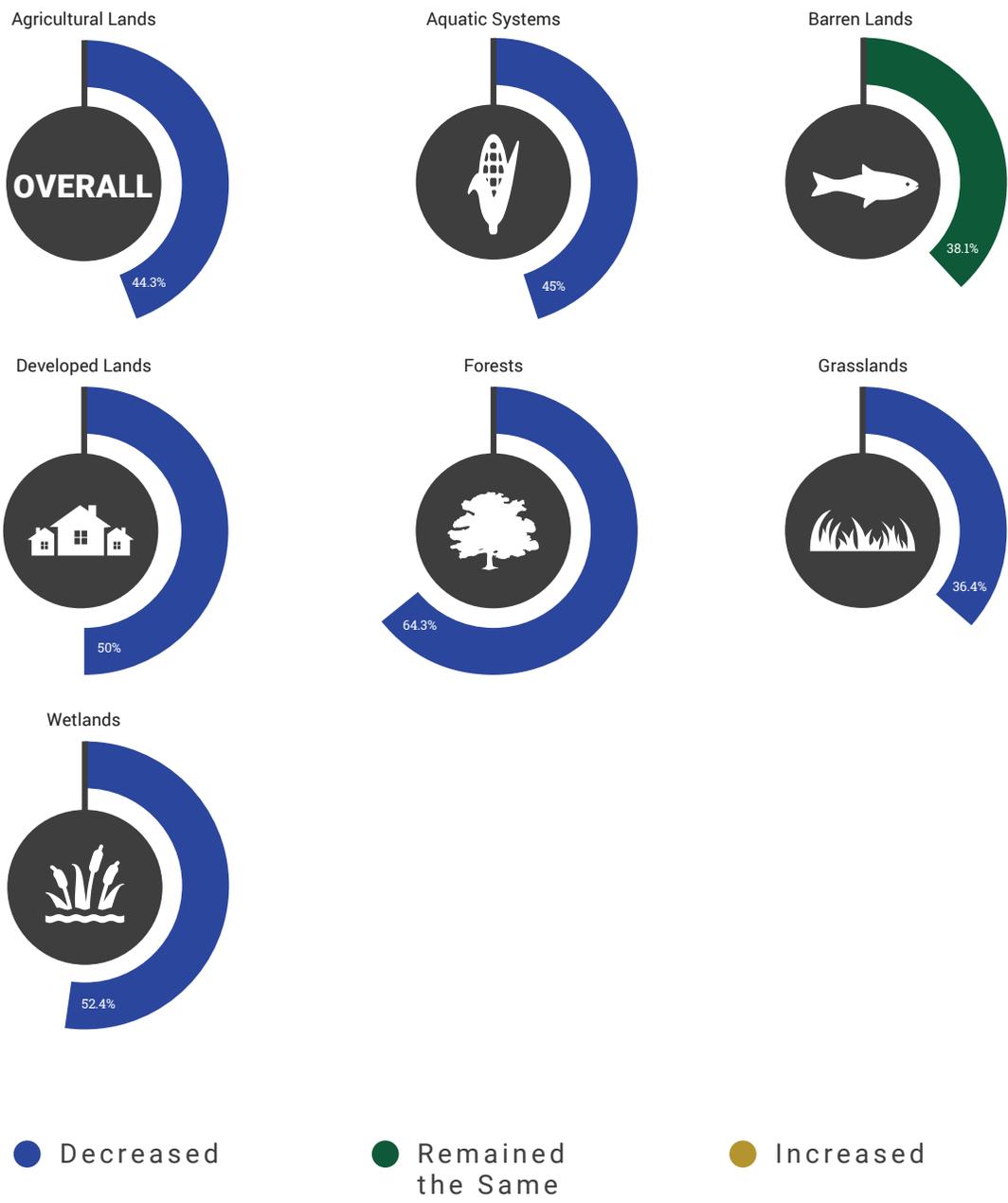


Figure 6-9. Predicted changes in overall quality of fish and wildlife habitats over the next ten years for each major habitat type in the Kankakee Region.

Changes in Land Cover

Most land cover in the Kankakee Region, 71.9%, consists of cultivated crops, 9.8% forests, 8.3% developed lands, and 6.3% grasslands (Fig. 6-10). Compared to other regions in Indiana, the Kankakee Region has the highest percentage of agriculture and the lowest percentage of open water.

Although aquatic systems and wetlands have increased marginally (Table 6-5), the Kankakee Region has experienced loss in many habitat types over the past ten years. Most habitats were lost to urban development, and agriculture lost most cover in terms of total acreage (Fig. 6-10). Percentage-wise, the greatest losses were seen in the shrubland with an 8.5% decrease, hay and pasture with a 1% decrease, and evergreen forests with a 1% decrease. The greatest increases were seen in medium-intensity developed lands with a 25.4% increase, high-intensity developed lands with a 21.5% increase, and barren lands with a 20.2% increase.

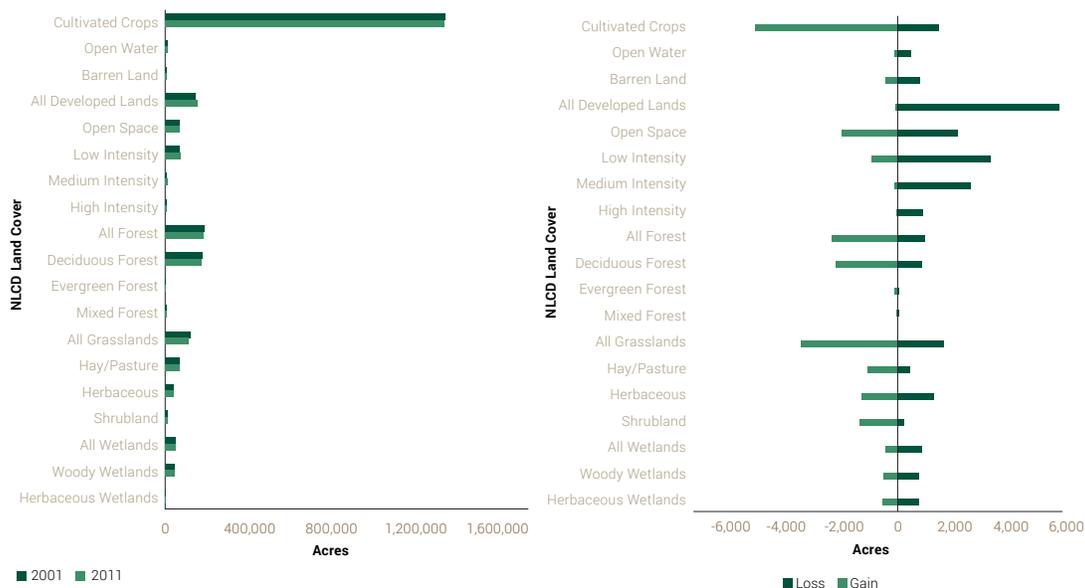


Figure 6-10. The distribution of land cover, and losses and gains in land cover in the Kankakee Region between 2001 and 2011.

Threats Affecting Habitats

Top Threat Categories

The third element requires the description of threats to SGCN and their habitats. The SWAP identifies a habitat perspective in order to manage for the conservation of species in Indiana. This section utilizes the same hierarchical method of identifying and rating threats based on Salafsky et al. (2008) that was outlined in Chapter V. Category rankings and specific threat rankings are outlined below (Table 6-5). A full summary of the Habitat Survey results can be found in Appendix Q.

For first-level threat categories, agriculture and aquaculture, invasive and other problematic species and genes, residential and commercial development, natural system modification, and human intrusion and disturbance had mean threat level ratings between significant and moderate. Climate change and severe weather, pollution, other stressors, transportation and service corridors, biological resource use, and energy production and mining had average threat level ratings between moderate and minor. No threat category received an average rating landing between the minor and not a threat levels for the region.

Agriculture and aquaculture was identified as the top threat category across this region and within each of the major habitat types except for developed lands, forests, and grasslands. Invasive and other problematic species and genes were ranked first in forests and grasslands. Residential and commercial development was identified as the top threat to fish and wildlife habitats in developed lands.

Within agriculture and aquaculture, conversion of habitat to annual crops was identified as the top specific second-level threat for the region, followed closely by annual and perennial non-timber crops. Other specific threats in this category received lower average threat levels. Livestock farming and ranching was on average rated within the moderate and minor threat level. Both wood and pulp plantations as well as aquaculture received average ratings between minor and not a threat. Some respondents noted agricultural practices, such as use of insecticide and non-local genotype seeds, may be a threat in this region.

Invasive and other problematic species and genes were ranked highly as a threat to habitats in all land use types with the exception of developed lands. The invasive and alien species category was regionally rated as a significant to moderate threat, while the other specific threats within this category were on average rated as a moderate to minor threat. Respondents identified a concern for problematic native species like beavers and geese.

Development was identified as the highest rated threat to fish and wildlife habitats with developed lands, and a moderately high-ranking threat within other habitat types. Both housing and urban areas and commercial and industrial areas were rated on average as a significant to moderate threat to habitats in this land use type.

Natural systems modification was ranked as the fourth highest threat across the region, and received high to mid rankings in individual habitat types. Natural habitat conversion was ranked as the most specific threat within this category, receiving an average rating of significant to moderate threat regionally. All other threats in this category received a moderate to minor average rating in this region. As a category, human intrusion and disturbance ranked higher than climate change and severe weather, but specific threats within climate change and severe weather received average ratings from significant to moderate, while specific threats within human intrusion and disturbance were rated moderate to minor. Biological

resource use and energy production and mining were identified as the lowest ranking threats regionally. These threats ranked low in each habitat type, with the exception of energy production and mining in barren lands. Respondents also identified direct stressors, such as lack of fish and wildlife habitat or alteration of habitat through channelization of streams for aquatic systems.

Table 6-5. Threat category ranking to habitats in the Kankakee Region. First-level threat categories are based on the hierarchical method of identifying threats outlined in Salafsky et al. (2008). Ranked threat categories for the entire region are arranged by each major habitat type.

Category	Regional Ranking	Aquatic Systems	Agricultural Lands	Barren Lands	Developed Lands	Forests	Grasslands	Wetlands
Agriculture and Aquaculture	1	1	1	2	3	1	1	1
Invasive and Other Problematic Species and Genes	2	4	3	1	1	2	3	2
Residential and Commercial Development	3	3	4	7	10	4	2	4
Natural Systems Modification	4	6	2	6	5	3	4	3
Human Intrusion and Disturbance	5	2	5	3	2	6	8	5
Climate Change and Severe Weather	6	5	7	4	4	5	5	7
Pollution	7	7	6	8	7	7	6	6
Other Stressors	8	8	8	5	6	9	7	8
Transportation and Service Corridors	9	9	9	9	8	8	9	9
Biological Resource Use	10	11	10	11	9	10	11	10
Energy Production and Mining	11	10	11	10	11	11	10	11

Top Specific Threats in Ranked Order

In the Habitat Survey, respondents were also asked to identify specific threats to major habitat types using the same threat category ranking system outlined in Salafsky et al. (2008). These second-level threats represent subcategories of threats within the major threat categories listed in the table above. The following are the top specific second-level threats to habitats in the Kankakee Region, aggregated across habitat types:

1. Invasive and alien species
2. Conversion of natural habitats to other land uses
3. Conversion of habitat to annual crops
4. Changing frequency, duration, and intensity of floods
5. Changing frequency, duration, and intensity of drought
6. Annual and perennial non-timber crops

7. Housing and urban areas
8. Agriculture, residential, and forestry effluents
9. Shifting and alteration of habitats due to climate change
10. Runoff from roads/service corridors

In the Species Survey, respondents were also asked to identify threats to individual SGCN using the same threat category ranking system. The following is the top specific (second-level) threat to SGCN occurring in the Kankakee Region, aggregated across all species:

1. Natural habitat conversion

Emerging/Anticipated Threats

In a free-response question, respondents were asked specifically to identify any emerging/anticipated threats over the next ten years for fish and wildlife habitats within the major habitat types for a region. Full survey results are contained in Appendix Q.

Respondents identified anticipated threats to fish and wildlife habitats tied to expansion of agriculture and loss of CRP grasslands. Other respondents also noted that habitats may be threatened by the increased spread of invasive species and lack of public valuation of wildlife habitats.

Conservation Actions Needed

Top Action Categories

The fourth element of the Congressional guidelines requires that the SWAP describe conservation actions proposed to conserve identified species and habitats as well as outlining priorities for their implementation. This section outlines conservation actions identified on a regional basis for each of the major habitat types following the same protocol to rate and rank actions in this region based on Salafsky et al. (2008) that was outlined in Chapter V. Category rankings for actions, and specific actions are outlined below (Table 6-6). A full summary of the Habitat Survey results can be found in Appendix Q.

All categories had average ratings between very and moderately important, indicating respondents observing a need for a variety of management actions within this region. Land, water, and species management was ranked as the most important category of actions regionally and in each individual land use type except for developed lands. Within the categories, means were used to determine the rankings. Because of this, some habitat-specific options with few respondents may have high means regionally. Overall, important actions reflected respondents identifying a need to restore habitats and disturbance regimes as well as control invasive species in multiple habitat types.

Reducing loss of habitat due to agricultural and residential development was identified as one of the highest rated actions across several habitat types; this action was ranked first in aquatic systems and forests. Developing farming technologies and practices also was rated as the most important conservation action for fish and wildlife habitats in agricultural lands and developed lands; this action was also ranked relatively highly among other habitat types as well.

Land and water protection was rated second overall for this region and tied for first with land, water, and species management in barren lands, developed lands, and grasslands. Respondents emphasized a need to acquire currently unprotected lands in various habitat types. Preserving currently existing corridors was ranked as either the first or second action of importance in every habitat type, except for barren lands, which had no respondents. In general, using easements to protect fish and wildlife habitats was also ranked highly across habitat types in this region.

Education and awareness as a category was ranked third overall, though three of the four categories received an average rating between very important to moderately important actions. Improvement of signage and communication materials was, on average, rated between moderately important and somewhat important. Respondents also noted an importance to increase public valuation of resources, particularly in grasslands and wetlands.

Law and policy was ranked fourth overall but second in forests. Increasing regulations on invasive species was identified as a very to moderately important action for forests. Respondents suggested changes in policy regarding drainage, log jam removal, and harvesting in this region. External capacity building and livelihood, economic, and other incentives were the two lowest ranked categories for this region, although strengthening conservation financing was identified as a very to moderately important action for fish and wildlife habitats across multiple land use types.

Table 6-6. Action category ranking to habitats in the Kankakee Region. First-level categories are based on the hierarchical method of identifying actions outlined in Salafsky et al. (2008). Ranked action categories for the entire region and are arranged by each major habitat type.

Category	Regional Ranking	Aquatic Systems	Agricultural Lands	Barren Lands	Developed Lands	Forests	Grasslands	Wetlands
Land/Water/Species Management	1	1	1	1	3	1	1	1
Land/Water Protection	2	2	2	1	1	3	1	2
Education and Awareness	3	3	3	1	1	5	3	3

Law and Policy	4	4	5	1	3	2	5	4
External Capacity Building	5	5	6	1	3	4	4	5
Livelihood, Economic, and Other Incentives	6	6	4	1	6	6	6	6
	Indicates a tie within this habitat type							

Top Specific Actions in Ranked Order

In the Habitat Survey, respondents were also asked to identify specific actions for major habitat types using the same action category ranking system outlined in Salafsky et al. (2008). These second-level actions represent subcategories of actions within the major action categories listed in the table above. The following are the top specific second-level conservation actions for habitats in the Kankakee Region, aggregated across habitat types:

1. Preserve currently existing corridors
2. Strengthen conservation financing
3. Reduce loss of fish and wildlife habitats (due to agriculture, urban sprawl, commercial development, etc.)
4. Acquire conservation easements to protect important wildlife habitats
5. Reduce conversion to cropland
6. Develop alliances and partnerships (e.g., between producers, landowners, and conservation professionals)
7. Manage recreational opportunities to be compatible with fish and wildlife habitats
8. Develop and promote farming technologies and practices that have conservation benefits (e.g., cover crops, no-till)
9. Promote nonmonetary values of natural systems within the state
10. Increase capacity for research and monitoring of conservation actions

The following are top actions for SGCN occurring the Kankakee Region, as summarized from the free-response questions about conservation actions for individual species:

1. Educate and engage with landowners and citizens.
2. Enhance connectivity of habitats
3. Increase CRP lands
4. Protect large contiguous forested areas
5. Limit conversion of habitat to non-habitat
6. Reduce point and non-point source pollution
7. Protect and restore riparian corridors
8. Control invasive plants
9. Minimize disturbance to nesting birds
10. Use burning and mowing as management techniques
11. Protect and manage large wetland complexes

Prioritization of Actions

In order to prioritize these actions within an environment of limited resources, respondents were then asked to distribute hypothetical “effort points” to any action they had previously rated as “very important” for any of the major habitat types within a region. The effort ratings were averaged and then ranked to identify the top 5 actions for a region.

Full survey results are summarized in Appendix Q. Priority actions for this region include the following:

1. Reduce conversion to cropland
2. Acquire conservation easements to protect important wildlife habitats
3. Acquire currently unprotected wetlands
4. Preserve currently existing corridors
5. Develop educational programs in general

The top priority actions reflect an identification of agriculture and aquaculture as a significant threat to fish and wildlife habitats in this region. Education-focused actions and land and water protection actions, such as acquiring easements and unprotected habitats as well as preserving corridors, received a greater amount of hypothetical effort over many of the highly rated land, water, and management actions in each land use type.

Threats and Actions by Major Habitat Type

The following summaries break down threats and conservation actions in this region by major habitat type, based on responses to the Habitat Survey and the Species Survey. For each major habitat type in this region, the SGCN that occur there, top threats to SGCN, top actions for SGCN, key threats to habitats, and priority actions for habitats are listed.

Threats and actions were only included in these lists if the majority of eligible survey respondents, greater than 50%, rated them, to avoid artificially elevating items which were highly ranked, but only by a few respondents. This approach left some threat/action lists with no items for certain habitats, which is illogical from a practical perspective. Therefore, in these situations, the top threats/actions are still listed but are denoted with an asterisk (*) to signify that there may be some items, which seem out-of-place, reflecting a lack of sufficient response for a particular habitat in the survey.

For each list, approximately ten items are given. Lists may be shorter if fewer than ten items were rated by a majority of survey respondents or longer if there were ties between items (e.g. they have exactly the same mean score and exactly the same number of respondents who rated them).

Top actions for SGCN were summarized from free-response questions about individual species and, therefore, do not follow the same categorizations as actions for habitats. The full text of all survey responses can be found in Appendix Q.

Agricultural Lands

Agricultural lands are defined as lands devoted to commodity production. Examples of agricultural lands include: intensively managed non-native grasses, row crops, fruit and nut-bearing trees, confined feeding operations, and feedlots. Top threats to SGCN occurring in agricultural lands in the Kankakee Region:

1. Natural habitat conversion
2. Conversion of habitat to annual crops
3. Annual and perennial non-timber crops
4. Fire and fire suppression
5. Over-mowing of natural areas
6. Dams and water management and use
7. Livestock farming and ranching

Top conservation actions for SGCN occurring in agricultural lands in the Kankakee Region:

1. Increase and maintain CRP lands
2. Establish conservation easements on farmland surrounding protected areas
3. Educate agricultural landowner community
4. Provide incentives to farmers to increase participation in conservation.
5. Maintain shallow-water areas for shorebirds
6. Preserve suitable nest sites for barn owls
7. Encourage no-till practices

Top threats to fish and wildlife habitats in agricultural lands in the Kankakee Region:

1. Conversion of natural habitats to other land uses
2. Conversion of habitat to annual crops
3. Invasive and alien species
4. Annual and perennial non-timber crops
5. Over-mowing of natural areas
6. Housing and urban areas
7. Runoff from roads and service corridors
8. Dams and water management and use
9. Commercial and industrial areas
10. Point source pollution from commercial and industrial sources
11. Agriculture, residential, and forestry effluents

Top conservation actions for fish and wildlife habitats in agricultural lands in the Kankakee Region:

1. Acquire conservation easements to protect important wildlife habitats
2. Preserve currently existing corridors
3. Develop and promote farming technologies and practices that have conservation benefits (e.g., cover crops, no-till)
4. Link existing habitat blocks through corridor enhancement in agricultural lands
5. Reduce conversion to cropland
6. Reduce loss of fish and wildlife habitats (due to agriculture, urban sprawl, commercial development, etc.)
7. Strengthen conservation financing
8. Promote nonmonetary values of natural systems within the state
9. Manage recreational opportunities to be compatible with fish and wildlife habitats

Aquatic Systems

Aquatic systems are defined as all water habitats, both flowing and stationary. Examples of aquatic systems include: manmade impoundments, natural lakes rivers, streams, oxbows, sloughs, embayments, and backwaters (not including wetlands).

Top threats to SGCN occurring in aquatic systems in the Kankakee Region:

1. Natural habitat conversion
2. Conversion of habitat to annual crops
3. Annual and perennial non-timber crops
4. Dams and water management and use

Top conservation actions for SGCN occurring in aquatic systems in the Kankakee Region:

1. Improve water quality
2. Protect aquatic systems
3. Restore and protect riparian corridors
4. Clean polluted areas
5. Reduce point and non-point source pollution
6. Implement agricultural BMPs
7. Manage water levels in rivers and lakes
8. Preserve nest sites for Ospreys and Bald Eagles
9. Maintain bottomland floodplain habitat
10. Restrict recreational overuse on rivers
11. Protect habitat from dredging
12. Remove dams
13. Reduce siltation and nutrient inputs
14. Maintain and increase flows and flow volumes

Top threats to fish and wildlife habitats in aquatic systems in the Kankakee Region:

1. Agriculture, residential, and forestry effluents
2. Invasive and alien species
3. Conversion of natural habitats to other land uses
4. Changing frequency, duration, and intensity of floods
5. Annual and perennial non-timber crops
6. Changing frequency, duration, and intensity of drought
7. Runoff from roads and service corridors
8. Conversion of habitat to annual crops
9. Point source pollution from commercial and industrial sources
10. Commercial and industrial areas

Top conservation actions for fish and wildlife habitats in aquatic systems in the Kankakee Region:

1. Preserve currently existing corridors
2. Acquire conservation easements to protect important wildlife habitats
3. Promote use of research and science in conservation decision-making processes
4. Reduce loss of fish and wildlife habitats (due to agriculture, urban sprawl, commercial development, etc.)
5. Acquire currently unprotected aquatic systems (manage and/or educate for easement habitat values)
6. Reduce nutrient and toxin loads (e.g., heavy metals, pharmaceuticals, fertilizers, insecticides)
7. Develop education programs in general
8. Strengthen conservation financing
9. Develop and promote farming technologies and practices that have conservation benefits (e.g., cover crops, no-till)
10. Increase state's capacity for research and monitoring of conservation actions

Barren Lands

Barren lands are defined as lands dominated by exposed rock or minerals with sparse vegetation. Examples of barren lands include: sand/dunes, rock outcrops, cliffs, and bare rock.

Top threats to SGCN occurring in barren lands in the Kankakee Region:

1. Natural habitat conversion
2. Annual and perennial non-timber crops
3. Conversion of habitat to annual crops
4. Dams and water management and use
5. Over-mowing of natural areas
6. Fire and fire suppression

Top conservation actions for SGCN occurring in barren lands in the Kankakee Region:

1. Educate public about Peregrine Falcon
2. Protect Bald Eagle nest sites

Top threats to fish and wildlife habitats in barren lands in the Kankakee Region:*

1. Invasive and alien species
2. Problematic native species (e.g., overabundant native deer or algae)
3. Plant diseases
4. Introduced genetic material (such as crop, seed stock, bio-control, stocked/released species, etc.)
5. Chemical spills
6. Point source pollution from commercial/industrial sources
7. Air pollution (e.g., smoke, mercury emissions)
8. Household sewage and urban water waste
9. Garbage and solid waste
10. Excess energy (e.g., noise/light pollution, warm water discharge, etc.)

Top conservation actions for fish and wildlife habitats in barren lands in the Kankakee Region:

**No survey responses were received for actions in this habitat type in this region*

Developed Lands

Developed lands are defined as highly impacted lands intensively modified to support human habitation, transportation, commerce, and recreation. Examples of developed lands include: urban lands, suburban lands, industrial areas, commercial areas, towers for communication and wind power generation, and recreational areas such as golf courses and soccer fields.

Top threats to SGCN occurring in developed lands in the Kankakee Region:

1. Renewable energy production
2. Diseases from domestic populations and unknown sources
3. Fossil fuel energy production
4. Mining and quarrying

Top conservation actions for SGCN occurring in developed lands in the Kankakee Region:

1. Enhance public education and awareness regarding bat ecology and issues
2. Reduce urban sprawl and commercial property expansion
3. Manage urban areas for peregrine falcons; minimize disturbance during nesting

4. Increase gravel-surfaced rooftop habitat for breeding common nighthawks
5. Mitigate road hazards for wildlife

Top threats to fish and wildlife habitats in developed lands in the Kankakee Region:

1. Runoff from roads and service corridors
2. Housing and urban areas
3. Commercial and industrial areas
4. Changing frequency, duration, and intensity of drought
5. Invasive and alien species
6. Point source pollution from commercial/industrial sources
7. Air pollution (e.g., smoke, mercury emissions)
8. Excess energy (e.g., noise/light pollution, warm water discharge, etc.)
9. Changing frequency, duration, and intensity of floods
10. Roads and railroads
11. Conversion of natural habitats to other land uses

Top conservation actions for fish and wildlife habitats in developed lands in the Kankakee Region:

1. Preserve currently existing corridors
2. Acquire conservation easements to protect important wildlife habitats
3. Establish training programs for stakeholders
4. Promote nonmonetary values of natural systems within the state
5. Manage recreational opportunities to be compatible with fish and wildlife habitats
6. Develop alliances and partnerships (e.g., between producers, landowners, and conservation professionals)
7. Promote use of research and science in conservation decision-making processes
8. Develop education programs in general.

Forests

Forests are defined as a plant community dominated by trees. Examples of forests include, but are not limited to, all stages of natural forest and plantations.

Top threats to SGCN occurring in forests in the Kankakee Region:

1. Natural habitat conversion
2. Shifting and alteration of habitats
3. Conversion of habitat to annual crops
4. Housing and urban areas
5. Annual and perennial non-timber crops
6. Commercial and industrial areas
7. Invasive and alien species
8. Diseases from domestic populations and unknown sources
9. Fire and fire suppression

10. Wood and pulp plantations
11. Tourism and recreation areas
12. Over-mowing of natural areas
13. Livestock farming and ranching
14. Recreation activities
15. Problematic native species

Top conservation actions for SGCN occurring in forests in the Kankakee Region:

1. Protect large contiguous forested areas and reduce forest fragmentation
2. Limit conversion of forests to non-forest land uses
3. Control invasive woody plants to benefit box turtles, whip-poor-wills, and other species
4. Reduce development in forested areas to benefit warblers and other species
5. Protect roost trees for bat species
6. Restore forests and woodlands (benefits all forest species)
7. Create small forest openings to increase diversity
8. Provide downed woody debris for the least weasel
9. Implement best management practices in forestry

Top threats to fish and wildlife habitats in forests in the Kankakee Region:

1. Invasive and alien species
2. Conversion of natural habitats to other land uses
3. Conversion of habitat to annual crops
4. Annual and perennial non-timber crops
5. Roads and railroads
6. Housing and urban areas
7. Problematic native species
8. Fire and fire suppression
9. Recreation activities (e.g., ATVs, trail use, horseback riding, high-speed boating, canoeing)
10. Utility and service lines

Top conservation actions for fish and wildlife habitats in forests in the Kankakee Region:

1. Control invasive species in forests
2. Reduce loss of fish and wildlife habitats (due to agriculture, urban sprawl, commercial development, etc.)
3. Reduce conversion to cropland
4. Increase regulations on invasive species
5. Manage recreational opportunities to be compatible with fish and wildlife habitats
6. Preserve currently existing corridors

7. Strengthen conservation financing
8. Acquire currently unprotected forests
9. Restore habitats and natural systems in forests
10. Develop alliances and partnerships (e.g., between producers, landowners, and conservation professionals)
11. Increase state's capacity for research and monitoring of conservation actions

Grasslands

Grasslands are defined as an open area dominated by grass species. Examples of grasslands include: haylands, pasture, prairies, savannahs, or reclaimed mine lands.

Top threats to SGCN occurring in grasslands in the Kankakee Region:

1. Conversion of habitat to annual crops
2. Annual and perennial non-timber crops
3. Livestock farming and ranching

Top conservation actions for SGCN occurring in grasslands in the Kankakee Region:

1. Restore and improve connectivity of grasslands (benefits all grassland species)
2. Reduce woody encroachment on grasslands to benefit the Massasauga, sedge wren, and other species
3. Increase CRP grasslands (benefits all grassland species)
4. Implement burning regimes (but plan around active seasons, such as when the smooth greensnake is active)
5. Minimize disturbance to nesting grassland birds (e.g., Henslow's Sparrow).
6. Mow properly (reduce mowing for shorebirds and owls)
7. Improve grazing practices
8. Establish translocation program for Franklin's Ground Squirrels

Top threats to fish and wildlife habitats in grasslands in the Kankakee Region:

1. Invasive and alien species
2. Conversion of habitat to annual crops
3. Conversion of natural habitats to other land uses
4. Annual and perennial non-timber crops
5. Housing and urban areas
6. Fire and fire suppression
7. Roads and railroads
8. Commercial and industrial areas
9. Over-mowing of natural areas
10. Introduced genetic material (such as crop, seed stock, bio-control, stocked/released species, etc.)

Top conservation actions for fish and wildlife habitats in grasslands in the Kankakee Region:

1. Restore habitats and natural systems in grasslands
2. Acquire currently unprotected grasslands
3. Preserve currently existing corridors
4. Re-establish natural disturbance regimes in grasslands
5. Reduce loss of fish and wildlife habitats (due to agriculture, urban sprawl, commercial development, etc.)
6. Reduce conversion to cropland
7. Control invasive species in grasslands
8. Promote diversity of grassland types and successional stages
9. Acquire conservation easements to protect important wildlife habitats
10. Promote conservation payment programs (e.g., payment for ecosystem services, conservation easements)
11. Promote nonmonetary values of natural systems within the state

Wetlands

Wetlands are defined as either ephemeral or permanently flooded habitat. Examples of wetlands include: swamps, marshes, bogs, fens, potholes, wetlands of farmed areas, and mudflats.

Top threats to SGCN occurring in wetlands in the Kankakee Region:

1. Natural habitat conversion
2. Invasive and alien species
3. Conversion of habitat to annual crops
4. Housing and urban areas
5. Commercial and industrial areas
6. Annual and perennial non-timber crops
7. Tourism and recreation areas
8. Problematic native species
9. Dams and water management and use
10. Recreation activities
11. Fire and fire suppression
12. Over-mowing of natural areas

Top conservation actions for SGCN occurring in wetlands in the Kankakee Region:

1. Protect and maintain large wetlands complexes
2. Restore wetlands.
3. Protect buffers around wetlands
4. Control invasive plants in wetlands
5. Create shorebird management areas

6. In some cases, actively manage water levels (e.g., for black tern, common gallinule)
7. Mitigate road hazards to amphibians and reptiles when roads cross over wetlands
8. Minimize disturbance to nesting turtles
9. Provide stopover and roosting habitat for cranes

Top threats to fish and wildlife habitats in wetlands in the Kankakee Region:

1. Invasive and alien species
2. Conversion of natural habitats to other land uses
3. Changing frequency, duration, and intensity of drought
4. Changing frequency, duration, and intensity of floods
5. Housing and urban areas
6. Conversion of habitat to annual crops
7. Commercial and industrial areas
8. Runoff from roads and service corridors
9. Agriculture, residential, and forestry effluents
10. Shifting and alteration of habitats due to climate change

Top conservation actions for fish and wildlife habitats in wetlands in the Kankakee Region:

1. Acquire currently unprotected wetlands
2. Strengthen conservation financing
3. Restore habitats and natural systems in wetlands
4. Preserve currently existing corridors
5. Control invasive species in wetlands
6. Reduce loss of fish and wildlife habitats (due to agriculture, urban sprawl, commercial development, etc.)
7. Promote conservation payment programs (e.g., payment for ecosystem services, conservation easements)
8. Manage recreational opportunities to be compatible with fish and wildlife habitats
9. Develop alliances and partnerships (e.g., between producers, landowners, and conservation professionals)
10. Develop and promote farming technologies and practices that have conservation benefits (e.g., cover crops, no-till)