

**Appendix 3.8 Kentucky's terrestrial habitat guild descriptions, prioritized conservation actions, objectives, and performance measures.**

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**Cumberland Highland Forest - Terrestrial Guild**

The Cumberland Highland Forest Guild is a mesic upland forest type that occurs above 1,100 meters (3,700 feet) elevation on Black Mountain (Jones 2005). The guild is made up of shrubs, herbaceous woodland plants, and deciduous trees that are most often associated with Northern Hardwood Forests of New England or forests of the Great Smoky Mountains (Jones 2005). Many of the plant species found in this high-elevation community are found nowhere else in Kentucky; because of its unique plant community and isolated topography, many animals also occur here that are not found elsewhere in the state. The Cumberland Highland Forest is obviously rare, and is the most endangered mesic upland forest type in Kentucky (Jones 2005).

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**Species**

**AMPHIBIA - Amphibian**

Allegheny Mountain Dusky Salamander, Black Mountain Salamander, Cumberland Plateau Salamander, Green Salamander, Wehrle's Salamander, Wood Frog.

**AVES - Bird**

Blackburnian Warbler, Black-throated Green Warbler, Canada Warbler, Cerulean Warbler, Common Raven, Golden-winged Warbler, Least Flycatcher, Rose-breasted Grosbeak, Ruffed Grouse.

**MAMMALIA - Mammal**

American Black Bear, Appalachian Cottontail, Cinereus Shrew, Eastern Small-footed Myotis, Eastern Spotted Skunk, Indiana Bat, Kentucky Red-backed Vole, Long-tailed Or Rock Shrew.

**REPTILIA - Reptile**

Timber Rattlesnake.

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**Top conservation actions for this guild.**

**Rank Code Conservation action**

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|----------|----|--|
| <b>1</b> | 80 | Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.  |
| <b>2</b> | 83 | Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management). |
| <b>3</b> | 97 | Identify unique microhabitats important to priority species and acquire or protect through acquisition, easements, or cost-share programs.                                 |
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| 4  | 44 | Partner with the Office of Surface Mining to develop regulations that increase the use of wildlife friendly reclamation practices and provide incentives to the industry for doing so.         |
| 5  | 45 | Work with industry and regulatory agencies to develop better protocol for the timing of pre-mining logging and survey needs  |
| 6  | 51 | Provide information and guidance to the mining industry and contractors on reclamation practices that benefit wildlife.  |
| 7  | 50 | Create innovative methods to better use Fees-in-lieu-of money (or other programs) for permanent protection/restoration of streams and riparian corridors (purchase surface and mineral rights) |
| 8  | 54 | Revise current Best Management Practices and develop new ones (if needed).   |
| 9  | 14 | Encourage practices that increase structural and vegetative diversity that benefit priority species.   |
| 10 | 60 | Develop workshops for loggers and forestry consultants about timber management practices that most benefit wildlife.   |
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### Objectives for this guild.

#### **Objective 1** Implement landscape level conservation projects in priority areas

##### **Highest priority conservation actions.**

- 80 Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.
- 83 Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).

##### **Performance measures.**

- Number of STWG-funded projects that occur in priority areas
- Number of all conservation projects implemented by partners in priority areas (e.g., Wetlands Reserve Program, U.S. Forest Service projects, etc.)

##### **Additional conservation actions for this objective.**

- 7 Work with partners to focus conservation projects in high priority areas.
- 85 Create a landscape ecologist position within Kentucky Department of Fish and Wildlife Resources.
- 82 Use Geographic Information Systems to identify gaps in habitat connectivity.

#### **Objective 2** Protection, restoration, and management of unique habitats

##### **Highest priority conservation actions.**

- 97 Identify unique microhabitats important to priority species and acquire or protect through acquisition, easements, or cost-share programs.
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## Appendix 3.8 Continued.

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### **Performance measures.**

- Number/acres of unique habitats restored, managed, and/or protected

### **Additional conservation actions for this objective.**

- 107 Encourage landowners to incorporate strategies into management plans that benefit priority species during technical guidance sessions.
- 103 Create a unique habitat stewardship program.
- 100 Create education program about the importance of unique microhabitats.
- 99 Create new microhabitats on Kentucky Department of Fish and Wildlife Resources owned or managed lands that benefit priority species.

### **Objective 3** Minimize impacts of mining to priority species.

#### **Highest priority conservation actions.**

- 44 Partner with the Office of Surface Mining to develop regulations that increase the use of wildlife friendly reclamation practices and provide incentives to the industry for doing so.
- 45 Work with industry and regulatory agencies to develop better protocol for the timing of pre-mining logging and survey needs
- 51 Provide information and guidance to the mining industry and contractors on reclamation practices that benefit wildlife.
- 50 Create innovative methods to better use Fees-in-lieu-of money (or other programs) for permanent protection/restoration of streams and riparian corridors (purchase surface and mineral rights)

### **Performance measures.**

- Number of programs, regulations, and practices developed and implemented to enhance wildlife habitat for priority species

### **Additional conservation actions for this objective.**

- 52 Facilitate information and idea exchange between Kentucky Department of Fish and Wildlife Resources and mining industry by creating a liaison position.
- 47 Partner with the appropriate agency to develop new habitat restoration and enhancement projects using abandoned mine lands funding.
- 49 Partner with the coal-mining industry to establish Wildlife Management Areas on company lands and implement management plans for priority species.
- 46 Partner with appropriate agency to develop new regulations that discourages companies from forfeiting a bond rather than properly reclaiming an area.

### **Objective 4** Increase acreage of and protect existing highland forests

#### **Highest priority conservation actions.**

- 54 Revise current Best Management Practices and develop new ones (if needed).
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## Appendix 3.8 Continued.

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### **Performance measures.**

- Acres of highland forest restored
- Acres of highland forest acquired or protected via easements

### **Additional conservation actions for this objective.**

- 57 Garner congressional support for forest management programs (i.e., continuation and/or development)
- 40 Facilitate information and idea exchange between Kentucky Department of Fish and Wildlife Resources and timber industry by creating a timber liaison.

### **Objective 5**    Encourage landowners to include wildlife friendly practices in timber management plans.

### **Highest priority conservation actions.**

- 14 Encourage practices that increase structural and vegetative diversity that benefit priority species.
- 60 Develop workshops for loggers and forestry consultants about timber management practices that most benefit wildlife.

### **Performance measures.**

- Number of landowners and plans that incorporate wildlife friendly practices into forest management plans

### **Additional conservation actions for this objective.**

- 38 Partner with the timber industry to establish Wildlife Management Areas on company lands and implement management plans for priority species.
- 59 Identify and acknowledge outstanding timber companies and private landowners that make significant contributions to wildlife conservation.
- 3 Increase Kentucky Department of Fish and Wildlife Resources staff devoted to raising public awareness and implementation of cost-share programs.
- 17 Reduce impacts of livestock grazing through partnerships that increase the use of Best Management Practices (e.g., rotational grazing, fencing of woodlands, vegetative diversity, planting later maturing grasses, etc.) on private land.

### **Objective 6**    Manage public forests for priority species

### **Highest priority conservation actions.**

### **Performance measures.**

### **Additional conservation actions for this objective.**

- 58 Partner with the KY State Foresters Association and the KY Division of Forestry to provide recommendations on management practices that benefit wildlife.
  - 55 Inventory Kentucky Department of Fish and Wildlife Resources owned land and prepare forest management plans.
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**Appendix 3.8 Continued.**

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**Objective 7** Increase acreage of hard mast trees.

**Highest priority conservation actions.**

**Performance measures.**

**Additional conservation actions for this objective.**

- 108** Implement oak regeneration projects on Kentucky Department of Fish and Wildlife Resources owned or managed lands.
  - 109** Partner with appropriate agencies to distribute technical guidance about oak regeneration on private lands.
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## Appendix 3.8 Continued.

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### **Emergent And Shrub-dominated Wetlands - Terrestrial Guild**

The Emergent and Shrub-dominated Wetland Terrestrial Habitat Guild actually is a combination of two general wetland plant communities as described by Jones (2005): emergent wetland communities and shrub wetland communities. For our purposes, this guild includes wetlands such as wet barrens and prairies/meadows, marshes, and seeps (dominated by emergent perennials like grasses, ferns, mosses, and other herbaceous plants), or open wetland sites (e.g., in depressions or seepages) that support a variety of woody shrubs and small trees adapted to wetland conditions (Jones 2005). Additionally, stream heads, sphagnum swamps, buttonbush swamps, and moist soil units were included in this habitat guild. These areas are typically viewed as transitional zones to forested wetlands, and as such, usually have much different hydrologic patterns.

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#### **Species**

##### **MALACOSTRACA - Crayfish, amphipod, isopod, shrimp**

Bousfield's Amphipod, Cajun Dwarf Crayfish, Swamp Dwarf Crayfish, Vernal Crayfish.

##### **AMPHIBIA - Amphibian**

Bird-voiced Treefrog, Eastern Spadefoot, Four-toed Salamander, Gray Treefrog, Green Treefrog, Mole Salamander, Northern Leopard Frog, Southern Leopard Frog, Three-toed Amphiuma, Western Lesser Siren.

##### **AVES - Bird**

American Bittern, American Black Duck, American Golden-plover, Buff-breasted Sandpiper, Common Moorhen, Great Egret, Hooded Merganser, King Rail, Least Bittern, Lesser Yellowlegs, Northern Harrier, Northern Pintail, Pied-billed Grebe, Sandhill Crane, Sora, Spotted Sandpiper, Trumpeter Swan, Tundra Swan, Virginia Rail, Whooping Crane, Willow Flycatcher, Wilson's Snipe, Yellow Rail.

##### **MAMMALIA - Mammal**

Appalachian Cottontail, Evening Bat, Indiana Bat, Kentucky Red-backed Vole, Rafinesque's Big-eared Bat, Swamp Rabbit, Virginia Big-eared Bat.

##### **REPTILIA - Reptile**

Alligator Snapping Turtle, Broad-banded Water Snake, Copperbelly Watersnake, Diamondback Water Snake, Eastern Mud Turtle, Eastern Ribbon Snake, Green Water Snake, Kirtland's Snake, Mississippi Map Turtle, Southern Painted Turtle, Western Cottonmouth, Western Mud Snake, Western Ribbon Snake.

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## Appendix 3.8 Continued.

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### Top conservation actions for this guild.

Rank	Code	Conservation action
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1	80	Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.
2	83	Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).
3	138	Acquire and protect wetland habitat and manage for priority species (manage for prey species, breeding and cover habitat, etc.).
4	185	Restore or create wetland habitat on Kentucky Department of Fish and Wildlife Resources owned or managed lands and manage for priority species.
5	184	Partner with appropriate agencies to promote construction or restoration of wetland habitat.
6	136	Encourage creation of wetland habitat for priority species on private land through incentive programs (i.e. Wetland Reserve Program, Conservation Reserve Program, etc.).
7	95	Increase disturbance regimes (i.e. prescribed fire, targeted timber harvest, strip disking, etc.) where appropriate on Kentucky Department of Fish and Wildlife Resources owned or managed lands.
8	96	Encourage private landowners to reduce woody encroachment of shallow water wetlands (by flooding, disking, mowing, draining, herbicide application, etc.) through private land consultations and incentive programs.
9	20	Identify and prioritize high ecological value areas most at risk to urban sprawl and protect from development through acquisition or conservation easements.
10	76	Implement control of invasive and exotic species on both public and private lands through partnerships.

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### Objectives for this guild.

#### Objective 1 Implement landscape level conservation projects in priority areas

##### Highest priority conservation actions.

- 80 Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.
- 83 Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).

##### Performance measures.

- Number of STWG-funded projects that occur in priority areas
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## Appendix 3.8 Continued.

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- Number of all conservation projects implemented by partners in priority areas (e.g., Wetlands Reserve Program, U.S. Forest Service projects, etc.)

### **Additional conservation actions for this objective.**

- 7 Work with partners to focus conservation projects in high priority areas.
- 85 Create a landscape ecologist position within Kentucky Department of Fish and Wildlife Resources.
- 82 Use Geographic Information Systems to identify gaps in habitat connectivity.

### **Objective 2** Maintain, restore, and/or increase acreage of shallow water wetlands

#### **Highest priority conservation actions.**

- 138 Acquire and protect wetland habitat and manage for priority species (manage for prey species, breeding and cover habitat, etc.).
- 185 Restore or create wetland habitat on Kentucky Department of Fish and Wildlife Resources owned or managed lands and manage for priority species.
- 184 Partner with appropriate agencies to promote construction or restoration of wetland habitat.
- 136 Encourage creation of wetland habitat for priority species on private land through incentive programs (i.e. Wetland Reserve Program, Conservation Reserve Program, etc.).
- 95 Increase disturbance regimes (i.e. prescribed fire, targeted timber harvest, strip disking, etc.) where appropriate on Kentucky Department of Fish and Wildlife Resources owned or managed lands.
- 96 Encourage private landowners to reduce woody encroachment of shallow water wetlands (by flooding, disking, mowing, draining, herbicide application, etc.) through private land consultations and incentive programs.

#### **Performance measures.**

- Number of shallow water wetland acres managed appropriately (e.g., setting back succession, restoring hydrology)
- Presence/absence of targeted STWG species on created, managed, or restored acres
- Number of shallow water wetland acres acquired, protected, created, and restored

### **Additional conservation actions for this objective.**

- 3 Increase Kentucky Department of Fish and Wildlife Resources staff devoted to raising public awareness and implementation of cost-share programs.

### **Objective 3** Reduce pace and impacts of urban sprawl

#### **Highest priority conservation actions.**

- 20 Identify and prioritize high ecological value areas most at risk to urban sprawl and protect from development through acquisition or conservation easements.
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## Appendix 3.8 Continued.

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### **Performance measures.**

- Acres of ecological significance threatened by urban sprawl that are protected

### **Additional conservation actions for this objective.**

- 19 Work with partners to develop new habitat or green space programs in high priority areas
- 21 Partner with local governments to conserve lands outside city limits using "smart growth" tools, such as zoning, land use planning, and restricting infrastructure.
- 22 Reduce development by working with partners to provide tax incentives to owners of undeveloped property
- 26 Create education programs about the importance of green spaces and their impact on quality of life, etc.
- 25 Expand urban wildlife habitat programs (Kentucky Backyard Conservation Program, Backyard Wildlife, etc.) and create new urban habitat programs.

### **Objective 4**    Control the use and spread of invasive and exotic plants

#### **Highest priority conservation actions.**

- 76 Implement control of invasive and exotic species on both public and private lands through partnerships.

### **Performance measures.**

- Number/acreage of projects to control invasive and exotic species

### **Additional conservation actions for this objective.**

- 75 Partner with the appropriate agency to identify sources of invasive and exotic species (i.e. fescue, phragmites, sercia, etc.), discourage continued use, and encourage the use of native herbaceous species.

### **Objective 5**    Minimize impacts of mining to priority species.

#### **Highest priority conservation actions.**

### **Performance measures.**

### **Additional conservation actions for this objective.**

- 44 Partner with the Office of Surface Mining to develop regulations that increase the use of wildlife friendly reclamation practices and provide incentives to the industry for doing so.
  - 47 Partner with the appropriate agency to develop new habitat restoration and enhancement projects using abandoned mine lands funding.
  - 45 Work with industry and regulatory agencies to develop better protocol for the timing of pre-mining logging and survey needs
  - 51 Provide information and guidance to the mining industry and contractors on reclamation practices that benefit wildlife.
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**Appendix 3.8 Continued.**

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**52** Facilitate information and idea exchange between Kentucky Department of Fish and Wildlife Resources and mining industry by creating a liaison position.

**Objective 6** Protection, restoration, and management of unique habitats

**Highest priority conservation actions.**

**Performance measures.**

**Additional conservation actions for this objective.**

- 97** Identify unique microhabitats important to priority species and acquire or protect through acquisition, easements, or cost-share programs.
  - 107** Encourage landowners to incorporate strategies into management plans that benefit priority species during technical guidance sessions.
  - 103** Create a unique habitat stewardship program.
  - 100** Create education program about the importance of unique microhabitats.
  - 99** Create new microhabitats on Kentucky Department of Fish and Wildlife Resources owned or managed lands that benefit priority species.
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## Appendix 3.8 Continued.

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### **Forested Wetland - Terrestrial Guild**

The Forested Wetland Terrestrial Habitat Guild actually is a combination of two major plant communities as described by Jones (2005): swamp forests and floodplain forests. Habitats typifying this guild can be found throughout Kentucky, but are most common in western and central Kentucky and include such habitats as cypress swamps, tupelo swamps, bottomland hardwood communities, green ash swamps, etc. The larger river systems (Mississippi, Ohio, and Green Rivers and their tributaries) harbor the most complex and extensive tracts of forested wetlands, but smaller tracts can be found even in the Appalachian corridors (Jones 2005). The guild can be characterized generally as being forested in areas ranging from deep, permanent standing water, to having saturated soils throughout most of the growing season, or to being seasonally and temporarily flooded. Forested wetlands are one of the most severely impacted and endangered community types in Kentucky.

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#### **Species**

##### **MALACOSTRACA - Crayfish, amphipod, isopod, shrimp**

Bousfield's Amphipod, Cajun Dwarf Crayfish, Shrimp Crayfish, Swamp Dwarf Crayfish, Vernal Crayfish.

##### **AMPHIBIA - Amphibian**

Bird-voiced Treefrog, Green Treefrog, Mole Salamander, Northern Dusky Salamander, Southern Leopard Frog, Spotted Dusky Salamander, Streamside Salamander, Three-lined Salamander.

##### **AVES - Bird**

American Black Duck, Bald Eagle, Brown Creeper, Cerulean Warbler, Great Egret, Hooded Merganser, Little Blue Heron, Louisiana Waterthrush, Mississippi Kite, Northern Pintail, Osprey, Prothonotary Warbler, Red-headed Woodpecker, Rusty Blackbird, Swainson's Warbler, Swallow-tailed Kite, Yellow-crowned Night-heron.

##### **MAMMALIA - Mammal**

Cinereus Shrew, Cotton Mouse, Evening Bat, Gray Myotis, Indiana Bat, Rafinesque's Big-eared Bat, Southeastern Myotis, Swamp Rabbit.

##### **REPTILIA - Reptile**

Alligator Snapping Turtle, Broad-banded Water Snake, Copperbelly Watersnake, Diamondback Water Snake, Eastern Mud Turtle, Eastern Ribbon Snake, Green Water Snake, Kirtland's Snake, Western Cottonmouth, Western Mud Snake, Western Ribbon Snake.

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## Appendix 3.8 Continued.

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### Top conservation actions for this guild.

Rank	Code	Conservation action
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1	80	Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.
2	83	Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).
3	39	Acquire land previously managed for timber resources and restore to native forest.
4	3	Increase Kentucky Department of Fish and Wildlife Resources staff devoted to raising public awareness and implementation of cost-share programs.
5	136	Encourage creation of wetland habitat for priority species on private land through incentive programs (i.e. Wetland Reserve Program, Conservation Reserve Program, etc.).
6	185	Restore or create wetland habitat on Kentucky Department of Fish and Wildlife Resources owned or managed lands and manage for priority species.
7	36	Encourage the timber industry to use Best Management Practices (buffer strips of native forest, wider tree spacing) when converting to rotational crop trees.
8	97	Identify unique microhabitats important to priority species and acquire or protect through acquisition, easements, or cost-share programs.
9	47	Partner with the appropriate agency to develop new habitat restoration and enhancement projects using abandoned mine lands funding.
10	62	Create more snags and cavity trees on Kentucky Department of Fish and Wildlife Resources owned or managed lands

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### Objectives for this guild.

#### **Objective 1** Implement landscape level conservation projects in priority areas

##### **Highest priority conservation actions.**

- 80** Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.
- 83** Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).

##### **Performance measures.**

- Number of STWG-funded projects that occur in priority areas
  - Number of all conservation projects implemented by partners in priority areas (e.g., Wetlands Reserve Program, U.S. Forest Service projects, etc.)
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## Appendix 3.8 Continued.

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### **Additional conservation actions for this objective.**

- 85 Create a landscape ecologist position within Kentucky Department of Fish and Wildlife Resources.
- 82 Use Geographic Information Systems to identify gaps in habitat connectivity.
- 7 Work with partners to focus conservation projects in high priority areas.

### **Objective 2**    Increase acreage of and protect existing bottomland hardwood forests

#### **Highest priority conservation actions.**

- 39 Acquire land previously managed for timber resources and restore to native forest.
- 3 Increase Kentucky Department of Fish and Wildlife Resources staff devoted to raising public awareness and implementation of cost-share programs.
- 136 Encourage creation of wetland habitat for priority species on private land through incentive programs (i.e. Wetland Reserve Program, Conservation Reserve Program, etc.).
- 185 Restore or create wetland habitat on Kentucky Department of Fish and Wildlife Resources owned or managed lands and manage for priority species.
- 36 Encourage the timber industry to use Best Management Practices (buffer strips of native forest, wider tree spacing) when converting to rotational crop trees.

#### **Performance measures.**

- Acres bottomland hardwood forest restored
- Acres of bottomland hardwood forest acquired or protected via easements

### **Additional conservation actions for this objective.**

- 35 Decrease conversion of native forests to rotational crop trees (i.e. pine, sycamore, cottonwood) by encouraging the use of existing agricultural lands instead.
- 57 Garner congressional support for forest management programs (i.e., continuation and/or development)
- 184 Partner with appropriate agencies to promote construction or restoration of wetland habitat.

### **Objective 3**    Protection, restoration, and management of unique habitats

#### **Highest priority conservation actions.**

- 97 Identify unique microhabitats important to priority species and acquire or protect through acquisition, easements, or cost-share programs.

#### **Performance measures.**

- Number/acres of unique habitats restored, managed, and/or protected

### **Additional conservation actions for this objective.**

- 107 Encourage landowners to incorporate strategies into management plans that benefit priority species during technical guidance sessions.
  - 103 Create a unique habitat stewardship program.
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100 Create education program about the importance of unique microhabitats.

99 Create new microhabitats on Kentucky Department of Fish and Wildlife Resources owned or managed lands that benefit priority species.

### **Objective 4** Minimize impacts of mining to priority species.

#### **Highest priority conservation actions.**

47 Partner with the appropriate agency to develop new habitat restoration and enhancement projects using abandoned mine lands funding.

#### **Performance measures.**

- Number of programs, regulations, and practices developed and implemented to enhance wildlife habitat for priority species

#### **Additional conservation actions for this objective.**

50 Create innovative methods to better use Fees-in-lieu-of money (or other programs) for permanent protection/restoration of streams and riparian corridors (purchase surface and mineral rights)

44 Partner with the Office of Surface Mining to develop regulations that increase the use of wildlife friendly reclamation practices and provide incentives to the industry for doing so.

52 Facilitate information and idea exchange between Kentucky Department of Fish and Wildlife Resources and mining industry by creating a liaison position.

45 Work with industry and regulatory agencies to develop better protocol for the timing of pre-mining logging and survey needs

51 Provide information and guidance to the mining industry and contractors on reclamation practices that benefit wildlife.

49 Partner with the coal-mining industry to establish Wildlife Management Areas on company lands and implement management plans for priority species.

46 Partner with appropriate agency to develop new regulations that discourages companies from forfeiting a bond rather than properly reclaiming an area.

### **Objective 5** Increase the amount of snag habitat

#### **Highest priority conservation actions.**

62 Create more snags and cavity trees on Kentucky Department of Fish and Wildlife Resources owned or managed lands

#### **Performance measures.**

- Number of projects implemented to improve snag habitat

#### **Additional conservation actions for this objective.**

61 Create educational programs for the public, agencies, and consultants about the value of snags and/or cavity trees and how to manage for them (create a how-to video, distribute information on where to place them, etc.).

### **Objective 6** Reduce pace and impacts of urban sprawl

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### Highest priority conservation actions.

### Performance measures.

### Additional conservation actions for this objective.

- 20 Identify and prioritize high ecological value areas most at risk to urban sprawl and protect from development through acquisition or conservation easements.
  - 19 Work with partners to develop new habitat or green space programs in high priority areas
  - 22 Reduce development by working with partners to provide tax incentives to owners of undeveloped property
  - 21 Partner with local governments to conserve lands outside city limits using "smart growth" tools, such as zoning, land use planning, and restricting infrastructure.
  - 26 Create education programs about the importance of green spaces and their impact on quality of life, etc.
  - 25 Expand urban wildlife habitat programs (Kentucky Backyard Conservation Program, Backyard Wildlife, etc.) and create new urban habitat programs.
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## Appendix 3.8 Continued.

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### **Grassland/agricultural - Terrestrial Guild**

The Grassland/Agriculture Terrestrial Habitat Guild includes native and non-native grass-dominated landscapes, as well as cultivated fields for row crop production. Native grasslands we included in this guild are both remnant and restored grasslands and, depending on the author referenced, include barrens, tall grass prairies, wet prairies (also occurs in “Emergent and Shrub-dominated Wetlands”), glades, and the earliest successional stages of the “old-field stage” (i.e., dominated mostly by annual ‘weeds’ and very sparse shrubs or trees). Non-native grasslands and row crop agriculture dominate Kentucky’s openlands, and are used to support agricultural industries by providing pasture and hayland for grazing, or to grow such crops as corn, soybean, tobacco, and other grains. Seasonal flooding of agricultural fields also provides important habitat for numerous priority species. Previously mined areas, abandoned quarries and gravel pits, powerline and gas line rights-of-way, and highway and railroad corridors that are reclaimed or are maintained as grasslands (both native and non-native) are also included in this habitat guild. Several important features (e.g., shallow seasonal ponds, proximity to forest, etc.) influence the presence, abundance, and quality of these habitats for priority species. Overall, this terrestrial habitat guild is comprised mainly of very disturbed and non-native habitats.

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### **Species**

#### **AMPHIBIA - Amphibian**

Barking Treefrog, Eastern Spadefoot, Northern Crawfish Frog, Northern Leopard Frog, Southern Leopard Frog, Streamside Salamander.

#### **AVES - Bird**

American Bittern, American Golden-plover, American Kestrel, American Woodcock, Barn Owl, Bobolink, Buff-breasted Sandpiper, Chuck-will's-widow, Common Moorhen, Dickcissel, Dunlin, Grasshopper Sparrow, Greater Prairie-chicken, Henslow's Sparrow, Lark Sparrow, Lesser Yellowlegs, Loggerhead Shrike, Northern Harrier, Northern Pintail, Piping Plover, Sanderling, Sandhill Crane, Savannah Sparrow, Sedge Wren, Semipalmated Sandpiper, Short-billed Dowitcher, Short-eared Owl, Solitary Sandpiper, Stilt Sandpiper, Tundra Swan, Upland Sandpiper, Vesper Sparrow, Western Sandpiper, Whip-poor-will, Whooping Crane, Wilson's Snipe.

#### **MAMMALIA - Mammal**

Virginia Big-eared Bat.

#### **REPTILIA - Reptile**

Coal Skink, Corn Snake, Eastern Coachwhip, Eastern Slender Glass Lizard, Northern Pine Snake, Six-lined Racerunner, Southeastern Crowned Snake, Southeastern Five-lined Skink, Western Pygmy Rattlesnake.

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### Top conservation actions for this guild.

Rank	Code	Conservation action
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1	80	Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.
2	83	Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).
3	5	Provide technical guidance on private and public lands to encourage the use of wildlife friendly agricultural practices (i.e. no fall plowing, reduce pesticide use, allow fallow fields).
4	10	Implement wildlife friendly mowing regimes on Wildlife Management Areas and build partnerships to encourage this practice on private lands.
5	17	Reduce impacts of livestock grazing through partnerships that increase the use of Best Management Practices (e.g., rotational grazing, fencing of woodlands, vegetative diversity, planting later maturing grasses, etc.) on private land.
6	97	Identify unique microhabitats important to priority species and acquire or protect through acquisition, easements, or cost-share programs.
7	75	Partner with the appropriate agency to identify sources of invasive and exotic species (i.e. fescue, phragmites, serotia, etc.), discourage continued use, and encourage the use of native herbaceous species.
8	76	Implement control of invasive and exotic species on both public and private lands through partnerships.
9	1	Implement cost-share programs to provide incentives to land owners to reduce acreage of row crop agriculture (e.g., Conservation Reserve Program).
10	88	Provide technical guidance to public agencies and private landowners on how to restore fire regimes.

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### Objectives for this guild.

#### Objective 1 Implement landscape level conservation projects in priority areas

##### Highest priority conservation actions.

- 80 Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.
- 83 Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).

##### Performance measures.

- Number of STWG-funded projects that occur in priority areas
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- Number of all conservation projects implemented by partners in priority areas (e.g., Wetlands Reserve Program, U.S. Forest Service projects, etc.)

### **Additional conservation actions for this objective.**

- 7 Work with partners to focus conservation projects in high priority areas.
- 85 Create a landscape ecologist position within Kentucky Department of Fish and Wildlife Resources.
- 82 Use Geographic Information Systems to identify gaps in habitat connectivity.

### **Objective 2** Increase the use of management practices that benefit wildlife on pasture and agricultural land

#### **Highest priority conservation actions.**

- 5 Provide technical guidance on private and public lands to encourage the use of wildlife friendly agricultural practices (i.e. no fall plowing, reduce pesticide use, allow fallow fields).
- 10 Implement wildlife friendly mowing regimes on Wildlife Management Areas and build partnerships to encourage this practice on private lands.
- 17 Reduce impacts of livestock grazing through partnerships that increase the use of Best Management Practices (e.g., rotational grazing, fencing of woodlands, vegetative diversity, planting later maturing grasses, etc.) on private land.

#### **Performance measures.**

- Number of acres enrolled in incentive programs that used wildlife-friendly practices
- Presence/absence of STWG species on pasture and agricultural land

### **Additional conservation actions for this objective.**

- 3 Increase Kentucky Department of Fish and Wildlife Resources staff devoted to raising public awareness and implementation of cost-share programs.
- 184 Partner with appropriate agencies to promote construction or restoration of wetland habitat.

### **Objective 3** Protection, restoration, and management of unique habitats

#### **Highest priority conservation actions.**

- 97 Identify unique microhabitats important to priority species and acquire or protect through acquisition, easements, or cost-share programs.

#### **Performance measures.**

- Number/acres of unique habitats restored, managed, and/or protected

### **Additional conservation actions for this objective.**

- 107 Encourage landowners to incorporate strategies into management plans that benefit priority species during technical guidance sessions.
  - 103 Create a unique habitat stewardship program.
  - 100 Create education program about the importance of unique microhabitats.
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## Appendix 3.8 Continued.

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- 99 Create new microhabitats on Kentucky Department of Fish and Wildlife Resources owned or managed lands that benefit priority species.

### **Objective 4** Control the use and spread of invasive and exotic plants

#### **Highest priority conservation actions.**

- 75 Partner with the appropriate agency to identify sources of invasive and exotic species (i.e. fescue, phragmites, serotia, etc.), discourage continued use, and encourage the use of native herbaceous species.
- 76 Implement control of invasive and exotic species on both public and private lands through partnerships.

#### **Performance measures.**

- Number/acreage of projects to control invasive and exotic species
- Number of cooperative projects with other agencies using native species

#### **Additional conservation actions for this objective.**

- 74 Create education programs about the benefits of using native vs. non-native species by using demonstration areas on Wildlife Management Areas as models and by continued outreach during Farm and Field days.

### **Objective 5** Increase acreage of and protect existing grasslands

#### **Highest priority conservation actions.**

- 1 Implement cost-share programs to provide incentives to land owners to reduce acreage of row crop agriculture (e.g., Conservation Reserve Program).

#### **Performance measures.**

- Acres converted to high-quality grassland
- Acres of grasslands acquired

#### **Additional conservation actions for this objective.**

- 95 Increase disturbance regimes (i.e. prescribed fire, targeted timber harvest, strip disking, etc.) where appropriate on Kentucky Department of Fish and Wildlife Resources owned or managed lands.
- 8 Acquire or protect agricultural land, through acquisition or easements, and restore to wildlife habitat.
- 9 Partner with local governments to zone agricultural land as areas not suitable for development.
- 63 Work with partners to identify open lands that should not be reforested and maintain priority areas as grassland or early successional habitat.

### **Objective 6** Restore fire regimes to public and private land

#### **Highest priority conservation actions.**

- 88 Provide technical guidance to public agencies and private landowners on how to restore fire regimes.
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## Appendix 3.8 Continued.

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### **Performance measures.**

- Acres of burns on private and public lands

### **Additional conservation actions for this objective.**

- 90** Create fire-teams to implement large-scale fire management programs on private lands.
- 89** Work with partners to develop and promote the passage of fire-friendly laws.
- 87** Create education programs that promote the ecological value of fire.

## **Objective 7    Reduce pace and impacts of urban sprawl**

### **Highest priority conservation actions.**

### **Performance measures.**

### **Additional conservation actions for this objective.**

- 20** Identify and prioritize high ecological value areas most at risk to urban sprawl and protect from development through acquisition or conservation easements.
  - 19** Work with partners to develop new habitat or green space programs in high priority areas
  - 21** Partner with local governments to conserve lands outside city limits using "smart growth" tools, such as zoning, land use planning, and restricting infrastructure.
  - 22** Reduce development by working with partners to provide tax incentives to owners of undeveloped property
  - 26** Create education programs about the importance of green spaces and their impact on quality of life, etc.
  - 25** Expand urban wildlife habitat programs (Kentucky Backyard Conservation Program, Backyard Wildlife, etc.) and create new urban habitat programs.
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## Appendix 3.8 Continued.

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### **Karst, Caves, Rock Shelters, And Cliffines - Terrestrial Guild**

The Karst, Cave, Rock Shelter, and Cliffine Terrestrial Habitat Guild was derived primarily based on the unique features that limestone and sandstone geologies have created, although the plant communities supported by these areas are also unique (see Jones 2005 for discussion about plant communities). Karst topography is formed by the dissolution of a layer of bedrock (e.g. limestone, dolostones, gypsum) by groundwater. During the Ordovician (~ 488 – 443 million years ago), Middle Silurian (~ 430 million years ago), and Middle Devonian (~ 380 million years ago) time periods, fluctuating water levels in Kentucky gave way to vast coral reef (limestone) deposits. The karst topography in Kentucky is a direct result of the slow break-down of these ancient coral reef / limestone deposits through groundwater exposure and carbonation (Haney 1985).

Caves, rock shelters and cliffines are unique geologic features formed through a combination of geologic upheavals, cutting by streams and rivers through rock, and collapse of cavernous limestone systems (Jones 2005). Most of Kentucky's cliffine and rock shelter habitats are restricted to the Appalachian Mountain region of eastern Kentucky; however, the habitats are present throughout The Knobs region of Kentucky and in isolated locales elsewhere in the state. Karst (Appendix 1.71) and cave systems (includes caves, open-throated sinkholes, and "closed" sinkholes) are largely constrained to the following physiological regions: Inner Bluegrass, Outer Bluegrass, Cumberland Plateau, Pottsville Escarpment, Dripping Spring Escarpment, Muldraughs Hill, and Mississippian Plateau (see Appendix 1.6 for map of physiographic regions of Kentucky).

The Karst, Cave, Rock Shelter, and Cliffine Terrestrial Habitat Guild also includes boulder fields, talus slopes, shale cliffs, abandoned underground quarries and mine portals (openings), and rock cuts associated with mining, quarrying, road construction, and railroads. This Terrestrial Habitat Guild is particularly important because Kentucky Karst systems harbor high levels of subterranean biodiversity. The rich cave faunas of Kentucky Karst stem from the presence of large segments of two major Mississippian limestone plateaus within the Commonwealth (Haney 1985). Of particular importance is Mammoth Cave, located in Edmonson County, Kentucky which is listed as one of the top twenty global hotspots of subterranean biodiversity (Culver and Sket 2000). Karst conservation and cave protection are critically important because Karst systems are easily contaminated by rapid surface water run-off into the aquifer.

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### **Species**

#### **MALACOSTRACA - Crayfish, amphipod, isopod, shrimp**

An Amphipod.

#### **AMPHIBIA - Amphibian**

Allegheny Mountain Dusky Salamander, Cumberland Plateau Salamander, Green Salamander, Northern Dusky Salamander, Southern Zigzag Salamander, Wehrle's Salamander.

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## Appendix 3.8 Continued.

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### AVES - Bird

Common Raven, Peregrine Falcon.

### MAMMALIA - Mammal

Allegheny Woodrat, Eastern Small-footed Myotis, Eastern Spotted Skunk, Gray Myotis, Indiana Bat, Long-tailed Or Rock Shrew, Rafinesque's Big-eared Bat, Southeastern Myotis, Virginia Big-eared Bat.

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### Top conservation actions for this guild.

#### Rank Code Conservation action

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- |    |     |  |
|----|-----|--|
| 1  | 188 | Implement monitoring, surveillance, and response plans for wildlife diseases affecting species of greatest conservation need in Kentucky; specifically, White Nose Syndrome.           |
| 2  | 97  | Identify unique microhabitats important to priority species and acquire or protect through acquisition, easements, or cost-share programs.   |
| 3  | 107 | Encourage landowners to incorporate strategies into management plans that benefit priority species during technical guidance sessions.   |
| 4  | 80  | Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.              |
| 5  | 83  | Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).             |
| 6  | 147 | Work with other agencies and landowners to protect critical habitats from human disturbance through acquisition, easements, gates, buoys, etc.   |
| 7  | 146 | Create education programs to inform the public about the potential impacts of human disturbance to priority species (create signs, presentations, brochures, etc.).                    |
| 8  | 44  | Partner with the Office of Surface Mining to develop regulations that increase the use of wildlife friendly reclamation practices and provide incentives to the industry for doing so. |
| 9  | 47  | Partner with the appropriate agency to develop new habitat restoration and enhancement projects using abandoned mine lands funding.  |
| 10 | 45  | Work with industry and regulatory agencies to develop better protocol for the timing of pre-mining logging and survey needs  |
- 

### Objectives for this guild.

#### Objective 1    Protection, restoration, and management of unique habitats

#### Highest priority conservation actions.

- 97 Identify unique microhabitats important to priority species and acquire or protect through acquisition, easements, or cost-share programs.
-

## Appendix 3.8 Continued.

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- 107 Encourage landowners to incorporate strategies into management plans that benefit priority species during technical guidance sessions.

### **Performance measures.**

- Number/acres of unique habitats restored, managed, and/or protected
- Number of technical guidance sessions in which management strategies for priority species are discussed with landowners

### **Additional conservation actions for this objective.**

- 100 Create education program about the importance of unique microhabitats.
- 99 Create new microhabitats on Kentucky Department of Fish and Wildlife Resources owned or managed lands that benefit priority species.
- 53 Survey abandoned mines in and around portals to determine the use and importance of an area for bat conservation prior to mine closure (on and off permit area).
- 103 Create a unique habitat stewardship program.

## **Objective 2** Implement landscape level conservation projects in priority areas

### **Highest priority conservation actions.**

- 80 Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.
- 83 Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).

### **Performance measures.**

- Number of STWG-funded projects that occur in priority areas
- Number of all conservation projects implemented by partners in priority areas (e.g., Wetlands Reserve Program, U.S. Forest Service projects, etc.)

### **Additional conservation actions for this objective.**

- 7 Work with partners to focus conservation projects in high priority areas.
- 85 Create a landscape ecologist position within Kentucky Department of Fish and Wildlife Resources.
- 82 Use Geographic Information Systems to identify gaps in habitat connectivity.

## **Objective 3** Minimize impacts of human disturbance.

### **Highest priority conservation actions.**

- 188 Implement monitoring, surveillance, and response plans for wildlife diseases affecting species of greatest conservation need in Kentucky; specifically, White Nose Syndrome.
- 147 Work with other agencies and landowners to protect critical habitats from human disturbance through acquisition, easements, gates, buoys, etc.
-

## Appendix 3.8 Continued.

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- 146** Create education programs to inform the public about the potential impacts of human disturbance to priority species (create signs, presentations, brochures, etc.).

**Performance measures.**

- Number of regulations and programs developed
- Number of partners engaged in minimizing mortalities
- Number of management plans developed to mitigate disturbance and mortality
- Number of tenets within Kentucky's White Nose Syndrome Response Plan that are successfully implemented

**Additional conservation actions for this objective.**

- 148** Review, revise, and develop new regulations to protect species from human disturbance.

**Objective 4** Minimize impacts of mining to priority species.

**Highest priority conservation actions.**

- 44** Partner with the Office of Surface Mining to develop regulations that increase the use of wildlife friendly reclamation practices and provide incentives to the industry for doing so.
- 47** Partner with the appropriate agency to develop new habitat restoration and enhancement projects using abandoned mine lands funding.
- 45** Work with industry and regulatory agencies to develop better protocol for the timing of pre-mining logging and survey needs

**Performance measures.**

- Number of programs, regulations, and practices developed and implemented to enhance wildlife habitat for priority species

**Additional conservation actions for this objective.**

- 51** Provide information and guidance to the mining industry and contractors on reclamation practices that benefit wildlife.
- 52** Facilitate information and idea exchange between Kentucky Department of Fish and Wildlife Resources and mining industry by creating a liaison position.
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## Appendix 3.8 Continued.

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### **Running Water - Terrestrial Guild**

The Running Water Terrestrial Habitat Guild is made up of the streams and rivers found throughout Kentucky. This guild ranges from high gradient headwater streams typical of eastern Kentucky, to the lower Ohio River and Mississippi River in western Kentucky, and includes springs and dripping seeps that can be found throughout the state. Shorelines, sandbars, and gravel bars associated with stream and river systems support a diversity of vegetation and were included as part of this guild when we classified terrestrial species into guilds. Riparian forest adjacent to streams were also considered when classifying species into guilds, but essentially were secondary in importance (i.e., the running water and in-stream/shoreline habitat was of primary importance).

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#### **Species**

##### **AMPHIBIA - Amphibian**

Allegheny Mountain Dusky Salamander, Black Mountain Salamander, Eastern Hellbender, Four-toed Salamander, Northern Dusky Salamander, Spotted Dusky Salamander, Streamside Salamander, Three-lined Salamander.

##### **AVES - Bird**

American Black Duck, American White Pelican, Bald Eagle, Bank Swallow, Black Tern, Black-crowned Night-heron, Common Tern, Dunlin, Great Egret, Hooded Merganser, Horned Grebe, Interior Least Tern, Lesser Yellowlegs, Little Blue Heron, Louisiana Waterthrush, Northern Pintail, Osprey, Pied-billed Grebe, Piping Plover, Sanderling, Semipalmated Sandpiper, Short-billed Dowitcher, Solitary Sandpiper, Stilt Sandpiper, Trumpeter Swan, Western Sandpiper, Wilson's Phalarope, Yellow-crowned Night-heron.

##### **MAMMALIA - Mammal**

Evening Bat, Gray Myotis, Indiana Bat, Southeastern Myotis.

##### **REPTILIA - Reptile**

Alligator Snapping Turtle, Diamondback Water Snake, False Map Turtle, Midland Smooth Softshell, Mississippi Map Turtle.

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#### **Top conservation actions for this guild.**

##### **Rank Code Conservation action**

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- |          |           |  |
|----------|-----------|--|
| <b>1</b> | <b>80</b> | Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.  |
| <b>2</b> | <b>83</b> | Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management). |
| <b>3</b> | <b>27</b> | Acquire or protect through acquisition or easements shoreline and riparian habitat.  |
-

## Appendix 3.8 Continued.

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- |    |     |   |
|----|-----|---|
| 4  | 138 | Acquire and protect wetland habitat and manage for priority species (manage for prey species, breeding and cover habitat, etc.).  |
| 5  | 32  | Identify and implement shoreline and riparian zone habitat restoration projects.  |
| 6  | 51  | Provide information and guidance to the mining industry and contractors on reclamation practices that benefit wildlife.   |
| 7  | 50  | Create innovative methods to better use Fees-in-lieu-of money (or other programs) for permanent protection/restoration of streams and riparian corridors (purchase surface and mineral rights)                |
| 8  | 68  | Work with state and federal partner to identify sources of pollutants.  |
| 9  | 159 | Encourage and assist in using, developing, and implementing Best Management Practices, including revision and evaluation as applied to aquatic systems.   |
| 10 | 31  | Partner with the appropriate permitting agency to expand Kentucky Department of Fish and Wildlife Resources's role in assessing impacts of development on fish and wildlife prior to the permit being issued. |
- 

### Objectives for this guild.

#### **Objective 1**    Implement landscape level conservation projects in priority areas

##### **Highest priority conservation actions.**

- 80** Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.
- 83** Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).

##### **Performance measures.**

- Number of STWG-funded projects that occur in priority areas
- Number of all conservation projects implemented by partners in priority areas (e.g., Wetlands Reserve Program, U.S. Forest Service projects, etc.)

##### **Additional conservation actions for this objective.**

- 7** Work with partners to focus conservation projects in high priority areas.
- 85** Create a landscape ecologist position within Kentucky Department of Fish and Wildlife Resources.
- 82** Use Geographic Information Systems to identify gaps in habitat connectivity.

#### **Objective 2**    Protect, restore, and enhance riparian zones and shoreline habitat

##### **Highest priority conservation actions.**

- 27** Acquire or protect through acquisition or easements shoreline and riparian habitat.
  - 138** Acquire and protect wetland habitat and manage for priority species (manage for prey species, breeding and cover habitat, etc.).
  - 32** Identify and implement shoreline and riparian zone habitat restoration projects.
-

## Appendix 3.8 Continued.

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### **Performance measures.**

- Acres of riparian/shoreline habitat restored
- Acres of riparian/shoreline habitat acquired or protected via easements

### **Additional conservation actions for this objective.**

- 28** Work with local governments to zone sensitive shoreline and riparian habitats as areas not suitable for development.

### **Objective 3** Minimize impacts of mining to priority species.

#### **Highest priority conservation actions.**

- 51** Provide information and guidance to the mining industry and contractors on reclamation practices that benefit wildlife.
- 50** Create innovative methods to better use Fees-in-lieu-of money (or other programs) for permanent protection/restoration of streams and riparian corridors (purchase surface and mineral rights)

### **Performance measures.**

- Number of programs, regulations, and practices developed and implemented to enhance wildlife habitat for priority species

### **Additional conservation actions for this objective.**

- 47** Partner with the appropriate agency to develop new habitat restoration and enhancement projects using abandoned mine lands funding.
- 44** Partner with the Office of Surface Mining to develop regulations that increase the use of wildlife friendly reclamation practices and provide incentives to the industry for doing so.
- 52** Facilitate information and idea exchange between Kentucky Department of Fish and Wildlife Resources and mining industry by creating a liaison position.
- 45** Work with industry and regulatory agencies to develop better protocol for the timing of pre-mining logging and survey needs
- 49** Partner with the coal-mining industry to establish Wildlife Management Areas on company lands and implement management plans for priority species.
- 46** Partner with appropriate agency to develop new regulations that discourages companies from forfeiting a bond rather than properly reclaiming an area.

### **Objective 4** Reduce input of pollutants and other contaminants into aquatic systems.

#### **Highest priority conservation actions.**

- 68** Work with state and federal partner to identify sources of pollutants.
- 159** Encourage and assist in using, developing, and implementing Best Management Practices, including revision and evaluation as applied to aquatic systems.

### **Performance measures.**

- Number of streams or rivers that show decreased input levels of targeted pollutants
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## Appendix 3.8 Continued.

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### **Additional conservation actions for this objective.**

- 71 Partner with appropriate agency to enforce current laws and develop new laws that deter excessive and/or improper chemical use.
- 69 Create education programs to inform industry and the public about the potential risks of pollutants to wildlife.
- 70 Develop programs to encourage the use of native plants or landscape designs that do not require chemical use.

### **Objective 5**    Mitigate impacts of shoreline development

#### **Highest priority conservation actions.**

- 31 Partner with the appropriate permitting agency to expand Kentucky Department of Fish and Wildlife Resources's role in assessing impacts of development on fish and wildlife prior to the permit being issued.

#### **Performance measures.**

- Number of shoreline development projects on which Kentucky Department of Fish and Wildlife Resources provides guidance

### **Additional conservation actions for this objective.**

- 29 Work with partners to expand the use of Best Management Practices during development activities.
- 101 Maintain unique microhabitats by retarding succession or invasion of certain plant species where applicable.

### **Objective 6**    Protection, restoration, and management of unique habitats

#### **Highest priority conservation actions.**

#### **Performance measures.**

### **Additional conservation actions for this objective.**

- 101 Maintain unique microhabitats by retarding succession or invasion of certain plant species where applicable.
  - 97 Identify unique microhabitats important to priority species and acquire or protect through acquisition, easements, or cost-share programs.
  - 107 Encourage landowners to incorporate strategies into management plans that benefit priority species during technical guidance sessions.
  - 103 Create a unique habitat stewardship program.
  - 100 Create education program about the importance of unique microhabitats.
  - 99 Create new microhabitats on Kentucky Department of Fish and Wildlife Resources owned or managed lands that benefit priority species.
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## Appendix 3.8 Continued.

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### **Savanna/ Shrub-scrub - Terrestrial Guild**

The Savanna/Shrub-scrub Terrestrial Habitat Guild includes those areas that are transitional zones from grassland to forest (both savannas and woodlands), early-successional stages of forest (e.g., regenerating stands, reforestation projects, latter stages of “old fields” where shrubs and young trees dominate), and previously mined areas currently in the shrub-scrub successional stage. Savannas and woodlands (i.e., <50% canopy cover and a transition between forests and grasslands; Jones 2005) can be found in various places dispersed throughout the state. The ash-oak savanna of the Bluegrass Region (central Kentucky) was once one of the very unique habitats in Kentucky, but few remnants exist today; various species of ash and oaks dominated the sparse overstory, and a mix of cane, wildflowers, and grasses dominated the understory (Jones 2005). Other savanna or woodland habitats once were common in central and western Kentucky, as the barrens (mentioned above) transitioned into areas dominated by forest, as well as in south and southeastern Kentucky, where limestone and sandstone strata led to the formation of oak and pine woodlands and barrens. Savannas and woodlands were maintained by frequent disturbances (e.g., fire) and will require use of their respective disturbance regime(s) in order to restore the habitat.

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### **Species**

#### **AVES - Bird**

American Woodcock, Bachman's Sparrow, Barn Owl, Bell's Vireo, Bewick's Wren, Blue-winged Warbler, Chuck-will's-widow, Golden-winged Warbler, Least Flycatcher, Long-eared Owl, Northern Bobwhite, Prairie Warbler, Red-headed Woodpecker, Ruffed Grouse, Whip-poor-will, Willow Flycatcher.

#### **MAMMALIA - Mammal**

Appalachian Cottontail, Evening Bat, Indiana Bat, Kentucky Red-backed Vole, Rafinesque's Big-eared Bat, Southeastern Myotis, Swamp Rabbit, Virginia Big-eared Bat.

#### **REPTILIA - Reptile**

Coal Skink, Corn Snake, Eastern Coachwhip, Eastern Slender Glass Lizard, Northern Pine Snake, Northern Scarlet Snake, Scarlet Kingsnake, Six-lined Racerunner, Southeastern Crowned Snake, Southeastern Five-lined Skink, Timber Rattlesnake, Western Pygmy Rattlesnake.

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## Appendix 3.8 Continued.

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### Top conservation actions for this guild.

Rank	Code	Conservation action
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1	80	Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.
2	83	Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).
3	14	Encourage practices that increase structural and vegetative diversity that benefit priority species.
4	17	Reduce impacts of livestock grazing through partnerships that increase the use of Best Management Practices (e.g., rotational grazing, fencing of woodlands, vegetative diversity, planting later maturing grasses, etc.) on private land.
5	88	Provide technical guidance to public agencies and private landowners on how to restore fire regimes.
6	75	Partner with the appropriate agency to identify sources of invasive and exotic species (i.e. fescue, phragmites, seresia, etc.), discourage continued use, and encourage the use of native herbaceous species.
7	76	Implement control of invasive and exotic species on both public and private lands through partnerships.
8	97	Identify unique microhabitats important to priority species and acquire or protect through acquisition, easements, or cost-share programs.
9	107	Encourage landowners to incorporate strategies into management plans that benefit priority species during technical guidance sessions.
10	20	Identify and prioritize high ecological value areas most at risk to urban sprawl and protect from development through acquisition or conservation easements.

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### Objectives for this guild.

#### Objective 1    Implement landscape level conservation projects in priority areas

##### Highest priority conservation actions.

- 80** Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.
- 83** Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).

##### Performance measures.

- Number of STWG-funded projects that occur in priority areas
  - Number of all conservation projects implemented by partners in priority areas (e.g., Wetlands Reserve Program, U.S. Forest Service projects, etc.)
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## Appendix 3.8 Continued.

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### **Additional conservation actions for this objective.**

- 7 Work with partners to focus conservation projects in high priority areas.
- 85 Create a landscape ecologist position within Kentucky Department of Fish and Wildlife Resources.
- 82 Use Geographic Information Systems to identify gaps in habitat connectivity.
- 119 Identify specific locations where overlap of species and potential hybridization may occur. Implement species-specific habitat improvement projects on private and public lands to reduce likelihood of hybridization.

### **Objective 2    Increase acreage of or maintain early succession habitat**

#### **Highest priority conservation actions.**

- 14 Encourage practices that increase structural and vegetative diversity that benefit priority species.
- 17 Reduce impacts of livestock grazing through partnerships that increase the use of Best Management Practices (e.g., rotational grazing, fencing of woodlands, vegetative diversity, planting later maturing grasses, etc.) on private land.

#### **Performance measures.**

- Acres managed for structural and vegetative diversity

### **Additional conservation actions for this objective.**

- 95 Increase disturbance regimes (i.e. prescribed fire, targeted timber harvest, strip disking, etc.) where appropriate on Kentucky Department of Fish and Wildlife Resources owned or managed lands.
- 63 Work with partners to identify open lands that should not be reforested and maintain priority areas as grassland or early successional habitat.
- 13 Acquire or protect agricultural land through acquisition or easements and create newly abandoned areas.
- 12 Increase acreage of newly abandoned farmland with incentives from cost-share programs.
- 15 Discourage clean farming practices using incentives in cost-share programs.
- 3 Increase Kentucky Department of Fish and Wildlife Resources staff devoted to raising public awareness and implementation of cost-share programs.

### **Objective 3    Restore fire regimes to public and private land**

#### **Highest priority conservation actions.**

- 88 Provide technical guidance to public agencies and private landowners on how to restore fire regimes.

#### **Performance measures.**

- Acres of burns on private and public lands
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## Appendix 3.8 Continued.

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### **Additional conservation actions for this objective.**

- 90 Create fire-teams to implement large-scale fire management programs on private lands.
- 89 Work with partners to develop and promote the passage of fire-friendly laws.
- 87 Create education programs that promote the ecological value of fire.

### **Objective 4**    Control the use and spread of invasive and exotic plants

#### **Highest priority conservation actions.**

- 75 Partner with the appropriate agency to identify sources of invasive and exotic species (i.e. fescue, phragmites, serotia, etc.), discourage continued use, and encourage the use of native herbaceous species.
- 76 Implement control of invasive and exotic species on both public and private lands through partnerships.

#### **Performance measures.**

- Number/acreage of projects to control invasive and exotic species
- Number of cooperative projects with other agencies using native species

### **Additional conservation actions for this objective.**

- 74 Create education programs about the benefits of using native vs. non-native species by using demonstration areas on Wildlife Management Areas as models and by continued outreach during Farm and Field days.

### **Objective 5**    Protection, restoration, and management of unique habitats

#### **Highest priority conservation actions.**

- 97 Identify unique microhabitats important to priority species and acquire or protect through acquisition, easements, or cost-share programs.
- 107 Encourage landowners to incorporate strategies into management plans that benefit priority species during technical guidance sessions.

#### **Performance measures.**

- Number/ acres of unique habitats restored, managed, and/or protected
- Number of technical guidance sessions in which management strategies for priority species are discussed with landowners

### **Additional conservation actions for this objective.**

- 103 Create a unique habitat stewardship program.
- 100 Create education program about the importance of unique microhabitats.
- 99 Create new microhabitats on Kentucky Department of Fish and Wildlife Resources owned or managed lands that benefit priority species.

### **Objective 6**    Reduce pace and impacts of urban sprawl

#### **Highest priority conservation actions.**

- 20 Identify and prioritize high ecological value areas most at risk to urban sprawl and
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### Appendix 3.8 Continued.

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protect from development through acquisition or conservation easements.

#### **Performance measures.**

- Acres of ecological significance threatened by urban sprawl that are protected

#### **Additional conservation actions for this objective.**

- 19** Work with partners to develop new habitat or green space programs in high priority areas
  - 21** Partner with local governments to conserve lands outside city limits using "smart growth" tools, such as zoning, land use planning, and restricting infrastructure.
  - 22** Reduce development by working with partners to provide tax incentives to owners of undeveloped property
  - 26** Create education programs about the importance of green spaces and their impact on quality of life, etc.
  - 25** Expand urban wildlife habitat programs (Kentucky Backyard Conservation Program, Backyard Wildlife, etc.) and create new urban habitat programs.
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## Appendix 3.8 Continued.

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### **Standing Water - Terrestrial Guild**

The Standing Water Terrestrial Habitat Guild is composed of non-forested, permanent water bodies whose plants are mostly common and widespread throughout Kentucky. For our purposes, we included natural ponds and lakes, farm ponds, reservoirs, and other artificial impoundments that maintained permanent water. Additionally, we included seasonal ponds (vernal pools) and similar habitats such as tire ruts, roadside ditches that contain standing water, sinkhole ponds, and wildlife water holes in this habitat guild; numerous priority species use these “constructed” habitats for various portions of their life cycles. Free-floating plants, submersed plants, rooted plants with floating stems and leaves, and numerous species of emergent perennials occur within or along the shorelines of this community type (Jones 2005). Conservation actions that address terrestrial habitats immediately adjacent to standing water bodies also are presented within this guild because those habitats influence the quality and integrity of the standing water habitat.

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#### **Species**

##### **MALACOSTRACA - Crayfish, amphipod, isopod, shrimp**

Bousfield's Amphipod, Cajun Dwarf Crayfish, Shrimp Crayfish, Swamp Dwarf Crayfish, Vernal Crayfish.

##### **AMPHIBIA - Amphibian**

Barking Treefrog, Eastern Spadefoot, Four-toed Salamander, Gray Treefrog, Mole Salamander, Northern Crawfish Frog, Northern Leopard Frog, Southern Leopard Frog, Streamside Salamander, Western Lesser Siren, Wood Frog.

##### **AVES - Bird**

American Bittern, American Black Duck, American Golden-plover, American White Pelican, Bald Eagle, Black Tern, Black-crowned Night-heron, Black-necked Stilt, Buff-breasted Sandpiper, Common Moorhen, Common Tern, Dunlin, Great Egret, Hooded Merganser, Horned Grebe, Least Bittern, Lesser Yellowlegs, Little Blue Heron, Louisiana Waterthrush, Northern Pintail, Osprey, Pied-billed Grebe, Piping Plover, Sanderling, Semipalmated Sandpiper, Short-billed Dowitcher, Solitary Sandpiper, Stilt Sandpiper, Trumpeter Swan, Tundra Swan, Western Sandpiper, Wilson's Phalarope, Wilson's Snipe.

##### **REPTILIA - Reptile**

Alligator Snapping Turtle, Broad-banded Water Snake, Copperbelly Watersnake, Diamondback Water Snake, Eastern Mud Turtle, Eastern Ribbon Snake, Green Water Snake, Midland Smooth Softshell, Mississippi Map Turtle, Southern Painted Turtle, Western Cottonmouth, Western Mud Snake, Western Ribbon Snake.

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## Appendix 3.8 Continued.

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### Top conservation actions for this guild.

Rank	Code	Conservation action
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1	80	Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.
2	83	Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).
3	185	Restore or create wetland habitat on Kentucky Department of Fish and Wildlife Resources owned or managed lands and manage for priority species.
4	136	Encourage creation of wetland habitat for priority species on private land through incentive programs (i.e. Wetland Reserve Program, Conservation Reserve Program, etc.).
5	186	Encourage reservoir management agencies to manage water levels to benefit shorebirds and waterfowl (expose shoreline and mudflats during the appropriate time of year).
6	107	Encourage landowners to incorporate strategies into management plans that benefit priority species during technical guidance sessions.
7	47	Partner with the appropriate agency to develop new habitat restoration and enhancement projects using abandoned mine lands funding.
8	31	Partner with the appropriate permitting agency to expand Kentucky Department of Fish and Wildlife Resources's role in assessing impacts of development on fish and wildlife prior to the permit being issued.
9	68	Work with state and federal partner to identify sources of pollutants.
10	159	Encourage and assist in using, developing, and implementing Best Management Practices, including revision and evaluation as applied to aquatic systems.

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### Objectives for this guild.

#### Objective 1 Implement landscape level conservation projects in priority areas

##### Highest priority conservation actions.

- 80** Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.
- 83** Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).

##### Performance measures.

- Number of STWG-funded projects that occur in priority areas
  - Number of all conservation projects implemented by partners in priority areas (e.g., Wetlands Reserve Program, U.S. Forest Service projects, etc.)
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## Appendix 3.8 Continued.

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### **Additional conservation actions for this objective.**

- 7 Work with partners to focus conservation projects in high priority areas.
- 85 Create a landscape ecologist position within Kentucky Department of Fish and Wildlife Resources.
- 82 Use Geographic Information Systems to identify gaps in habitat connectivity.

### **Objective 2** Increase acreage of and protect existing wetlands

#### **Highest priority conservation actions.**

- 185 Restore or create wetland habitat on Kentucky Department of Fish and Wildlife Resources owned or managed lands and manage for priority species.
- 136 Encourage creation of wetland habitat for priority species on private land through incentive programs (i.e. Wetland Reserve Program, Conservation Reserve Program, etc.).

#### **Performance measures.**

- Acres of wetlands created or restored
- Acres of wetlands acquired or protected through easements

### **Additional conservation actions for this objective.**

- 184 Partner with appropriate agencies to promote construction or restoration of wetland habitat.
- 138 Acquire and protect wetland habitat and manage for priority species (manage for prey species, breeding and cover habitat, etc.).

### **Objective 3** Protect, restore, and enhance riparian zones and shoreline habitat

#### **Highest priority conservation actions.**

- 186 Encourage reservoir management agencies to manage water levels to benefit shorebirds and waterfowl (expose shoreline and mudflats during the appropriate time of year).
- 107 Encourage landowners to incorporate strategies into management plans that benefit priority species during technical guidance sessions.

#### **Performance measures.**

- Acres and/or linear feet of riparian zones and shoreline habitat restored or enhanced
- Acres and/or linear feet of riparian zones and shoreline habitat acquired or protected through easements
- Number of technical guidance sessions in which management strategies for priority species are discussed with landowners

### **Additional conservation actions for this objective.**

- 27 Acquire or protect through acquisition or easements shoreline and riparian habitat.
  - 32 Identify and implement shoreline and riparian zone habitat restoration projects.
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## Appendix 3.8 Continued.

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- 28 Work with local governments to zone sensitive shoreline and riparian habitats as areas not suitable for development.
- 101 Maintain unique microhabitats by retarding succession or invasion of certain plant species where applicable.
- 97 Identify unique microhabitats important to priority species and acquire or protect through acquisition, easements, or cost-share programs.
- 103 Create a unique habitat stewardship program.
- 100 Create education program about the importance of unique microhabitats.
- 99 Create new microhabitats on Kentucky Department of Fish and Wildlife Resources owned or managed lands that benefit priority species.

### **Objective 4** Minimize impacts of mining to priority species.

#### **Highest priority conservation actions.**

- 47 Partner with the appropriate agency to develop new habitat restoration and enhancement projects using abandoned mine lands funding.

#### **Performance measures.**

- Number of programs, regulations, and practices developed and implemented to enhance wildlife habitat for priority species

#### **Additional conservation actions for this objective.**

- 44 Partner with the Office of Surface Mining to develop regulations that increase the use of wildlife friendly reclamation practices and provide incentives to the industry for doing so.
- 52 Facilitate information and idea exchange between Kentucky Department of Fish and Wildlife Resources and mining industry by creating a liaison position.
- 50 Create innovative methods to better use Fees-in-lieu-of money (or other programs) for permanent protection/restoration of streams and riparian corridors (purchase surface and mineral rights)
- 45 Work with industry and regulatory agencies to develop better protocol for the timing of pre-mining logging and survey needs
- 51 Provide information and guidance to the mining industry and contractors on reclamation practices that benefit wildlife.
- 49 Partner with the coal-mining industry to establish Wildlife Management Areas on company lands and implement management plans for priority species.
- 46 Partner with appropriate agency to develop new regulations that discourages companies from forfeiting a bond rather than properly reclaiming an area.

### **Objective 5** Mitigate impacts of shoreline development

#### **Highest priority conservation actions.**

- 31 Partner with the appropriate permitting agency to expand Kentucky Department of Fish and Wildlife Resources's role in assessing impacts of development on fish and wildlife prior to the permit being issued.
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## Appendix 3.8 Continued.

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### **Performance measures.**

- Number of shoreline development projects on which Kentucky Department of Fish and Wildlife Resources provides guidance

### **Additional conservation actions for this objective.**

- 29 Work with partners to expand the use of Best Management Practices during development activities.

## **Objective 6** Reduce input of pollutants and other contaminants into aquatic systems.

### **Highest priority conservation actions.**

- 68 Work with state and federal partner to identify sources of pollutants.
- 159 Encourage and assist in using, developing, and implementing Best Management Practices, including revision and evaluation as applied to aquatic systems.

### **Performance measures.**

- Number of water bodies that show decreased input levels of targeted pollutants

### **Additional conservation actions for this objective.**

- 69 Create education programs to inform industry and the public about the potential risks of pollutants to wildlife.
- 71 Partner with appropriate agency to enforce current laws and develop new laws that deter excessive and/or improper chemical use.
- 70 Develop programs to encourage the use of native plants or landscape designs that do not require chemical use.

## **Objective 7** Reduce pace and impacts of urban sprawl

### **Highest priority conservation actions.**

### **Performance measures.**

### **Additional conservation actions for this objective.**

- 20 Identify and prioritize high ecological value areas most at risk to urban sprawl and protect from development through acquisition or conservation easements.
  - 19 Work with partners to develop new habitat or green space programs in high priority areas
  - 21 Partner with local governments to conserve lands outside city limits using "smart growth" tools, such as zoning, land use planning, and restricting infrastructure.
  - 22 Reduce development by working with partners to provide tax incentives to owners of undeveloped property
  - 26 Create education programs about the importance of green spaces and their impact on quality of life, etc.
  - 25 Expand urban wildlife habitat programs (Kentucky Backyard Conservation Program, Backyard Wildlife, etc.) and create new urban habitat programs.
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**Appendix 3.8 Continued.**

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## Appendix 3.8 Continued.

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### **Upland Forest - Terrestrial Guild**

The Upland Forest Terrestrial Habitat Guild includes all forests types (excluding Cumberland Highland Forest; see below) that are not regularly affected by high water or flood events (i.e., out of the floodplain). This includes forests that are transitions between floodplain and upland habitats, which typically have noticeably different tree species, as described by Jones (2005). Upland forests, in some form or another, occur throughout Kentucky, and their species composition varies based on soils, topography, moisture, and aspect. Nearly all of Kentucky's upland forests have been disturbed repeatedly, which has no doubt altered the forest community to varying degrees. According to Jones (2005), upland forests in Kentucky can be grouped into four general categories (from most mesic to most xeric): mixed deciduous with eastern hemlock in some communities, mixed oak and associates (typically oak/hickory or oak/ash), xeric oaks and associates (typically oak/cedar or oak/pine), and pine forests.

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### **Species**

#### **AMPHIBIA - Amphibian**

Allegheny Mountain Dusky Salamander, Black Mountain Salamander, Cumberland Plateau Salamander, Eastern Spadefoot, Four-toed Salamander, Gray Treefrog, Green Salamander, Mole Salamander, Northern Dusky Salamander, Redback Salamander, Southern Leopard Frog, Southern Zigzag Salamander, Spotted Dusky Salamander, Streamside Salamander, Wehrle's Salamander, Wood Frog.

#### **AVES - Bird**

American Woodcock, Black-throated Green Warbler, Cerulean Warbler, Chuck-will's-widow, Common Raven, Kentucky Warbler, Red-breasted Nuthatch, Red-cockaded Woodpecker, Rose-breasted Grosbeak, Ruffed Grouse, Sharp-shinned Hawk, Swainson's Warbler, Whip-poor-will, Wood Thrush, Worm-eating Warbler.

#### **MAMMALIA - Mammal**

Allegheny Woodrat, American Black Bear, Appalachian Cottontail, Eastern Small-footed Myotis, Eastern Spotted Skunk, Evening Bat, Indiana Bat, Rafinesque's Big-eared Bat, Virginia Big-eared Bat.

#### **REPTILIA - Reptile**

Coal Skink, Corn Snake, Northern Pine Snake, Northern Scarlet Snake, Scarlet Kingsnake, Southeastern Crowned Snake, Southeastern Five-lined Skink, Timber Rattlesnake.

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## Appendix 3.8 Continued.

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### Top conservation actions for this guild.

Rank	Code	Conservation action
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1	80	Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.
2	83	Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).
3	14	Encourage practices that increase structural and vegetative diversity that benefit priority species.
4	58	Partner with the KY State Foresters Association and the KY Division of Forestry to provide recommendations on management practices that benefit wildlife.
5	88	Provide technical guidance to public agencies and private landowners on how to restore fire regimes.
6	44	Partner with the Office of Surface Mining to develop regulations that increase the use of wildlife friendly reclamation practices and provide incentives to the industry for doing so.
7	107	Encourage landowners to incorporate strategies into management plans that benefit priority species during technical guidance sessions.
8	54	Revise current Best Management Practices and develop new ones (if needed).
9	61	Create educational programs for the public, agencies, and consultants about the value of snags and/or cavity trees and how to manage for them (create a how-to video, distribute information on where to place them, etc.).
10	20	Identify and prioritize high ecological value areas most at risk to urban sprawl and protect from development through acquisition or conservation easements.

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### Objectives for this guild.

#### Objective 1    Implement landscape level conservation projects in priority areas

##### Highest priority conservation actions.

- 80** Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.
- 83** Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).

##### Performance measures.

- Number of STWG-funded projects that occur in priority areas
  - Number of all conservation projects implemented by partners in priority areas (e.g., Wetlands Reserve Program, U.S. Forest Service projects, etc.)
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## Appendix 3.8 Continued.

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### **Additional conservation actions for this objective.**

- 7 Work with partners to focus conservation projects in high priority areas.
- 85 Create a landscape ecologist position within Kentucky Department of Fish and Wildlife Resources.
- 82 Use Geographic Information Systems to identify gaps in habitat connectivity.

### **Objective 2** Encourage landowners to include wildlife friendly practices in timber management plans.

#### **Highest priority conservation actions.**

- 14 Encourage practices that increase structural and vegetative diversity that benefit priority species.
- 58 Partner with the KY State Foresters Association and the KY Division of Forestry to provide recommendations on management practices that benefit wildlife.

#### **Performance measures.**

- Number of landowners and plans that incorporate wildlife friendly practices into forest management plans

### **Additional conservation actions for this objective.**

- 55 Inventory Kentucky Department of Fish and Wildlife Resources owned land and prepare forest management plans.
- 60 Develop workshops for loggers and forestry consultants about timber management practices that most benefit wildlife.
- 3 Increase Kentucky Department of Fish and Wildlife Resources staff devoted to raising public awareness and implementation of cost-share programs.
- 17 Reduce impacts of livestock grazing through partnerships that increase the use of Best Management Practices (e.g., rotational grazing, fencing of woodlands, vegetative diversity, planting later maturing grasses, etc.) on private land.
- 38 Partner with the timber industry to establish Wildlife Management Areas on company lands and implement management plans for priority species.
- 59 Identify and acknowledge outstanding timber companies and private landowners that make significant contributions to wildlife conservation.

### **Objective 3** Restore fire regimes to public and private land

#### **Highest priority conservation actions.**

- 88 Provide technical guidance to public agencies and private landowners on how to restore fire regimes.

#### **Performance measures.**

- Acres of burns on private and public lands

### **Additional conservation actions for this objective.**

- 90 Create fire-teams to implement large-scale fire management programs on private lands.
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## Appendix 3.8 Continued.

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89 Work with partners to develop and promote the passage of fire-friendly laws.

87 Create education programs that promote the ecological value of fire.

### **Objective 4** Minimize impacts of mining to priority species.

#### **Highest priority conservation actions.**

44 Partner with the Office of Surface Mining to develop regulations that increase the use of wildlife friendly reclamation practices and provide incentives to the industry for doing so.

#### **Performance measures.**

- Number of programs, regulations, and practices developed and implemented to enhance wildlife habitat for priority species

#### **Additional conservation actions for this objective.**

52 Facilitate information and idea exchange between Kentucky Department of Fish and Wildlife Resources and mining industry by creating a liaison position.

50 Create innovative methods to better use Fees-in-lieu-of money (or other programs) for permanent protection/restoration of streams and riparian corridors (purchase surface and mineral rights)

45 Work with industry and regulatory agencies to develop better protocol for the timing of pre-mining logging and survey needs

51 Provide information and guidance to the mining industry and contractors on reclamation practices that benefit wildlife.

47 Partner with the appropriate agency to develop new habitat restoration and enhancement projects using abandoned mine lands funding.

49 Partner with the coal-mining industry to establish Wildlife Management Areas on company lands and implement management plans for priority species.

46 Partner with appropriate agency to develop new regulations that discourages companies from forfeiting a bond rather than properly reclaiming an area.

### **Objective 5** Protection, restoration, and management of unique habitats

#### **Highest priority conservation actions.**

107 Encourage landowners to incorporate strategies into management plans that benefit priority species during technical guidance sessions.

#### **Performance measures.**

- Number/acres of unique habitats restored, managed, and/or protected
- Number of technical guidance sessions in which management strategies for priority species are discussed with landowners

#### **Additional conservation actions for this objective.**

97 Identify unique microhabitats important to priority species and acquire or protect through acquisition, easements, or cost-share programs.

103 Create a unique habitat stewardship program.

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## Appendix 3.8 Continued.

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100 Create education program about the importance of unique microhabitats.

99 Create new microhabitats on Kentucky Department of Fish and Wildlife Resources owned or managed lands that benefit priority species.

### **Objective 6** Increase acreage of and protect existing upland forests

#### **Highest priority conservation actions.**

54 Revise current Best Management Practices and develop new ones (if needed).

#### **Performance measures.**

- Acres planted to upland forest
- Acres of upland forest acquired

#### **Additional conservation actions for this objective.**

39 Acquire land previously managed for timber resources and restore to native forest.

57 Garner congressional support for forest management programs (i.e., continuation and/or development)

40 Facilitate information and idea exchange between Kentucky Department of Fish and Wildlife Resources and timber industry by creating a timber liaison.

35 Decrease conversion of native forests to rotational crop trees (i.e. pine, sycamore, cottonwood) by encouraging the use of existing agricultural lands instead.

36 Encourage the timber industry to use Best Management Practices (buffer strips of native forest, wider tree spacing) when converting to rotational crop trees.

### **Objective 7** Increase the amount of snag habitat

#### **Highest priority conservation actions.**

61 Create educational programs for the public, agencies, and consultants about the value of snags and/or cavity trees and how to manage for them (create a how-to video, distribute information on where to place them, etc.).

#### **Performance measures.**

- Number of projects implemented to improve snag habitat

#### **Additional conservation actions for this objective.**

62 Create more snags and cavity trees on Kentucky Department of Fish and Wildlife Resources owned or managed lands

### **Objective 8** Reduce pace and impacts of urban sprawl

#### **Highest priority conservation actions.**

20 Identify and prioritize high ecological value areas most at risk to urban sprawl and protect from development through acquisition or conservation easements.

#### **Performance measures.**

- Acres of ecological significance threatened by urban sprawl that are protected
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## Appendix 3.8 Continued.

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### **Additional conservation actions for this objective.**

- 19 Work with partners to develop new habitat or green space programs in high priority areas
- 21 Partner with local governments to conserve lands outside city limits using "smart growth" tools, such as zoning, land use planning, and restricting infrastructure.
- 22 Reduce development by working with partners to provide tax incentives to owners of undeveloped property
- 26 Create education programs about the importance of green spaces and their impact on quality of life, etc.
- 25 Expand urban wildlife habitat programs (Kentucky Backyard Conservation Program, Backyard Wildlife, etc.) and create new urban habitat programs.

### **Objective 9    Reduce impacts of cervids on vegetative communities**

#### **Highest priority conservation actions.**

#### **Performance measures.**

### **Additional conservation actions for this objective.**

- 111 Identify areas where overabundance impacts priority species and reduce cervid density.
- 112 Review and revise cervid harvest regulations as needed.
- 113 Partner with private landowners to increase public hunting access for cervids through incentive programs.

### **Objective 10    Increase acreage of hard mast trees.**

#### **Highest priority conservation actions.**

#### **Performance measures.**

### **Additional conservation actions for this objective.**

- 108 Implement oak regeneration projects on Kentucky Department of Fish and Wildlife Resources owned or managed lands.
  - 109 Partner with appropriate agencies to distribute technical guidance about oak regeneration on private lands.
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## Appendix 3.8 Continued.

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### **Urban/suburban - Terrestrial Guild**

The Urban/Suburban Terrestrial Habitat Guild includes an array of artificial and/or disturbed habitats that lie mainly within city limits or in fairly developed areas. However, this guild also includes structures, facilities, etc., that are sometimes in rural areas but provide service to urban/suburban areas (e.g., bridges, communication towers, cooling towers, buildings, powerlines, etc.). Actual habitat varies considerably from fairly intact native communities (mostly in the rural areas) to highly disturbed habitats with a high percentage of weedy, non-native vegetation. For our purposes, this guild includes both “habitats” (e.g., fields, yards, vacant lots, parks and other “greenspace”, rock walls/piles, ditches, canals, wet meadows, rights-of-way, etc.) and structures (e.g., bridges, buildings, cooling towers, powerlines, etc.) that either impact priority species or are used during portions of their life cycle.

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#### **Species**

##### **AVES - Bird**

American Kestrel, Barn Owl, Black-crowned Night-heron, Peregrine Falcon.

##### **REPTILIA - Reptile**

Kirtland's Snake.

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#### **Top conservation actions for this guild.**

##### **Rank Code Conservation action**

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- |          |            |  |
|----------|------------|--|
| <b>1</b> | <b>80</b>  | Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.  |
| <b>2</b> | <b>83</b>  | Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management). |
| <b>3</b> | <b>20</b>  | Identify and prioritize high ecological value areas most at risk to urban sprawl and protect from development through acquisition or conservation easements.               |
| <b>4</b> | <b>19</b>  | Work with partners to develop new habitat or green space programs in high priority areas   |
| <b>5</b> | <b>21</b>  | Partner with local governments to conserve lands outside city limits using "smart growth" tools, such as zoning, land use planning, and restricting infrastructure.        |
| <b>6</b> | <b>146</b> | Create education programs to inform the public about the potential impacts of human disturbance to priority species (create signs, presentations, brochures, etc.).        |
| <b>7</b> | <b>25</b>  | Expand urban wildlife habitat programs (Kentucky Backyard Conservation Program, Backyard Wildlife, etc.) and create new urban habitat programs.                            |
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## Appendix 3.8 Continued.

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|-----------|-----|--|
| <b>8</b>  | 142 | Work with industry and agencies to decrease impacts of man-made structures (communication towers, wind towers, buildings, powerlines, etc.) through use of wildlife-friendly structures and practices.   |
| <b>9</b>  | 41  | Work with the KY Department of Transportation (DOT) and other agencies to incorporate wildlife friendly features (incorporate overpasses, signs, road barriers etc.) into construction and maintenance projects to decrease impacts to wildlife. |
| <b>10</b> | 189 | Work with the KY Department of Transportation (DOT) and other agencies to incorporate landscape-level planning (e.g. wildlife corridors, habitat connectivity) into infrastructure/road-building efforts.  |
| <b>11</b> | 107 | Encourage landowners to incorporate strategies into management plans that benefit priority species during technical guidance sessions.   |
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### Objectives for this guild.

#### **Objective 1**    Implement landscape level conservation projects in priority areas

##### **Highest priority conservation actions.**

- 80** Work with partners to prioritize land protection, acquisition, and restoration projects that work toward connecting blocks of habitat and restoring ecological processes.
- 83** Partner with appropriate agencies to encourage regional land use planning and cooperation on private lands (i.e. watershed management vs. individual property management).

##### **Performance measures.**

- Number of STWG-funded projects that occur in priority areas
- Number of all conservation projects implemented by partners in priority areas (e.g., Wetlands Reserve Program, U.S. Forest Service projects, etc.)

##### **Additional conservation actions for this objective.**

- 7** Work with partners to focus conservation projects in high priority areas.
- 85** Create a landscape ecologist position within Kentucky Department of Fish and Wildlife Resources.
- 82** Use Geographic Information Systems to identify gaps in habitat connectivity.

#### **Objective 2**    Reduce pace and impacts of urban sprawl

##### **Highest priority conservation actions.**

- 20** Identify and prioritize high ecological value areas most at risk to urban sprawl and protect from development through acquisition or conservation easements.
  - 19** Work with partners to develop new habitat or green space programs in high priority areas
  - 21** Partner with local governments to conserve lands outside city limits using "smart growth" tools, such as zoning, land use planning, and restricting infrastructure.
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## Appendix 3.8 Continued.

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### **Performance measures.**

- Acres of ecological significance threatened by urban sprawl that are protected

### **Additional conservation actions for this objective.**

- 22 Reduce development by working with partners to provide tax incentives to owners of undeveloped property
- 26 Create education programs about the importance of green spaces and their impact on quality of life, etc.

### **Objective 3**    Improve urban/suburban habitat for priority species

#### **Highest priority conservation actions.**

- 146 Create education programs to inform the public about the potential impacts of human disturbance to priority species (create signs, presentations, brochures, etc.).
- 25 Expand urban wildlife habitat programs (Kentucky Backyard Conservation Program, Backyard Wildlife, etc.) and create new urban habitat programs.
- 142 Work with industry and agencies to decrease impacts of man-made structures (communication towers, wind towers, buildings, powerlines, etc.) through use of wildlife-friendly structures and practices.

#### **Performance measures.**

- Number of urban/suburban habitat improvement projects for priority species
- Number of educational programs or tools (brochures, etc.) created and delivered to urban/suburban areas to teach about priority species

#### **Additional conservation actions for this objective.**

### **Objective 4**    Reduce mortality of priority species

#### **Highest priority conservation actions.**

- 41 Work with the KY Department of Transportation (DOT) and other agencies to incorporate wildlife friendly features (incorporate overpasses, signs, road barriers etc.) into construction and maintenance projects to decrease impacts to wildlife.

#### **Performance measures.**

- Number of projects utilizing wildlife friendly features
- Number of regulations and programs developed to reduce mortality of priority species
- Number of partners engaged in minimizing mortalities
- Number of management plans developed to mitigate disturbance and mortality

#### **Additional conservation actions for this objective.**

- 116 Identify specific location where predation is adversely affecting a species at risk and develop a management plan for that site.
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## Appendix 3.8 Continued.

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### **Objective 5**    Protection, restoration, and management of unique habitats

#### **Highest priority conservation actions.**

- 189** Work with the KY Department of Transportation (DOT) and other agencies to incorporate landscape-level planning (e.g. wildlife corridors, habitat connectivity) into infrastructure/road-building efforts.
- 107** Encourage landowners to incorporate strategies into management plans that benefit priority species during technical guidance sessions.

#### **Performance measures.**

- Number/acres of unique habitats restored, managed, and/or protected
- Number of technical guidance sessions in which management strategies for priority species are discussed with landowners
- Number of new infrastructure projects incorporating landscape-level planning into design and planning stages

#### **Additional conservation actions for this objective.**

- 97** Identify unique microhabitats important to priority species and acquire or protect through acquisition, easements, or cost-share programs.
  - 103** Create a unique habitat stewardship program.
  - 100** Create education program about the importance of unique microhabitats.
  - 99** Create new microhabitats on Kentucky Department of Fish and Wildlife Resources owned or managed lands that benefit priority species.
-