

Skylands Landscape

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The Skylands Landscape extends northwest of the Piedmont Plains, from the southern tip of Hunterdon County to the headwaters of the Ramapo River. The Skylands include all or parts of Hunterdon, Somerset, Warren, Morris, Passaic, and Sussex counties. The Delaware and the North and South Branch of the Raritan River are the prominent rivers and watershed regions in the Skylands.

A. Ecological Units in the Skylands Landscape

The Skylands run across the Hudson Valley, Lower New England, and Northern Appalachian Piedmont Sections. The Hudson Valley in the Skylands has two subsections, the Kittatinny-Shawangunk Ridges (or the Kittatinny Ridge in New Jersey) (221Bd) and the Hudson Limestone Valley (or the Kittatinny Valley). The Lower New England Section consists of two subsections in northwestern New Jersey, the Hudson Highlands (221Ae) and the Reading Prong (221Am). The Skylands also include a portion of the Gettysburg Piedmont Lowland (221Da) subsection of the Northern Appalachian Piedmont.

B. Geology and Climate

The Ridge and Valley, Highlands, and Piedmont physiographic provinces make up the foundation of the Skylands Landscape. Within the Ridge and Valley province, the Kittatinny Ridge is a steep ridge that spans across New Jersey into Pennsylvania and New York. It rises to more than 549 meters (1,801 feet) in elevation. The Kittatinny Valley is a very broad valley of shale and limestone that dips to 122 meters (400 feet) above sea level and lies between the Kittatinny Ridge and the northern extent of the Highlands province's gneiss and granite rocks. The Highlands province consists of the Reading Prong and the southern tip of the Hudson Highlands subsections. From southwest to northeast, broad uplands and narrow valleys of the Reading Prong give way to high hills above 427 meters (1,400 feet) with steep-sided valleys and

glacial lakes of the Hudson Highlands. To the southeast of the Highlands, the landscape opens up to the rolling hills and wide river valleys of the Gettysburg Piedmont Lowland subsection. The average temperature in the Skylands is between 8.9°C and 12.2°C (48 and 54 degrees F.) and the growing season varies between 130 and 180 days. The average annual precipitation is between 1,118mm (44 in.) and 1,270 mm (50 in.).

C. Habitats and Conservation Priority Areas of the Skylands Landscape

The Skylands are dominated by contiguous northern mixed-hardwoods forests, including oak, maple, birch, ash, hickory, hemlock, with white pine, pitch pine-scrub oak forests on the mountaintops, and hemlock ravines alongside mountain streams (252,550 hectares or 975 sq. mi. of forests and 42,778 hectares or 165 sq. mi. of forested wetlands). The valleys that lie between the ridges consist of cultivated fields, grasslands and meadows (91,250 hectares or 352 sq. mi.). It is important to note that habitats identified as “grassland” within the Landscape Map and throughout this document include agricultural lands and therefore, are not necessarily suitable habitats for grassland species. Similarly, scrub-shrub habitat is included in the “forest” and “forested wetlands” habitats on the Landscape Maps. Wetlands (14,608 hectares or 56 sq. mi.) include limestone fens, floodplains, spring-fed wetlands, and the largest concentration of glacial lakes in New Jersey. The Skylands’ large areas of public land and contiguous habitat from the Delaware River to the Kittatinny Ridge, Kittatinny Valley, Wawayanda State Park, and the Rockaway River present tremendous conservation opportunities, despite the pressures of expanding development from the New York metropolitan area (Figure 27).

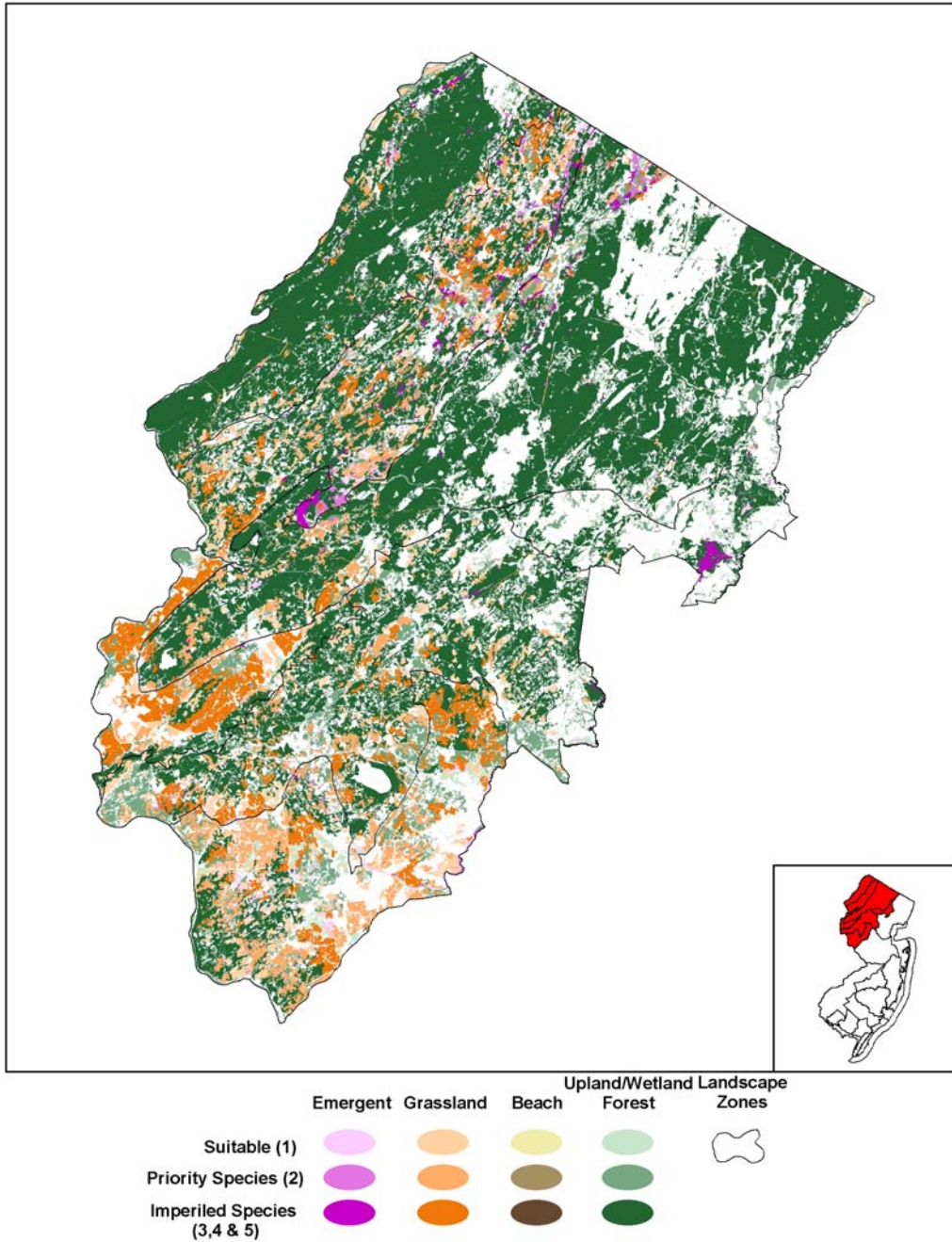
Seven Priority Conservation Zones are identified within the Skylands Region. The zones are delineated by the similarity of habitat types. A description of the habitat types and major land use/land cover types are found in each of the zone sections within this region.

- (1) Upper Delaware River Valley and Kittatinny Ridge
- (2) Kittatinny Valley
- (3) Northern Highlands
- (4) Delaware and Musconetcong River Valleys
- (5) Central Highlands
- (6) Urban Highlands
- (7) Southern Highlands

D. Wildlife of Greatest Conservation Need of the Skylands Landscape

The Skylands Landscape Region supports three federal endangered and threatened, 15 state endangered, 15 state threatened, and 67 special concern wildlife species. The only known hibernacula for the federal endangered Indiana bats occur in the region’s abandoned iron mines. Bog turtles persist on wet meadows and fens in the vast limestone valleys of the Skylands. The region provides riverine and wetland habitat for wood turtles and the only viable population of federal endangered dwarf wedgemussels in New Jersey. The large, contiguous tracts of northern hardwood forest in the Skylands Region are habitat for forest-interior wildlife, including cavity-nesting birds, interior forest nesting passerines, and raptors. Bobcats persist throughout the region in forests and forested wetlands that are not yet highly fragmented by development or agriculture. Rocky outcroppings along mountain ridges provide habitat for timber rattlesnakes. The agricultural landscape of the valleys provides habitat for grassland birds.

Figure 27. Critical landscape habitats within the Skylands Landscape and associated conservation zones as identified through the Landscape Map (v2).



Successful management of the Skylands Landscape is essential to preserving numerous species and suites of species in New Jersey, such as Indiana bat, forest-dwelling bats, bobcat, red-shouldered hawk, northern goshawk, barred owl, forest passerines, grassland birds, scrub-shrub birds, bog turtle, wood turtle, timber rattlesnake, blue-spotted salamander, long-tailed salamander, and dwarf wedgemussel. The majority of the state's remaining native brook trout populations occur in this region's high-water-quality streams. The Skylands Landscape plays a crucial role in the conservation of the following species or species groups: the northern copperhead, eastern box turtle, spotted turtle, northern spring salamander, and vernal pool breeders and special concern mussels. The Skylands Landscape plays an accessory role in the conservation of the Fowler's toad, freshwater wetland birds, and rare dragonflies, damselflies, moths and butterflies.

The Skylands Landscape is characterized by a broad array of habitat types that support a wide variety of wildlife species. Among the more prominent features of the region are the large, contiguous forests of the Kittatinny Ridge and Northern Highlands zones. These provide critical habitat for area-sensitive wildlife such as bobcats, forest-dwelling bats, woodland raptors, neotropical migrant songbirds, and timber rattlesnakes. The region's numerous limestone fens, vernal pools, and emergent, riparian and forested wetlands provide critical habitat for freshwater wetland birds, bog turtles, blue-spotted salamanders, and a host of other special concern reptiles and amphibians. The clear, unpolluted rivers and streams provide critical habitat for dwarf wedgemussels and other mollusks, wood turtles and long-tailed salamanders. The Kittatinny Valley has a rich history of agriculture and is characterized by open farmlands and smaller forest patches interspersed. Some larger forest patches persist throughout this zone and provide habitat for area-sensitive species. The Delaware and Musconetcong River Valley and Central and Southern Highlands zones contain more highly fragmented habitats that are dominated by agricultural fields and smaller forest patches. Relatively few areas remain in this zone that provide suitable habitat for area-sensitive forest-dwelling species.

Tables S1 – S8 (shown after *Threats to the Wildlife and Habitats of the Skylands Landscape Region*) list the wildlife of greatest conservation need, the suites of wildlife, and the conservation opportunity areas to conserve them in the Skylands. The wildlife are prioritized by federal endangered and threatened, state endangered, state threatened, and special concern status.

E. Threats to the Wildlife and Habitats of the Skylands Landscape Region

Loss, alteration and fragmentation of all habitat types within the Skylands Landscape pose the greatest threats to wildlife in this region. Habitat loss results from development and is occurring at an alarming rate in northern New Jersey. Fragmentation alters the habitat by breaking up large contiguous blocks into smaller patches that are unsuitable for area-sensitive species. New roads fragment habitats and create barriers to animal movements between habitats. Preserving the remaining large, contiguous blocks of habitat, and maintaining connectivity between them, is critical to the long-term viability of area-sensitive wildlife populations in the Skylands.

The discontinuity of emergent and forested wetlands along with the loss of other suitable corridors may eventually lead to the genetic bottlenecking of both bog turtles and spotted turtles. Contamination and alteration of waterways and wetlands, in combination with increased human encroachment into these riparian areas, affect all wetland dependent species and species groups.

Non-point source pollution, unrestricted livestock access, reduction in stream flows, stream cleaning activities, culvert construction and the persistence of dams all have an impact on riparian and riverine species. Human encroachment on wetland habitats often results in an increase in invasive and exotic flora becoming more dominant. These species often decimate native wetland plant communities and can have a deleterious effect on wetland hydrology that results in a loss of habitat value to wetland-dependent wildlife. Illegal collection for the pet trade remains an important problem for many of our rare turtle species.

Invasive, non-indigenous species often cause substantial ecological and economic problems. They frequently have competitive advantages because of the absence of predators, diseases and competitors that they evolved with in other ecosystems or because of more efficient mechanisms of reproduction, dispersal or use of resources. They occur in every broad habitat type that occurs in the state. Invasive, non-indigenous plants threaten species diversity, composition and structure of our fields, forests, wetlands, and aquatic habitats. Invasive, non-indigenous invertebrates such as zebra mussels and Asiatic clams have the potential to adversely impact aquatic habitats and species. Plants such as the Eurasian water-milfoil and vertebrates such as the northern snakehead threaten our aquatic resources and habitats. Emerald ash borer and Asian longhorn beetles have the potential to severely damage our forests and wildlife habitat. Diseases such as West Nile virus have already impacted certain avian species.

New Jersey's burgeoning white-tailed deer population poses a significant threat to forest health and forest regeneration. Especially in portions of the region where there is a paucity of public land where hunting is permitted. Deer damage coupled with anthropogenic (caused by man) factors has severely impacted some of New Jersey's remaining public and private natural lands where hunting is not permitted. High numbers of deer find refuge in residential areas or on public and private land where hunting is not allowed. Over-browsing by deer can eliminate native shrub layers and damage breeding habitat for many species, particularly shrub-nesting birds. In addition, over-browsing by deer can create an environment conducive for invasive plants to germinate and crowd out native species and can eliminate rare plant communities.

Increased use of caves and mines for recreational activities poses a major threat to hibernating Indiana and other cave-dwelling bats because it forces them to use crucial fat reserves needed to survive the winter. During hibernation, cave-dwelling bats are highly susceptible to large-scale mortality due to vandalism.

Although New Jersey has an aggressive open space acquisition program, a large portion of critical wildlife habitat in this region remains in private ownership. This accentuates the need to protect, maintain, and enhance critical wildlife habitat on private lands. Without success in this arena we cannot adequately conserve rare species over the long term. With the recent passage of the Highlands Water Protection and Planning Act (Highlands Act), areas that lie within the designated Preservation Area will be afforded additional protection. It is still too early to predict how the Highlands Act will affect municipal land use and land preservation within the Skylands Landscape Region. However, the Highlands Act will result in additional protection for critical wildlife habitat in areas that lie within the Preservation Area. In the short term this will be accomplished through strict limitations on impervious cover; limitations on development on steep slopes, in forested areas, within 300-foot buffers of all water bodies, and in flood areas; and

implementation of Category One water quality protections on all Highlands waters. The Division of Fish and Wildlife will work with the Highlands Council to identify critical wildlife habitat through the use of the Landscape Project maps.

Prioritized List of the Wildlife of Greatest Conservation Need and their Location in the Skylands Landscape

Table S1. Federal Endangered and Threatened Species*

Common Name	Federal Status & Regional Priority	Upper Delaware River Valley and Kittatinny Ridge	Kittatinny Valley	Northern Highlands	Delaware and Musconetcong River Valleys	Central Highlands	Urban Highlands	Southern Highlands
Mammals								
Indiana bat	E	R**	R**	I		R**	R**	
Reptiles								
Bog turtle	T	I	I	I	I	I		I
Mollusks								
Dwarf wedgemussel	E & RP	I	I					
Insects								
American burying beetle ♦	E		R		R	R		R
Mitchell's satyr ♦	E		R					

*All Federal Endangered and Threatened species have an Endangered status on the NJ List of Endangered Wildlife

**Potential presence.

♦ Only historic records exist, species believed to be extirpated.

T: Federally threatened species.

E: Federally endangered species.

RP: Species is of regional priority; currently only mammals, reptiles, and insects are not identified due to information gaps.

M: Maintain population, species occurs within specific habitat(s) of landscape region.

I: Increase and stabilize population, species occurs within specific habitat(s) of landscape region.

R: Research and restore population, suitable habitat, species presence unknown.

Table S2. State Endangered Species

Common Name	Regional Priority	Upper Delaware River Valley and Kittatinny Ridge	Kittatinny Valley	Northern Highlands	Delaware and Musconetcong River Valleys	Central Highlands	Urban Highlands	Southern Highlands
Mammals								
Allegheny woodrat		R		R				
Bobcat		I	I	I		I	I	
Birds								
American bittern	RP	I	I	I		I		
Bald eagle	T	I	I	I		I		
Northern goshawk		I		I				
Northern harrier		I	I	I	I	I	I	I
Peregrine falcon		R						
Pied-billed grebe	RP	I	I	I			I	
Red-shouldered hawk		I	I	I		I	I	
Sedge wren	RP		I	I				
Short-eared owl	RP		R		R	R	R	R

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State Endangered Species (continued)

Common Name	Regional Priority	Upper Delaware River Valley and Kittatinny Ridge	Kittatinny Valley	Northern Highlands	Delaware and Musconetcong River Valleys	Central Highlands	Urban Highlands	Southern Highlands
Birds (continued)								
Upland sandpiper	RP		R		I	I		I
Vesper sparrow		I	I	I	I	I		I
Reptiles								
Timber rattlesnake		I	I	I				
Amphibians								
Blue-spotted salamander			I				I	
Mollusks								
Brook floater	RP	I						
Green floater	RP						R	R
Insects								
Appalachian grizzled skipper		R*	R*		R*		R*	R*
Arogos skipper				I		R		

*Only historic records exist. Species believed to be extirpated.

RP: Species is of regional priority; currently only mammals, reptiles, and insects are not identified due to information gaps.

M: Maintain population, species occurs within specific habitat(s) of landscape region.

I: Increase and stabilize population, species occurs within specific habitat(s) of landscape region.

R: Research and restore population, suitable habitat, species presence unknown.

Table S3. State Threatened Species

Common Name	Regional Priority	Upper Delaware River Valley and Kittatinny Ridge	Kittatinny Valley	Northern Highlands	Delaware and Musconetcong River Valleys	Central Highlands	Urban Highlands	Southern Highlands
Birds								
Barred owl		I	I	I		I	I	
Black-crowned night-heron	RP	I	I	I			R	
Bobolink	RP	I	I	I	I	I		I
Cooper's hawk	RP	M	M	M	M	M	M	M
Grasshopper sparrow	RP	I	I	I	I	I		I
Long-eared owl		I	I	I		I	I	I
Osprey		R	R	I	I	I		I
Red-headed woodpecker	RP	I	I	I	I	I	I	
Savannah sparrow		I	I	I	I	I		I
Reptiles								
Wood turtle		I	I	I	I	I	I	I
Amphibians								
Long-tailed salamander		I	I	I	I			I
Mollusks								
Eastern lampmussel			I					

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State Threatened Species (continued)

Common Name	Regional Priority	Upper Delaware River Valley and Kittatinny Ridge	Kittatinny Valley	Northern Highlands	Delaware and Musconetcong River Valleys	Central Highlands	Urban Highlands	Southern Highlands
Mollusks (continued)								
Tidewater mucket	RP	R	R	R	R	R	R	R
Common Name	Regional Priority	Upper Delaware River Valley and Kittatinny Ridge	Kittatinny Valley	Northern Highlands	Delaware and Musconetcong River Valleys	Central Highlands	Urban Highlands	Southern Highlands
Mollusks (continued)								
Triangle floater			I					
Yellow lampmussel	RP	M	M	M	M	M	M	M
Insects								
Silver-bordered fritillary		I	I	I				

RP: Species is of regional priority; currently only mammals, reptiles, and insects are not identified due to information gaps.

M: Maintain population, species occurs within specific habitat(s) of landscape region.

I: Increase and stabilize population, species occurs within specific habitat(s) of landscape region.

R: Research and restore population, suitable habitat, species presence unknown.

Table S4. Nongame Species of Conservation Concern

Common Name	Conservation Status	Upper Delaware River Valley and Kittatinny Ridge	Kittatinny Valley	Northern Highlands	Delaware and Musconetcong River Valleys	Central Highlands	Urban Highlands	Southern Highlands
Mammals								
Eastern small-footed bat	RP			I				
Eastern red bat	RP	R*	R*	R*	R	R*	R*	R*
Hoary bat	RP	R*	R*	R*	R*	R*	R*	R*
Long-tailed (Rock) shrew	RP	R						
Silver-haired bat	RP	R*	R*	R	R*	R*	R*	R*
Southern bog lemming	RP		R	R				
Birds								
Acadian flycatcher	RP	I	I	I	I	I		I
American golden-plover		M	M		M	M	M	
American kestrel	SC	I	I	I	I	I		I
Baltimore oriole	RP	I	I	I	I	I	I	I
Black-and-white warbler	RP	I	I	I	I	I	I	I
Black-billed cuckoo	RP	I	I	I		I		
Blackburnian warbler	RP	M		M				
Black-throated blue warbler	RP	M		M		M		
Black-throated green warbler	SC	I	I	I				
Blue-headed vireo (Solitary vireo)	SC	I		I				
Blue-winged warbler	RP	M	M	M	M	M	M	M

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Nongame Species of Conservation Concern (continued)

Common Name	Conservation Status	Upper Delaware River Valley and Kittatinny Ridge	Kittatinny Valley	Northern Highlands	Delaware and Musconetcong River Valleys	Central Highlands	Urban Highlands	Southern Highlands
Birds (continued)								
Broad-winged hawk	SC/ RP	M		M		M		
Brown thrasher	RP	I	I	I	I	I	I	I
Canada warbler	SC/ RP	I	I	I				
Cerulean warbler	SC/ RP	I	I	I	I	I		
Chimney swift	RP	I	I	I	I	I	I	I
Cliff swallow	SC	M	M	M	R	M	R	M
Common barn owl	SC	R	R		R	R	R	R
Common nighthawk	SC	R	R	R	R	R	R	R
Eastern kingbird	RP	I	I	I	I	I	I	I
Eastern meadowlark	SC/ RP	I	I	I	I	I		I
Eastern screech-owl	RP	M	M	M	M	M	M	M
Eastern towhee	RP	I	I	I	I	I	I	I
Eastern wood-pewee	RP	I	I	I	I	I	I	I
Field sparrow	RP	I	I	I	I	I	I	I
Golden-winged warbler	SC/ RP	I	I	I				
Gray catbird	RP	M	M	M	M	M	M	M
Gray-cheeked thrush	SC	M	M	M	M	M	M	M
Great blue heron	SC/ RP	M	M	M	M	M	M	M
Great crested flycatcher	RP	M	M	M	M	M	M	M
Green heron	RP	M	M	M	M	M	M	M
Hooded warbler	RP	M		M		M		M
Horned lark	SC	M	M					
Indigo bunting	RP	I	I	I	I	I	I	I
Kentucky warbler	SC/ RP	I	I		I	I		I
King rail	SC/ RP		I			I	I	
Least bittern	SC/ RP	I	I	I		I	I	
Least flycatcher	SC/ RP	I	I	I	I			
Louisiana waterthrush	RP	I	I	I		I		I
Marsh wren	RP			M		M		
Northern flicker	RP	M	M	M	M	M	M	M
Northern parula	SC	M	M	M		M		M
Pine warbler	RP	M	M	M		M	M	
Prairie warbler	RP	I	I	I	I	I	I	I
Purple finch	RP	I	I	I	I	I		I
Rose-breasted grosbeak	RP	I	I	I	I	I	I	I
Scarlet tanager	RP	M	M	M	M	M	M	M
Sharp-shinned hawk	SC/ RP	M		M	M	M		M
Spotted Sandpiper	SC	M		M	M			
Veery	SC	I	I	I	I	I	I	I
Whip-poor-will	RP	R	R	R				
Willow flycatcher	RP	I	I	I	I	I	I	I

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Nongame Species of Conservation Concern (continued)

Common Name	Conservation Status	Upper Delaware River Valley and Kittatinny Ridge	Kittatinny Valley	Northern Highlands	Delaware and Musconetcong River Valleys	Central Highlands	Urban Highlands	Southern Highlands
Birds (continued)								
Winter wren	SC	M		M				
Wood thrush	RP	I	I	I	I	I	I	I
Worm-eating warbler	RP	I	I	I	I	I		I
Yellow-billed sapsucker	RP	M	M	M	M	M	M	M
Yellow-billed cuckoo	RP	I	I	I	I			
Yellow-breasted chat	SC/RP	I	I	I				
Yellow-throated vireo	RP	M	M	M	M	M	M	M
Yellow-throated warbler	RP	M	M	M	M	M	M	M
Reptiles								
Eastern box turtle	SC	M	M	M	M	M	M	M
Northern copperhead	SC	M	R	M		M	M	M
Eastern hognose snake	RP	M	M	M				
Eastern ribbon snake	RP	M	M	M	M	M	M	M
Spotted turtle	SC	M	M	M		M	M	M
Amphibians								
Carpenter frog	SC			M	M	M		M
Fowler's toad	SC	M	M	M	M	M	M	M
Jefferson salamander	SC	M	M	M		M	M	M
Marbled salamander	SC	M	M	M		M	M	M
Northern spring salamander	SC	M	M	M	M	M		M
Mollusks								
Creeper	SC	I	I					
Insects								
Extra-striped snaketail		X						
Harris's checkerspot	SC			M				
New England bluet		X	X	X				
Northern metalmark	SC	M	M					
A noctuid moth (<i>Cucullia alfarata</i>)			X					
2-spotted skipper				X				
Clubtail dragonfly		X			X			
Pitcher plant borer moth			X					
Schweitzer's buckmoth			X	X				

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Nongame Species of Conservation Concern (continued)

Common Name	Conservation Status	Upper Delaware River Valley and Kittatinny Ridge	Kittatinny Valley	Northern Highlands	Delaware and Musconetcong River Valleys	Central Highlands	Urban Highlands	Southern Highlands
Fish								
American brook lamprey**	RP	I	I	I	I	I	I	I
Bridle shiner	RP	I	I	I		I		I

*Potential presence.

**Species are also recognized as target species of ecoregional concern by the Nature Conservancy-NJ Chapter.

SC: Species of special concern as identified within the state.

RP: Species is of regional priority; currently only mammals, reptiles, and insects are not identified due to information gaps.

M: Maintain population, species occurs within specific habitat(s) of landscape region.

I: Increase and stabilize population, species occurs within specific habitat(s) of landscape region.

R: Research and restore population, suitable habitat, species presence unknown.

X: Species present. Management strategy not yet determined.

Table S5. Game Species of Regional Priority

Note: Species identified within the table have seasonal harvests within New Jersey.

Common Name	Regional Priority	Upper Delaware River Valley and Kittatinny Ridge	Kittatinny Valley	Northern Highlands	Delaware and Musconetcong River Valleys	Central Highlands	Urban Highlands	Southern Highlands
Birds								
American black duck	RP	I	I	I	I	I	I	I
Canada goose (Atlantic population)	RP	M	M	M	M	M	M	M
Wood duck	RP	M	M	M	M	M	M	M
American woodcock	RP	I	I	I	I	I	I	I
Northern bobwhite quail	RP				R	R		R
Virginia rail	RP	R	R	R	R	R	R	R
Fish								
Brook trout*	RP	I	I	I	I	I		

*Species is a New Jersey game species, but is also an excellent indicator of water quality.

RP: Species of regional priority; currently mammals, reptiles, and insects are not identified due to information gaps.

M: Maintain population, species occurs within specific habitat(s) of landscape region.

I: Increase and stabilize population, species occurs within specific habitat(s) of landscape region.

R: Research and restore population, suitable habitat, species presence unknown.

Table S6. Fish Species

Note: Species identified within the table are nongame species within New Jersey, currently without state or regional status.

Common Name	Upper Delaware River Valley and Kittatinny Ridge	Kittatinny Valley	Northern Highlands	Delaware and Musconetcong River Valleys	Central Highlands	Urban Highlands	Southern Highlands
Fish							
Comely shiner					X		X
Cutlips minnow	X	X	X	X	X	X	X
Hickory shad					X		X
Ironcolor shiner			X				
Margined madtom	X	X		X	X	X	X
Northern hogsucker	X						
Shield darter	X			X	X		X
Slimy sculpin	X	X	X	X	X	X	X

X: Species present. Management strategy not yet determined.

Table S7. Game Species

Note: Species identified within the table have seasonal harvests within New Jersey and currently are not identified as regional priority species, but they are considered by NJDFW to be species of concern.

Common Name	Regional Priority	Upper Delaware River Valley and Kittatinny Ridge	Kittatinny Valley	Northern Highlands	Delaware and Musconetcong River Valleys	Central Highlands	Urban Highlands	Southern Highlands
Mammals								
River otter	-	M	M	M	M	M	M	M
Birds								
Ruffed grouse	-	R	R	R	R	R	R	R
Sora rail	-	R	R	R	R	R	R	R
Fish								
Brown trout*	-	I	I	I	I	I		
Rainbow trout*	-	I	I	I	I			

* Species are not native to New Jersey. Established breeding populations exist due to stocking for recreational use.

M: Maintain population, species occurs within specific habitat(s) of landscape region.

I: Increase and stabilize population, species occurs within specific habitat(s) of landscape region.

R: Research and restore population, suitable habitat, species presence unknown.

X: Species present. Management strategy not yet determined.

Table S8. Suites of Wildlife and their Location in the Skylands Landscape

Common Name	Upper Delaware River Valley and Kittatinny Ridge	Kittatinny Valley	Northern Highlands	Delaware and Musconetcong River Valleys	Central Highlands	Urban Highlands	Southern Highlands
Mammals							
Forest-dwelling Large Mammals	X	X	X		X		
Forest-dwelling Bats	X	X	X	X	X	X	X
Birds							
Interior-forest Cavity-nesters	X	X	X	X	X		
Savannah and Forest-edge Habitat Cavity Nesters	X	X	X	X	X	X	X
Chimney Swift	X	X	X	X	X	X	X
Cliff Swallow	X	X	X				X
Colonial Waterbirds	X	X	X	X	X	X	
Common Nighthawk	X	X	X	X	X	X	X
Forest Passerines	X	X	X	X	X	X	X
Freshwater Wetland Birds	X	X	X	X	X	X	
Grassland Birds	X	X	X	X	X		X
Migratory Songbirds and Raptors	X	X	X	X	X	X	X
Peregrine Falcon	X						
Forest Raptors	X	X	X	X	X	X	
Scrub-shrub/Open Field (3-7 yrs) Birds	X	X	X	X	X	X	X
Early Succession (0 -3 years) Open Field Birds	X	X		X	X	X	X
Waterfowl	X	X	X	X	X	X	X
Reptiles							
Forest-dwelling Reptiles	X	X	X	X	X	X	X
Reptile Inhabitants of Wetland, Marsh and Bog	X	X	X	X	X	X	X
Reptiles Associated with water (lakes, ponds, streams)	X	X	X	X	X	X	X
Reptiles of Special Concern	X	X	X	X	X	X	
Amphibians							
Amphibians of Special Concern	X	X	X	X	X	X	
Vernal Pool and Vernal Sinkhole Breeders	X	X	X	X	X	X	X
Limestone Fen Inhabitants		X	X				
Mollusks							
Mollusks of Special Concern	X	X					
Insects							
Lepidoptera of Federal or State Legal Status			X				

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Suites of Wildlife and their Location in the Skylands Landscape (continued)

Common Name	Upper Delaware River Valley and Kittatinny Ridge	Kittatinny Valley	Northern Highlands	Delaware and Musconetcong River Valleys	Central Highlands	Urban Highlands	Southern Highlands
Insects (continued)							
Lepidoptera of Special Concern		X	X				
Odonata of Special Concern	X	X	X				

X: Species occurs within the identified habitat.