

Pinelands Landscape

Contents of the Chapter on the Pinelands Landscape

- A. *Ecological Units in the Pinelands Landscape*
- B. *Geology and Climate*
- C. *Habitats*
- D. *Wildlife of Greatest Conservation Need*
- E. *Threats to Wildlife and Habitats of the Pinelands Landscape Region*
- F. *Conservation Zones, Assessments, and Strategies*
 - 1. *Southern Pinelands*
 - a. *Habitats*
 - b. *Wildlife of Greatest Conservation Need*
 - c. *Threats to Wildlife and Associated Habitats*
 - d. *Conservation Goals*
 - e. *Conservation Actions*
 - f. *Partnerships to Deliver Conservation*
 - g. *Monitoring Success*
 - 2. *Western Pinelands*
 - 3. *Mullica River Watershed*
 - 4. *Northern Pinelands*

The Pinelands Landscape, or the “Pine Barrens,” is the vast tract of pitch-pine forest that extends from the Atlantic coast into south-central New Jersey. The Pinelands extend through Ocean, Burlington, Camden, Gloucester, and Atlantic counties, with a total area equaling 474,331 hectares (1,831 sq. mi.). The Great Egg Harbor and Mullica Rivers and the Barnegat Bay watershed are the largest aquatic features of the Pinelands.

A. Ecological Units in the Pinelands Landscape

The Pinelands are within the New Jersey Outer Coastal Plain (232Ab) in the Middle Atlantic Coastal Plain Section.

B. Geology and Climate

The Pinelands are within the Coastal Plain physiographic province. The Pinelands have broad valleys that gently rise from the Atlantic coast to hills no higher than 60 meters (196 feet). The average temperature across the Pinelands is between 10 to 12° C (50 to 53.6° F) and the growing season varies from 180 to 225 days. The annual precipitation averages between 101 and 116 cm (39 and 45 inches).

C. Habitats and Conservation Priority Areas of the Pinelands Landscape

The Pinelands (Figure 22) stretch to the vast tidal salt marshes before the barrier islands and to the inner coastal plain along the west, with the Delaware Bay landscape to the south and the Piedmont Plains to the north. Pitch pine-oak forests dominate the Pinelands (318,542 hectares, 1,229 sq. mi.) and these forests are plentiful with wetlands – sluggish streams, white cedar swamps, hardwood swamps, cranberry bogs – and open to broad tidal estuaries before the Atlantic coast (18,269 hectares or 70 sq. mi. of wetlands). Upland agriculture and grasslands make up 35,782 hectares (138 sq. mi.) of the Pinelands. 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.

State law has protected the Pinelands ecosystem and its unique wildlife and habitats since 1979, when the New Jersey Legislature passed the Pinelands Protection Act. This action followed the passing of federal legislation in 1978, which directed New Jersey to establish a Commission for the Pinelands and to allocate funds for land acquisition and planning in this region.

Development within most of the Pinelands National Reserves is now overseen by the Pinelands Commission, which controls growth pursuant to its Comprehensive Management Plan (CMP).

Conservation Zones in the Pinelands Landscape are:

- (1) Southern Pinelands
- (2) Western Pinelands
- (3) Mullica River Watershed
- (4) Northern Pinelands

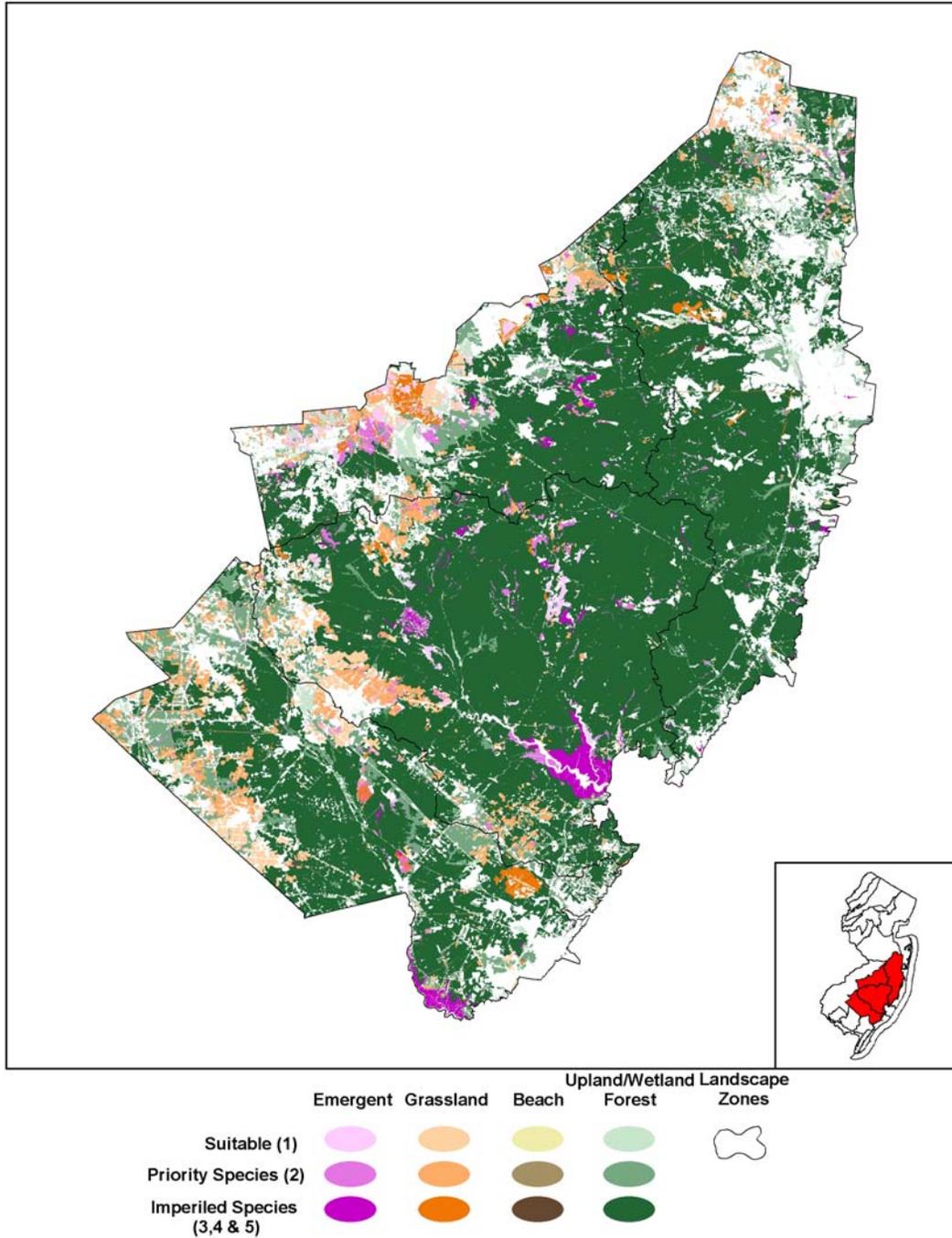
Within the Pinelands Landscape Region, conservation zones are delineated by watershed boundaries (Watershed Management Areas or WMAs), which the New Jersey Department of Environmental Protection’s Division of Watershed Management has established. The Southern Pinelands Zone is comprised mainly of the Great Egg Harbor Watershed (WMA 15), but also contains a small portion of the northern edge of the Maurice, Salem, Cohansey Watershed (WMA 17). The Western Pinelands Zone contains a very small portion of the Lower Delaware Watershed (WMA 18), with the remainder of the zone made up of the Rancocas Watershed (WMA 19) and the Assiscunk, Crosswicks, Doctors Watershed (WMA 20). The largest of the four zones in this region is the Mullica River Watershed Zone, which is comprised entirely of the Mullica Watershed (WMA 14). The Northern Pinelands Zone is primarily contained within the Barnegat Bay Watershed (WMA 13), but also includes a small portion of the Monmouth Watershed (WMA12) and Lower Raritan, South River, Lawrence Watershed (WMA 9).

D. Wildlife of Greatest Conservation Need of the Pinelands Landscape

With its unique habitats, the Pinelands Landscape is host to several threatened and endangered species that are found in few other areas of New Jersey. Species such as Pine Barrens treefrog, corn snake, timber rattlesnake, arogos skipper, and pine snake occur as disjunct populations in the Pinelands, with no natural connections to other populations of these species. This high degree of isolation makes proper habitat management of the Pinelands Landscape essential for the long-term viability of these species in New Jersey. The large contiguous forest patches of the Pinelands are also important for nesting forest passerines and as migratory bird stopovers. This landscape region is therefore crucial for the viability of these species as well. The habitats in the Pinelands play an accessory role for species and species groups such as eastern box turtles, northern diamondback terrapins, grassland birds, and osprey.

The Pinelands support one federal threatened species, 12 state endangered species, 15 state threatened species, and more than 60 special concern/regional priority wildlife species. The

Figure 22. Critical landscape habitats within the Pinelands Landscape and associated conservation zones as identified through the Landscape Map (v2).



Pinelands host a number of imperiled habitat-specialists, including corn snake, northern pine snake, and Pine Barrens treefrog. Bald eagles, cavity-nesters, forest passerines, raptors and scrub-shrub/open field birds inhabit the forests and fields of this region. Coastal plain milk snakes, eastern box turtles, eastern kingsnakes, spotted turtles, timber rattlesnakes, wood turtles, Cope’s gray treefrogs, carpenter frogs, Fowler’s toads, and marbled salamanders populate the pine forests, forested wetlands, meandering streams, swamps, and bogs. The region’s forests and riparian areas are also known to host populations of forest-dwelling bats and may contain habitat suitable for summer colonies of Indiana bats. Finally, the Pinelands have large tracts of suitable habitat capable of supporting remnant bobcat populations.

The following tables list the wildlife of greatest conservation need, the suites of wildlife, and the conservation opportunity areas to conserve them in the Pinelands Landscape. The wildlife are prioritized by federal endangered and threatened, state endangered, state threatened, and special concern and regional priority status.

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

Table P1. Federal Endangered and Threatened Species*

Common Name	Fed Status & Regional Priority	Southern Pinelands	Western Pinelands	Mullica River Watershed	Northern Pinelands
Mammals					
Indiana bat	E	R**	R**	R**	R**
Reptiles					
Bog turtle	T		I		I

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

**Potential presence.

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 P2. State Endangered Species

Common Name	Regional Priority	Southern Pinelands	Western Pinelands	Mullica River Watershed	Northern Pinelands
Mammals					
Bobcat					R
Birds					
American bittern	RP		I		
Bald eagle	T	I	I	I	I
Black skimmer	RP	M		M	M
Least Tern	RP				M
Red-shouldered hawk		I	I	I	I
Upland sandpiper	RP	I			I
Vesper sparrow			I		I
Reptiles					
Corn snake				I	I
Timber rattlesnake			I	I	I
Amphibians					
Cope’s gray treefrog					I

NJ Wildlife Action Plan: 01/23/08

State Endangered Species (continued)

Common Name	Regional Priority	Southern Pinelands	Western Pinelands	Mullica River Watershed	Northern Pinelands
Insects					
Arogos skipper			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 P3. State Threatened Species

Common Name	Regional Priority	Southern Pinelands	Western Pinelands	Mullica River Watershed	Northern Pinelands
Birds					
Barred owl		I	I	I	I
Black-crowned night heron	RP	I		I	I
Bobolink		I	I		
Cooper's hawk	RP	I	I	I	I
Grasshopper sparrow	RP	M	M		X
Osprey		M		M	M
Red-headed woodpecker	RP	I	I	I	I
Savannah sparrow			M		X
Yellow-crowned night heron	RP	M			
Reptiles					
Northern pine snake		I	I	I	I
Wood turtle					I
Amphibians					
Eastern mud salamander			R	R	
Pine Barrens Treefrog		I	I	I	I
Invertebrates					
Frosted Elfin		I			
Silver-bordered fritillary			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 P4. Nongame Species of Conservation Concern

Common Name	Conservation Status	Southern Pinelands	Western Pinelands	Mullica River Watershed	Northern Pinelands
Mammals					
Eastern red bat	RP	R*	R*	R*	R*
Eastern small-footed myotis	S1, G3	R*	R*	R*	R*
Hoary bat	RP	R*	R*	R*	R*
Marsh rice rat	S3, G5	X	X	X	X
Silver-haired bat	RP	R*	R*	R*	R*
Southern bog lemming	S2, G5	X	X	X	X
Birds					
Acadian flycatcher	RP	M	M	M	M
American kestrel	SC	I	I	I	I
Baltimore oriole	RP	I	I	I	I
Black-and-white warbler	RP	I	I	I	I
Black-billed cuckoo	RP	I	I	I	I
Black-throated green warbler	SC	I	I		I
Blue-winged warbler	RP	I	I	I	I
Broad-winged hawk	SC/ RP	M	M	M	M
Brown thrasher	RP	M	M	M	M
Cattle Egret	RP	M			
Cerulean warbler	SC/ RP	M			M
Common Barn owl	SC	I	I	I	I
Common nighthawk	SC	M	M	M	M
Dickcissel	RP		M	M	
Eastern kingbird	RP	M	M	M	M
Eastern meadowlark	SC/ RP	M	M	M	M
Eastern screech-owl	RP	M	M	M	M

NJ Wildlife Action Plan: 01/23/08

Nongame Species of Conservation Concern (continued)

Common Name	Conservation Status	Southern Pinelands	Western Pinelands	Mullica River Watershed	Northern Pinelands
Birds (continued)					
Eastern towhee	RP	I	I	I	I
Eastern wood-pewee	RP	I	I	I	I
Field sparrow	RP	I	I	I	I
Gray catbird	RP	M	M	M	M
Great blue heron	SC/ RP	M	M	M	M
Great crested flycatcher	RP	I	I	I	I
Great egret	RP	M	M	M	M
Green heron	RP	M	M	M	M
Hooded warbler	RP	M	M	M	
Horned lark	SC	M	M		M
Indigo bunting	RP	M	M	M	M
Kentucky warbler	SC/ RP	I	I	I	
King rail	SC/ RP	M	M	M	
Least flycatcher	SC/ RP	I		I	I
Little blue heron	SC/ RP	M		M	M
Louisiana waterthrush	RP	M	M	M	M
Marsh wren	RP	M		M	M
Northern flicker	RP	I	I	I	I
Northern parula	SC	M	M	M	M
Pine warbler	RP	M	M	M	M
Prairie warbler	RP	I	I	I	I
Prothonotary warbler	RP	I	I	I	
Rose-breasted grosbeak	RP	I	I	I	I
Saltmarsh sharp-tailed sparrow	RP	M		M	M
Scarlet tanager	RP	I	I	I	I
Seaside sparrow	RP	M		M	M
Snowy egret	SC/ RP	M		M	M
Spotted sandpiper	SC	M	M	M	M
Tricolored heron	SC/ RP	M		M	M
Veery	SC	I	I	I	
Whip-poor-will	RP	I	I		I
Wood thrush	RP	I	I	I	I
Worm-eating warbler	RP	M	M	M	M
Yellow-billed cuckoo	RP	I	I	I	I
Yellow-breasted chat	SC/ RP	M	M	M	M
Yellow-throated vireo	RP	I	I	I	I
Yellow-throated warbler	RP	M		M	M
Reptiles					
Coastal plain milk snake	SC	M	M	M	M
Eastern box turtle	SC	M	M	M	M
Eastern kingsnake	SC	M	M	M	M
Northern diamondback terrapin	SC	M		M	M
Spotted turtle	SC	M	M	M	M
Amphibians					
Carpenter frog	SC	M	M	M	M
Fowler's toad	SC	M	M	M	M
Marbled salamander	SC	M		M	M
Northern Spring Salamander	SC				M
Insects					
A geometrid moth <i>Idaea violacearia</i>	S1S3, G4			M	
A geometrid moth <i>Metarranthis sp 1</i>	S2, G3		M		
A noctuid moth <i>Apharetra dentata</i>	S2S3, G4		M	M	M
A noctuid moth <i>Macrochilo louisiana</i>	S2S3, G4			M	
A noctuid moth <i>Macrochilo sp 1</i>	S3, G3		M		
A noctuid moth <i>Meropleon cosmion</i>	S1S2, G4			M	

NJ Wildlife Action Plan: 01/23/08

Nongame Species of Conservation Concern (continued)

Common Name	Conservation Status	Southern Pinelands	Western Pinelands	Mullica River Watershed	Northern Pinelands
Insects (continued)					
A noctuid moth <i>Chytonix sensilis</i>	S1S3, G4			M	
A slugmoth <i>Monoleuca semifascia</i>	S2S3, G4G5	M			
A spanworm <i>Itame sp 1</i>	S3, G3		M	M	M
Buchholz's gray <i>Hypomecis buchholzaria</i>	S3, G3G4		M	M	M
Carter's noctuid moth <i>Spartiniphaga carterae</i>	S2, G2G3		M	M	M
Chain fern borer moth <i>Papaipema stenocelis</i>	S3, G4	M		M	
Daecke's pyralid moth <i>Crambus daeckellus</i>	S1S3, G1G3		M		M
Doll's merolonche <i>Merolonche dolli</i>	S1S3, G3G4		M	M	M
Dotted skipper <i>Hesperia attalus</i>	SC, S2S3, G3G4	M	M	M	M
Granitosa fern moth <i>Callopietria granitosa</i>	S2S3, G4G5		M	M	
Hessel's hairstreak <i>Callophrys hesseli</i>	SC, S3S4, G3G4			M	M
Lemmer's pinion moth <i>Lithophane lemmeri</i>	S2, G3G4	M		M	M
Pine Barrens bluet <i>Enallagma recurvatum</i>	S3, G3		M	M	M
Pine Barrens zale <i>Zale sp 1</i>	S3, G3Q			M	M
Pink streak <i>Faronta rubripennis</i>	S3, G3G4	M	M		M
Pitcher plant borer moth <i>Papaipema appassionate</i>	S2S3, G4			M	
Placentia tiger moth <i>Grammia placentia</i>	S1S3, G4		M	M	M
Rare skipper <i>Problema bulenta</i>	S2, G2G3			M	
Scarlet bluet <i>Enallagma pictum</i>	S3, G3	M	M	M	M
Southern ptichodis <i>Ptichodis bistrigata</i>	S1S3, G3			M	M
The consort, or consors underwing <i>Catocala consors sorsconi</i>	S1S3, G4			M	
Two-spotted skipper <i>Euphyes bimacula</i>	SC, S3, G4		M	M	M
Fish					
American brook lamprey**	RP		X		
Banded sunfish**	RP	X	X	X	X
Black-banded sunfish	RP	X	X	X	X
Mud sunfish	RP	X	X	X	X

*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.

S & G: Conservation Ranks defined in Appendix I

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 P5. Game Species of Regional Priority

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

Common Name	Species of Regional Priority	Southern Pinelands	Western Pinelands	Mullica River Watershed	Northern Pinelands
Birds					
American black duck	RP	I	I	I	I
American woodcock	RP	I	I	I	I
Canada goose (Atlantic population)	RP	M	M	M	M
Northern bobwhite	RP	R	R	R	R
Virginia rail	RP	R	R	R	R
Wood duck	RP	M	M	M	M

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 P6. Fish Species

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

Common Name	Regional Priority	Southern Pinelands	Western Pinelands	Mullica River Watershed	Northern Pinelands
Fish					
Ironcolor shiner	-	X			
Margined madtom	-		X		
Pirate perch	-	X	X	X	X
Shield darter	-				X

X: Species present. Management strategy not yet determined.

Table P7. 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	Southern Pinelands	Western Pinelands	Mullica River Watershed	Northern Pinelands
Mammals					
River otter	-	M	M	M	M
Birds					
Ruffed grouse	-	R	R	R	R
Sora rail	-	R	R	R	R

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 P8. Suites of Wildlife and their Location in the Pinelands Landscape

Common Name	Southern Pinelands	Western Pinelands	Mullica River Watershed	Northern Pinelands
Mammals				
Forest Dwelling Bats	X	X	X	X
Birds				
Beach-nesting Birds			X	X
Interior-forest Cavity-nesters	X	X	X	X
Savannah and Forest-edge Habitat Cavity-nesters	X	X	X	X
Coastal High Marsh Birds	X		X	X
Coastal Low Marsh Birds	X		X	X
Colonial Waterbirds	X	X	X	X
Forest Passerines	X	X	X	
Forest Raptors	X	X	X	X
Freshwater Wetland Birds		X	X	

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

Common Name	Southern Pinelands	Western Pinelands	Mullica River Watershed	Northern Pinelands
Birds (continued)				
Grassland Birds	X		X	
Migratory Shorebirds			X	X
Migratory Songbirds & Raptors		X	X	X
Scrub-shrub/Open Field (3-7 yrs) Birds	X	X	X	X
Early Succession (0 -3 years) Open Field Birds	X	X	X	X
Waterfowl	X	X	X	X
Reptiles				
Forest Dwelling Reptiles	X	X	X	X
Reptile Inhabitants of Wetland, Marsh and Bog	X	X	X	X
Reptiles Associated with water (lakes, ponds, streams)	X	X	X	X
Reptiles of Special Concern	X	X	X	X
Amphibians				
Amphibians of Special Concern	X	X	X	
Vernal Pool and Vernal Sinkhole Breeders	X	X	X	X
Insects				
Lepidoptera of Federal or State Legal Status	X	X	X	X
Lepidoptera of Special Concern	X	X	X	X
Odonata	X	X	X	X

X: Species occurs within the identified habitat.

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

The Pinelands Commission regulates development throughout much of the Pinelands Landscape; however, habitat loss and fragmentation remain the largest threat to wildlife in this region. Areas outside the regulatory boundaries of the Pinelands National Reserve (PNR) are at the highest risk of development, and large acreages of critical habitats continue to be modified by development in these areas. Within the PNR, development is directed into “Regional Growth” and “Rural Development” management areas and away from environmental sensitive areas, such as those within the “Forest Area” and “Preservation Area District”.

Changes in groundwater quantity and quality, along with inter-watershed transport of groundwater, threaten the productivity and health of amphibians and other wildlife. Research has shown that surface water quality decreases for Pinelands wildlife as pH levels rise in association with residential and commercial development and upland agriculture. This “buffering effect” has a negative impact on native Pinelands wildlife because it allows for non-Pinelands species to colonize sites that would normally be too acidic. The unlawful use of off-road vehicles on public and private lands also threatens sensitive species and habitats through destruction of vegetation, soil compaction, and direct mortality of rare reptiles and amphibians. Over-browsing by deer, fire suppression, and invasive insect infestations also represent significant threats to native Pinelands wildlife.