

## **Piedmont Plains Landscape**

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The Piedmont Plains landscape spans a diagonal zone across New Jersey from the southwest and the Delaware River estuary to the northeast at Sandy Hook and north to the Palisades. This expansive landscape runs across Salem, Gloucester, Camden, Burlington, Mercer, Monmouth, Middlesex, Somerset, Morris, Union, Essex, Hudson, and Bergen counties. The Delaware, the Raritan, and the Hudson are the prominent rivers and watershed regions in the Piedmont Plains.

### **A. Ecological Units in the Piedmont Plains**

The U.S. Forest Service has developed a map of regional ecological units of the United States (Bailey, 1997) and the first iteration of a map that divides the eastern United States into subregional ecological units (Keys and others, 1995). The ecological units represent ecoregions that are distinct associations of interconnected physical and biological features. The eastern United States is divided into three regional levels – domains, divisions, and provinces – and two subregional levels – section and subsection.

According to Keys and others (1995), New Jersey is within the Humid Temperate Domain, and divided between the Hot Continental Division and the Subtropical Division. The Hot Continental Division includes the Eastern Broadleaf Forest Province and the Lower New England (221A), Hudson Valley (221B), and Northern Appalachian Piedmont (221C) Sections. The Subtropical Division in New Jersey includes the Outer Coastal Plain Mixed Forest Province and the Middle Atlantic Coastal Plain Section (232A).

#### **U.S. Forest Service Ecological Units in the Piedmont Plains**

The Piedmont Plains is within the Middle Atlantic Coastal Plain and the Northern Appalachian Piedmont Sections and contains the New Jersey Inner Coastal Plain (232Ac) and the Gettysburg Piedmont Lowland (221Da) and Newark (221Dc) subsections.

## B. Geology and Climate

The Piedmont Plains landscape includes the Coastal Plain and Piedmont physiographic provinces of New Jersey. The New Jersey Inner Coastal Plain is within the Coastal Plain physiographic province and the subsection consists of terraced lowlands rising to crest-like hills and varies in elevation from sea level to 119 meters (390.4 feet). The Gettysburg Piedmont Lowland and Newark subsections are within the Piedmont physiographic province and are characterized by rolling hilly lowlands dissected by broad, winding river valleys with well-developed floodplains. Distinctly higher, rocky ridges and hills of basalt and diabase, such as the Palisades, disrupt the contours in the Piedmont Plains landscape. The average temperature varies from 10.5 to 12.2°C (51 to 54°F) and there are typically 165 to 225 days when the air temperature above 32°F (the growing season). The average annual precipitation is between 101.6 and 116.8 centimeters (40 and 46 inches).

## C. Habitats and Conservation Zones of the Piedmont Plains Landscape

The Piedmont Plains Landscape received nearly half of all development that occurred in New Jersey during the period between 1984 and 1995 – approximately 45,000 hectares (177.6 sq. mi.). Cultivated/grasslands, wetland and upland forest, and estuarine emergent wetlands sustained the greatest losses.

Although extensive loss and fragmentation of grassland and forest habitats has increased the prevalence of smaller habitat patches, the Piedmont Plains Landscape (Figure 17) still has extensive grasslands and agricultural areas (115,537 hectares, 446 sq. mi.), fragmented deciduous and mixed deciduous-coniferous woodlands of pine-oak, mixed-oak, oak-hickory, and hardwood swamps (107,848 hectares or 416.4 sq. mi. of forest, 74,866 hectares or 289 sq. mi. of forested wetlands), tidal freshwater and brackish marshes (40,954 hectares or 158.1 sq. mi. of wetlands), and extensive riparian areas through the entire landscape. 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.

The Delaware, Raritan, and Hudson are the prominent rivers and watershed regions in the Piedmont Plains. The tidal tributaries and wetlands of the Delaware River are characterized by a brackish estuary, from the Cohansey River to Camden, and freshwater tidal wetlands, from Camden north to Trenton.

Eight of the 10 most populated cities and municipalities in New Jersey are located in the Piedmont Plains Landscape, including Newark, Jersey City, Elizabeth, Edison Township, Woodbridge Township, Hamilton Township, Trenton, and Camden (Table PP1).

Table PP1. The most populated cities in New Jersey according to the 2000 Census.

<b>Most Populous Cities</b>	<b>Population (2000 Census)</b>	<b>Landscape Region</b>
Newark	273,546	Piedmont Plains
Jersey City	240,055	Piedmont Plains
Paterson	149,222	Piedmont Plains
Elizabeth	120,568	Piedmont Plains

Table PP1 (continued)

<b>Most Populous Cities</b>	<b>Population (2000 Census)</b>	<b>Landscape Region</b>
Edison Township	97,687	Piedmont Plains
Woodbridge Township	97,203	Piedmont Plains
Dover Township	89,706	Pinelands
Hamilton Township	87,109	Piedmont Plains
Trenton	85,403	Piedmont Plains
Camden	79,904	Piedmont Plains

This highly urbanized and developed region also serves as the transportation corridor between Pennsylvania and New York.

Most critical wildlife habitats are widely dispersed between the Delaware River estuary, the grasslands of the inner coastal plain, rolling hills of the piedmont, the beaches and dunes of Sandy Hook, and the cliffs of the Palisades.

The Priority Conservation Zones in the Piedmont Plains Landscape are:

- (1) Northern Piedmont Plains
- (2) Raritan Bay and North Atlantic Coast
- (3) Central Piedmont Plains
- (4) Southern Piedmont Plains

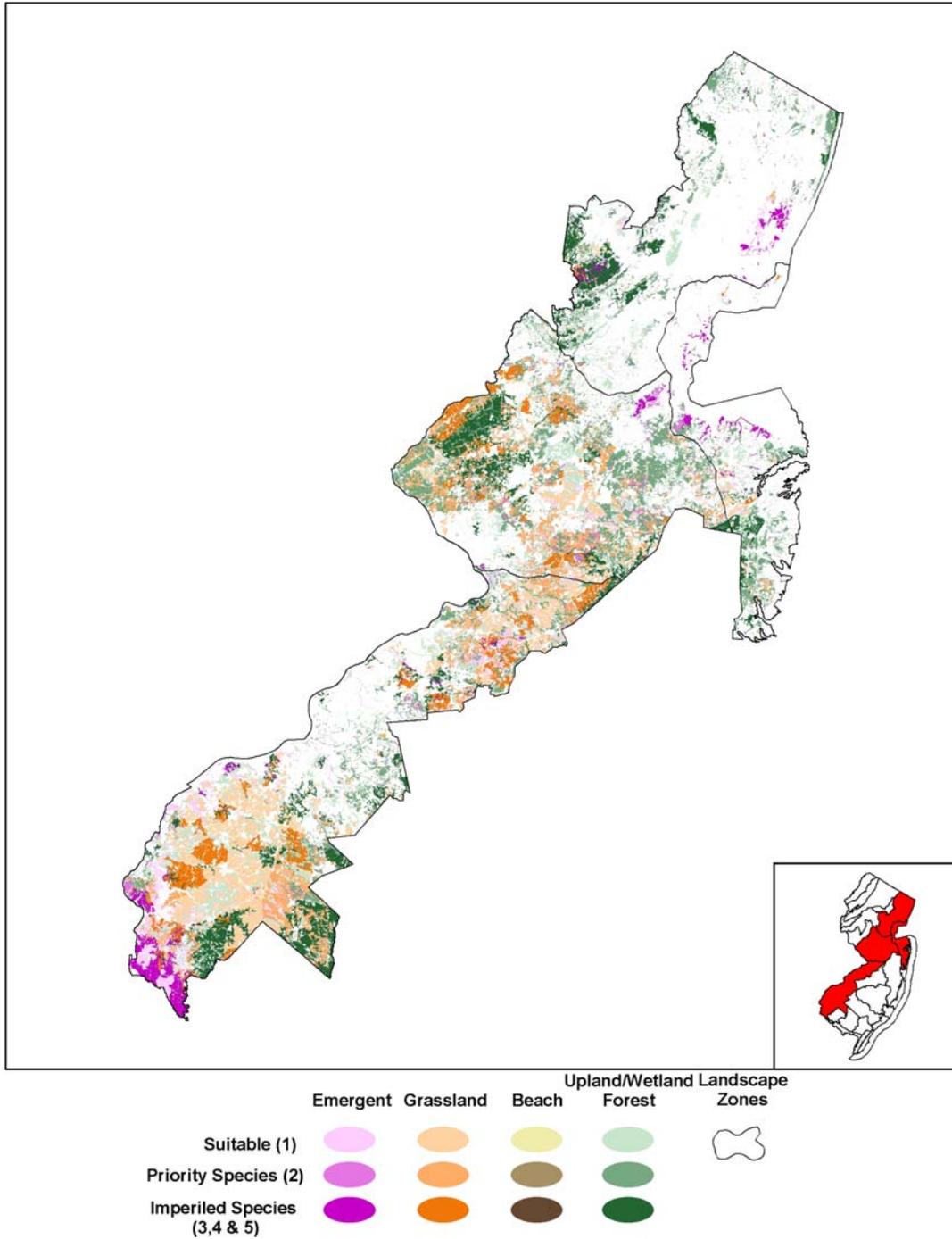
**D. Wildlife of Greatest Conservation Need of the Piedmont Plains Landscape**

Successful management of the Piedmont Plains Landscape is essential to conservation of several species including bald eagles, colonial waterbirds and freshwater wetland birds that inhabit riparian forests, brackish and freshwater wetlands. Robust grassland bird communities exist in the Southern Piedmont Zone. The eastern pondmussel and triangle floater inhabit the network of rivers found throughout this landscape. The Palisades Interstate Park is the last stronghold of the Allegheny woodrat in New Jersey, and the Northern Piedmont and the Raritan Bay and North Atlantic Coast are important for recovering populations of peregrine falcon and osprey.

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 typically evolve within 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 (or Asian) clams have the potential to adversely impact aquatic habitats and species. Plants like 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 cause severe damage to our forests and wildlife habitat. Diseases such as West Nile virus have already had an impact on certain avian species.

Although heavily suburbanized, the Central and South Piedmont Plains has significant habitat for bog and wood turtles whose remnant populations are supported in fragmented grassland and

**Figure 17.** Critical landscape habitats within the Piedmont Plains Landscape and associated conservation zones as identified through the Landscape Map (v2).



woodland. Large forest tracts are important for breeding forest passerines and raptors and remnant populations of bobcat. The patchwork of habitats in this Landscape (forests, grasslands, wetlands, riparian areas) provides critical stopover sites for migratory birds to rest and refuel. The region's forests and riparian areas are also known to host populations of forest-dwelling bats and contain habitat suitable for summer colonies of Indiana bats.

Judicious management of the Piedmont Plains Landscape is essential to conserve some of the most significant natural areas in New Jersey: the Palisades, Great Swamp National Wildlife Refuge, the Meadowlands, Preakness Mountain, and Sourland Mountain. These areas support unique and intact ecosystems that are in jeopardy from surrounding land uses and other human impacts.

Finally, the Piedmont Plains Landscape is a critical transition area between the northern deciduous forest ecosystem of the Skylands Landscape and the southern coastal plain ecosystem of the Pinelands Landscape. Retaining and enhancing connectivity between these two landscapes is an important goal in the Piedmont Plains.

The Piedmont Plains supports two federal endangered or threatened species and potentially three other federally listed species, 22 state endangered species, 22 state threatened species, and 123 special concern and regional priority wildlife species. Federally listed species include the bald eagle, bog turtle, and dwarf wedgemussel and state endangered species include the Allegheny woodrat, bobcat, American bittern, peregrine falcon, and eastern tiger salamander. In addition, the American burying beetle, shortnose sturgeon, and summer populations of the federal endangered Indiana bat are suspected to be located within the Piedmont Plains region. Among the state threatened species are the barred owl, red-headed woodpecker, savannah sparrow, Pine Barrens treefrog, and silver-bordered fritillary.

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

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

Table PP2. Federal Endangered and Threatened Species

Common Name	Federal Status & Regional Priority	Northern Piedmont	Raritan Bay	Central Piedmont	Southern Piedmont
<b>Mammals</b>					
Indiana bat	E	R**	R**	R**	R**
<b>Reptiles</b>					
Bog turtle	T	I	I	I	I
<b>Mollusks</b>					
Dwarf Wedgemussel	E & RP			I	I
<b>Insects</b>					
American burying beetle ♦	E	R	R		
<b>Fish</b>					
Shortnose sturgeon	E & RP			I	I

\*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 PP3. State Endangered Species

Common Name	Regional Priority	Northern Piedmont	Raritan Bay	Central Piedmont	Southern Piedmont
<b>Mammals</b>					
Allegheny woodrat		I			
Bobcat		I		I	I
<b>Birds</b>					
American bittern	RP	I		I	I
Bald eagle	T		I		I
Black skimmer	RP	I	R		
Henslow's Sparrow	RP	R	R		R
Least tern	RP	I	I		
Loggerhead shrike (migrant)	RP	I			
Northern goshawk		I			
Northern harrier		I	I	I	I
Peregrine falcon		I	I	I	I
Pied-billed grebe	RP	I	I	I	I
Red-shouldered hawk		I	I	I	I
Sedge wren	RP	I			I
Short-eared owl	RP				I
Upland sandpiper	RP		I	I	I
Vesper sparrow				I	I
<b>Reptiles</b>					
Timber rattlesnake				I	I
Queen snake					R
<b>Amphibians</b>					
Blue-spotted salamander		I		R	R
Eastern tiger salamander					I
<b>Insects</b>					
Appalachian grizzled skipper		R			
Bronze copper		R			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.

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Table PP4. State Threatened Species

Common Name	Regional Priority	Northern Piedmont	Raritan Bay	Central Piedmont	Southern Piedmont
<b>Birds</b>					
Barred owl		I	I	I	I
Black-crowned night-heron	RP	I	I	I	I
Bobolink	RP	I		I	I
Cooper's hawk	RP	I	I	I	I
Grasshopper sparrow	RP	I	I	I	I
Long-eared owl		I		I	I
Osprey		I	I	I	I
Red-headed woodpecker	RP	I		I	I
Savannah sparrow		I	I	I	I
Yellow-crowned night-heron	RP	I	I		
<b>Reptiles</b>					
Northern pine snake			I		I
Wood turtle		I	I	I	I
<b>Amphibians</b>					
Eastern mud salamander				R	R
Long-tailed salamander		R		R	
Pine Barrens treefrog			I	I	I
<b>Mollusks</b>					
Eastern pondmussel					I
Tidewater mucket				R	R
Triangle floater				I	I
Yellow lampmussel				M	M
<b>Insects</b>					
Checked white		R	I		
Frosted elfin				I	R
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 PP5. Nongame Species of Conservation Concern

Common Name	Conservation Status	Northern Piedmont	Raritan Bay	Central Piedmont	Southern Piedmont
<b>Mammals</b>					
Eastern small-footed myotis	RP	R**	R**	R**	R**
Eastern red bat	RP	R**	R**	R**	R**
Hoary bat	RP	R**	R**	R**	R**
Marsh rice rat	S3, G5	R	R	R	R
Silver-haired bat	RP	R**	R**	R**	R**
Southern bog lemming	RP	R	R	R	R
<b>Birds</b>					
Acadian flycatcher	RP	I	M	M	M
American golden-plover	RP	M		M	M
American kestrel	SC	I	I	I	I
American oystercatcher	RP		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
Blackburnian warbler	RP	I			
Black-throated blue warbler	RP	M		M	
Black-throated green warbler	SC	I	I	I	
Blue-headed vireo	SC	I	I		
Blue-winged warbler	RP	M	I	I	I
Broad-winged hawk	SC/RP	M	M	M	M
Brown thrasher	RP	M	M	M	I
Canada warbler	SC/RP	I	M	I	
Cattle egret	RP				M
Cerulean warbler	SC/RP	I		I	

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Nongame Species of Conservation Concern (continued)

Common Name	Conservation Status	Northern Piedmont	Raritan Bay	Central Piedmont	Southern Piedmont
<b>Birds (continued)</b>					
Chimney swift	RP	I	I	I	I
Chuck-will's-widow	RP			R	R
Cliff swallow	SC	I		I	I
Common barn owl	SC	I	I		I
Common nighthawk	SC	I	M	M	M
Common tern	SC/RP		M		
Dickcissel	RP			M	M
Eastern kingbird	RP	I	I	I	I
Eastern meadowlark	SC/RP	I	I	I	I
Eastern screech-owl	RP	M	M	M	M
Eastern towhee	RP	I	I	I	I
Eastern wood-pewee	RP	I	I	I	I
Field sparrow	RP	I	I	I	M
Forster's tern	RP		M		M
Glossy ibis	RP		M		M
Golden-winged warbler	SC/RP	I			
Gray catbird	RP	M	M	M	M
Gray-cheeked thrush	SC	M			
Great blue heron	SC/RP	M	M	M	M
Great crested flycatcher	RP	M	I	M	I
Great egret	RP	M	M		M
Green heron	RP	I	M	I	I
Hooded warbler	RP	M	M	M	M
Horned grebe	RP		M		
Horned lark	SC		M	M	M
Indigo bunting	RP	I	I	I	I
Kentucky warbler	SC/RP	I	I	I	I
King rail	SC/RP	M			M
Least bittern	SC/RP	M	M	M	M
Least flycatcher	SC/RP	I	I	I	I
Little blue heron	SC/RP	I	I		I
Louisiana waterthrush	RP	M	M	M	M
Marsh wren	RP	M	M	I	I
Northern flicker	RP	M	M	M	I
Northern gannet	RP		M		M
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
Purple finch	RP	R	R		R
Red-throated loon	RP		M		M
Rose-breasted grosbeak	RP	I	I	I	R
Saltmarsh sharp-tailed sparrow	RP	R	R	R	
Scarlet tanager	RP	M	M	M	I
Seaside sparrow	RP	R	R	R	R
Sharp-shinned hawk	SC/RP	M		M	M
Snowy egret	RP				I
Spotted sandpiper	SC	M	M	M	M
Summer tanager	RP	M	M	M	M
Veery	SC/RP	I	I	I	I
Whip-poor-will	RP		I	I	M
White-eyed vireo	RP	M	M	M	M
Willet	RP		M	M	M
Willow flycatcher	RP	I	I	I	I
Winter wren	SC	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	I	I	I	I
Yellow-throated vireo	RP	M	M	M	I
Yellow-throated warbler	RP		M	M	M

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Nongame Species of Conservation Concern (continued)

Common Name	Conservation Status	Northern Piedmont	Raritan Bay	Central Piedmont	Southern Piedmont
<b>Reptiles</b>					
Coastal plain milk snake	SC				M
Eastern box turtle	SC	M	M	M	M
Eastern kingsnake	SC				M
Northern copperhead	SC	M	M	M	
Northern diamondback terrapin	SC	M	M	M	M
Spotted turtle	SC	M	M	M	M
<b>Amphibians</b>					
Carpenter frog	SC			M	M
Fowler's toad	SC	M	M	M	M
Jefferson salamander	SC	M			
Northern spring salamander	SC	M	M		
<b>Mollusks</b>					
Creeper	SC				M
<b>Insects</b>					
Harris's checkerspot, <i>Chlosyne harrisii</i>	SC	M			
Clubtail dragonfly, <i>Gomphus septima</i>	S1, G2			M	
A noctuid moth, <i>Macrochila santerivalis</i>	S1S3, G3G4				M
Doll's merolonche, <i>Merolonche dolli</i>	S1S3, G3G4				M
A noctuid moth, <i>Chytonix sensilis</i>	S1S3, G4		M		M
Rare skipper, <i>Problema bulenta</i>	S2, G2G3				M
Lemmer's pinion moth, <i>Lithophane lemmeri</i>	S2, G3G4				M
A noctuid moth, <i>Cucullia alfarata</i>	S2, G4				M
Precious underwing, <i>Catocala pretiosa pretiosa</i>	S2S3, G4				M
A noctuid moth, <i>Macrochilo louisiana</i>	S2S3, G4				M
A slugmoth, <i>Monoleuca semifascia</i>	S2S3, G4G5				M
A spanworm, <i>Itame sp 1</i>	S3, G3				M
A noctuid moth, <i>Macrochilo sp 1</i>	S3, G3				M
Scarlet bluet, <i>Enallagma pictum</i>	S3, G3			M	M
<i>Zanclognatha sp 1</i>	S3, G3G4				M
Pink streak, <i>Faronta rubripennis</i>	S3, G3G4			M	M
Ringed boghaunter, <i>Williamsonia lintheri</i>	SH, G3	M			
<b>Fish</b>					
American brook lamprey***	RP	X	X	X	X
Atlantic sturgeon	SC* & RP			X	X
Bridle shiner	RP			X	X

\*Federal species of special concern.

\*\*Potential presence.

\*\*\*Species is 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 PP6. Game Species of Regional Priority

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

Common Name	Regional Priority	Northern Piedmont	Raritan Bay	Central Piedmont	Southern Piedmont
<b>Birds</b>					
American black duck	RP	I	I	I	I
American woodcock	RP	I	I	I	I
Atlantic brant	RP		M		
Black scoter	RP		R		
Bufflehead	RP		M		
Canada goose (Atlantic population)	RP	M	M	M	M
Canvasback	RP		I		I
Clapper rail	RP		M		M
Greater scaup	RP		I		I
Lesser scaup	RP		I		I
Long-tailed duck	RP		R		
Northern bobwhite	RP		R	R	R
Northern pintail	RP		I		I
Surf scoter	RP		R	R	R
Virginia rail	RP	R	R	R	R
White-winged scoter	RP		R		
Wood duck	RP	M	M	M	M
<b>Fish</b>					
Brook trout*		X			X

\*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.

X: Species present. Management strategy not yet determined.

Table PP7. Fish Species

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

Common Name	Regional Priority	Northern Piedmont	Raritan Bay	Central Piedmont	Southern Piedmont
<b>Fish</b>					
Comely shiner	-				X
Cutlips minnow	-	X			
Hickory shad	-			X	X
Ironcolor shiner	-				X
Margined madtom	-			X	X
Rainbow smelt	-				X
Shield darter	-		X	X	
Slimy sculpin	-	X			

X: Species present. Management strategy not yet determined.

Table PP8. 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	Northern Piedmont	Raritan Bay	Central Piedmont	Southern Piedmont
<b>Mammals</b>					
River otter	-	R	R	R	R
<b>Birds</b>					
Ruffed grouse	-	M	R	R	R
Sora	-	M	R	R	R
<b>Fish</b>					
Brown trout*	-	X			
Rainbow trout*	-	X			

\*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 PP9. Suites of Wildlife and their Location in the Piedmont Plains Landscape

Common Name	Northern Piedmont	Raritan Bay	Central Piedmont	Southern Piedmont
<b>Mammals</b>				
Forest-dwelling Bats	X	X	X	X
<b>Birds</b>				
Beach-nesting Birds		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		
Coastal Low Marsh Birds	X	X		
Colonial Waterbirds	X	X	X	X
Forest Passerines	X	X	X	X
Freshwater Wetland Birds	X	X	X	X
Grassland Birds	X	X	X	X
Migratory Shorebirds		X		
Migratory Songbirds	X	X	X	X
Forest Raptors	X	X	X	X
Scrub-shrub/ Open Field (5-10 yrs) Birds	X	X	X	X
Early Succession (3 -5 years) Open Field Birds	X	X	X	X
Waterfowl	X	X	X	X
<b>Reptiles</b>				
Forest Dwelling Reptiles	X			
Reptile Inhabitants of Wetland, Marsh and Bog	X		X	X
Reptiles Associated with water (lakes, ponds, streams)	X		X	X
Reptiles of Special Concern	X	X	X	X
<b>Amphibians</b>				
Amphibians of Special Concern	X	X	X	X
Vernal Pool and Vernal Sinkhole Breeders	X		X	X
Non-vernal Sinkhole Inhabitants				
Limestone Fen Inhabitants	X			
<b>Mollusks</b>				
Mollusks of Special Concern			X	X

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

Common Name	Northern Piedmont	Raritan Bay	Central Piedmont	Southern Piedmont
<b>Insects</b>				
Lepidoptera of Federal or State Legal Status				
Lepidoptera of Special Concern	X		X	X
Odonata	X		X	X

X: Species occurs within the identified habitat.

**E. Threats**

The Piedmont Plains Landscape since 1972 has undergone extensive development, which has been accompanied by extensive habitat loss and fragmentation. Habitat loss and fragmentation are compounded by impacts from roads and development which include, but are not limited to, habitat degradation from human disturbance and heavy recreational uses, clearing of vegetation along rivers and streams (“stream encroachment”), habitat degradation from invasive plants, runoff of contaminants from roads and residential areas, increase in impervious surfaces, roads and development that act as barriers to wildlife movement, increased predation of wildlife by free-roaming housecats and edge-associated predators, loss of native plants and invertebrates, traffic noise that degrades habitat adjacent to roads, and greater road mortality (particularly of reptiles and amphibians).

In addition, protected natural lands that remain (state, county, non-government organization, private) act as a “magnet resource” attracting residential development that surround and isolates habitat patches. Isolated habitats can become cut off from other habitats, eliminating safe corridors for wildlife to travel between areas. Major impacts of habitat isolation include an overall reduction of wildlife diversity and an increased probability of local extinction of less-mobile wildlife populations. Moreover, in suburban forests and on private lands where hunting is not allowed burgeoning deer populations find refuge. Deer overbrowse destroys seedling trees and prevents forest regeneration; it also destroys habitat for other wildlife such as ground- and shrub-nesting birds. Consequently, these refugia, and some of our remaining public natural lands, are being severely damaged. Coupled with habitat loss and impacts from development, deer over-browse threatens the future of some of New Jersey’s forested lands. The difficulty of reducing the impact of deer is exacerbated by a growing reluctance among private landowners to allow hunting on their property, and the close proximity of development to natural lands limits or prohibits the use of firearms.