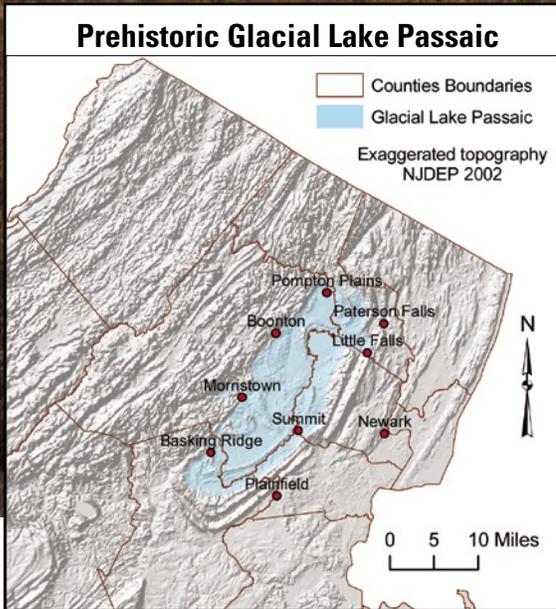


New Jersey's Central Passaic Basin

Prehistoric Glacial Lake, Present-Day Wetland Treasure



"During the flood of 1903 the water fell so quickly all over this basin, and was collected so rapidly by the small tributaries, that a lake was formed at once which served as a cushion against which the raging torrent of the highland tributaries spent itself without doing extraordinary damage in that immediate region. . . . The conditions here outlined illustrate the rapidity with which flood waters are discharged from the Pompton drainage area, and the deterring effect of Great Piece Meadows upon the flood."

Marshall Ora Leighton, U.S. Geologic Survey, 1904

Panoramic view of Troy Meadows, Morris County, New Jersey. Photo: Wendy Walsh / USFWS

Origins

During the last ice age, the massive Wisconsin glacier encountered a large oval basin in northern New Jersey. About 30 miles long and 5 to 10 miles wide, this distinctive basin dates back about 180 million years and consists of a sedimentary Piedmont plain enclosed by hard volcanic rocks—the Watchung Mountains to the east and the ancient Highlands ridges to the west. Ice and debris from the glacier blocked gaps in the Watchung Mountains, and the Passaic River backed up to form a lake. As the ice retreated, Glacial Lake Passaic reached its maximum size between 13,000 and 11,000 years ago, supplemented by glacial melt waters. When the Passaic River carved its current circuitous course, it drained the basin through a mountain gap at Little Falls, leaving behind an impressive series of palustrine wetlands from Basking Ridge to Pompton Plains. Sediments deposited by the glacier cover much of the Central Passaic Basin, in places more than 300 feet thick.

Drinking Water

About 40 percent of New Jersey's Highlands, renowned for clean water, drain to the Central Passaic Basin through the Ramapo, Pompton, Pequannock, Rockaway, and Whippany Rivers. The Basin's five reservoirs provide drinking water to people as far as Jersey City. A prolific glacial aquifer beneath the Central Passaic is tapped by over 100 wells that supply water to most of the Basin's half-million local residents.

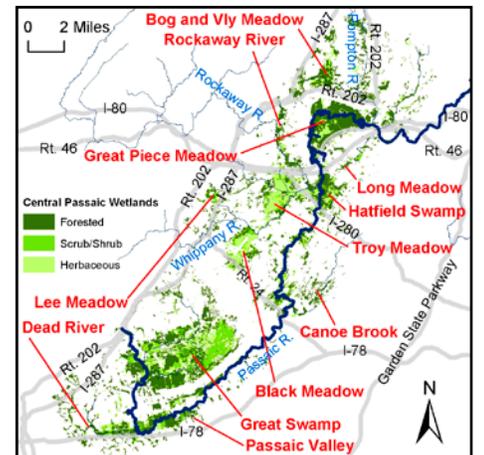
Flood Control

Nine floods since the 1960s have prompted Federal Disaster declarations and extensive flood control studies in the Passaic watershed. However, flood damages would be much worse without the capacity of wetlands to retain and detain flood waters. The importance of the Central Passaic wetlands as a natural flood buffer has been recognized for over 100 years.



Wood duck (*Aix sponsa*)

Photo: Dave Menke / USFWS



Fish and Wildlife

Despite historic losses from development, wetlands comprise about a quarter of the Central Passaic Basin, over 30,000 acres. About 70 percent of the wetlands are forested, mainly red maple (*Acer rubrum*) swamps. Other wetland communities include buttonbush (*Cephalanthus occidentalis*) shrub swamps and marshes of cattails (*Typha* spp.), bulrushes (*Scirpus* spp.), sedges (*Carex* spp.), and arrow arum (*Peltandra virginica*). Undeveloped uplands include about 2,000 acres of grasslands and 15,000 acres of forest. The size and diversity of this freshwater wetland complex is especially significant in the urbanized metropolitan area.

The species list for the Central Passaic includes at least 33 mammals, 244 birds, 20 reptiles, 24 amphibians, and 35 fish. The Central Passaic contains the State's only known population of the blue-spotted salamander and important breeding habitat for Indiana bat. About 600 plant species occur in the area, including 10 State-listed and 1 federally listed species (swamp pink).

The Basin supports over 100 species of breeding birds, including 10 species of conservation concern. Nesting birds include sensitive forest-interior songbirds, cavity-nesting red-headed woodpeckers and wood ducks (*Aix sponsa*), colonial great blue herons (*Ardea herodias*), three species of rails, four State-listed raptor species, and one of the largest Eastern bluebird (*Sialia sialis*) populations in New Jersey. Forested wetlands of the Central Passaic provide valuable stopover habitats for migrating songbirds, and the Basin's diverse habitats support a prey base for raptors that follow the Watchung ridges during migration. November waterfowl surveys of the area average over 5,000 wintering ducks and geese.

Threats

The primary threat to the natural resources of the Central Passaic is development that promotes flooding, sedimentation, pollution, invasive species, and ecosystem fragmentation. Over half the Basin is already developed, and its wetlands are fragmented by a web of major highways and utility rights-of-way. The invasive plants purple loosestrife (*Lythrum salicaria*) and common reed (*Phragmites australis*) have degraded many wetlands, and overabundant white-tailed deer (*Odocoileus virginianus*) are damaging the forest understory in places—both symptoms of encroaching development. To protect developments in the floodplain, a number of flood control construction projects have been proposed since the 1930s, some of which would damage the area's wetlands if built.

Pollution is another threat. The Central Passaic was once viewed as a swampy dumping ground. Old landfills have left a legacy of contamination including four Superfund sites. In addition to polluted runoff from development, about 150 authorized facilities discharge to the Basin's surface waters, including over 30 sewage treatment plants. Water quality in the Central Basin is impaired by excess nutrients and a variety of metals.



Eastern bluebird (*Sialia sialis*)

Photo: Nieminen / USFWS

Conservation

Although threats remain, considerable conservation progress has been made in the Central Passaic Basin. Laws regulating waste disposal have put an end to indiscriminate dumping. State laws now regulate activities in wetlands and floodplains. The Flood Hazard Control Act prohibits almost all new development in Floodways, which total about 6,300 acres in the Central Passaic Basin. Recognizing the area's particular flooding problems, the Act includes a special rule for the Central Passaic Basin that prohibits any net loss of flood water retention capacity.

Over 20,000 acres in the Passaic Basin are conserved. State-owned lands exceed 1,600 acres and are increasing in part through a U.S. Army Corps of Engineers program to acquire 5,350 acres of natural flood storage areas—essentially, the outer core perimeter of the wetland complexes. At the south end of the Basin, the U.S. Fish and Wildlife Service (*Service*) administers the Great Swamp National Wildlife Refuge. At approximately 7,600 acres, the Refuge is the largest public land holding in the Central Passaic Basin. The Service is authorized to acquire another 1,800 acres for the Refuge. Within the Great Swamp watershed, the Service is working with partners to clean up contaminated sites, improve sewage treatment plant discharges, survey for federally listed species, and restore wetlands with settlement funds from parties responsible for pollution.

The Service's *Partners for Fish and Wildlife* program has carried out three habitat restoration projects in the Basin. Since 1997, the Service has reviewed over 450 development proposals in the Basin, providing recommendations to protect wildlife. Numerous reports issued by the Service have helped steer flood control in the Passaic River watershed toward the least environmentally damaging alternatives. The Service is a committed conservation partner in protecting the Central Passaic and invites you to enjoy this wetland treasure in the heart of suburbia.



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Listed Species in the Passaic Basin

Federally Listed Species

Indiana Bat (*Myotis sodalis*) [endangered]
Bog Turtle (*Clemmys muhlenbergii*) [threatened]
Swamp Pink (*Helonias bullata*) [threatened]

State-Listed Wildlife Species

Bobcat (*Lynx rufus*)
American Bittern (*Botaurus lentiginosus*)
Barred Owl (*Strix varia*)
Bobolink (*Dolichonyx oryzivorus*)
Cooper's Hawk (*Accipiter cooperii*)
Long-Eared Owl (*Asio otus*)
Northern Harrier (*Circus cyaneus*)
Pied-Billed Grebe (*Podilymbus podiceps*)
Red-Headed woodpecker (*Melanerpes erythrocephalus*)
Red-Shouldered Hawk (*Buteo lineatus*)
Wood Turtle (*Clemmys insculpta*)
Blue-Spotted Salamander (*Ambystoma laterale*)

Designations of the Central Passaic Wetland Complex

Biodiversity Priority Site	New Jersey Natural Heritage Program
Priority Wetland	U.S. Fish and Wildlife Service
Significant Habitat Complex ..	U.S. Fish and Wildlife Service
Priority Wetland	U.S. Environmental Protection Agency
Waterfowl Focus Area	Atlantic Coast Joint Venture