

1.10 Wildlife and Fish Communities

Watershed Management Area 4 contains tracts of forest that provide habitat for a variety of wildlife species. Common species include; white-tailed deer, red fox, eastern chipmunk, gray squirrel, eastern cottontail, woodchuck, and diversity of small mammals, amphibians, birds, insects, and reptiles. See Appendix 1.10.1 for a representative listing of wildlife species by physiographic province.

There are many rivers, streams, and creeks that are managed as trout fisheries through various stocking strategies. Water quality is a primary determinant in all trout waters. Suitable trout habitat depends on adequate forest buffers and tree canopies to provide good water quality and stable temperatures.

In addition to riverine habitats, the watershed contains numerous lakes, ponds, and reservoirs. Trout species and smallmouth bass tend to dominate the cold and cooler water systems, while yellow perch, largemouth and smallmouth bass are found in the warmer water lakes, ponds, and impoundments. Other important species that are found in these waterbodies include members of the following families: lampreys, suckers, sunfish, sculpins, minnows and carp, killifishes, pikes, and perches.

The New Jersey portion of the watershed contains 8.5 square miles that are considered critical habitat (Niles et al., 2000). Critical habitats are defined as contiguous natural areas that provide habitat for state and federal threatened and endangered species. The management area also contains portions of 2 NJDEP Natural Heritage Program sites, which are areas defined as the best habitats for rare plant and animal species and natural communities (Plate 1.15.1).

There are approximately 5,192 acres (8 sq. miles) of local, county, and federally owned protected open space and recreation areas, which include parks and water supply management areas (Plate 1.18.1) The biggest threat to wildlife is the fragmentation and loss of habitat due to urbanization. The management area is very highly urbanized (83%), western portions of the watershed contain contiguous natural habitat. Between 1986 and 1995 there was a loss of 1,250 acres (6%) of forest and wetland habitat that was converted to urban land uses.

Historic Forests of New Jersey

Pre-Columbian New Jersey was nearly completely forested. Native Americans manipulated forests through burning and clearing small areas of forests for cultivation, wildlife habitat and protection. It has been theorized that greater than 40% of these forests were American Chestnut forests.

European settlers cleared larger areas of forest for agriculture, animal grazing and building materials. In the 1800's, even larger areas of the forest in WMA 3 were cleared for charcoal and iron ore production. By 1900, there was virtually no forested land left in the area.

In 1900, the Chestnut Blight (a fungus) was also introduced through nursery stock in New York City. By 1940, the Chestnut was gone from New Jersey Forests. Root sprouts can still be found but few if any reach maturity. Many of these Chestnut forests have been replaced by Oak-Hickory forests.

Dutch Elm Disease was first found in 1930, has now spread throughout the country and killed half of all Elm trees. The disease was particularly devastating in suburban areas where the Elm tree was a popular street tree and the disease spread via root grafting or bark beetles.

Large areas of land were reforested by the Civilian Conservation Corps (CCC) between 1933 and 1942 under a Depression Era program implemented by President Franklin Delanor Roosevelt to combat soil erosion, lack of forest resources and rampant unemployment.

Current State of Forests in WMA 4

WMA 4 is highly developed and only about 10% forested, much of which is in public ownership. This is the lowest percentage in the Passaic River Basin. Most forested land is found along rivers and streams or in municipal or county owned parks. This highly fragmented forest cannot provide the numerous benefits of a large area of contiguous forest but serve as habitat and travel corridors for some species of wildlife.

The majority of forests in WMA 4 fall into the Oak-Hickory type. In Oak-Hickory forests one typically finds Red Oak, White Oak, Black Oak, Scarlet Oak and Chestnut Oak. Pignut Hickory and Shagbark Hickory are common minor components of this forest type. The mixture may also contain Tulip Poplar, White Ash, American Elm, Sugar Maple, Red Maple, Black Birch, Black Cherry and Black Walnut. Pignut Hickory and Chestnut Oak are more common on dry rocky ridges found throughout WMA 4. These Oak-Hickory forests without disturbance will overtime convert to more shade tolerant Sugar Maple, Red Maple, Black Birch and Beech forests. Understory and shrubs species associated with this forest type include Flowering Dogwood, Sassafras, Downy Serviceberry, Blueberry, Mountain Laurel and Rubus spp.

Upper reaches in first and second order stream riparian forests would include Yellow Birch, White Ash and Tulip Poplar. Lower reaches of the basin with wide flood plains the riparian forest type likely found would be a Boxelder Maple, Silver Maple, Pin Oak and Sycamore forests.

Benefits of a Healthy Forest

Healthy riparian and community forests would be of great benefit to particularly in WMA 4 in reducing non-point source runoff, reducing spiky peak flows by protecting soils into which water would slowly percolate to be released more slowly maintaining baseflows. It is the forest soils that serve as the sponges and cleansers of precipitation falling in the watershed.

Recent studies have shown that riparian forest buffers can reduce both point and non-point source pollution on 1st to 5th order streams. Reforested streams have healthier stream biota more adept at using nutrients particularly nitrogen and phosphorus and are more likely to have non-filamentous algae species and are more likely to produce green than blue-green algae which cause taste and odor problems in drinking water. Many reforestation projects fail due to poor planning (wrong tree for the sites poor maintenance), poor planting techniques and deer predation.

A reforested buffer will reduce erosion, provide wildlife habitat, cool streams and discourage the Canada goose, which is largely responsible for the fecal coliform problems within the Passaic River Basin.

Current Forest Health Issues

The Hemlock Woolly Adelgid (introduced in 1924) has decimated Eastern Hemlock populations throughout its range. New Jersey has been particularly hard hit by this insect. Eastern Hemlock is an important species since it typically grows in steep, cool ravines. Loss of this cover will have a significant impact on local water quality.

In isolated areas of WMA 4 entire stands of trees have been killed by repeated attacks by the Gypsy Moth, recurrent drought or a combination of both. Many of these sites are on ridgetops and steep slopes where there is a danger of severe erosion or mud slides. The Gypsy Moth was introduced in 1869 and feeds on dozens of tree species but favors oak. Gypsy Moth outbreaks occur cyclically. Infestations in 2000-2002 were particularly severe defoliating over 100,000 acres each of these years. A minor percentage of this defoliation occurred in WMA 4.

Other forest health issues to be monitored for are Asian Longhorned Beetle which has been found in New York and Chicago and in warehouses in New Jersey. For the first time in October of 2002 it has been discovered in the environs in Jersey City. It is transported in pallet wood from Asia. The only known controls are removal of all woody vegetation in the area. Given its proximity to WMA 4 increased surveillance will likely be implemented. Other diseases of concern are Sudden Oak Death, which has only been found in California and Oregon but is capable of affecting eastern oak forests as well. It is fatal within one year of infection. New Jersey is currently classified as a moderate risk. The last is Bacterial Leaf Scorch, which has affected the Red Oak in Southern and Central New Jersey. The disease has not been detected in Northern New Jersey Plots to date. The heaviest infestation is found in and around the Philadelphia metro region.

In urban and community forests the loss of individual tree is more detrimental than loss of an individual tree in a forest setting given the prevalence of street and yard trees. Urban trees and forest are typically more stressed and are much more susceptible to insect or disease outbreaks and treatment and removal costs are much higher. Recent studies in Baltimore and Atlanta have developed dollar values for the benefit of urban trees and forests particularly for heating, cooling and stormwater management.

In the northern half of WMA 4 deer predation has become a concern in recent years. In many areas deer densities are at a level that has interrupted the natural regeneration of forest and created unnatural “park-like forests” with little or no shrub or floor species. Many of the urban parks contain canopy trees with little or no understory and provide little benefit to most wildlife species. As these mature trees die there are no replacement trees waiting in the understory.

Several non-native and invasive plants are found in WMA 4 including Japanese Barberry, Multiflora Rose, Winged Euonymus, Porcelain berry, Norway Maple, Ailanthus, Northern Catalpa, Purple Loosestrife, Japanese Knotweed, and Asiatic Bittersweet. These invasive plants out compete native vegetation and are altering natural communities. Deer browsing native woody vegetation, which would favor non-native plant species, may aid the spread of these species. Many of the remaining forests in WMA 4 have sizeable populations of invasive species and in some instances they are the majority of species found there.

Reforestation, forest management and ecological restoration efforts particularly in riparian areas would prove beneficial to water quality, the forest ecosystem and wildlife in WMA 4.

Appendix 1.10.1

Representative List of Vegetative Communities and Wildlife Species by Physiographic Province in Watershed Management Area 4

Newark Basin

Vegetative Communities

Mixed-Oak Forest

White oak
Black oak
Red oak
Pignut hickory
Sugar maple
Red maple
American beech
White ash
Norway maple
Pin oak
Sour gum
Black cherry
Sweet cherry
Flowering dogwood
Maple-leaved viburnum
Black haw
Spicebush
Arrowwood

Herbs of Moist Woodlands

Mayapple
Jack-in-the-pulpit
Solomon's-seal
Aster
Goldenrod
New York fern
Christmas fern

Hardwood Swamp Communities

Red maple
Pin oak
Black willow
Swamp white oak
American elm
White ash
Silver maple
Basswood
Green ash
Box-elder maple

Meadowland Communities

Cattail
Flood tolerant shrubs, grasses and herbs

Abandoned Farm Fields

Eastern red cedar
Sassafras
Big-toothed aspen
Tulip tree
Gray birch
Black locust
Black cherry
Red maple
Crabgrass
Wintercress
Common mullein
Canada thistle
Yarrow
Butter-and-eggs
Orchard grass

Mowed Roadside Fields

Common cinquefoil
Wild strawberry
Common dandelion
English plantain
Chichory
Hawkweed
Goldenrod
Common ragweed
Variety of grasses

Wildlife Species

White-tailed deer

Red fox

Variety of toads and turtles

Eastern chipmunk

Gray squirrel

Eastern cottontail

Woodchuck

White-tailed deer

Endangered avian grassland species

P:\310500 NJDWSC WMA346\Reports\WMA 4\1.10 Wildlife.doc