

PART II: Significant Habitats of the Hudson River Valley

Introduction

The Hudson River Estuary corridor contains a rich diversity of habitats, ranging from the highly productive estuarine and coastal habitats and associated beaches, mudflats, marshes, swamps, and tributaries; to the mountainous forests of the Highlands, Catskills, Taconics, and Shawangunks. In addition, the Estuary corridor contains other exceptional natural features, including the Albany Pine Bush, Shawangunk grasslands, cave complexes, large freshwater wetlands such as the Great Swamp, and globally rare freshwater tidal wetlands.

This diverse assemblage of landforms, cover types, and habitats helps to sustain a multitude of plant and animal species. The lakes, ponds, and wetlands of the region provide a major stopover point for tens of thousands of birds migrating along the Atlantic Flyway and also support resident populations of amphibians, reptiles, and mammals. Remaining unfragmented forests of the Helderberg Escarpment, Catskills, Rensselaer Plateau, Highlands, and Shawangunks maintain populations of migratory songbirds, black bear, bobcat, fisher, salamanders, snakes and other interesting animals. In the last century, some forested habitats have recovered to the point that they now support species such as coyote, raven, fisher and black bear that have been gone from the Hudson River Valley since at least 1850. Meanwhile, farmlands and other open uplands continue to provide early stage successional habitat for populations of grassland songbirds and invertebrate species such as butterflies and dragonflies.

Overall, the Hudson River Estuary region is home to more than 2,000 plant and vertebrate animal species (Smith et al. 2001; Mitchell and Tucker 1997). Additionally, there are numerous less glamorous, but ecologically important species of invertebrates, fungi and bacteria in the region. Although few species have their entire worldwide population within the Hudson River Estuary corridor, a number of species have their only New York State occurrence within the Hudson River Estuary corridor: including the fence lizard, northern cricket frog, and sable clubtail dragonfly. Other species have the majority of their state occurrences or their best remaining populations in the Hudson River Estuary corridor, including the Kentucky warbler, bog turtle, timber rattlesnake and the federally endangered Karner blue butterfly and Indiana bat (Finton et al. 2000).

Terrestrial biodiversity benefits the Hudson River Estuary in important ways. Valuable ecosystem services such as nutrient cycling, water purification, resistance to disease and pest infestations, forest regeneration, and plant pollination are dependent upon biological diversity. Whether these processes operate near the estuary or in the highlands of the Hudson River Watershed, they can affect the quality of the estuary. Upland areas are linked with the estuary through smaller waterways such as creeks, rivers, and ditches that drain the land and empty into the Hudson River. As water flows from the uplands to the estuary, its chemical, physical and biological nature is modified. As a result, the conditions of these tributaries and the lands they drain directly affect the estuarine environment.

While some species flourish in the Hudson River Estuary corridor, others are threatened by habitat loss and fragmentation, pollution, and competition with invasive or overabundant species. Approximately 150 species in the Hudson River Valley are listed by the NYS Department of Environmental Conservation (NYSDEC) as threatened, endangered, or of special concern in New York. A Gap Analysis Project (Smith et al. 2001) found that of the terrestrial vertebrate animals, most (272 of 308 species) have only 10% or less of their predicted distribution within public lands, including all of the region's amphibians. Twenty-three species were not predicted to occur at all on public lands. These results highlight the importance of conservation efforts by both public and private landowners and indicate a need for prioritization of conservation efforts.

Significant Habitats and Biodiversity Areas

The entire Hudson River Estuary corridor is a significant biodiversity area within the context of New York State and the New England and Mid-Atlantic portions of the United States. Within the State of New York, the region forms a matrix that nurtures and sustains the Hudson River Estuary. Areas that are representative of the region's biodiversity are shown in Figure 3. These areas are distinguished by their unique topography, geology, hydrology, and plant and animal communities. The areas contribute a fascinating variety and uniqueness to the region. Often, they contain high concentrations of biological diversity or unusual ecological features that contribute to regional biodiversity.

The areas shown in Figure 3 carry no regulatory designation whatsoever. Instead, it is hoped that recognition of these distinct landscapes will serve as a basis for their voluntary conservation. Recognition of these areas can encourage coordination of conservation partnerships between willing stakeholders. The identification of different biodiversity zones serves as a mechanism for communicating information on biodiversity to the public. Also, identification of significant areas supports scientific analysis of the patterns and processes that maintain biodiversity at a regional scale.

Biologists analyzed existing data to determine the general locations of significant biodiversity areas within the Hudson River Estuary corridor. The areas were then inventoried and further refined following two years of field study (Howard et al. 2002). Information used to identify biodiversity areas was provided by the U.S. Fish and Wildlife Service (USFWS 1997), New York Natural Heritage Program (Finton et al. 1999, Finton et al. 2000, Howard et al. 2002), the National Audubon Society of New York State (1998), and the New York Cooperative Fish and Wildlife Research Unit at Cornell University (Smith et al. 2001).

These significant biodiversity areas can contain uncommon and ancient geologic features, large wetland complexes, unfragmented forests, or sharp changes in elevation. It is important to note that lowland landscapes, whether rural or urban, are as important to the health of the Estuary as mountainous settings. The biodiversity areas range in size from 360 to 361,000 acres. However, over half of the areas are larger than 25,000 acres.

The highest richness of biodiversity elements occurs in the Highlands West, Shawangunk Ridge, and the Hudson River Estuary in relation to other biodiversity areas their own size (Howard et al. 2002). There are two likely reasons for these areas to rank higher in biodiversity. One is that the overall biodiversity *is* actually higher within the area compared to the other areas. The other reason is that these areas have been more intensively sampled than the others. Almost certainly both of these factors play a role. Biodiversity element occurrences tracked by the NY Natural Heritage Program in the Hudson River Estuary corridor and the significant biodiversity areas are shown in Figure 4. The NY Natural Heritage Program tracks the distribution and health of viable populations of rare species and significant ecological communities.

The significant biodiversity areas tend to be large in size, but by no means contain all of the important wildlife, habitat, and ecological elements important to the Hudson River Estuary ecosystem. Significant habitats, some of which are profiled later in this section, may be found throughout the Hudson River Estuary corridor. Ecological processes such as water and nutrient cycling, pollination, and habitat renewal necessary for the maintenance of biodiversity and environmental quality operate throughout the Estuary corridor. Residents of the Hudson River Valley are invited to identify the biological features that support local environmental quality and make their area unique. The strategy of identifying large areas important to biodiversity must be complimented by local approaches that identify landscape configurations that support biodiversity over the long-term, especially as these landscapes are developed and become more populated. Addressing the habitat requirements of common species affected by urban sprawl will prevent common species from becoming rare and in need of legislative protection in the future. Significant biodiversity areas are integral parts of the regional landscape that support stable populations of species and can serve as core habitat areas.

The following sections highlight some of the habitats, species, and significant biodiversity areas that are found in the Hudson River Estuary corridor. First, a general description of the entire Hudson River Estuary Area of Biological Concern is provided. This is followed by information on the contribution of parks and preserves to biodiversity conservation within the area of biological concern. Then, examples and descriptions are provided for the following significant habitat types: cliff and cave habitats, coastal habitats, open uplands and barrens, tributaries and riparian habitat, unfragmented forest and habitat corridors, and wetlands. The descriptions do not provide exhaustive information about the habitats, but they give the reader a general understanding of their ecological importance and offer strategies for their conservation. Additional information on the ecological communities described in this section can be found in Reschke (1990) and Kiviat and Stevens (2001). The habitat descriptions are followed by information on 22 significant biodiversity areas within the Hudson River Estuary Area of Biological Concern. Both significant habitats and significant biodiversity areas are presented in alphabetical order. Information on specific threats to biodiversity and appropriate conservation strategies is provided in Part III of this document.