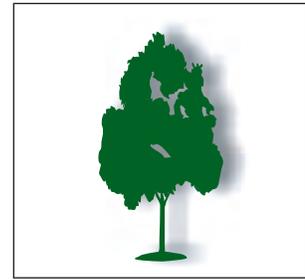


THE GREEN INFRASTRUCTURE NETWORK



INTRODUCTION

The green infrastructure network includes designated areas of countywide environmental significance. It contains most of the county's most significant natural resource lands including streams, wetlands, buffers, 100-year floodplains, severe slopes, interior forests, colonial waterbird nesting sites, and unique habitats (see Appendix 2 for definitions). This system of resources comprises approximately 168,000 acres, of which 33 percent is currently in public ownership. The vast majority, 67 percent, is in private ownership. It is anticipated that this trend will continue, with much of the land within the network remaining in private ownership.

MAPPING FUNCTIONS AND FEATURES

The green infrastructure network map (Map 1) is conceptual in nature and illustrates a generalized pattern for green infrastructure conservation in the county. It is envisioned as an assessment tool that will be used to consider the role of a specific location within a larger ecological system during the review of land development applications; to enhance and coordinate local, state and regional natural resources management planning; and to address the need for a regional and landscape level view for wildlife conservation. A more precise outline of the green infrastructure network may be identified when area master and/or sector plans are updated. Details on the methodology used for developing this map are provided in Appendix 2.

It is important to note that the map adopted with this plan is an interim map representing a snapshot in time based primarily on 2000 aerial photography (the most recent available) and platted lots or parcels of four acres or smaller recorded as of March 31, 2004. The 2000 aerial photographs were also used to evaluate the appropriate placement of the continuous outline of the green infrastructure network.

It is recognized that development has continued to occur and development proposals continue to be submitted for areas included in the green infrastructure network and that areas shown as evaluation areas may already be disturbed. Because 2000 aerial photographs were used in the development of the map, when aerial photos in 2005 are available, they will be used to evaluate the resources existing at that time and to set the boundaries of the green infrastructure network accordingly. The map will be refined for countywide significance based on subdivisions platted at the time of plan approval. The GIS database is currently being updated to include information on 15–25 percent slopes on highly erodible soils so this information will also be reflected in the mapping of regulated areas.

Once the final green infrastructure network map is generated, it will be used to calculate total acreages and to evaluate the plan based on the measurable objectives. In the interim, the map approved at the time of plan adoption will be used.

The Maryland Department of Natural Resources completed a green infrastructure assessment for statewide significant environmental features in 2001. This assessment was used as a base map for the development of the county plan. State-designated areas were included in the county plan, except in areas where existing and/or approved development compromised the areas to the point where they no longer met the definition of countywide significance. The state green infrastructure plan categorizes land as being either in hubs, corridors, or nodes. This plan does not use the same categorization because environmentally sensitive areas in Prince George's County do not discretely fall into these categories. Instead, an approach was used that designates areas of the green infrastructure network as being in one of the following three categories:

Regulated areas contain environmentally sensitive features, such as streams, wetlands, 100-year floodplains, severe slopes and their associated buffers,¹⁰ that are regulated (i.e., protected) during the land development process. Regulated areas comprise 32 percent of the mapped green infrastructure network.

Evaluation areas contain environmentally sensitive features, such as interior forests, colonial waterbird nesting sites, and unique habitats, that are not regulated (i.e., not protected) during the land development process. Evaluation areas comprise 52 percent of the mapped green infrastructure network.

Network gaps are those areas that are critical to the connection of the regulated and evaluation areas and were included in the mapping to provide areas of possible connectivity. These areas should be evaluated for restoration opportunities to enhance the ecological functioning of the network. Network gaps comprise 16 percent of the mapped green infrastructure network.

The three areas delineated on the network mapping will be considered differently in the implementation of the plan. For protection priorities, generally the regulated areas should be considered for acquisition or easements when they further some other purpose, such as implementation of the stream valley park network. However, in some instances the regulated areas may not be the highest priority for acquisition and easements because they already receive protection and mandatory easement protection through existing land development regulations. Sometimes evaluation areas may be considered a higher priority for acquisition and easements than regulated areas because they could provide additional opportunities for protection of these nonregulated lands. Network gaps would be the lowest priority for acquisition unless they provide a unique opportunity for a network connection that would otherwise not be realized.

¹⁰ The regulated areas shown on the map are based on the regulations that were in place at the time of the development of the plan; the map does not include land containing slopes between 15 and 25 percent on highly erodible soils because this information was not available at the time of plan preparation as a GIS layer.



During the land development process the three areas of the network will also receive different levels of consideration. The regulated areas will be required to be preserved, as they are today, with impacts recommended for approval only where necessary for construction of road crossings and the installation of necessary public utilities. The evaluation areas will be considered during the review process as areas of high priority for on-site woodland and wildlife habitat conservation. These areas should be considered before the use of off-site conservation options. Properties that contain evaluation areas will develop in keeping with the underlying zoning and in conformance with the other regulations of applicable ordinances; however, consideration must be given to the resources that exist on the site and their priority for preservation and permanent conservation. Areas designated in the network as gaps should be considered during the development review process to evaluate whether or not there are opportunities to make critical connections in the green infrastructure network and/or to restore areas and enhance the ecological functioning of the network. Prior to submission of land development applications, the exact location of the green infrastructure network will be delineated on natural resources inventory plans.

SPECIAL CONSERVATION AREAS

Areas of specific countywide significance in need of special attention have been identified on Map 2. These areas, identified as special conservation areas, should be carefully considered when land development proposals are reviewed in the vicinity to ensure that their ecological functions are protected or restored and that critical ecological connections are established and/or maintained to the areas.

Other wildlife habitat types of countywide significance exist that are unique and in need of preservation. Many of these habitats occur outside regulated areas, which mainly include streams, wetlands, 100-year floodplain, and the associated buffers. Specific habitats of concern outside the regulated areas include forests with interior dwelling bird species, upland forests containing trees with high wildlife food value, and meadows. These habitats should be considered high priorities for preservation, restoration and enhancement. In addition, the locations of rare, threatened and endangered species have been identified by the state and should be considered as part of the highest priority areas for preservation.

Beltsville Agricultural Research Center

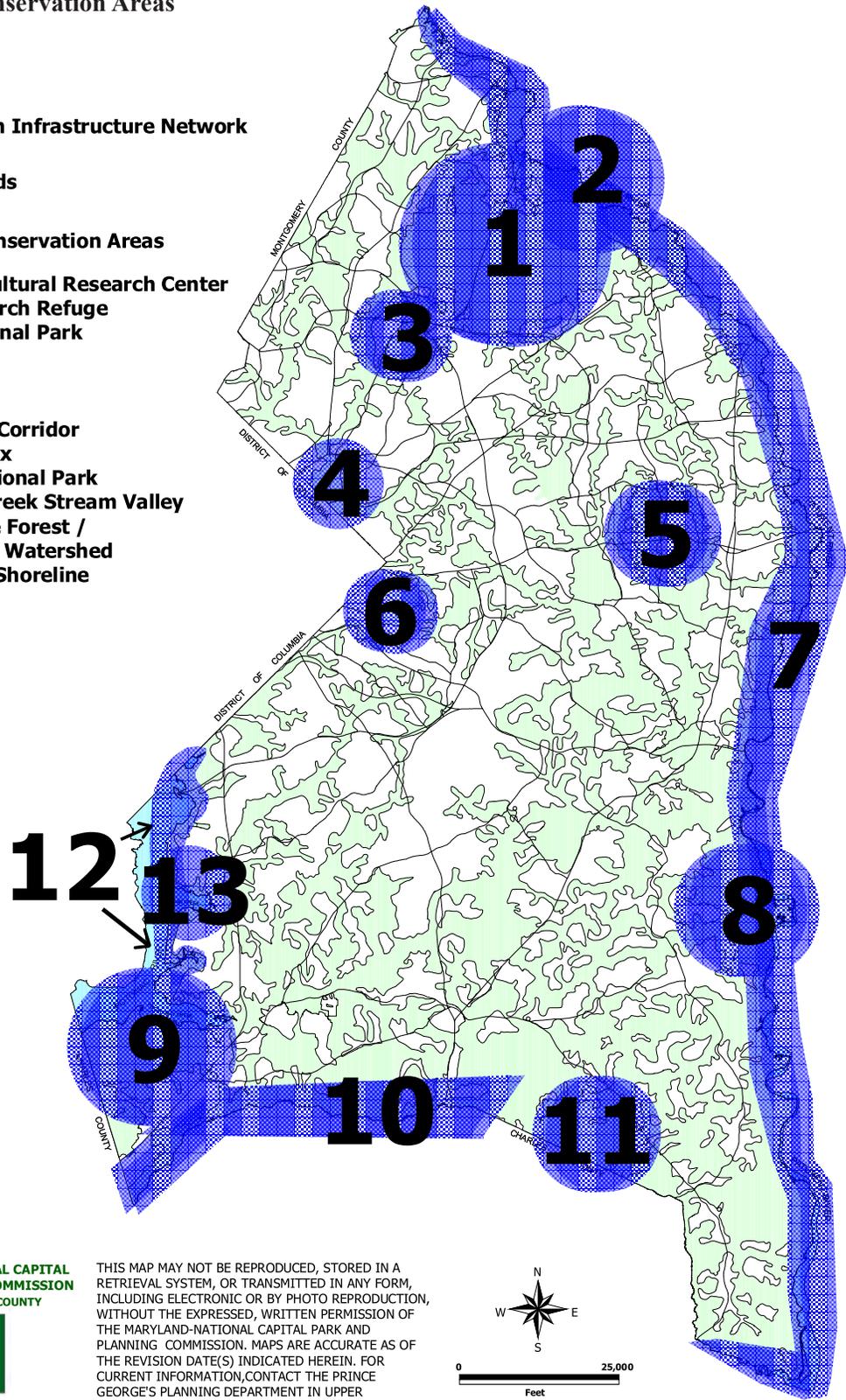
The Beltsville Agricultural Research Center (BARC) is owned by the U.S. Department of Agriculture and is spread over 7,000 acres. It is among the largest and most diversified agricultural research complexes in the world. BARC has experimental pastures, nurseries, orchards, gardens, fields for cultivated crops, and forested ecosystems. This complex has vast areas of open space providing ecological hubs and wildlife corridors. The site also contains a wide variety of habitats that provides extensive research opportunities. Its placement in the green infrastructure network's evaluation area emphasizes that any future land use of the area should be carefully considered.



Map 2: Special Conservation Areas

-  Final Green Infrastructure Network
-  Major Roads
-  Special Conservation Areas

1. Beltsville Agricultural Research Center
2. Patuxent Research Refuge
3. Greenbelt National Park
4. Anacostia River
5. Belt Woods
6. Suitland Bog
7. Patuxent River Corridor
8. Jug Bay Complex
9. Piscataway National Park
10. Mattawoman Creek Stream Valley
11. Cedarville State Forest / Zekiah Swamp Watershed
12. Potomac River Shoreline
13. Broad Creek

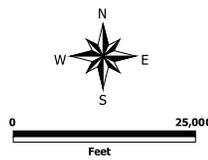


**MARYLAND-NATIONAL CAPITAL
PARK & PLANNING COMMISSION
PRINCE GEORGE'S COUNTY**



PLANNING DEPARTMENT

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Patuxent Research Refuge

The Patuxent Research Refuge is the nation's only national wildlife refuge established to support wildlife research. The refuge is 12,750 acres in size and is owned by the U.S. Department of Interior, Fish and Wildlife Service. Throughout decades of change, Patuxent's mission of conserving and protecting the nation's wildlife and habitat through research and wildlife management techniques has remained virtually unchanged. The site also contains the National Wildlife Visitor's Center, providing educational opportunities related to wildlife conservation.

Patuxent Research Refuge supports a wide diversity of wildlife in forest, meadow, and wetland habitats. The land is managed to maintain biological diversity for the protection and benefit of native and migratory species. During the fall and spring migrations, many waterfowl species stop to rest and feed. Over 200 species of birds occur on the refuge. A nesting pair of bald eagles has used the refuge since 1989.

Particular attention should be given to minimizing forest fragmentation in the area. The refuge is one of the largest forested areas in the mid-Atlantic region and provides critical breeding habitat and an important nesting area for a variety of bird species. Biologists at the refuge have found that increasing forest fragmentation due to urban development has reduced many populations of neotropical migratory birds utilizing the refuge.¹¹

Greenbelt National Park

Greenbelt National Park is one of the largest natural sanctuaries located within the urbanized areas in the region. The mixed evergreen/deciduous forest provides a refreshing escape. The park's 1,100 acres provide facilities for camping, hiking, cycling, picnicking and a variety of other outdoor pursuits. The park is owned and operated by the National Park Service. Greenbelt National Park provides a large area of connectivity for adjacent green corridors within the larger context of the Developed Tier. Connections surrounding the park should be maintained and enhanced or restored whenever possible.

Main Stem of the Anacostia River

The Anacostia River main stem (from the county line to the confluence of the Northeast and Northwest Branches) contains tidal waters that flow landward into one of the farthest points in Prince George's County. This highly developed urban waterway is an important historic spawning ground for anadromous fish such as alewife herring, blueback herring, hickory shad, white perch, striped bass, yellow perch, American eel, and sea lamprey. These species spend most of their lives in saltwater but return to fresh water to spawn. For the past ten years, the Anacostia main stem and the freshwater tributaries immediately upstream have been the target of intense retrofitting to remove stream blockages, improve stream bank stability, replant lost stream buffers, and improve water quality.

The goal is to reopen the historic spawning grounds and to replace important portions of the green infrastructure network that were denuded as the Washington metropolitan region expanded. Public and private investments are

¹¹ U.S. Fish and Wildlife Service web site. October 2004, <http://patuxent.fws.gov>.



needed to achieve the goal, and areas in need of restoration should be identified and targeted for mitigation. As development and redevelopment within this watershed occur, opportunities will arise to restore lost habitat and improve water quality.

Belt Woods

Belt Woods is one of the few remaining old-age upland forests in the Atlantic Coastal Plain physiographic province. It is an upland hardwood forest dominated by tulip poplar and white oak, supporting a dense and diverse bird population. The density of birds breeding at Belt Woods is among the highest observed on the East Coast.¹² Critical wildlife connections and wetlands of special state concern support this system and should be maintained and enhanced. Development surrounding this site should be conducted sensitively and should consider the needs of the flora and fauna of this unique community. Belt Woods is owned by the State of Maryland and is managed by the Western Shore Conservancy. It is recognized by the National Park Service as a national natural landmark.

Suitland Bog

Suitland Bog is a small remnant of the Magnolia Virginia Bogs that were once much more extensive in the region. Of these 30 bogs once known to exist in the Washington area, only the Suitland Bog remains. It is located inside the Beltway and includes approximately 60 acres of unique wetland habitat. The site is owned by The Maryland-National Capital Park and Planning Commission and is known for its rare plant life and a variety of carnivorous plants, as well as rare and threatened plants, that thrive there.

The three most important impacts that could affect Suitland Bog are direct encroachment causing habitat loss, sedimentation, and alteration of surface and/or ground water flow patterns.¹³ Activities within the Suitland Bog watershed should maintain ground water flow to the bog, limit surface water flooding of the bog, and reduce or eliminate sediment reaching the bog.

Patuxent River Corridor

Efforts to protect the entire Patuxent watershed began in the 1960s through Maryland's Patuxent River Watershed Act, encouraging the seven counties bordering the river to preserve its natural lands. Today, The Maryland-National Capital Park and Planning Commission owns more than 6,000 acres of marshes, swamps, and woodlands along the river, known collectively as the Patuxent River Park. Together with many thousands of acres owned by the Maryland Department of Natural Resources and other counties, protected lands along the Patuxent compose one of Maryland's premier greenways.

¹² Maryland DNR web site. October, 2004, <http://www.dnr.state.md.us/wildlife/rtebeltwoodscanopy.asp>

¹³ Management Strategies For Critical Areas—Suitland Bog, June 1984, Natural Resources Division, The Maryland-National Capital Park and Planning Commission.



The preservation of the natural environment and the river’s scenic character are priorities along this corridor. To this end, much of the Patuxent River watershed is located in the Rural Tier. The low-density zoning and existing and proposed conservation methods should serve to add to the protection of this river and its tributaries.

Jug Bay Complex: Jug Bay Natural Area of the Patuxent River Park and the Merkle Wildlife Sanctuary

a. Patuxent River Park/Jug Bay Natural Area

The Jug Bay Natural Area of the Patuxent River Park, near Upper Marlboro, provides some of the best bird watching opportunities in Maryland. More than 290 species have been recorded here, more than 100 of those confirmed as nesting, including the least bittern, which is a species in need of conservation. Jug Bay has been designated an “Important Birding Area” by the National Audubon Society. There is also a companion natural area across the river in Anne Arundel County—Jug Bay Wildlife Sanctuary—and together the complex exceeds 2,000 acres. The marshes here boast one of the largest stands of wild rice in Maryland, attracting large numbers of migrating sora rails and waterfowl in the early fall. Many of the visitors to this area, as well as residents of the surrounding community, enjoy the educational and recreational bird watching opportunities that are provided here. The area has been designated as a component of the Chesapeake Bay National Estuarine Research Reserve, which encourages long-term research in the area.

Jug Bay is often described as a microcosm of the Chesapeake Bay because of its wide range of ecosystems, with marsh and river surrounded by fields and forest. Jug Bay itself is a spectacular expanse of open water, where the Patuxent River slows to loop around high bluffs to the west in Prince George’s County and spreads across low-lying areas to the east, forming one of the largest wetland systems on the western shore.

b. Merkle Wildlife Sanctuary

Merkle Wildlife Sanctuary is the only wildlife sanctuary operated by the Maryland Department of Natural Resources. It is located adjacent to the Patuxent River Park/Jug Bay Natural Area and comprises nearly 2,000 acres of marshland, woodlands, farm ponds, and fields along the picturesque Patuxent River. The sanctuary ranks ninth on the Smithsonian Institution’s Chesapeake Bay inventory of significant natural areas and contains the largest Canada goose wintering ground on the western shore of the Chesapeake Bay. As many as 20,000 geese spend the winter at the sanctuary, and some remain for the summer to nest on the ponds and nearby marshes.

Although the Jug Bay Complex includes a significant amount of land, one threat to its continued existence is water quality degradation. Within the Patuxent River watershed, special attention should be paid to maintaining and improving water quality.



Piscataway Park

Piscataway Park was established to preserve the view of the Maryland shore of the Potomac River from Mount Vernon in Virginia. The park is over 4,600 acres in size and it stretches for six miles from Piscataway Creek to Marshall Hall on the Potomac River. The forests, fields, and wetlands of Piscataway Park provide habitat for a wide variety of bird species. The number of forest-nesting neotropical migrants is especially high. Several warbler species that regularly nest in Piscataway Park are sensitive to habitat fragmentation, and have become increasingly rare in the Washington, D.C., region.¹⁴

Forest fragmentation outside the park and the water quality of the Potomac and its tributaries are concerns for this special conservation area. Development surrounding the park should continue to protect the viewshed and protect the water quality of the Potomac.

Mattawoman Creek Stream Valley

Mattawoman Creek and its tidal and nontidal wetlands are among the most productive finfish spawning and nursery streams in the entire Chesapeake Bay region.¹⁵ The wetland areas support unusually large numbers of fish-eating wildlife, especially great blue herons, great egrets, bald eagles, and black-crowned night herons. The tidal wetlands contain the largest concentration of nesting wood ducks in Maryland.

Quality of the water entering the stream systems in the watershed is of particular concern. When evaluation areas occur within the watershed, the woodlands present should be preserved adjacent to streams to widen the corridors adjacent to regulated areas and protect water quality.

Cedarville State Forest and Zekiah Swamp Watershed

Cedarville State Forest is an actively managed 3,510-acre forest located at the headwaters of Maryland's largest freshwater swamp, the Zekiah. Most of Cedarville is forested with over 50 species of trees. Wildlife is abundant and forestry management practices have created successional forest habitats that enhance bird habitat.

A unique feature of the forest is the Cedarville Bog, which is within the headwaters of the Zekiah Swamp. The bog supports a unique array of plants, such as sphagnum moss and insect-eating plants.

The 77,000-acre Zekiah Swamp watershed is a vast complex of extensive hardwood swamp forests intermingled with shrub swamps, wetlands, grass and sedge savannas, open beaver ponds, and shallow pools. Zekiah Swamp Run, designated a wetland of special state concern and considered by the Smithsonian Institution as one of the most ecologically important on the East Coast, flows through the area in a southwesterly direction from Cedarville State Forest on the Prince George's/Charles County boundary to the Wicomico River, one of

¹⁴ USGS web site: <http://www.mbr-pwrc.usgs.gov/Infocenter/Nps/piscintro.htm>

¹⁵ Charles County web site: <http://www.charlescounty.org/pgm/planning/plans/environmental/mattawoman/characteristics.htm>



nine state-designated scenic rivers. The Zekiah Swamp is an undisturbed wild area with a densely vegetated interior supporting a diversity of plant and animal life, many of which are classified as rare, threatened or endangered species.

Maintenance of water hydrology is of particular concern for this special conservation area. Because much of the area is in private ownership, the potential exists for changes to the hydrology that may damage its long-term viability. This is an area that should receive protection through public or private conservation investments, and if surrounding areas are developed, the design of the land development proposals should seek to maintain the existing hydrology.

Potomac River Shoreline

Along the Potomac River shoreline there are a variety of existing and proposed land uses including national parkland, single-family detached homes, marinas, and the National Harbor project. There are many federal, state, local, nonprofit and volunteer efforts underway to protect and restore the Potomac River. The Potomac River shoreline special conservation area within Prince George's County includes areas supporting the main stem of the Potomac River as well as Piscataway Creek, Swan Creek, Broad Creek, and Oxon Cove. There are several national parks along the shoreline including Fort Foote, Harmony Hall/Broad Creek Historic District, Fort Washington, and Oxon Hill Farm. These areas contain woodlands, wetlands, important plant communities and wildlife habitats, as well as fossil and archeological resources, and they serve as important natural connectors along the river. All of the Potomac River shoreline in Prince George's County is located in the Chesapeake Bay Critical Area, which has special regulations to ensure that development and other land uses are sensitive to the health of the bay. Water quality is of particular concern in this special conservation area, as is the preservation of the natural environment and the river's scenic character. Forest fragmentation should be minimized and ecological connections between existing natural areas should be maintained and/or enhanced when development occurs.

Broad Creek

The tidal wetlands at the mouth of Broad Creek have been identified as an area important to the overall ecology of the Lower Potomac River Basin. The natural productivity of this area is of great value to resident and migratory fish, waterfowl and marsh birds. For this reason, the tidal wetlands of Broad Creek have been designated as an area of Critical State Concern. Future actions in this watershed should ensure the conservation and preservation of these wetlands.



