

## CHAPTER 4: HABITAT PROTECTION

One of the three goals of all local Critical Area Programs is to conserve fish, wildlife, and plant habitat. “Habitat Protection Areas” are designated areas that receive special protection within the Critical Area because they provide habitat for fish, wildlife, and plant species that are significant to the ecosystems of Maryland’s Bays. These special protection measures must be adequate to provide for the conservation and long-term preservation of various species and their habitats. Habitat Protection Areas can be found in areas designated RCA, LDA, and IDA. They are located in both counties and municipalities and may be found in the water, in wetlands, and in upland areas. Due to the unique nature of these species and the sensitivity of their habitats, forest clearing, stormwater runoff, grading, hydrologic changes, and human activity can adversely impact Habitat Protection Areas. The Critical Area Law requires that each local jurisdiction identify and provide for the protection and maintenance of Habitat Protection Areas. These areas include:

- The 100-foot Buffer.
- Nontidal wetlands.
- Habitats of threatened and endangered species and species in need of conservation.
- Significant plant and wildlife habitats.
- Anadromous fish spawning areas.

### **The 100-Foot Buffer and Its Functions**

The State Critical Area Law and Criteria define the term “Buffer” as “an existing, naturally vegetated area or an area established in vegetation and managed to protect aquatic, wetlands, shoreline, and terrestrial environments from manmade

- *Many songbirds require large riparian forests, exceeding 50 acres, in order to breed, nest, and raise young successfully.*



**One of the three goals of all local Critical Area Programs is to conserve fish, wildlife, and plant habitat.**



■ *A variety of wildlife species use riparian forests.*

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disturbances.” “Natural vegetation” means “those plant communities that develop in the absence of human activities.” Generally, this is considered to be forest vegetation. Vegetated buffers can be an effective natural system that works to reduce sedimentation and erosion and filter stormwater runoff. In addition to providing water quality benefits, buffers are also a vital part of shoreline ecosystems and provide fish, wildlife, and plant habitat.

The Criteria and all local Critical Area programs require the establishment and maintenance of a minimum 100-foot Buffer adjacent to all tidal waters, tidal wetlands, and tributary streams. When the Criteria were developed, the Critical Area Commission determined that 100 feet would generally be adequate to fulfill the Critical Area goals of improvement and protection of water quality and enhancement and conservation of natural habitats. However, the Buffer is expanded beyond 100 feet in areas where there are adjacent sensitive resources such as steep slopes or highly erodible or hydric soils. In the case of steep slopes (slopes of 15 percent or greater), the Criteria require that the Buffer be expanded four feet for every one percent

of slope or to the top of the slope, whichever is greater. In the case of erodible soils and hydric soils, expansion of the Buffer is somewhat discretionary and is dependent on whether disturbance or development in these areas will adversely affect streams, wetlands, or other aquatic environments. The Buffer is measured from mean high water, from the landward edge of tidal wetlands, and from the edge of tributary streams.

Although a Buffer width of 100 feet generally serves to promote the water quality improvement and habitat protection goals of the Critical Area Program, scientific studies show that wider buffers can optimize these functions. In 2008, the Buffer provisions were amended to require a minimum width of 200 feet on certain properties proposed for development activities involving subdivision or a change in land use (requiring site plan approval, other than the conversion of agricultural land to a homesite for a single family dwelling without subdividing). This requirement is only applicable to RCA lands that are to remain RCA, and it is intended to enhance the ecological values of RCA lands as part of the overall watersheds of Maryland’s Bays.



- *Standing water, buttressed tree trunks, and watermarks usually indicate that an area is a nontidal wetland.*

The Criteria require local jurisdictions to designate the Buffer as an undisturbed vegetated area between upland land uses and tidal waters, wetlands or tributary streams. This Buffer is required to remain in natural vegetation and is protected from development activities involving building structures, grading of the natural land surface, or removal of vegetation. Development activity in the Buffer is permitted only if it is: associated with a water-dependent structure or use, such as access to a pier; necessary for and associated with the installation of a shore erosion control measure; an activity for which a property owner has obtained a variance; or an activity such as pruning or the removal of invasive plants, when authorized under an approved Buffer Management Plan.

There are a number of significant environmental benefits identified by the provisions of Maryland's Critical Area Program requiring a permanently protected Buffer between upland land uses and tidal waters, tidal wetlands, and tributary streams. These benefits include:

- *The Critical Area Criteria require that a forested Buffer be established or maintained adjacent to tidal waters, tidal wetlands, and tributary streams.*



## Naturally Vegetated 100-Foot Buffer Vital for Water Quality and Habitat Protection

The Buffer is the most important feature of the 1000 ft. Critical Area. The physical separation it provides between development and the water reduces the negative effects of development on Maryland's Bays and also reduces the potential impact of the storms on the built environment.

### Canopy and Shade

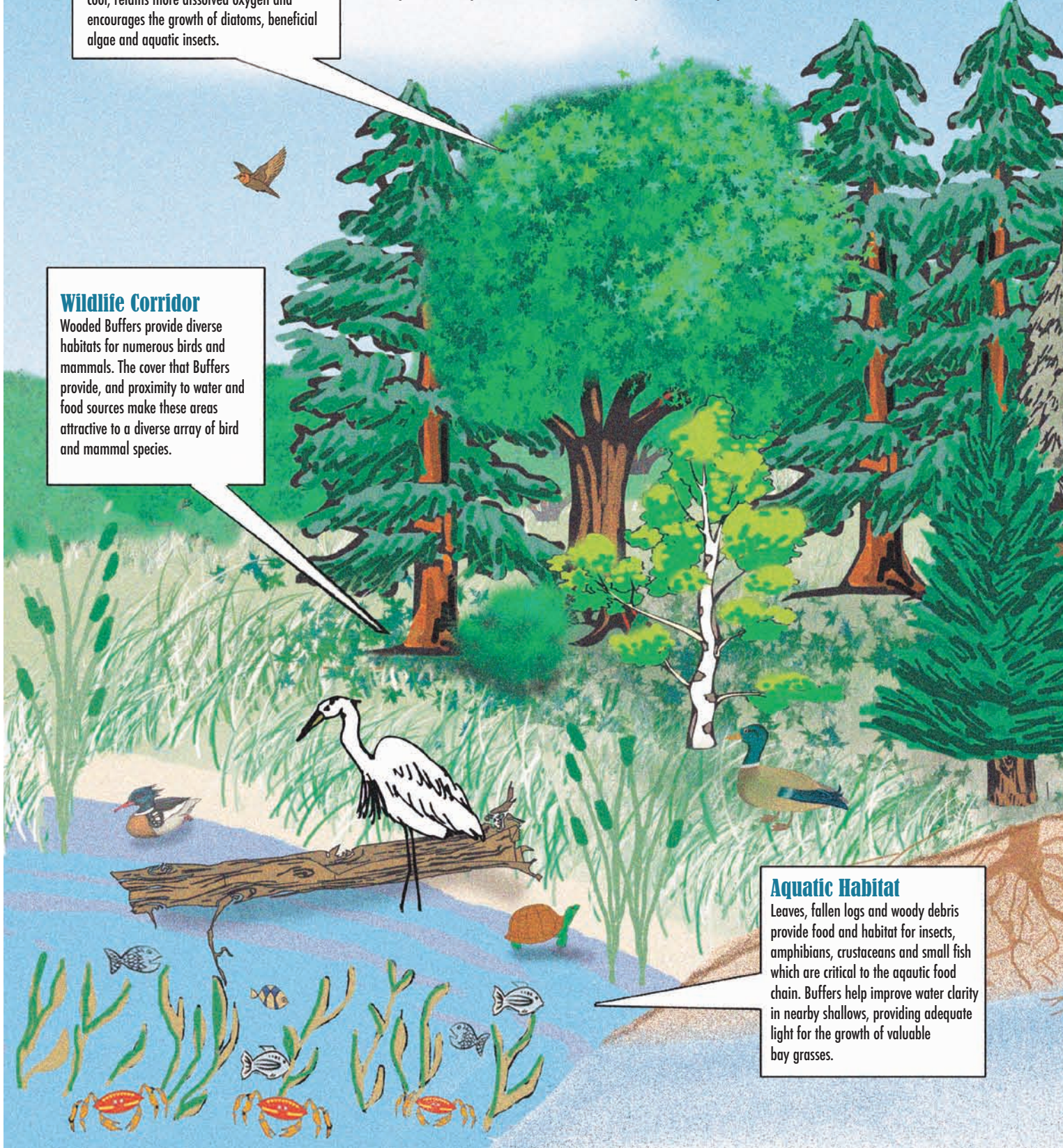
The canopy slows and captures rainfall and improves air quality by filtering dust from wind erosion, construction or farm machinery. Particularly along smaller streams, the leaf canopy provides shade that keeps the water cool, retains more dissolved oxygen and encourages the growth of diatoms, beneficial algae and aquatic insects.

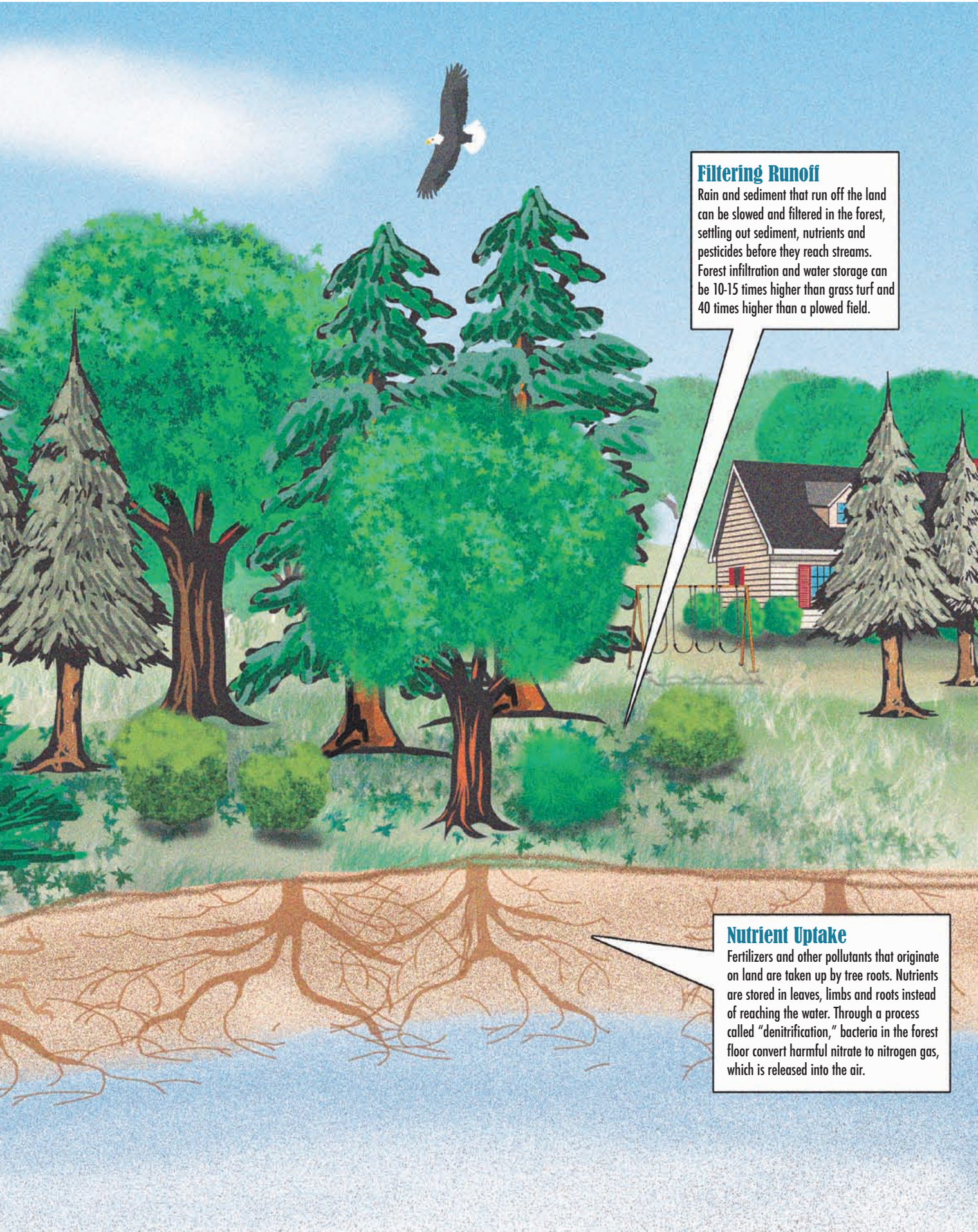
### Wildlife Corridor

Wooded Buffers provide diverse habitats for numerous birds and mammals. The cover that Buffers provide, and proximity to water and food sources make these areas attractive to a diverse array of bird and mammal species.

### Aquatic Habitat

Leaves, fallen logs and woody debris provide food and habitat for insects, amphibians, crustaceans and small fish which are critical to the aquatic food chain. Buffers help improve water clarity in nearby shallows, providing adequate light for the growth of valuable bay grasses.

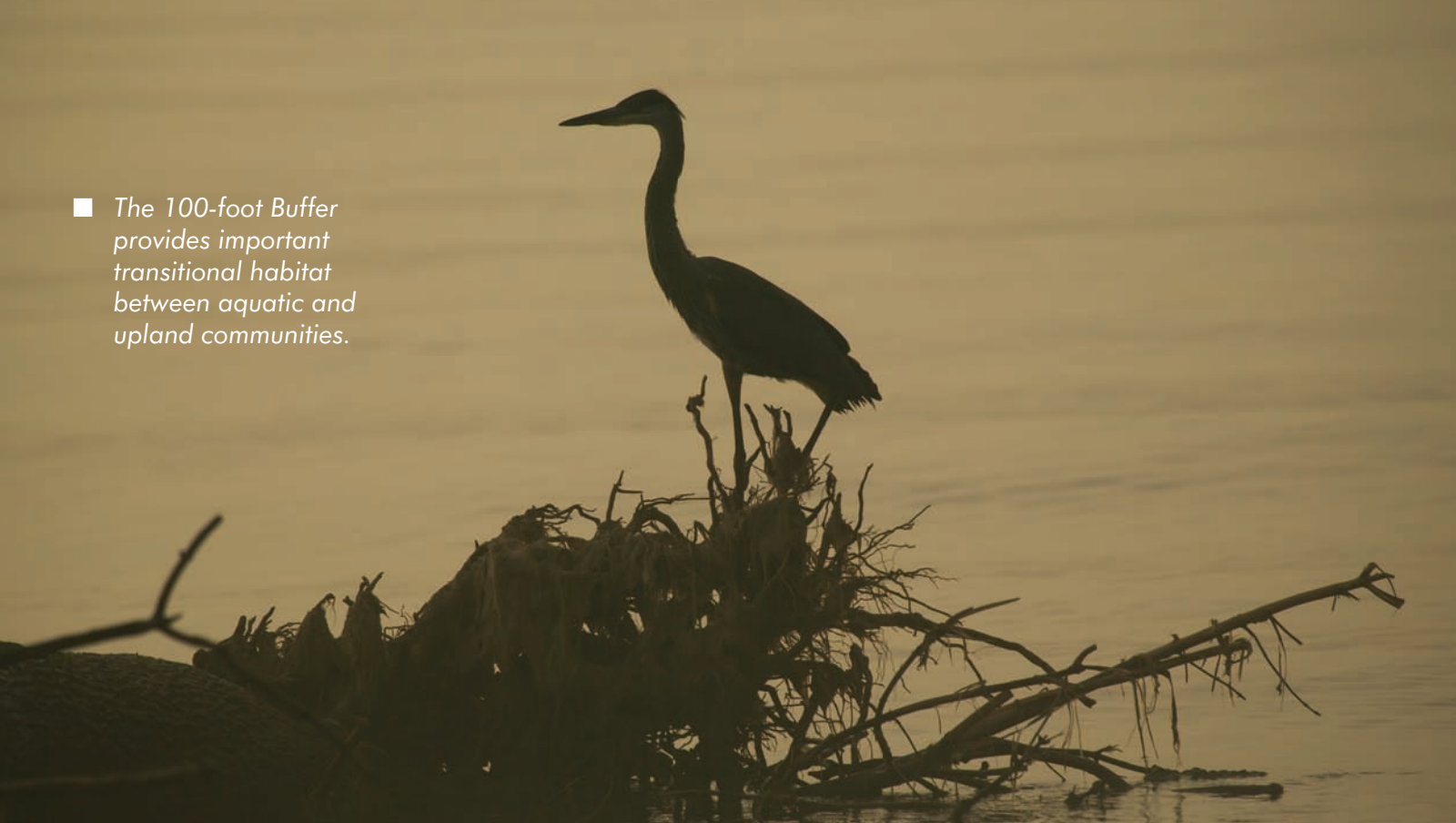




**Filtering Runoff**  
Rain and sediment that run off the land can be slowed and filtered in the forest, settling out sediment, nutrients and pesticides before they reach streams. Forest infiltration and water storage can be 10-15 times higher than grass turf and 40 times higher than a plowed field.

**Nutrient Uptake**  
Fertilizers and other pollutants that originate on land are taken up by tree roots. Nutrients are stored in leaves, limbs and roots instead of reaching the water. Through a process called "denitrification," bacteria in the forest floor convert harmful nitrate to nitrogen gas, which is released into the air.

■ *The 100-foot Buffer provides important transitional habitat between aquatic and upland communities.*



- The removal or reduction of sediments, nutrients, and potentially harmful or toxic substances in runoff entering the Bays and their tributaries.
- Minimization of the adverse effects of human activities on wetlands, shorelines, stream banks, tidal waters and aquatic resources.
- Maintenance of an area of transitional habitat between aquatic and upland communities.
- Maintenance of the natural environment of streams.
- Protection of riparian wildlife habitat.

These Buffer functions can be grouped into three general categories: water quality management, riparian habitat protection, and management of human activities. In an undeveloped and naturally vegetated Buffer, these functions serve to protect the Bays' ecosystems from many of the adverse consequences associated with land use and development activities in the watershed. For this

reason, the prohibition of development activities within the Buffer is considered an essential element of the Critical Area Program. However, there are some instances where disturbance to the Buffer can be permitted because it is either necessary for a certain type of activity or because the condition of the Buffer is such that it no longer performs its identified functions. Properly designed structures and facilities that require a location at or near the shoreline can be developed in such a way as to minimize their effects on the functions of the Buffer. In situations where the Buffer is not functioning because it is already intensely developed, permitting certain development and redevelopment activities can provide an opportunity for restoration. Implementing a vegetated setback from the water's edge, requiring mitigation plantings, and addressing water quality management can serve to replace and restore some of the Buffer functions.

### **WATER QUALITY MANAGEMENT**

A considerable amount of the Chesapeake and Atlantic Coastal Bays' major pollutants (sediments, nutrients, and toxins) reach tidal waters through surface runoff from surrounding upland areas. The Buffer provides water quality protection against these

pollutants through natural physical, biological, and chemical processes. Vegetation within the Buffer traps and filters sediments, nutrients, and chemicals from surface runoff and shallow groundwater. The leaves and branches of mature trees within the Buffer slow the velocity of falling rain so water reaches the ground with less energy. The leaf litter of a forest floor slows runoff velocity and captures sediments and the compounds (such as pesticides, oil and other chemicals) attached to it. Roots keep the soil porous so water can be absorbed instead of rapidly running off. When runoff is infiltrated, excess nutrients or other potentially harmful substances found in stormwater can be bound to soils or biologically processed by plants and soil organisms. Roots can also hold soil in place, preventing sediments and any pollutants attached to sediment particles from entering adjacent waterways. Trees and shrubs with deep root systems absorb nutrients into their woody biomass for long-term storage. Similarly, microbes inhabiting the organic soils of the forest floor help convert nitrates in stormwater into nitrogen gas. The natural processes performed by vegetation within the Buffer from the deepest roots to the tops of the trees significantly reduce pollutant loadings to the Chesapeake and Coastal Bays.

### **RIPARIAN HABITAT PROTECTION**

Contiguous with wetlands, tidal waters, and streams, an ecologically important transition zone functions to connect these aquatic environments to the adjacent land. This transition zone (in its natural state) has notable variation in hydrology, soils and topography. This range of physical features creates an environment for a diverse array of plant, fish, and animal species making riparian areas (both aquatic and upland) one of the most biologically diverse and ecologically important habitats within the Chesapeake and Coastal Bays watersheds. The creation and maintenance of a naturally vegetated Buffer protect and enhance this habitat area and maintain the diverse fish, wildlife, and plant communities along the shoreline.

Aquatic species, including economically important



■ *The Critical Area Criteria require that a forested Buffer be established or maintained adjacent to tidal waters, tidal wetlands, and tributary streams.*

■ *The broad range of physical features of the watersheds of Maryland's Bays contributes to the biological diversity of the region.*





■ *Wetlands, open water, and wooded Buffers provide the different landscape features that promote biological diversity.*

fish and crabs, benefit from Buffers in numerous ways. In addition to the water quality benefits previously described, Buffers provide coarse woody debris, leaves, and other vegetation used as food sources for the insects and invertebrates at the bottom of the aquatic food chain. Wooded Buffers also provide shade and moderate water temperatures for important fishery nursery areas. Long-term viability of the aquatic species of Maryland's Bays depends upon quality nursery habitat.

Buffers are also especially important to a wide variety of bird species. These include raptors such as Bald Eagles and Osprey and colonial waterbirds such as Great Blue Herons, who often establish groups of nests in

mature trees within the Buffer. Numerous species of migratory birds depend on coastal riparian areas to rest and feed during their long migratory flights from Central and South America. A range of mammal, amphibian and reptile species also use these near shore areas, though the number and variety of species are highly dependent on the amount and type of

**A range of mammal, amphibian and reptile species also use these near shore areas, though the number and variety of species are highly dependent on the amount and type of vegetation within the Buffer.**

vegetation within the Buffer. The more natural the state of the Buffer, the greater the number and variety of species that will use it. A manicured lawn that leads down to a bulkheaded shoreline provides none of the important habitat benefits found in a naturally vegetated Buffer.



## MANAGEMENT OF HUMAN ACTIVITIES

In passing the Critical Area Law and implementing local Critical Area Programs, the General Assembly and local government officials recognized that human activities within Maryland's Chesapeake and Coastal Bays' watersheds contributed to the documented decline of these resources. They recognized that development activities in shoreline areas can have a particularly immediate and adverse impact on water quality and natural habitats. They also acknowledged that the cumulative impacts of development within the Buffer are contrary to the restoration of the Bays' resources.

The Buffer, when viewed from the land toward the water, is the last 100 feet of the Critical Area and thus represents the last opportunity to minimize the adverse effects of human activities on the Chesapeake and Coastal Bays. The Buffer's physical separation between development and the water or wetlands provides the last chance for infiltration of runoff or settling out of sediments. It also provides a physical separation between the built environment and the natural one.

This physical buffering effect minimizes disruption to the habitat and behavior of many important species. The Buffer softens the impact of development within the watershed. The physical barrier alone, especially when forested, makes a huge difference in how many species inhabit an area. While human activities and associated development within the watersheds will continue, providing and maintaining a naturally vegetated Buffer is one of the simplest yet most significant ways to minimize their cumulative effects on the Chesapeake and Coastal Bays.

## PERMITTED ACTIVITIES IN THE BUFFER

There are a limited number of circumstances where the Critical Area Program allows some disturbance within the Buffer. The most common are water-dependent structures or activities. These structures and activities, such as a boat ramp or a stormwater outfall, must be located within the Buffer because of their function. Access paths to the water (perpendicular to the shoreline or the shortest distance possible) are also allowed, although any associated clearing must be the minimum necessary. Similarly, some removal of

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- *The Buffer is the last 100 feet of the Critical Area and represents the last opportunity to minimize the adverse effects of human activities on tidal waters, tidal wetlands, and tributary streams.*



- *Grass lawns adjacent to a revetted shoreline do not provide the same habitat benefits as forested Buffers, and, as a result, the numbers of many species have declined in the last 20 years.*
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natural vegetation may be permitted if, for example, a tree is in danger of falling and would potentially cause harm to existing structures or exacerbate erosion.

Generally, all vegetation removed within the Buffer must be replaced at a minimum one-to-one ratio under a Buffer Management Plan that is approved by the local jurisdiction. The installation of shore erosion control measures frequently involves disturbance and, in some instances, significant alteration to the Buffer. These activities can be permitted in the Buffer when they are necessary to control erosion. Shore erosion control measures are encouraged where necessary to protect rapidly eroding portions of the shoreline – that is, those that erode two feet or more per year.



- *A wide variety of terrestrial and aquatic species depend on fully functioning vegetated Buffers for food and cover.*
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Nonstructural measures, which typically involve the use of natural vegetation and sills or groins, are to be used in areas where they would be practical and effective. Additional information about shore erosion control can be found in Chapter 7.

Some resource utilization activities, such as farming or timber harvesting, are also allowed within the Buffer, provided that appropriate approvals and plans are in place to protect adjacent waterways and other natural resources. This additional flexibility is permitted for these uses because of the environmental stewardship



- *In order to ensure that the Buffer is maintained in natural vegetation, a Buffer Management Plan is generally required before starting any alteration to the Buffer, such as installing an erosion control measure or a pier.*



- *Many plant and animal species are uniquely adapted to live in the wet or saturated environments of nontidal wetlands.*

that necessarily accompanies these types of resource utilization activities. If agricultural use of the Buffer ceases and the land is developed, the 100-foot Buffer must be established in natural forest vegetation.

### **BUFFER EXEMPTION AREAS**

Some areas around the Chesapeake and Coastal Bays are characterized by intense shoreline development that existed before the Critical Area Law was passed. Examples include Baltimore Harbor, the city dock area of Annapolis, most of Ocean City, the community of Ocean Pines, and many municipal waterfront areas. The original drafters of the Critical Area regulations recognized these existing land uses, as well as shoreline areas that had been previously divided into very small lots, by allowing for the designation of Buffer Exemption or Buffer Management Areas by the local jurisdictions. The designation of these areas is considered a map amendment to a local Critical Area program and must be approved by the Critical Area Commission following local approval. The term “exemption” is somewhat misleading in that

the affected properties are not “exempt” from the Buffer provisions, but rather alternative regulations apply in these areas. Because Buffer disturbance in many of these areas is unavoidable in order for any development to occur, Buffer Exemption Area provisions allow for reasonable development and redevelopment, while ensuring that necessary water quality and habitat enhancements are provided.

In these areas, development activities are permitted within the Buffer without a variance from the regulations. The setback from the water for development may be modified from 100 feet to the zoning setback instead. However, mitigation, usually at a two-to-one ratio, and planting of the setback area are required to compensate for any adverse impact that may be created. Mitigation may take the form of additional tree and shrub planting within the Buffer; the removal of an existing structure, paving, roadway, or walkway in the Buffer; or the installation of water quality treatment measures.



- *Painted Turtles can be found in shallow freshwater ponds and wetland areas where they feed on aquatic plants, insects, and other organisms found in these areas.*

- *Disturbance to nontidal wetlands and the 25-foot nontidal wetland buffer requires authorization from the Maryland Department of the Environment.*

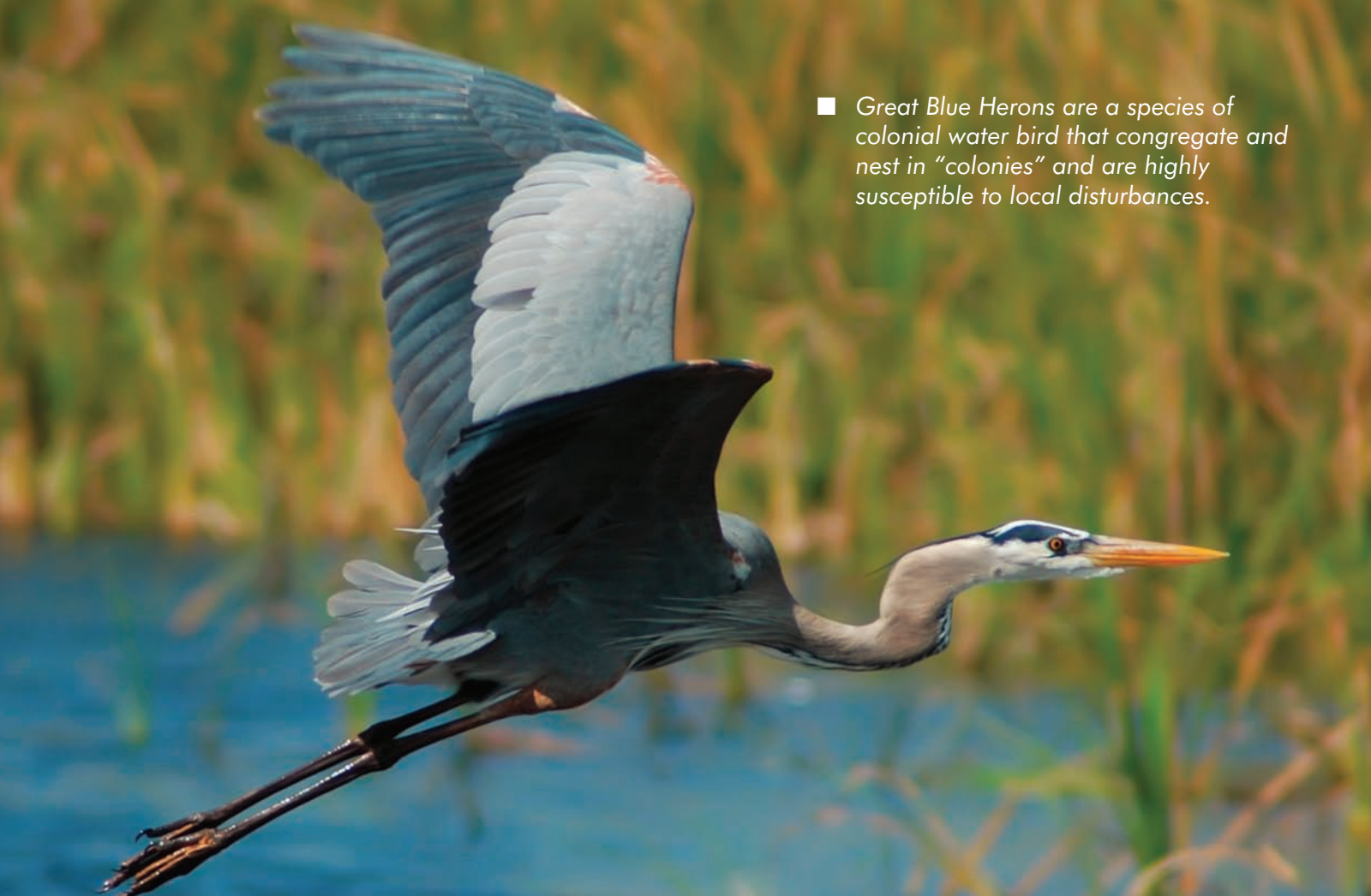


## Nontidal Wetlands

Nontidal wetlands are unique areas that are covered with, or saturated by, water for all or part of the year. These areas are identified by hydric or poorly drained soils, plant species that are uniquely adapted to living in wet or saturated environments, and evidence of hydrologic patterns and processes that indicate the area is frequently wet or flooded. Examples of wetlands are marshes, swamps, bogs, and streams that are not influenced by tidal waters. Nontidal wetlands are valuable areas for fish and wildlife habitat, are vital to the maintenance of water quality, and provide flood control benefits. Protection of these areas is important to the maintenance of the biodiversity and resilience of the ecosystems of Maryland's Bays.

In the original Critical Area Criteria, nontidal wetlands were identified as Habitat Protection Areas and specific protection measures for nontidal wetlands were included. Since that time, the responsibility for regulating the protection and conservation of nontidal wetlands has been transferred to the Maryland Department of the Environment (MDE) and is addressed in the Environment Article of the Annotated Code of Maryland. The nontidal wetland regulations require a 25-foot protective buffer around all wetlands and some wetlands that have been identified as Wetlands of Special State Concern must be protected by a 100-foot buffer. Any activity that will disturb, fill, or alter a nontidal wetland or the required buffer requires authorization from MDE.

In addition to any permit issued by MDE, many jurisdictions strictly regulate nontidal wetlands as Habitat Protection Areas and require that applicants for development activities obtain a Critical Area variance if nontidal wetlands or the nontidal wetland buffer will be disturbed or altered by development activity. These jurisdictions generally prohibit the filling, alteration, or development of nontidal wetlands. If an applicant obtains a variance, then substantial mitigation measures are required to replace the affected wetlands and provide for water



■ Great Blue Herons are a species of colonial water bird that congregate and nest in “colonies” and are highly susceptible to local disturbances.

quality benefits and habitat protection equal to or greater than that provided by the original wetlands.

### **Habitats of Threatened and Endangered Species and Species in Need of Conservation**

Local jurisdictions within the Critical Area are required to protect and conserve all federal and State listed threatened and endangered species and their habitats. In addition, the Critical Area Program requires the protection of “species in need of conservation,” which are those fish and wildlife whose continued existence as part of the State’s resources is in question. These species are officially designated in accordance with the Natural Resources Article of the Annotated Code of Maryland.

For some species, such as Bald Eagles, specific protection measures have been developed to provide for buffer zones around nest sites. Within



■ The Critical Area Commission works closely with the Department of Natural Resources and local governments to ensure that Bald Eagle nest sites are protected by buffer zones that prohibit and limit certain activities.

■ *The Delmarva Fox Squirrel is an endangered species found in many counties on the Eastern Shore, and protection and conservation plans for this species are usually developed on a site-by-site basis. (Photo courtesy of USFWS)*



■ *Many threatened and endangered species have specific habitat requirements like the Northeastern Beach Tiger Beetle, which is found on sandy beaches backed by eroding cliffs. (Photo courtesy of USFWS)*

these buffer zones, land disturbance activities may be prohibited or limited to certain times of the year. For other species, such as the Delmarva Fox Squirrel and the Puritan Tiger Beetle, local governments must coordinate closely with the U.S. Fish and Wildlife Service and the Department of Natural Resources

(DNR) to develop an appropriate protection and conservation plan that is specific to the particular site and species.

Many plant species are also identified as endangered or threatened in the State of Maryland. Because plants are not mobile, the continued presence of these species is often dependent on specific soil conditions and hydrologic regimes that can be affected by a variety of land use and development activities. Identifying these plant species is often difficult and in some cases can only be accomplished during certain months of the year when the specific species is flowering. DNR's staff can provide assistance to landowners regarding the identification and protection on these species.

The limited distribution of the habitats of threatened and endangered species and species in need of conservation makes protection and preservation of these areas a significant component of efforts to restore and protect the Chesapeake Bay and Atlantic Coastal Bays. Many of these species are highly

susceptible to local land disturbances. The Critical Area Program allows for a variety of measures and approaches for the protection of these species, including designation of protective buffer zones around essential habitat, establishment of conservation easements, and land acquisition. Threatened and endangered species provisions vary among local Critical Area programs; however, in all cases, coordination with the DNR is required.

### **Significant Plant and Wildlife Habitat**

The Critical Area Program requires that local governments provide for the conservation of certain plant and wildlife habitats that are important from a State-wide or local perspective because of their unique characteristics or their significance to the ecosystems of Maryland's Bays. These habitats can be found in areas designated RCA, LDA, or IDA, and they include upland areas, wetlands, rivers, creeks, and streams. Working with the DNR, local governments have identified the following habitats for protection within the Critical Area:

- Colonial water bird (e.g., heron, egret, and tern) nesting areas.



■ Significant plant and wildlife habitats can be found in areas designated RCA, LDA, or IDA.



■ Threatened and endangered plant species often depend on specific soil and water conditions and are highly vulnerable to eradication as a result of changes in land use and development activities.

- Historic waterfowl staging and concentration areas.
- Riparian forests, identified as forested areas of 300 feet in width along streams, tidal waters, and wetlands.
- Forest Interior Dwelling Species (FIDS) habitat, identified as relatively undisturbed, large forest tracts (50 acres or more) which support breeding populations of forest interior dwelling birds (e.g., vireos, warblers, flycatchers, and woodpeckers).
- Natural Heritage Areas, officially designated sites consisting of communities of plants and animals that are considered to be among the best State-wide examples of their kind.
- Areas of local significance, as identified by each jurisdiction.



- *Forest Interior Dwelling Species (FIDS) habitat consists of large forested tracts, which are not fragmented by roads, homesites, or open fields.*
- *Natural Heritage Areas are officially designated areas that are protected from alteration due to development activities or cutting or clearing, so that the structure and species composition of the areas are maintained.*



The DNR has identified and mapped these areas, and, in most cases, these maps are available at the DNR main office in Annapolis and at each local planning office. Applicants for new development projects on undeveloped sites are required to submit the proposal to the DNR for review and comment as part of the local development review process. This ensures that when new habitats are discovered, they are appropriately protected from the adverse impacts of human activities. In order to ensure that these areas are properly identified and protected, local governments generally use one or all of the following approaches:

- Designation of protection areas around a habitat where disturbance (such as new development or

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appropriately protected...**





- *Local governments can use a variety of approaches to ensure that Habitat Protection Areas are conserved and remain viable for the species that depend on them.*

the cutting of trees) is prohibited, unless it can be shown that the disturbance would not cause adverse impacts on the habitats or species being protected. In some cases, these activities may be limited only during certain times of the year because they disrupt nesting or the rearing of young.

- Development of a Habitat Protection Area Plan for a specific site as part of the development approval process, where disturbance may be restricted to certain areas of the site and specific conservation or protection measures may also be required. In some cases, if adverse impacts are anticipated, mitigation measures either on the site or elsewhere are required.
- Implementation of broad-scale protection programs, including the acquisition of land, conservation easements, cooperative agreements with landowners, or other similar measures.

- *As development pressure in the watersheds of Maryland's Bays continues to increase, broad scale protection programs such as land acquisition and conservation easements will be necessary to adequately protect significant habitats within the Critical Area.*





- *Anadromous fish, such as Yellow Perch, are species that travel from their primary ocean habitat to spawn or breed in freshwater areas.*

## **Anadromous Fish Spawning Areas**

Anadromous fish spawning waters are those tributary streams where species spawn, such as rockfish, yellow perch, white perch, shad, and river herring, or where such spawning has occurred in the past. These fish travel from their primary ocean habitat to spawn or breed in freshwater areas. Anadromous fish are valuable recreational and commercial species and also are an important component in the Chesapeake and Atlantic Coastal Bays ecosystems. The Criteria require that local governments implement the following standards:

- Prohibit the installation or introduction of concrete rip-rap or other artificial surfaces onto the bottom of natural streams, unless it can be demonstrated that water quality and fisheries habitat can be improved.
- Prohibit the channelization or other physical alteration of streams that may change the course or circulation of a stream and interfere with the movement of fish.
- Minimize development activities or other land disturbances in the watershed.

- *The channelization or physical alteration of anadromous fish spawning waters is prohibited in the Critical Area.*





- *Maintaining the economic benefits provided by recreational fishing in Maryland depends on protecting water quality in all Maryland waterways.*

- Maintain or improve the water quality in streams.
- Minimize, to the extent possible, the discharge of sediments into streams.
- Maintain or increase the natural vegetation in the watershed.

In addition, local governments are required to address and implement other State laws and regulations. These provisions prohibit the construction or placement of dams or other structures that interfere with the movement of spawning fish or larval forms; they also prohibit construction, repair, and maintenance activities associated with roads, bridges, and utilities between March 1 and May 15.

- *The protection of anadromous fish spawning waters is accomplished by minimizing development activities and other land disturbances within the watershed.*





**Through rigorous and thoughtful application of the growth allocation provisions, this element of the Critical Area Program can foster more sensitive development activity that minimizes impacts to water quality and conserves natural habitats.**