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U.S. Fish & Wildlife Service

# Blackwater

## *National Wildlife*

## *Refuge*

### *Wildlife Drive*



Wildlife Drive  
Jacob Carroll/USFWS

## Take a Drive on the Wild Side!

Blackwater National Wildlife Refuge is one of more than 560 refuges in the National Wildlife Refuge System administered by the U.S. Fish and Wildlife Service. The National Wildlife Refuge System is a network of lands and waters managed specifically for the protection of wildlife and habitat for the continuing benefit of the American people. On refuges, wildlife comes first!

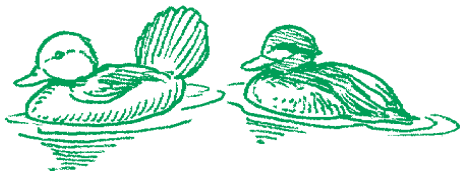
Blackwater National Wildlife Refuge welcomes you to tour the popular Wildlife Drive. The drive can be accessed by automobile, bicycle or on foot. All visitors must remain on the paved road. While on the refuge, please obey all signs, and do not feed, harass or collect any plants or wildlife. The Wildlife Drive is open daily from dawn until dusk.

This guide points out some of Blackwater's wildlife management programs and is keyed to numbered observation points along the drive.

Although this refuge is managed primarily for migratory birds, many other types of wildlife share the wide diversity of habitats. The careful observer will see a variety of plants and animals along the drive.



### 1. Moist Soil Vegetation



Freshwater habitat is scarce on Blackwater National Wildlife Refuge because of the predominantly brackish (mixture of salt and fresh water) conditions found here. The dike on which you are riding was built to create the freshwater impoundment (constructed wetland) to your right, which adds to the diversity of habitat for wildlife.

Scan the shallow edges for dabbling ducks such as mallards and northern pintails; wading birds such as great blue herons and great egrets; and shorebirds like yellowlegs and dunlins. The impoundments are drained in summer to encourage the growth of plants such as wild millet, smartweed and redroot cyperus which provide food for waterfowl. The exposed mudflats also provide good feeding areas for shorebirds and other marsh and water birds.

Management of the impoundments is designed to mimic natural processes. In late summer, water control structures are closed to allow rainfall to refill the impoundments, making the seeds and tubers of these plants and a variety of invertebrates, such as snails, worms, and larvae, available to migratory waterfowl.

To your left is the Little Blackwater River; a tidal waterway connected to the Chesapeake Bay. The river is named for its dark color, which comes from tannic acids picked up as water drains through leaf litter in forested wetlands.

### Marsh Edge Trail



### 2. Bluebird Box

At this point, if you would like to visit the Observation Platform and the Marsh Edge Trail, take the road to the left. To rejoin the Wildlife Drive, double back and continue from this point. A self-guiding leaflet for interpreting the Marsh Edge Trail is available at the trail head. The Marsh Edge Trail may be closed mid-winter through mid-summer to protect nesting eagles and herons.

On your left is a bluebird nest box. These boxes have been successfully used to improve bluebird reproduction. Bluebird nesting sites had decreased due to lack of natural nesting cavities, or holes in trees. Nesting boxes were installed to give the birds places to nest. As many as 140 bluebirds have fledged in one year from the refuge's 30+ boxes. Other birds such as tree swallows,

chickadees, titmice and wrens also use the boxes. Bluebirds, as well as other bird species, play an important role in the natural control of insects.

### 3. Marsh Loss and Migration

The majority of the scientific community agrees that sea levels are rising globally, and coastal wetlands are changing as a result. In many of these places, changes will have a significant negative impact on the ecosystem and economy. Understanding where and how these changes will occur is a complex challenge we face today.

The effects of sea level rise are visually apparent from this location. Standing snags (dead trees) serve as clear reminders of rising water and salt water intrusion. Over 5,000 acres of tidal marsh have been lost in the Blackwater River system since the 1930s. This marsh has converted to open water, while many forested areas are now converting to marsh. Ensuring that the refuge continues to provide these important habitats for wildlife is a key goal.

### 4. Phragmites (pronounced "frag-my-tees")



On your left, you may notice phragmites, or common reed, a tall perennial grass found in wetlands throughout temperate and tropical regions of the world. In the United States, we have both native and non-native strains of phragmites. The phragmites found at Blackwater is the non-native invasive strain which outcompetes native plants and provides little benefit to wildlife. It can grow in damp ground, in standing water up to 3 feet deep, or even as a floating mat, and has the ability to release toxins that hinder the growth of other plants.

Phragmites is not easy to remove once established. It spreads rapidly by root and seed and readily invades disturbed areas. As sea levels rise, causing forests to die and convert to



### 5. Delmarva Peninsula Fox Squirrel

marsh, phragmites is often the first plant to become established. The refuge controls the plant in strategic areas through the use of fire and herbicide, attempting to suppress the phragmites until more beneficial native plants have an opportunity to grow. Controlling this and other non-native species is one of the biggest challenges land managers face today.

This woodland is managed to provide habitat for the Delmarva Peninsula fox squirrel, which prefers a mature forest with little undergrowth. In the past, these large squirrels were found throughout the Delmarva Peninsula and into southeastern Pennsylvania. By 1967, they inhabited only 10% of their historic range and were placed on the first endangered species list. Forest clearing for agriculture, timber harvest and unregulated hunting in the early 1900s contributed to their decline.

The fox squirrel has a light, steel-gray coat and a large fluffy silvery tail with black edges. The gray squirrel, which also inhabits the refuge, is smaller and has a narrower tail and brownish gray fur. The fox squirrel spends considerable time on the ground foraging for food in woodlots, and will take food from farm fields. Decades of recovery efforts have led to the recovery of the Delmarva Peninsula fox squirrel and its removal from the endangered species list.

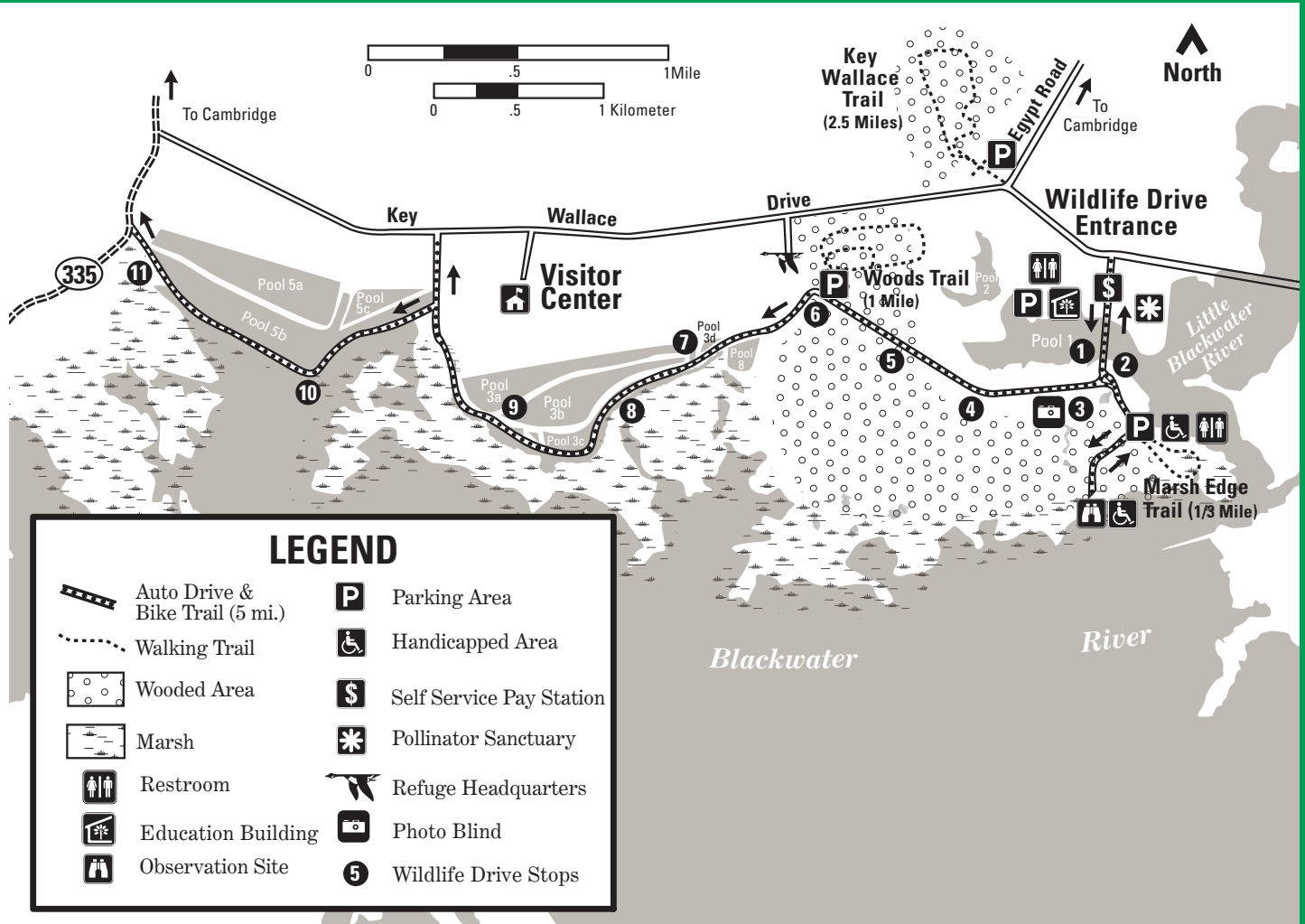
### Woods Trail

You will pass a parking lot on your right for one of the refuge's walking trails, the Woods Trail. In spring, these wet woods are alive with the calls of mating tree frogs and toads and numerous songbirds. The Woods Trail allows you to trek through Delmarva Peninsula fox squirrel habitat. If you choose to hike the one-mile trail, you may want to apply insect repellent as biting insects are abundant from April through October.

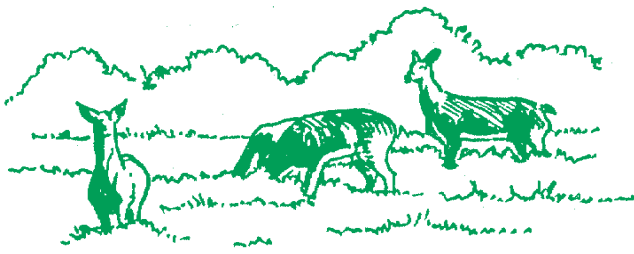


# Blackwater

## National Wildlife Refuge







## 6. Deer

More than 300 acres of refuge croplands are planted with corn, clover, and winter wheat to provide high energy food and cover for many species of wintering waterfowl. Other wildlife species also take advantage of these crops. White-tailed deer may be seen feeding in these fields, especially in the early morning or evening. They prefer the “edge” habitat where forests, meadows and croplands come together. In addition to white-tailed deer, the smaller, white-rumped sika (pronounced “see-kuh”), an Asian species of elk introduced to James Island in 1916, are also common at Blackwater. Abundant in marshy areas, sika are grazers that feed on the marsh grasses while white-tailed deer are primarily browsers that feed on the leaves, buds, mast and twigs in forested areas. Both species may forage on agricultural crops.

## 7. Fresh and Brackish Water Marshes



From here you can see typical habitat used by waterfowl, marsh birds, muskrats, and a variety of amphibians and reptiles. The dike you are on separates the freshwater impoundments on your right from the tidal, brackish marsh and Blackwater River on your left.

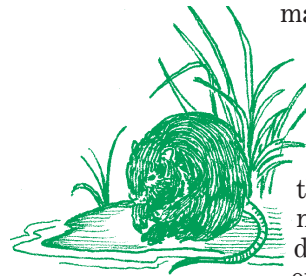
In the late winter, controlled burns are performed in the tidal marsh. These carefully planned burns help to promote new, vigorous spring growth of the Olney three-square and other marsh vegetation that is eaten by waterfowl and muskrats.

Fire also helps to prevent extremely hazardous and volatile conditions by removing dried or dead vegetation that fuel wildfires.

During the summer, egrets, herons and other water birds feed on fish and crustaceans of the brackish marsh. They also eat frogs and snakes found in the fresh waters of the impoundments. Painted turtles and redbelly turtles are often seen sunning themselves on logs in the impoundments, while snapping turtles and diamondback terrapins are more often seen in the brackish waters. Approximately 45 species of reptiles and amphibians are found on the refuge.

## 8. Muskrat and Nutria

Muskrats, sometimes observed swimming in the water, not only feed on the marsh vegetation, but also use it to build dome shaped homes called lodges. These can easily be seen after controlled burns in the marsh, but are hard to find in the summer when the marsh vegetation grows higher than the lodges. The large rodents reproduce rapidly. The young are considered adults in approximately two months. Trapping by permit is used to control the muskrat population and prevent damage to marsh vegetation from overgrazing.



The nutria, a much larger South American rodent, was introduced in this area in the 1940s for their fur. They reproduce more rapidly than the muskrat, do not have any natural predators, and there is little demand for their fur. Nutria feed on the roots of marsh plants, and are partially responsible for the loss of thousands of acres of wetlands over the past several decades. An intensive trapping effort, begun in 2002, has virtually eliminated nutria from the refuge and its surrounding counties.

Ahead on your left you will notice sections of marsh outlined with stakes and fencing. These are experimental marsh restoration plots that were planted in 2003 to test the feasibility of rebuilding some of the marsh that has been lost to nutria and other factors. These plots have shown that replanted marshes will grow quickly and remain vigorous if the underlying soils can be built up to proper levels.

## 9. Osprey

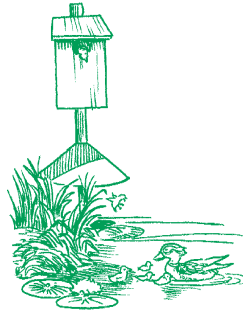


The structure on your right is an example of an osprey nesting platform. Nesting platforms were an important tool in early osprey recovery efforts, but are now used mainly for wildlife observation. The shallow waters of the Blackwater River provide excellent fishing habitat for this “fish hawk.”

Osprey populations declined in the mid-1900s as a result of pesticide use and increased human activity. The pesticide “DDT”, which caused the eggs that were laid by these birds to be too thin and soft to hatch, was banned in the United States in 1972. This legislation and various management techniques have helped increase the population of the osprey, as well as other raptors such as the bald eagle and the peregrine falcon.

## 10. Waterfowl

Blackwater National Wildlife Refuge is an important stop along the Atlantic Flyway, where migrating waterfowl are able to rest and feed during their long seasonal journeys. Species of waterfowl using Blackwater include Canada and snow geese, tundra swans, and more than 20 species of ducks. The shallow nature of the Blackwater River system and the freshwater impoundments make this area especially appealing to “dabbling” waterfowl, who look for food at or just below the surface of the



## 11. Bald Eagle



*We hope you enjoyed your visit to Blackwater National Wildlife Refuge's Wildlife Drive! Please come back again to experience a variety of wildlife that changes with every season of the year. For more information about the refuge, be sure to stop by our Visitor Center on Key Wallace Drive, open Tues. - Sun. 10:00 am to 4:00 pm., closed observed federal holidays.*

water. In spring and summer, look for resident mallards, wood ducks and black ducks. During the fall and winter, migratory dabblers such as northern shovelers, northern pintails, gadwall, teal and wigeon visit the refuge, along with several “diving” species such as ruddy ducks, common mergansers, and hooded mergansers. Waterfowl visitation is dominated by the presence of thousands of Canada geese, snow geese and tundra swans, many of whom remain at the refuge throughout the winter months.

The trees to your left are a favorite resting spot for bald eagles, as well as hawks, vultures, herons and egrets. Bald eagles prefer the tall loblolly pines near the water for nesting and roosting. Areas on Blackwater National Wildlife Refuge where eagles nest are protected from human disturbance to prevent nest abandonment. Look closely at the tall live pines, and you may spot a nest used by eagles for the past few years.

The area in and around the refuge boasts one of the largest concentrations of nesting eagles on the east coast outside of Florida. Eagle numbers increase during the winter when migrant eagles visit the area. Bald eagle populations in the U.S. decreased in the mid-1900s as a result of illegal shooting and the effects of DDT, and they were declared endangered in 1967. Through recovery efforts and the protection by the U.S. Fish and Wildlife Service, bald eagles became an endangered species success story in 2007 when they were removed from the list completely.