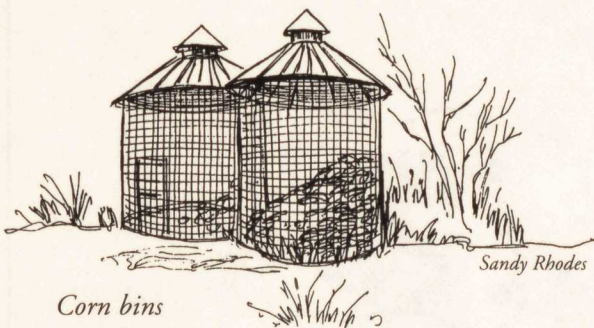


crowned night herons. During the fall hunting season, you may see grass-covered water blinds, used by Young Waterfowlers. Under this program, youths aged 12 to 18 are taught hunting safety, ethics, regulations, and waterfowl identification before participating in a refuge hunt.



Corn bins

Sandy Rhodes

Corn Bin

The bin to your left can store corn used during waterfowl banding. When banding takes place, the age and sex of captured birds are recorded and matched with the numbers on the band. Information on the birds is sent to the Migratory Bird Banding Laboratory in Laurel, Maryland. If you recover a banded bird, the band, along with information about where the bird was found, should be sent to the Bird Banding Laboratory. Through bird band returns, much valuable information is gained about waterfowl populations and migration patterns.



Sandy Rhodes

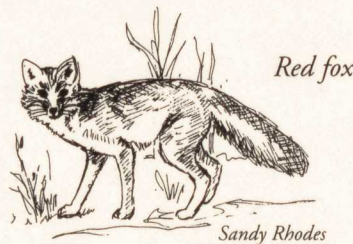
Old Field

On a regular basis fields are rotated from agricultural production and planted to a grass/lespedeza mixture. Areas like this throughout the upland portions of the refuge provide ideal nesting or breeding cover for a wide variety of birds and mammals, including ducks, quail, rabbits, pheasants and white-tailed deer. The old fields are mowed and/or burned every two or three years to prevent the growth of woody vegetation.

Woodland

Beyond the water to your left is a 410-acre woodland. It is managed to provide habitat for many species of plants and animals. Sweet gum, white oak and black tupelo are the larger trees in these woods. American holly, jack-in-the-pulpit and blood root also grow here.

Animal species that use these woods for food and cover include white-tailed deer, opossums, skunks, raccoons and foxes. Each spring the woodland is alive with the sound of warblers.



Red fox

Sandy Rhodes

Moist Soil Management

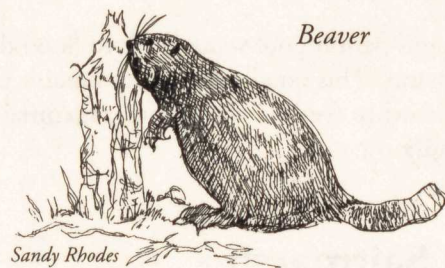
The small land depression to the left is one of a series of units being created throughout the refuge to provide wetland habitat diversity. The small levee in the ditch to your right accommodates a water control structure which allows us to hold up to several inches of water. Varying water levels throughout the growing season in turn encourage desirable wetland plants to grow. Many species of birds, mammals, reptiles, and amphibians utilize moist soil management areas.

Allee House

This small country-style dwelling of the Queen Anne period preserves a bit of history on the refuge. Built about 1753, it is on the National Register of Historic Places. Check at refuge headquarters for open hours.



Sandy Rhodes



Beaver

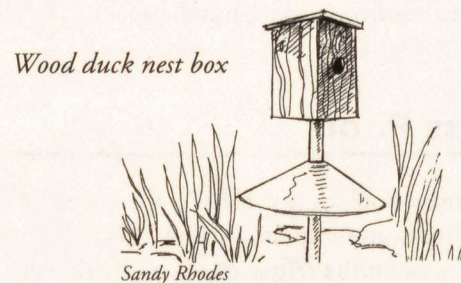
Sandy Rhodes

During the fall, you may notice goose blinds and elevated deer stands (platforms) in fields and woodlands along the road near the Allee House. On specified days, this area is open to waterfowl and deer hunting on a permit basis.

Finis Pool

Finis Pool contains the freshest water of any impoundment on the refuge. Beyond the pool is Finis Branch, the primary fresh water source for all impoundments. Beavers are occasionally trapped and relocated from here to reduce the potential for beaver dams to clog the water control structures and flood the road.

Wood ducks, which need cavities for nesting, use the wooden boxes you see here. The cone skirts prevent raccoons and snakes from getting into the nest and destroying the eggs or ducklings.



Wood duck nest box

Sandy Rhodes

The refuge staff hopes you enjoyed your tour. Please let us know about your wildlife encounters. To do this, either stop at the visitor center or record your sightings on the observation list kept in the brochure rack near the restrooms.

U.S. Fish and Wildlife Service

Bombay Hook is one of over 500 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 wildlife habitat and represents the most comprehensive wildlife management program in the world. Units of the system stretch across the United States from northern Alaska to the Florida Keys and include small islands in the Caribbean and South Pacific. The character of the refuges is as diverse as the nation itself.

The Service also manages National Fish Hatcheries, and provides Federal leadership in habitat protection, technical assistance, and the conservation and protection of migratory birds, certain marine mammals and threatened and endangered species.

For further information please contact:

Refuge Manager
Bombay Hook National Wildlife Refuge
2591 Whitehall Neck Road
Smyrna, DE 19977-9764
Office: (302) 653-9345
Visitor Center: (302) 653-6872

Hearing impaired visitors may call the Delaware Relay Center at 1-800-232-5460 TDD/1-800-232-5470 voice.

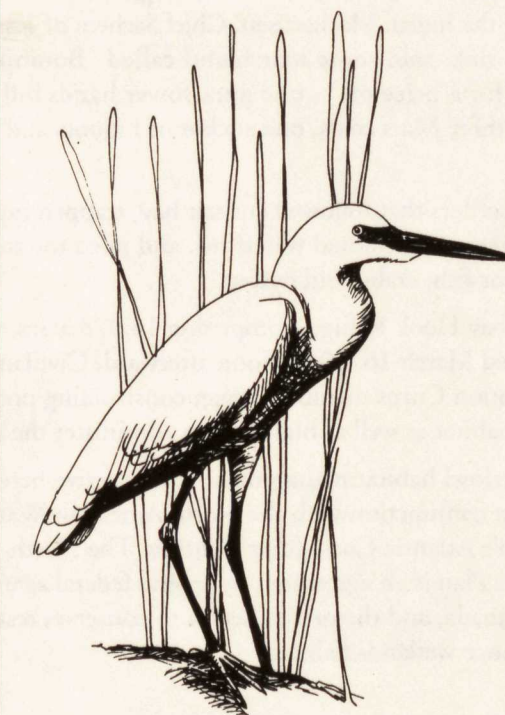
Illustrations except cover by Sandy Rhodes, courtesy of Delaware State College, Department of Agriculture and Natural Resources



UNITED STATES
DEPARTMENT OF THE INTERIOR
U.S. Fish and Wildlife Service

September 1996

Auto Tour



BOMBAY HOOK
National Wildlife Refuge
Smyrna, Delaware

Welcome to Bombay Hook National Wildlife Refuge, haven for wildlife and nature lovers seeking to study, photograph, and simply enjoy the environment at its scenic and protected best. This refuge is managed primarily for migrating and wintering ducks, geese, shorebirds, and other migratory birds, including the threatened southern bald eagle and endangered peregrine falcon.

History

Recorded history of the area began in 1679 when the Indian Machacksett, Chief Sachem of Kahan-sink, sold some marshland called "Boompies Hook" for a price of "...one gun, fower hands full of powder, three Mats coats, one anckor of Liquors and one Kittle..."

The settlers that followed cut salt hay, trapped muskrats and terrapins, hunted waterfowl, and plied the tidal streams for fish, crabs, and oysters.

Bombay Hook Refuge, comprising 15,978 acres, was established March 16, 1937. Soon afterward, Civilian Conservation Corps members began constructing pools for wildlife habitat as well as buildings to administer the area.

Waterfowl habitat management is very active here, and is done in conjunction with the North American Waterfowl Plan's Atlantic Coast Joint Venture. The North American Plan is an agreement by several federal agencies, states, Canada, and the private sector to conserve, restore and enhance wetlands habitat.

Cooperative Farming

A major refuge wildlife objective is to support migrating geese and ducks. Much food for these birds is supplied by the aquatic environment. However, crops are planted on about 1,000 acres of the refuge to provide additional food. Corn and soybeans are the primary crops harvested by refuge farmers for market,

while other crops (winter wheat, buckwheat, grass/clover pasture) are left for wildlife. Farmers supply some corn for the refuge to use in conjunction with waterfowl banding.

The gray-green tower on your left is a lookout used during goose banding. To capture geese, corn is spread on the field in front of a carefully-spread net. Several cannons with black powder charges are attached to the net. When enough birds have been attracted by the corn, the cannons are fired. This hurls the net over the geese without harming them. All birds are released after numbered bands have been placed on their legs.

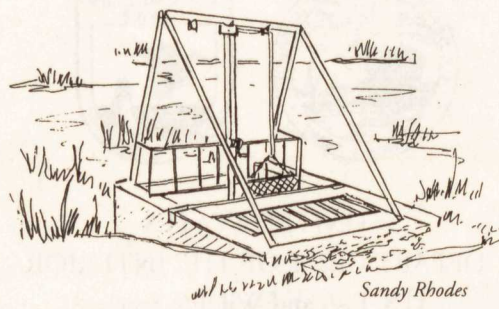


Wheat Sandy Rhodes

Freshwater Impoundments

The ability to manipulate water levels in these pools is the key to creating necessary habitats. Pool levels are maintained by the use of water control structures with stoplogs. In the spring, excess water in the pool is released to the salt marsh to create mudflats which provide a food source for wading birds and shorebirds.

During the summer, emergent plants like wild millet, three-square bulrush, cattail, pond weed, wigeon grass, and wild rice thrive and produce seed in the shallow waters and exposed pool margins. Low pool levels that favor the growth of waterfowl foods also favor invertebrate species that are a food source for shorebirds.



Water control structure Sandy Rhodes

Fall rains permit pool water levels to flood the seed-bearing plants. This flooding provides suitable conditions for waterfowl to feed on the plants, maximizing the food supply.

Tidal Saltmarsh

Tidal saltmarsh supplies organic materials for the food chain, circulates nutrients, provides nesting habitat for waterfowl and serves as a nursery area for fish.

A variety of waterfowl nest in the marsh, including black ducks, mallards, gadwalls, and blue-winged teal.

Bombay Hook Refuge hosts up to 85,000 migrating greater snow geese every year. Large numbers of geese can "eat out" salt marsh vegetation when they feed on the roots of wetland plants. To lessen this damage, managed snow goose hunts are used on the refuge to disperse the flocks.



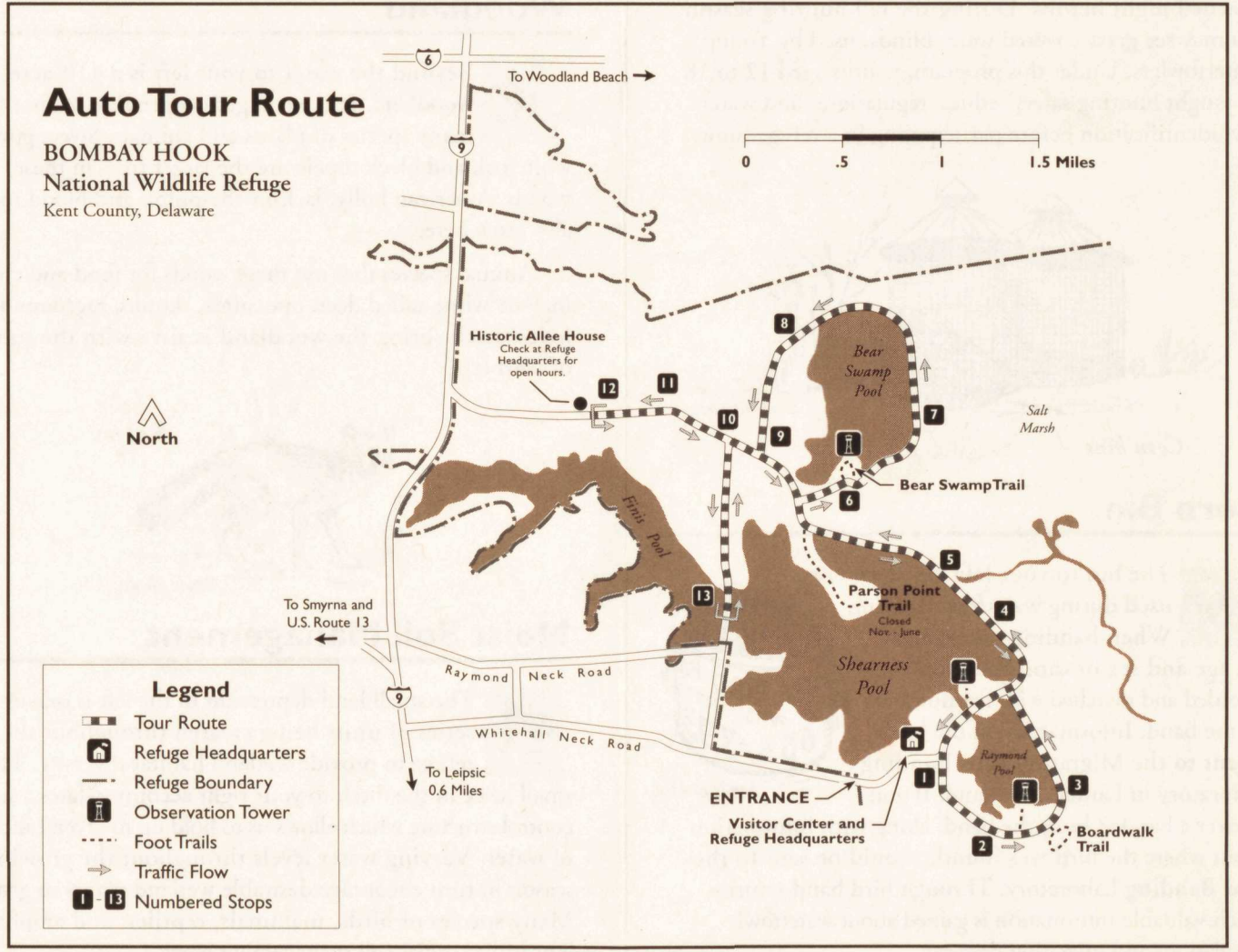
Muskrat house Sandy Rhodes

The mud and reed mounds scattered across the tidal salt marsh are muskrat houses. Because a large population of muskrats can damage marsh vegetation, trapping by permit is used to control muskrat numbers.

Shearness Pool

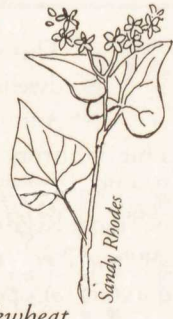
Shearness Pool, on your left, is the largest of the four freshwater impoundments. It is the most likely area on the refuge to see southern bald eagles, which may be perched in trees, or feeding on fish, crippled ducks, or geese. Bald eagles nest on the refuge.

The trap beyond the Shearness Pool parking lot is used to capture ducks for banding. The trap, which is baited with corn, allows ducks to enter, but does not allow them to escape.



Wildlife Food Plot

To your left is a wildlife food plot, planted with bicolor lespedeza. Other food plots on the refuge may consist of buckwheat, millet, or autumn olive. These food plots attract a variety of wildlife, and supplement natural food sources. Food plots also provide habitat for ground-nesting birds and breeding areas for small mammals.



Buckwheat Sandy Rhodes

Food plots are usually prepared and planted by neighboring farmers as part of their cooperative farming agreements with the refuge.

Loafing Area

The islands to your left in the Bear Swamp Pool are loafing (or resting) areas for wading birds. Throughout the summer, these islands are used by snowy egrets, great egrets, great blue herons, and black-