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U.S. Fish & Wildlife Service  
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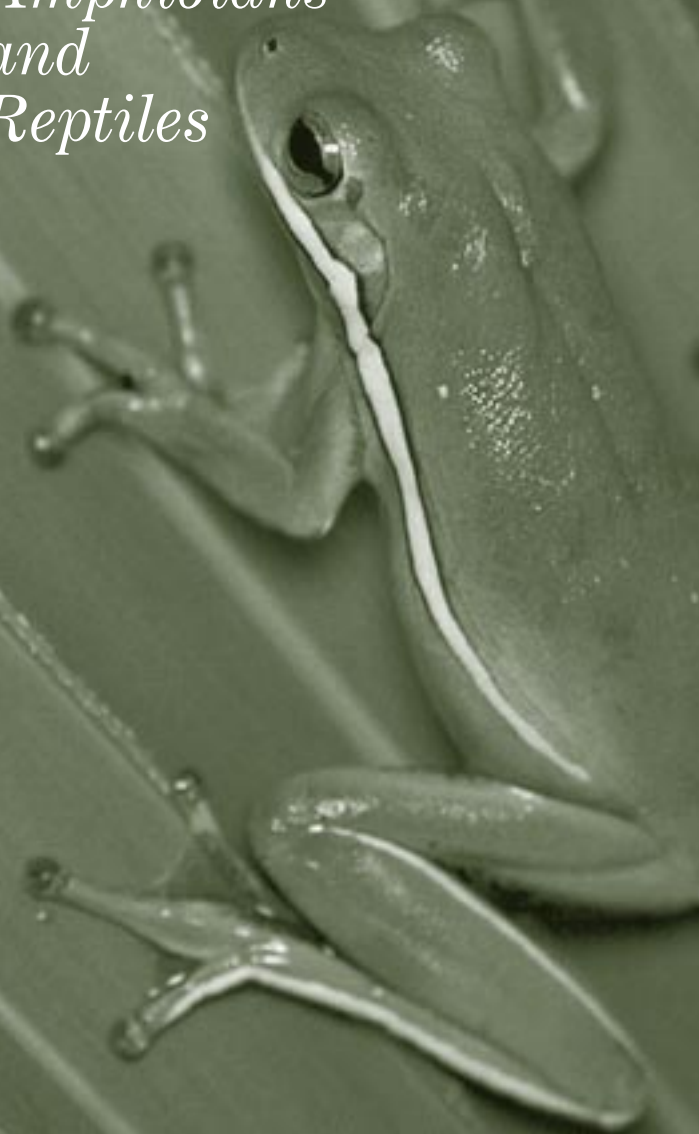
CELEBRATING A  
**CENTURY**  
of CONSERVATION

U.S. Fish & Wildlife Service

# Bombay Hook

*National Wildlife  
Refuge*

*Amphibians  
and  
Reptiles*



Green treefrog  
Jane M. Rohling



This goose, designed by J.N. "Ding" Darling, has become the symbol of the National Refuge System.

Bombay Hook National Wildlife Refuge comprises 15,978 acres, approximately three-quarters of which is tidal salt marsh. It also includes 1,100 acres of impounded fresh water pools, brushy and timbered swamps, 1,100 acres of agricultural lands, and timbered and grassy upland. The general terrain is flat and less than ten feet above sea level.

The variety of habitats within Bombay Hook Refuge provides the essential living requirements for an interesting array of amphibians (salamanders, toads, and frogs) and reptiles (turtles, snakes and lizards).

Many of these kinds of animals are often overlooked by visitors. They are hard to see; however, closer scrutiny may expose a "clump of moss" as a frog or "part of a vine" to be a snake. A slight movement on their part as you approach may be the giveaway. The frogs and toads can also be identified by their voices which ring out in loud chorus during spring nights, and into the summer.



*Redback salamander*

## Amphibians

### Salamanders

#### Redback Salamander

*(Plethodon cinereus)*

A fairly common woodland salamander. Hides beneath logs, bark slabs and stones during the daytime. In this area, it is usually in the "lead" phase, that is, the reddish pigment is usually lacking.

#### Marbled Salamander

*(Ambystoma opacum)*

Uncommon. Found in woodland areas hiding under logs. Fall breeder. A mole salamander, spending most of its life underground.

#### Spotted Salamander

*(Ambystoma maculatum)*

Uncommon. Found in woodland and pond areas. Early spring breeder. Like marbled salamander; breeds in fishless pools. Hides beneath logs during the day. Recognized by bright yellow spots.

#### *Marbled salamander*



### Toads and Frogs

#### Fowler's Toad

*(Bufo woodhousii fowleri)*

Common in woodland and grassy areas. Has three or more warts in each dark spot unlike the American toad which has 1 or 2. Breeds in shallow temporary pools.

#### Northern Cricket Frog

*(Acris c. crepitans)*

Common. Inhabits the emergent and shoreside vegetation of the freshwater pools. Call sounds like two marbles hitting together.



*Green treefrog*

### **Green Treefrog**

*(Hyla cinerea)*

Common in woodland areas adjacent to ponds. Seen particularly during spring. Visits windows at night, seeking insects attracted by light. Cowbell-like breeding call can be heard early to mid summer.

### **Gray Treefrog**

*(Hyla versicolor)*

Uncommon. Breeds in quiet shallow waters. Forages aloft in small trees and shrubs near water.

### **Northern Spring Peeper**

*(Pseudacris c. crucifer)*

Common. Congregates and calls loudly in early spring where shrubs stand in shallow water.

### **New Jersey Chorus Frog**

*(Pseudacris triseriata kalmi)*

Common. Congregate during the spring in low vegetation along the edges of freshwater pools and ponds. Call is reminiscent of a finger going across a comb.

### **Bullfrog**

*(Rana catesbeiana)*

A common large frog of the freshwater pools. The familiar jug-o-rum call can be heard throughout the warm weather.

### **Green Frog**

*(Rana clamitans melanota)*

Inhabits the shallow freshwater of the pools. Ponds and ditches. It's call sounds like a loose banjo string.

### **Southern Leopard Frog**

*(Rana u. utricularia)*

Common in shallow freshwater areas. Travels into grass fields, far from water, during the summer.

### **Pickerel Frog**

*(Rana palustris)*

Common. Inhabits shallow, freshwater areas. Travels into grass fields during the summer.

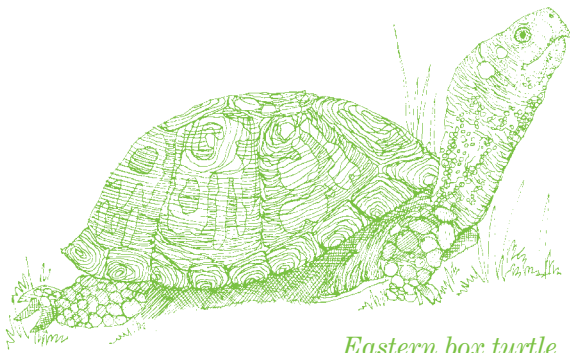
### **Wood Frog**

*(Rana sylvatica)*

Common. Should be looked for in shallow woodland pools during the early spring. One of the first frogs to call in spring. Gasping or clacking like call heard in early March.



*Pickerel frog*



*Eastern box turtle*

## Reptiles

### Turtles

#### **Common Snapping Turtle**

*(Chelydra s. serpentina)*

Common in the freshwater pools, but also inhabits brackish and salt water. The largest nesting turtle in Delaware, it lays its eggs in the upland fields and dike road during the late spring.

#### **Common Musk Turtle**

*(Sternotherus odoratus)*

Common. Lives in the freshwater pools. May give off musky smell when handled, sometimes called stinkpot.

#### **Eastern Mud Turtle**

*(Kinosternon s. subrubrum)*

More common than the musk turtle which it resembles. Inhabits both fresh and brackish water.

#### **Spotted Turtle**

*(Clemmys guttata)*

Uncommon. Inhabits shallow freshwater in the pools, ponds and ditches. Most individuals have yellow or orange spots on shell.

#### **Eastern Box Turtle**

*(Terrapene c. carolina)*

Uncommon. This is a dry-land turtle most frequently seen in the woodlands. Feeds on slugs, worms and vegetation. May live to 80+ years.

#### **Northern Diamondback Terrapin**

*(Malaclemys t. terrapin)*

A common estuarine species. Lives in unpolluted salt marsh and brackish water habitats. Lays eggs on the dikes or other accessible areas in early June to early July.

#### **Eastern Painted Turtle**

*(Chrysemys p. picta)*

The most frequently seen turtle. Basks in the warm sunlight on logs, stumps and vegetated clumps in the freshwater pools.

#### **Redbelly Turtle**

*(Pseudemys rubriventris)*

Uncommon. Inhabits the freshwater pools. Basks like the painted turtle but is much larger. Feeds primarily on aquatic vegetation.



*Five-lined skink*

### Lizards

#### **Five-lined Skink**

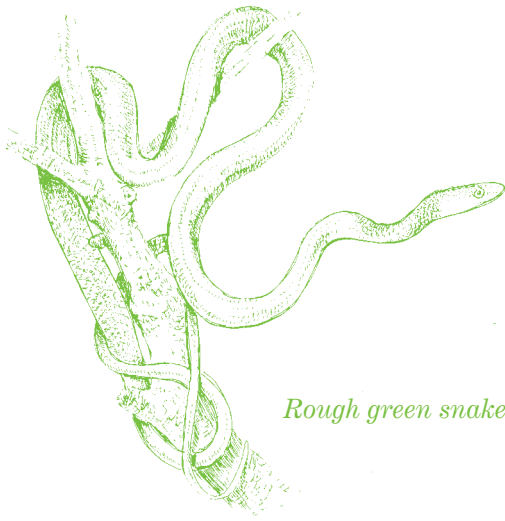
*(Eumeces fasciatus)*

Uncommon. Lives in cut-over woodlands that have rotting stumps and logs. Mainly terrestrial, but can climb trees. Juveniles have bright blue tails. Adult males have reddish orange heads.

#### **Northern Fence Lizard**

*(Sceloporus undulatus hyacinthinus)*

Uncommon. Favors rotting logs and open woodlands. Primarily arboreal, seldom far from trees.



*Rough green snake*

## Snakes

### Northern Water Snake

*(Nedrodia s. sipedon)*

Most commonly encountered snake on Refuge. Harmless, but will bite if provoked. Common in and about fresh and brackish water. Feeds on frogs and fish.

### Eastern Garter Snake

*(Thamnophis s. sirtalis)*

Frequently seen. Inhabits fields, woods and marsh edges.

### Eastern Ribbon Snake

*(Thamnophis s. sauritis)*

A semiaquatic snake found along the edges of the freshwater pools. Swamps and ditches, and also occasionally in fields and woods.

### Ringneck Snake

*(Diadophis punctatus)*

Secretive. Hides under stones and bark slabs in woodlands, especially near damp spots. Bright yellow to orange ring around neck.

### Northern Black Racer

*(Coluber c. constrictor)*

A large snake, active during the day. Seen occasionally in the woods and along field edges.

### Rough Green Snake

*(Opheodrys aestivus)*

Difficult to observe because it blends with the background. Favors dense vegetation along shallow bodies of freshwater. Feeds on insects.

### Black Rat Snake

*(Elaphe o. obsoleta)*

A large, thick, bodied snake. Seen commonly, usually in the upland woods or on field edges. Excellent climber, often found in trees.

### Eastern Kingsnake

*(Lampropeltis g. getula)*

Uncommon. Often secretive, hiding under boards and logs. Hunts along the banks of freshwater pools and swamps. May feed on other snakes.

### Eastern Milk Snake

*(Lampropeltis t. triangulum)*

Rare on Delaware's coastal plain. Secretive about farm buildings and in the fields and woods.

### Eastern Hognose Snake

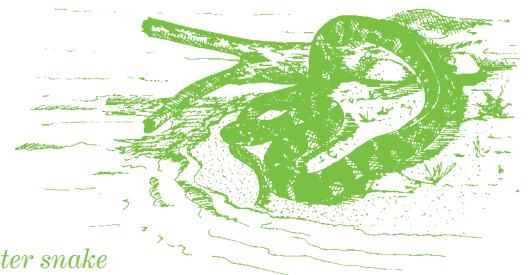
*(Heterodon platirhinus)*

Uncommon. Prefers cultivated fields and woodland meadows. Feeds on toads and frogs. Will play dead if harassed.

### Eastern Worm Snake

*(Carphophis a. amoenus)*

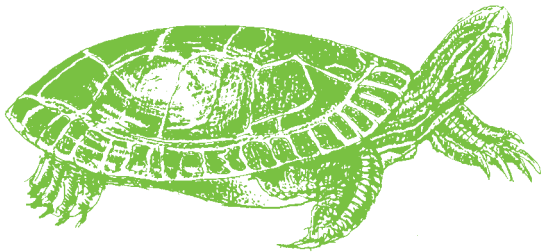
Uncommon. Inhabits farmland bordering woodlands; dwells in damp situations under rocks, decaying logs, and loose soil.



*Northern water snake*

The 35 species on this list have been identified on the Bombay Hook Refuge by refuge personnel with cooperation from the staff of the Philadelphia Zoological Garden. A special thanks also goes to Dr. Roger Conant, author of the Field Guide to the Reptiles of Amphibians of Eastern and Central North America, in the Peterson Series. To Skip Conant USFWS volunteer; Jim White of the Delaware Nature Society, Mike McLaughlin associated with Delaware conservation groups who assisted in updating this list. Bob Jones State Fish and Wildlife for original artwork. Names were taken from "Common and Scientific Names" by the Society for the Study of Reptiles and Amphibians.

Other species no doubt exist on the refuge and reports of their identification will be welcomed at the refuge headquarters. Following is a list of other possible species: Northern Brown Snake (*Storeria dekayi*), Ground Skink (*Scincella lateralis*), Eastern Mud Salamander (*Pseudotriton montanus*), Northern Red Salamander (*Pseudotriton ruber*), Cope's Gray Treefrog (*Hyla chrysoscelis*), and Eastern Spadefoot (*Scaphiopus h. holbrookii*).



*Eastern painted turtle*

Robert Savannah



*Northern Spring peeper*

### **U.S. Fish and Wildlife Service**

Bombay Hook is one of more than 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 resource management programs 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, fish and wildlife research, technical assistance and the conservation and protection of migratory birds, certain marine mammals and threatened and endangered species.