

EASTERN INDIGO SNAKE QUALIFIED OBSERVER



TITAN UNIVERSITY

Environmental Course Series



CONSTRUCTION MANAGEMENT BEGINS WITH TITAN

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EASTERN INDIGO SNAKE OBSERVER COURSE

Welcome to TITAN University's Eastern Indigo Snake Observer Course. This certificate course is very important for those working construction on Government projects, especially in the states of Florida and Georgia, where the Eastern Indigo Snake, an endangered species is found.

BACKGROUND

The Eastern indigo snake is protected as a Threatened Species by the Federal Endangered Species Act and as a Federally designated Threatened Species by Florida's Endangered and Threatened Species Rule.

CONSTRUCTION PROJECTS

On construction projects requiring Environmental Permits to include the Eastern Indigo Snake, it's crucial for Construction Contractors, their employees, and subcontractors to understand and abide by the Permit.

IDENTIFICATION

Being able to identify the Eastern Indigo Snake is important. Knowing its' habitats helps quite a bit because there are snakes that look like Eastern Indigo, like the black racer, although the habitats are not similar.

PENALTIES

The penalties associated with further endangering the Eastern Indigo Snake are high and understanding a little about the species will be expected of everyone on the project.

It is a third-degree felony A person found killing an eastern indigo snake is subject to prosecution under the Federal Endangered Species Act which may result in one year of jail and a \$50,000 fine.



ABOUT THE EASTERN INDIGO SNAKE

The eastern indigo snake is one of the largest non-venomous snakes in North America, with individuals often reaching up to 8 feet in length.

They derive their name from the glossy, blue-black color of their scales above the body, and uniformly slate blue on their underside. Frequently, they have orange to coral reddish coloration in the throat area, yet some specimens have been reported to only have cream coloration on the throat.

Most indigo snakes have smooth scales, although adults do have keels (ridges) on the front of some of their scales.

When approached, the Eastern indigo snake shows no aggression. These snakes are not typically aggressive and will attempt to crawl away when disturbed. Though indigo snakes rarely bite, they should **NOT** be handled.

The status and biology of the eastern indigo snake, which is the largest north American snake, is poorly understood. Its scientific name is *Drymarchon couperi*, which is a Greek phrase meaning “Lord of the Forest”.

WHY IS THE EASTERN INDIGO SNAKE ENDANGERED?

Destruction of habitat and exploitation by pet trade has reduced its population levels to the point that it is listed by the Federal government as a threatened species.

Construction activities have further reduced its population. This species has been sighted in Southeast Georgia, peninsular Florida, the lower keys, with disjunct populations in west Florida, and southern Alabama.

HABITAT

Within the Everglades National Park, the eastern indigo snake can be found in seven habitats: pine forest, tropical hardwood hammocks, freshwater marshes, coastal prairies, mangrove forests, abandoned farmland, and developed sites.



The pinelands of the Everglades National Park are remnants of the pine forest that once covered most of the coast of southeastern Florida. The pine forests are composed of open stands of slash pine with a diverse understory of hardwood shrubs and low palms. The understory is made of saw palmetto and a variety of mainly tropical species, including rough velvet seed and poisonwood. In the absence of fire, pine forests succeed to tropical hardwood forests with a mature layer of pine brush.

“Hammock” is the name given locally to tropical hardwood forests. Hammocks occur in patches in the pinelands, in tree lands in the marshes, and on artificially elevated sites. Several thousand of these small tree islands exist, but the total area of hammocks is less than 100 square miles for the 3 southernmost counties of Florida. The forest canopy is made up of many tropical hardwood species, including strangler fig, poisonwood, and layers of shrubs and trees, consisting of approximately 40 hardwood species. The humid hammock environment also supports orchids and a variety of fern species.

FRESHWATER MARSH

Everglades freshwater marsh represents the most widespread habitat in southern Florida. The most common plant is sawgrass, however many other grasses are present within the habitat. The composition of the vegetation communities reflect slight differences in elevation and substrate. Ponds occur in depressions throughout the everglades. These ponds known as “gator holes”, include willow, alligator flag, and maiden cane.

COASTAL PRAIRIE

The Coastal prairie habitat occurs between mangrove and tropical hardwood hammock vegetation zones. Typical plants include salt-tolerant grasses and herbs such as *Spartina* and *Salicornia*.

MANGROVE FOREST

The mangrove forest habitat extends along the coast inward to the freshwater marshes. This habitat, which covers approximately 346,000 acres in southern Florida and 230,000 acres inside the Everglades National Park, is dominated by four species: red mangrove, black mangrove, white mangrove, and buttonwood. Mangrove forests usually occur along mudflats, bays as a dense thicket ranging in height 6 to 75 feet.

ABANDONED FARMLAND

Approximately 10,000 acres of abandoned farmland, in various stages of succession, exist inside the Everglades National Park, mostly adjacent to the Long Pine Key. Pine forests and marshes originally covered this area, but the present vegetation varies from forbs and grasses to trees, reflecting different stages of succession. Grass-forb stages are five to seven years old, and the oldest tree stages are close to



35 years old. In approximately 5,000 acres of former marsh and pine forest, the substrate was altered by rock plowing and was subsequently invaded by exotic plant species, such as Brazilian pepper.

FEEDING HABITS

The eastern indigo snake is carnivorous, like all snakes, and will eat any other small animal it can overpower. It has been known to kill its prey by beating it against nearby objects. Captive specimens are frequently fed dead prey to prevent injury to the snake from this violent method of subduing its prey. Its diet has been known to include other snakes, including venomous ones, as it is immune to the venom of the North American rattlesnakes. The eastern indigo snake also eat turtles, lizards, frogs and a variety of small birds, mammals, and eggs.

BREEDING

Indigo snakes begin breeding between the months of November and April and nest between the months of May and August. Females lay 4-12 eggs yearly or bi-yearly, with the eggs hatching 90 days after being laid. Since the indigo snake is a commensal of the gopher tortoise, females usually deposit their eggs in gopher tortoise burrows.

THREATS

The main threats facing the Eastern indigo snake are habitat destruction, fragmentation, and degradation. Habitat destruction is caused mainly by the extension of urban development in their habitat. Indigo snakes lose more than 5% of their habitat each year in Florida.

As a species that often occupies gopher tortoise burrows, indigo snakes face being injured by people hunting for rattlesnakes in the burrows. This action usually causes death to other species in the burrow including Eastern indigo snakes.

Habitat degradation and fragmentation is also a threat as increased housing and road development can separate their habitat into smaller individual habitats. Small, fragmented habitats can have problems supporting a viable population. Other threats include pollutants, vehicle strikes, captures for domestication, and intentional killings. Because of habitat loss, the eastern indigo snake is listed as a federally threatened species in Georgia and Florida.



WHERE TO FIND EASTERN INDIGO SNAKES

Adult indigos may travel a span of three miles during warmer seasons. Few, if any, indigos exist in North Florida. Populations in other parts of the state, although declining, still have strongholds in warmer Central and South Florida, where it rarely drops below freezing. Indigos hibernate during cold weather, nestling in gopher tortoise burrows when temperatures reach the 20s. They often return every winter to the same burrow.

When tortoises were heavily harvested and suffered habitat loss in North Florida, the indigo population was impacted as well. Besides of where they tend to burrow,

you can find them in dense foliage during the warm months and in the open grass during colder months. Indigo snakes are most often found along the edges of swamps and marshes and in pine flatwoods and hardwoods communities where food is abundant.

It may also be found along river corridors, brushy canal banks, and edges of cypress swamps and wet prairies.

This snake is considered a commensal species of the gopher tortoise, which means it tends to rely upon gopher tortoise and armadillo burrows for refuge.

These dens are used for egg laying, shedding and protection from temperature extremes. Indigos breed from October to February.

Four to 12 eggs are laid in May or June, but do not hatch until August or September. Indigo hatchlings are usually about 16 inches long. It is generally active during the day and feeds on fish, frogs, toads, lizards, small turtles, birds, and small mammals.



STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE

In 2013, the U.S. Fish and Wildlife Service in Florida developed a Standard Protection Measures Education Plan for Contractors and their construction personnel.

Environmental permitting is about creating, documenting, and approving work proceed once the surrounding environment has been accounted for and all measures have been taken to ensure the minimum disturbances.

At least 30 days prior to any clearing and-or land alteration activities, the applicant must notify the appropriate United States Fish and Wildlife Services Field Office through e-mail that standard protection measures will be implemented to comply with the Plan's regulations.

The applicant could also decide to use an eastern indigo snake protection and education plan other than the approved Standard Plan. In this case, written confirmation or “approval” from the United States Fish and Wildlife Service confirming the alternate plan is adequate must be obtained.

If this is the case, and the applicant desires an alternate Plan, the applicant must submit their unique plan for review and approval at least 30 days prior to any clearing or land alteration activities. The United States Fish and Wildlife Services will respond through email, typically within 30 days of receiving the plan. At this point they will either concur that the plan is adequate or will request additional information.

A concurrence e-mail from the appropriate United States Fish and Wildlife Services Office will fulfill approval requirements.

The plan must include the following Plan Materials:

Posters and Pamphlets

Posters **must** be placed in strategic locations around the construction site and along any proposed access roads. The final poster for Plan compliance must be printed on 11” by 17” or larger paper and laminated. The poster **must** include the following verbiage found on the Poster & Brochures below.



PRE-CONSTRUCTION ACTIVITIES

During the preconstruction phase of activities, the applicant or designated agent must post educational posters in the construction office and throughout the construction site, including any access roads. The posters must be clearly visible to all construction staff.

Prior to the onset of construction activities, the applicant or designated agent will conduct a meeting with all construction staff to discuss identification of the snake, its protected status, what to do if a snake is observed within the project area, and applicable penalties that may be imposed if state and/or federal regulations are violated.

An educational brochure including color photographs of the snake will be given to each staff member in attendance and additional copies will be provided to the construction superintendent to make available in the onsite construction office. If this is a multi-year project, this meeting must be held each year of the contract. A final brochure for Plan compliance must be printed double-sided on 8.5-inch x 11-inch paper and then properly folded. Photos of eastern indigo snakes may be accessed on U.S. Fish and Wildlife websites.

Construction staff will be informed that if an eastern indigo snake, either alive or dead, is observed on the project site during construction activities, all such activities are to cease until the established procedures are implemented according to the Plan, which includes notification of the appropriate USFWS Field Office. The contact information for the USFWS is provided on the referenced posters and brochures.

ACTIVITIES DURING CONSTRUCTION

During initial site clearing activities, an onsite observer may be utilized to determine whether habitat conditions suggest a reasonable probability of an eastern indigo snake sighting. The following observations could indicate favorable conditions for Eastern Indigo Snakes: snake sheds, tracks, lots of refugia and cavities present in the area of clearing activities, and presence of gopher tortoises and burrows.

If an eastern indigo snake is discovered during gopher tortoise relocation activities, such as burrow excavation, the USFWS shall be contacted within one business day to obtain further guidance which may result in further project consultation.



Periodically during construction activities, the applicant's designated agent should visit the project area to observe the condition of the posters and Plan materials and replace them as

needed. Construction personnel should be reminded of the instructions as to what is expected if any eastern indigo snakes are seen.

POST CONSTRUCTION ACTIVITIES

Whether or not eastern indigo snakes are observed during construction activities, a monitoring report should be submitted to the appropriate USFWS Field Office within 60 days of project completion. The report can be sent electronically to the appropriate USFWS e-mail address listed on your plan.