

ALLIGATORS



Figure 1. American alligator, *Alligator mississippiensis*.
Photo by Ron Case.

OBJECTIVES

1. Explain wild alligator biology and behavior and how to respond appropriately
2. Communicate control options to clients
3. Describe the dangers a person faces by working with alligators

SUMMARY OF DAMAGE PREVENTION AND CONTROL METHODS

HABITAT MODIFICATION

Generally not practical

EXCLUSION

A 5-foot chain-link fence with 4-inch mesh with another 2 feet buried below the surface will exclude larger alligators if the top of the fence is angled outward.

FRIGHTENING

Not found to be effective.

REPELLENTS

None are effective

TOXICANTS

None are registered

FUMIGANTS

None are registered

TRAPPING

Cage traps

Trip snares

Baited hooks

OTHER CONTROL METHODS

Harpoons

Snatch-hooks

Snare poles

Dip nets

SPECIES PROFILE

IDENTIFICATION

American alligators (*Alligator mississippiensis*) are the more common of two crocodylians native to the US and are one of 22 crocodylian species worldwide (Figure 1). The other native crocodylian is the American crocodile (*Crocodylus acutus*). Caimans (*Caiman spp.*), imported from Central and South America, are occasionally released in the US and do

survive and reproduce in Florida. American alligators are distinguished from American crocodiles and caimans by a more rounded snout and black and yellow-white coloration. American crocodiles and caimans are olive-brown in color and have pointed snouts. American alligators and crocodiles are similar in physical size, whereas caimans are about 40 percent smaller.

NAME

In common parlance, alligators frequently are called “gators.”

SIZE

Alligators are among the largest animals in North America. Males can attain a size of more than 14 feet and 1,000 pounds. Females can exceed 10 feet and 250 pounds. Both sexes become sexually mature when they attain a length of 6 to 7 feet but their full reproductive capacity is not realized until females and males reach 7 and 8 feet in length, respectively.

Alligator growth rates are variable and dependent on diet, temperature, and sex. Alligators take seven to 10 years to reach 6 feet in Louisiana, nine to 14 years in Florida, and up to 16 years in North Carolina.

When maintained on farms under ideal temperature and nutrition, alligators can reach a length of 6 feet in three years.

TRACKS AND SIGNS

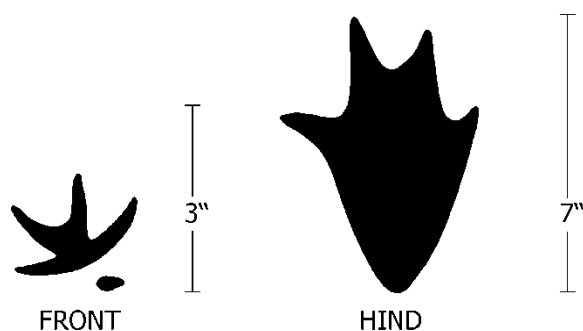


Figure 2. Track of American alligator. Image by Dee Ebbeka.

VOICE

Alligators communicate through bellows and head slaps.

GENERAL BIOLOGY, REPRODUCTION, AND BEHAVIOR

REPRODUCTION

Throughout most of their range, alligators begin courtship in April and breed in late May and early June. Females lay a single clutch of 30 to 50 eggs in a mound of vegetation from early June to mid-July.

NESTING COVER

Nests are about 2 feet in height and 5 feet in diameter. Nests are constructed of the predominant surrounding vegetation, which is commonly cordgrass (*Spartina* spp.), sawgrass (*Cladium jamaicense*), cattail (*Typha* spp.), giant reed (*Phragmites* spp.), other marsh grasses, peat, pine needles, and/or soil. Females tend their nests and sometimes defend them against intruders, including humans. Eggs take about 65 days to complete incubation. In late August to early September, 9 to 10-inch hatchlings are liberated from the nest by the female. She may defend her hatchlings and stay with them for up to a year, but gradually removes herself as caregiver as the next breeding season approaches.

BEHAVIOR

Alligators are ectothermic; they rely on external sources of heat to maintain body temperature. They are most active during warm weather at 82° to 92° F temperatures. They stop feeding when the ambient temperature drops below 70° F and become dormant below 55° F.

SPECIES RANGE

American alligators are found in wetlands throughout the coastal plain of the southeastern US (Figure 3). Viable alligator populations are found in Texas, Oklahoma, Arkansas, Louisiana, Mississippi, Alabama, Florida, Georgia, South Carolina, and North Carolina. The northern range is limited by low winter temperatures. Alligators rarely are found south of the Rio Grande drainage. They prefer fresh water but also inhabit brackish water and occasionally salt water. American crocodiles are scarce and protected in the US. They are found only in the warmer coastal waters of Florida, south of Tampa and Miami. Caimans rarely survive winters north of central Florida and reproduce only in southernmost Florida.



Figure 3. Range of American alligator. Image by Stephen M. Vantassel.

HABITAT

Alligators may be found in almost any type of fresh water but population densities are greatest in wetlands with an abundant food supply and adjacent marsh habitat for nesting. In Texas, Louisiana, and South Carolina the highest alligator densities are in highly productive coastal impoundments. In Florida, the highest densities occur in nutrient-enriched lakes

and marshes. Coastal and inland marshes maintain the highest alligator densities in Georgia, Alabama, and Mississippi. Alligators commonly inhabit urban wetlands (canals, lagoons, ponds, impoundments, and streams) throughout their range.

FOOD HABITS

Alligators are exclusively carnivorous and prey on whatever animals are most available. Juvenile alligators (less than 4 feet) eat crustaceans, snails, and small fish; subadults (4 to 6 feet) eat mostly fish, crustaceans, small mammals, and birds. Adults (greater than 6 feet) eat fish, mammals, turtles, birds, and other alligators. Diets are range-dependent; in Louisiana coastal marshes adult alligators feed primarily on nutria (*Myocastor coypus*), whereas in Florida and northern Louisiana rough fish and turtles comprise most of the diet. Studies in Florida and Louisiana indicate that cannibalism is common among alligators. Alligators readily take domestic dogs and cats. In rural areas, large alligators take calves, foals, goats, hogs, domestic waterfowl, and occasionally, full-grown cattle and horses.

LEGAL STATUS

American alligators are federally classified as “threatened due to similarity of appearance” to other endangered and threatened crocodylians. This provides federal protection for alligators but allows state-approved management and control programs. Alligators can be taken legally only by individuals with proper licenses or permits. Alabama, Florida, Louisiana, Georgia, South Carolina, and Texas have problem or nuisance alligator control programs that allow permitted hunters to kill or facilitate the removal of nuisance alligators. Some states, including Alabama, also use state wildlife officials to remove problem animals. Alabama also has a regulated hunting season in the southwest and southeast portions of the state.

DAMAGE PREVENTION AND CONTROL METHODS

DAMAGE AND NUISANCE BEHAVIOR

DAMAGE IDENTIFICATION

Damage by alligators usually is limited to injuries or death to humans or domestic animals.

Alligators inflict damage with their sharp, cone-shaped teeth and powerful jaws. Bites are characterized by puncture wounds and/or torn flesh. Alligators, like other crocodylians that take large prey, most often seize an appendage and twist it off by spinning. Many serious injuries involve badly damaged and broken arms on humans and legs on animals. Sometimes alligators bite or eat previously drowned persons. Coroners can usually determine whether a person drowned before or after being bitten. Stories of alligators breaking the legs of full-grown men with their tails are unfounded.

DAMAGE TO STRUCTURES

Alligators sometimes excavate extensive burrows or dens for refuge from cold temperatures, drought, other alligators, and humans. Burrowing can damage dikes, levees, impoundments, and breach fences.

DAMAGE TO ANIMALS

As a top predator, alligators will eat any animal it can physically consume. In Florida, approximately 15 percent of the alligator complaints are due to fear of pet losses and, to a lesser extent, livestock losses. Losses of livestock other than domestic waterfowl, however, are uncommon and difficult to verify.

DAMAGE TO GARDENS AND LANDSCAPES

Alligator damage to gardens and landscapes is not common. Some damage may occur from burrowing and nest construction activity.

HEALTH AND SAFETY CONCERNS

Alligators normally are not aggressive toward humans, but aberrant behavior occasionally occurs. Most attacks are characterized by a single bite and release with resulting puncture wounds. Single bites usually are made by small alligators (less than 8 feet) and result in an immediate release. One-third of recorded attacks, however, involve repeated bites, major injury, and sometimes death. Serious and repeated attacks normally are made by alligators greater than 8 feet in length and are most likely the result of chase and feeding behavior. Death occurs either by exsanguination or drowning. Those that survive an alligator attack may succumb to sepsis infection due to gram negative bacteria present in the mouths of alligators. Unprovoked attacks by alligators smaller than 5 feet are rare.

Most alligator bites occur in Florida, which has documented approximately 339 attacks between 1948 and 2006; only 17 of those attacks resulted in a fatality. Most attacks are non-fatal. Attacks also have been documented in South Carolina, Louisiana, Texas, Georgia, and Alabama.

Most attacks occur in water but alligators have assaulted humans and pets on land. People walking pets are often the secondary target as the pet escapes. Alligators quickly become conditioned to humans, especially when food is made available to them by humans. Habituated alligators lose their fear of humans and can be dangerous to unsuspecting humans, especially children. Many aggressive or “fearless” alligators have to be removed each year following feeding by humans. Ponds and waterways at golf courses and high-density housing create a similar problem when alligators become accustomed to living near people.

Few attacks are attributed to wounded or territorial alligators or females defending their nests or young. Necropsies of alligators that have attacked humans have shown that most are healthy and well-nourished. It is unlikely that alligator attacks are related to territorial defense. When defending a

territory, alligators display, vocalize, and normally approach on the surface of the water where they can be more intimidating. In most serious alligator attacks, victims were unaware of the alligator prior to the attack. Female alligators frequently defend their nest and young, but there have been no confirmed reports of humans being bitten by protective females. Brooding females typically try to intimidate intruders by displaying and hissing before attacking.

Hunting alligators is inherently dangerous. Have extra-capture equipment available. Never place your hands near the alligator's head as it can swing and snap with incredible speed. Use catch-poles and other distance enhancing devices to handle and control the alligator. Never assume the alligator is dead. Secure the alligator's jaws with quality duct tape at the earliest time when safely possible.

In the rare event that you are attacked, awareness of alligator behavior may help save your life. Alligators cannot chew. They clamp and then twist and roll to tear off food, unless the chunk is small enough to swallow. If an alligator bites your arm, it may help to grab the alligator and roll with it. This will reduce further tearing of your arm. Strike the nose of the alligator as hard and as often as possible. Gouging of the eye may help also but this has not been confirmed. Do not allow the alligator, if at all possible, to pull you into water.

Little is known about the diseases affecting alligators.

INTEGRATED PEST MANAGEMENT

TIMING, ECONOMICS, AND METHODS

Alligators may be managed whenever the law allows.

Alligators are a keystone species in many of their habitats. The openings they create, known as "alligator holes," are needed by many other species. These excavated holes frequently are the only locations filled with water during dry spells.

Lawsuits that arise from findings of negligence on the part of a private owner or governmental agency responsible for an attack site can lead to significant economic liability.

Alligators are valuable for their skin and meat. An average sized nuisance alligator typically yields 8 feet of skin and 30 pounds of boneless meat. Other products such as skulls, teeth, fat, and organs can be sold, but account for less than 10 percent of the value of an alligator. Nuisance alligator control programs in several states use the sale of alligator skins to offset costs of removal and administration.

Florida has the most conflicts with nuisance alligators. Nuisance alligator harvests also occur in Alabama, Louisiana, Georgia, South Carolina, and Texas.

HABITAT MODIFICATION

Elimination of wetlands will eradicate alligators because they depend on water for cover, food, and temperature regulation. Most modifications of wetlands, however, are unlawful and adversely affect other wildlife. Elimination of emergent vegetation can reduce alligator densities by reducing cover. Check with appropriate conservation authorities before modifying any wetlands.

EXCLUSION

Alligators are most dangerous in water or at the water's edge. They occasionally make overland forays in search of new habitat, mates, or prey. Concrete or wooden bulkheads that are a minimum of 3 feet above the high water mark will repel alligators along waterways and lakes. Alligators have been documented to climb 5-foot chain-link fences to get at dogs. Fences at least 5 feet high with 4-inch mesh with the top angled outward will effectively exclude larger alligators. The fence should be buried at least 2 feet into the soil to prevent alligators from digging underneath. Alligators have difficulty digging in firm dry soil; they excavate mucky soil easily.

FRIGHTENING DEVICES

Aversive conditioning using sticks to prod “tame” alligators and rough handling of captured alligators have been attempted in several areas with limited success. Hunting pressure appears to be the most effective means of increasing alligator wariness and may be responsible for limiting the incidences of alligator attacks in Florida, despite increasing human and alligator populations. The historically low attack rate in Louisiana is attributed to a history of intense hunting.

REPELLENTS

No repellents are registered for alligator control.

TOXICANTS

No repellents are registered for alligator control.

FUMIGANTS

No fumigants are registered for alligator control.

TRAPPING

Alligators are trapped readily because they are attracted to bait. A baited hook is the simplest method and is used in Louisiana as a general harvest method and in Florida to remove nuisance alligators. Hooks are rigged by embedding a large fish hook (12/0 forged) in bait (nutria, fish, beef lungs, and chicken are effective) and suspended from a tree limb or pole about 2 feet above the surface of the water. The bait should be set closer to the water to catch smaller alligators. To increase success, baited hooks should be set in the evening and left overnight during the primary feeding time of alligators. Once swallowed, the hook lodges in the alligator’s stomach and the alligator is retrieved with the attached rope. This method can kill or otherwise injure alligators and is not suitable for alligators that are to be translocated. Hooked alligators are most

effectively killed by a shot to the brain with a small caliber (.22) rifle. Powerheads (“bangsticks”) can kill alligators but should only be used with the barrel under water and according to manufacturer recommendations.

Wire box traps have been used effectively to trap alligators. Heavy nets have been used with limited success to capture alligators and crocodiles at basking sites.

BODY GRIPPING TRAPS

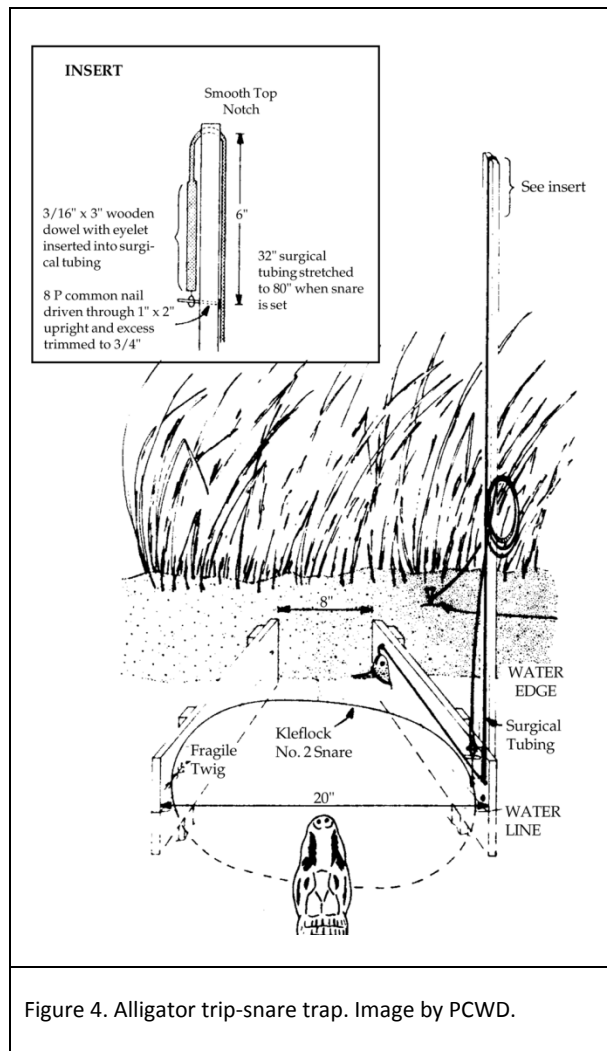
Body gripping traps are not recommended for alligators.

FOOTHOLD TRAPS

Foothold traps are not recommended for alligators.

SNARES

Trip-snare traps (Figure 4) are more complicated and somewhat less effective than set hooks, but do not injure or kill alligators. An alligator is attracted to the bait and, because of the placement of the guide boards, is forced to enter from the end of the trap with the snare. The alligator puts its head through the self-locking snare (No. 3, 72-inch), seizes the bait, and releases the trigger as it pulls the bait. The surgical tubing contracts and locks the snare on the alligator. These traps can be modified as floating sets. A variation of the trip-snare trap can be set on alligator trails and rigged to trip by the weight of the alligator.



ANIMAL HANDLING/DISPOSITION

RELOCATION

Relocation of an alligator is best done in rescue rather than nuisance situations.

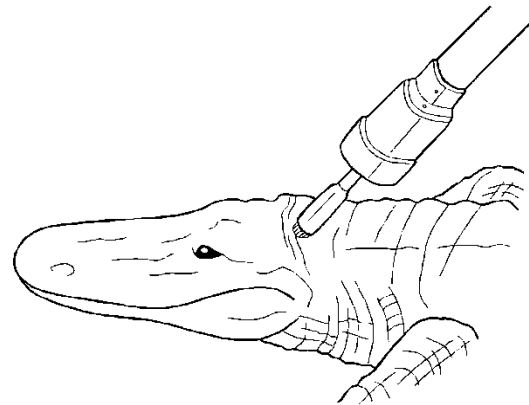
TRANSLOCATION

Translocation is not recommended due to the risk of disease transmission. However, translocation to an alligator farm is a viable option for handling nuisance alligators.

EUTHANASIA

With large alligators (> 5 feet), discharge a .243 caliber bullet or larger into the brain. It is critical to avoid placing the shot between the eyes or the top of the skull as the bullet may ricochet off the bone. Instead, shoot at the base of the skull (Figure 5). If using a bang stick, only discharge below water to reduce potential injury from fragments. Small alligators can be killed by a blow to the brain with a sharp object.

Refer to Volume 1 of the National Wildlife Control Program and your state regulations regarding carcass disposal.



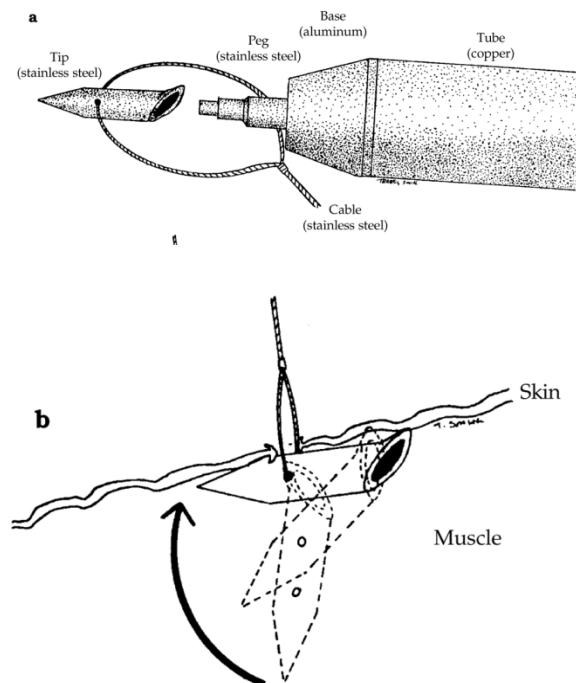
DISEASES

Alligators can cause injuries and death to humans, livestock, and pets. All alligator bites require medical treatment and serious bites may require hospitalization. Infections can result from alligator bites, particularly from the *Aeromonas* spp. bacteria.

OTHER CONTROL METHODS

HARPOON

Detachable-head harpoons (Figures 6a and 6b) with attached lines have been used effectively to harvest nuisance alligators. A harpoon assembly (Figure 6a) is attached to a 10- to 12-foot wooden pole. The harpoon is thrust at the alligator and withdrawn after the tip penetrates the skin. The tip remains embedded under the skin (Figure 6b). As tension is placed on the retrieval line, the off-center attachment location of the cable causes the tip to rotate into a position parallel to the skin of the alligator, providing a secure attachment to the alligator. Harpoons are less effective than firearms but the attached line helps ensure the recovery of the alligator.



Figures 6a and 6b Harpoon and break away snare for alligator control. Images by PCWD.

SNATCH HOOKS

Snatch hooks are weighted multi-tine hooks on fishing line that can be cast over an alligator's back and embedded in its skin. The size of the hooks and the line strength should be suited to the size of the alligator; small alligators can be caught with standard light fishing gear while large alligators require 10/0 hooks, a 100-pound test line, and a heavy-duty fishing rod. Heavy hooks with nylon line can be hand-cast for larger alligators. After the hook penetrates the alligator's skin, the line must be kept tight to prevent the hook from falling out. Alligators frequently roll after being snagged and become entangled in the line. This entanglement permits a more effective recovery. Snatch hooks work well provided vegetation is minimal.

SNAREPOLES

Handheld poles with self-locking snares (sizes No. 2 and 3; Figure 7) can be used effectively to capture unwary alligators at night. For small (less than 6 feet) alligators snares can be affixed to a pole with a hose clamp. For adult alligators snares should be rigged to "break away" from the pole by attaching the snare to the pole with thin ($\frac{1}{2}$ -inch wide) duct tape (Figure 7). The tape or clamps allow the snare to be maneuvered and are designed to release after the snare is locked. Carefully place the snare around the alligator's neck, then jerk the pole and/or retrieval line to set the locking snare. A nylon retrieval rope should always be fastened to the snare and the rope secured to a boat or other heavy object.

For alligators less than 6 feet long, commercially available catch poles (Figure 8) can be used. Snake tongs are effective for catching alligators less than 2 feet long.

DIP NETS

Large dip nets can be used to capture small alligators.

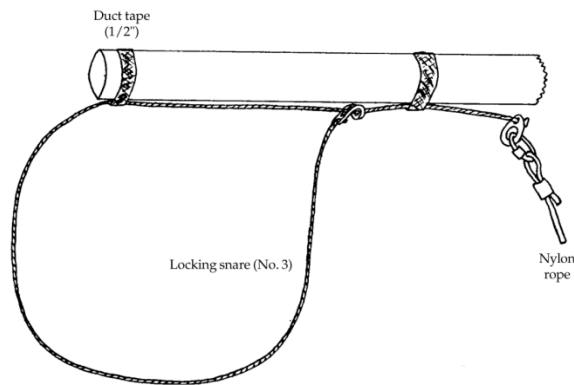


Figure 7. Self-locking snare pole. Image by PCWD.

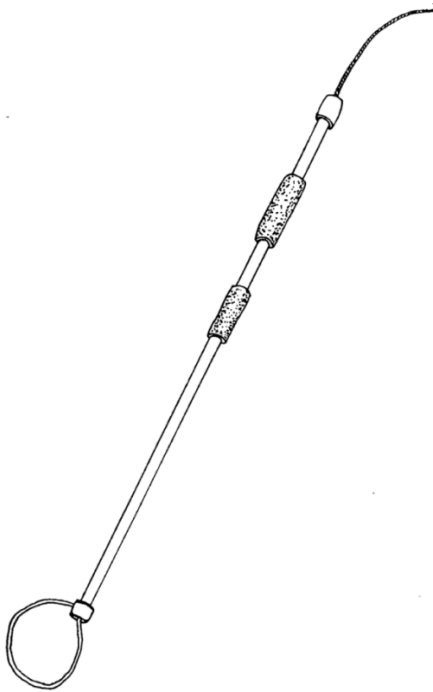


Figure 8. Commercially made snare-pole. Image by PCWD.

ACKNOWLEDGMENTS

We thank William Brownlee, Texas Parks and Wildlife Department; Ted Joanen, Louisiana Department of Wildlife and Fisheries; Steve Ruckel, Georgia Department of Natural Resources; Thomas Swaynham, South Carolina Department of Wildlife and Marine Resources; and Paul Moler and Michael

Jennings, Florida Game and Fresh Water Fish Commission for providing information on their respective states and for reviewing this chapter. We also thank Thomas Murphy and Philip Wilkinson, South Carolina Department of Wildlife and Marine Resources, for providing diagrams of the trip-snare trap.

AUTHORS

From the book, PREVENTION AND CONTROL OF WILDLIFE DAMAGE — 1994

Published by the University of Nebraska–Lincoln–Extension and the US Department of Agriculture–Animal and Plant Health Inspection Service–Wildlife Services

EDITORS

Stephen M. Vantassel, Paul D. Curtis, Scott E. Hygnstrom, Raj Smith, Kirsten Smith, and Gretchen Gary

REVIEWERS

- Dennis M. Ferraro, University of Nebraska–Lincoln
- James Armstrong, Auburn University

RESOURCES

KEY WORDS

American alligator, crocodile, caiman, nuisance wildlife control, wildlife damage management, nwco

ON-LINE RESOURCES

<http://wildlifecontroltraining.com>

<http://icwdm.org/>

<http://wildlifecontrol.info>

QUESTIONS FOR REFLECTION

1. Why is habitat modification not a viable control method for alligators?
2. Name 2 primary ways to capture alligators. .

OBJECTIVE QUESTIONS

1. Alligator diet consists of
 - a. animal flesh only
 - b. plant material only
 - c. plant and animal material
 - d. Insects only
 - e. none of the above.
2. True or False
Alligator attacks on humans are remarkably frequent.
3. Most alligator attacks are by alligators greater than ____ feet in length
 - a. 1 foot
 - b. 2 feet s
 - c. 3 to 4 feet
 - d. 5 or more feet
4. How long do females protect their young?
 - a. not at all
 - b. till hatched
 - c. 3 months
 - d.6 months
 - e. up to 1 year

5. What is the first thing you should do when an alligator is in your control?

- a. tie its feet so it cannot move.
- b. tape its mouth shut.
- c. take a trophy picture
- d. nothing, alligators are docile when subdued.

DISCLAIMER

Implementation of wildlife damage management involves risks. Readers are advised to implement the safety information contained in Volume 1 of the National Wildlife Control Training Program.

Some control methods mentioned in this document may not be legal in your location. Wildlife control providers must consult relevant authorities before instituting any wildlife control action. Always use repellents and toxicants in accordance with the EPA-approved label and your local regulations.

Mention of any products, trademarks or brand names does not constitute endorsement, nor does omission constitute criticism.