



ALLIGATOR STATUS

The American alligator, or *Alligator mississippiensis*, inhabits much of the southeastern United States. Heavily hunted for leather in the late 1800s, alligator populations declined drastically due to unregulated hunting and poaching, sparking concerns about extinction in certain areas.

Federal protections, including the Endangered Species Act of 1973 and amendments to the Lacey Act in 1981, facilitated their recovery. Today, alligator populations are estimated to exceed 3 million and are widespread throughout their historic range.

The story of the American alligator mirrors both tragedy and success much like other crocodylian species. There are 26 species of crocodylians worldwide. Most were heavily hunted for meat and skin. By 1971, all were classified as endangered or in decline exacerbated by habitat destruction.

However, legislation, law enforcement, conservation efforts, and sustainable harvesting programs have helped many species recover. Today, 15 of the 26 species are stable or increasing. Six are awaiting assessment. Five are still declining. The Chinese alligator remains highly endangered with fewer than 150 individuals left in the wild.

The American alligator is currently classified as "threatened due to similarity of appearance" to endangered crocodiles. In some states, controlled hunts are permitted for harvesting alligators. They are also farmed for meat and skins, with most farmed alligators hatched from wild-collected eggs. The legal sale of products from regulated harvests and farms provides essential funding for the conservation of the species and its habitat.

ALLIGATOR ECOLOGY

HABITAT

Alligators are found in aquatic habitats ranging from freshwater, brackish, and saltwater. They inhabit swamps, marshes, creeks, rivers, ponds, and lakes. A unique trait of alligators is their ability to create "gator holes" in marshes and floodplains, which serve as refuges for other animals during dry periods. These holes can be the size of a small backyard pool and are made using their snouts, forefeet, and tails. Alligators are considered a keystone species due to their significant ecological impact.

Their habitat preferences vary by size, age, and sex. Large adult males prefer deep, open water, while large females seek open water during breeding season but move to marshes for nesting. Smaller alligators (4 to 5 feet or 1.2 to 1.5 meters) typically thrive in wetlands with dense vegetation that offers cover and prey opportunities.



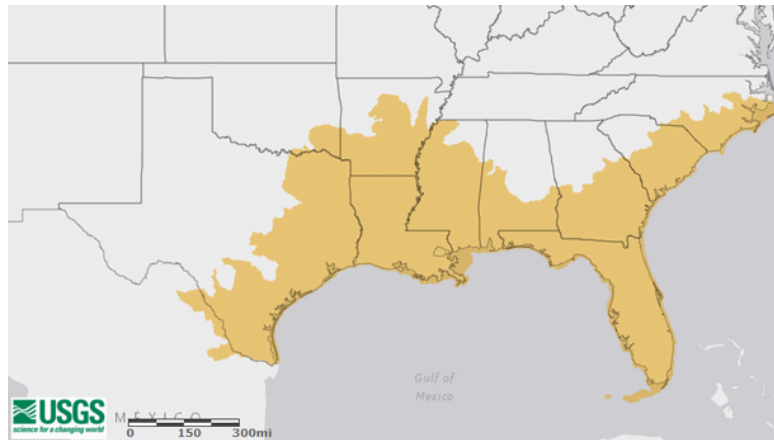


REPRODUCTION, NESTING, & HATCHING

The time it takes for alligators to reach sexual maturity varies among populations and is related to body size. Both males and females typically mature at around 6 feet (1.8 meters). The breeding season generally occurs from April to May, although some mating may happen in autumn. During courtship, alligators engage in behaviors such as body posturing, snout rubbing, and bellowing.

After mating, females build nests along the shoreline using vegetation and mud, laying 20 to 60 eggs in June or July. The temperature during incubation determines the sex of the hatchlings: below 87.8°F (31°C) produces females, 90.5°F to 91.4°F (32.5°C - 33°C) produces males, and above 93.2°F (34°C) results in more females. It takes just over two months for the embryos to develop and hatch.

Females protect their young throughout their early life stages. Hatchlings form pods for 1 to 3 years and call out to attract their mothers. Despite maternal care, many hatchlings are preyed upon by various animals, including birds, snakes, and other predators.



FEEDING HABITS

Alligators have a varied diet that changes with their size. Though primarily carnivorous, young alligators eat insects, crayfish, snails, small fish, and amphibians. Once they reach about 5 to 6 feet (1.5 to 1.8 meters), they start to consume larger fish, turtles, snakes, waterfowl, wading birds, and small mammals.

Equipped with excellent eyesight and specialized pressure sensors on their snouts, alligators can detect prey in the water. Their feeding is influenced by water temperature. They typically stop eating from late March or early April through October when the temperature falls below 70°F (21°C).

GROWTH & BODY SIZE

Young alligators grow between 4 to 14 inches (10 to 36 cm) per year, depending on factors such as temperature, food availability, and the animal's sex, size, and age. For example, juvenile alligators in South Carolina grow an average of 7.5 inches (19 cm) annually, while those in Louisiana can grow up to 12 inches (30.5 cm). Maturity is linked to size, meaning Louisiana alligators often mature earlier.

As alligators grow larger, their growth rate slows, especially after reaching reproductive maturity. Males typically grow larger and faster than females, with females reaching about 9 feet (2.7 m) and over 200 pounds (91 kg), while males can exceed 13 feet (4 m) and 500 pounds (227 kg). The largest recorded alligator was 19 feet and 2 inches long from Marsh Island, Louisiana.





INTERESTING ALLIGATOR BEHAVIORS

Alligators demonstrate some unique behaviors for an animal with a maximum brain mass of less than 1/2 ounce (~10.5 grams).

- In the temperate portions of their range, alligators construct dens (cave-like structures in the bank of the waterway), where they remain dormant during winter months. Alligators also exhibit “icing behavior” in response to extreme cold. Before the top layer of water freezes, an adult will move to shallow water, place its nostrils out of the water, and let its snout become frozen into the ice. Hatchlings and juveniles may not be as successful at this, which may explain (in part) the limits to the range of the alligator.
- Alligators communicate with a wide variety of sounds ranging from coughing and hissing to distress yelps, hatchling calls, and bellowing. Additionally, alligators communicate using sounds that humans cannot hear. Some alligator vocalizations fall below 20 Hz, within the infrasound range and beyond the human hearing range. These low-frequency sounds can travel very long distances.
- Researchers have used radio transmitters to track alligators in the wild. Alligators have large home range sizes, with males using a larger area than females. Males move the most and have their largest home ranges during the breeding season and females move the least and have their smallest ranges during the nesting season. Alligator home range size depends on many factors including the location and type of habitat. An adult male alligator may have a home range of more than 1,000 acres.
- Unique among reptiles, crocodylians have been observed bringing food to their young and providing parental care.



HUMANS & ALLIGATORS

The recovery of alligator populations in the Southeast and increasing human encroachment on wetland habitats have raised the chances of alligator-human interactions. However, the likelihood of an alligator attacking a person is still very low, with fewer than 10 attacks per year despite an estimated three million alligators in the region. Most attacks occur in Florida. These incidents typically happen when alligators lose their fear of humans due to illegal feeding or when they are defending their territory.

Humans can do several things to minimize the risk of attack:

- Do not feed alligators, thereby causing them to become accustomed to humans.
- Do not swim in areas (especially near heavily vegetated shorelines) where large (>6 feet) alligators are present, particularly at night/dusk when they are feeding.
- Do not attempt to capture alligators—it is dangerous and against the law.
- Do not approach an alligator nest or hatchlings.





ALLIGATOR RESEARCH AT SREL

The University of Georgia's Savannah River Ecology Laboratory (SREL) started ecological studies at the Savannah River Site (SRS) in South Carolina in 1951. Research on American alligators at SRS has deepened our understanding of their ecology and the effects of industrial facilities on them. SREL continues to collaborate with global researchers, leading to discoveries about alligators and other crocodylians.

The SREL alligator research program began in the late 1960s when nuclear reactors discharged heated effluents into cooling reservoirs at the Savannah River Site (SRS). The resulting warm water created unique temperature gradients that affected alligator behavior. For instance, alligators in the warm areas of Par Pond (2,840 acres) basked less often, especially in cooler months, compared to those in normal-temperature water.

Over the next decade, researchers observed that larger male alligators migrated into these heated waters and remained active during winter. This behavior disrupted their reproductive synchronization with females that stayed in cooler zones and became dormant. This shift in male activity timing may have delayed their breeding, leading to a population with a high proportion of adults (64%) and few juveniles, suggesting females were not nesting. In 1974, the ratio was 3.2 males for every female, with only about 15 females in Par Pond.

By the mid-1980s the heated discharge had ceased and the alligator population in Par Pond nearly doubled, reaching about 200 individuals, including 24 adult females. In 1991, SREL scientists observed a unique situation when Par Pond was lowered by approximately 18 feet (5.5 meters) for dam repairs. During this time, breeding females continued to nest, but the survival rate of hatchlings was extremely low due to the loss of protective aquatic vegetation along the shoreline.





ALLIGATOR RESEARCH AT SREL

Alligators are vulnerable to environmental contaminants as top-level carnivores, which can lead to bioaccumulation through their prey. At the SRS, some alligators nested in a contaminated swamp downstream from a coal-burning power plant, exposing them to toxic trace elements such as arsenic, cadmium, and selenium (Se). Although selenium concentrations in eggs and hatchlings from the contaminated site were 3 to 5 times higher than uncontaminated sites, this did not adversely affect embryonic development or hatching success.

In Par Pond, alligators were studied for elevated levels of radioactive cesium-137 (^{137}Cs) due to past reactor operations. Although some individuals exhibited elevated ^{137}Cs levels, SREL studies showed no detectable effects on their health or population dynamics.

Concerns about human consumption of alligators stem from mercury (Hg), a widespread environmental contaminant. Elevated Hg levels are common in wetland habitats and top predators, making alligators particularly susceptible. Research shows that if the mercury standards used for fish (1 mg/kg wet weight) were applied to alligators, many from the Everglades and the Savannah River Site (SRS) would be deemed unsafe for consumption.

Scientists at the SREL are employing advanced DNA techniques to study alligators and address environmental issues. They have discovered that about one-third of alligator nests contain offspring from multiple fathers, and while many males are 8 to 10 feet long, only a few large males (11+ feet) sire offspring. Additionally, studies indicate that mercury and low levels of radioactive contamination in the SRS alligators do not lead to increased mutation rates compared to other populations.

Ongoing research aims to enhance understanding of alligator biology and contribute to mapping the alligator genome.



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