



The photograph shows an American crocodile resting on a sandy area within a fenced enclosure. In the background, two white birds are perched on a rope barrier. The enclosure is bordered by a stone wall and a chain-link fence.



**Conflict Wildlife – American Crocodile**  
**Review and Discussion**  
**November 2014**  
Florida Fish and Wildlife Conservation Commission  
Division of Hunting and Game Management

One of the Commission’s current strategic initiatives associated with the Agency Strategic Plan includes managing wildlife conflict. Staff is focused on advancing the Commission’s goal of reducing wildlife conflict and conserving native species and habitats. This background report focuses on the American crocodile, a species native to coastal habitats of South Florida. The report provides an update on population status and outlines FWC’s approach to managing human interactions with this animal.

# Alligator or Crocodile?

<b>American Crocodile</b>	<b>American Alligator</b>
Grayish green color	Black in color
Fourth tooth on lower jaw exposed when mouth is closed	Only upper teeth exposed when mouth is closed
Narrow tapered snout	Broad rounded snout
Young are light with dark stripes	Young are dark with yellow stripes



A few physical characteristics are key to distinguishing between an American crocodile and Florida's other native crocodylian species, the more common American alligator.

# Background

- Valued for its hide and meat and captive display
- Overexploited, but never as abundant as alligators
- Nothing like saltwater or Nile crocodiles
- Limited by winter temperatures and availability of suitable coastal nesting habitat



Like all other crocodylians, the American crocodile has always been valued for its durable hide and nutritious meat and captive wildlife display. While never as abundant as alligators, by the 1970's, the Florida crocodile population was nonetheless overexploited and nearly depleted. American crocodiles are in the same family as the larger and TV-popularized saltwater and Nile crocodiles, but the American crocodile does not grow as large and is generally considered shy and reclusive. This species is limited by winter low temperatures and the availability of suitable coastal nesting habitat.

# Population Status

- South Florida northern extent of its range
- Florida population listed as endangered in 1975
- Once numbered less than 300 individuals to now as many as 2,000
- Florida population reclassified in 2007 as threatened
- All non-Florida populations listed as endangered



The American crocodile is found in Mexico, central and south America, and most of the Caribbean, with its northern extent being the southern tip of Florida. Due to overexploitation and loss of critical nesting habitat from development and altered freshwater flows through the Everglades, the Florida population of the American crocodile was listed as endangered in 1975 by the U.S. Fish and Wildlife Service. At that time, the number of American crocodiles was estimated to be somewhere near 300, but now the number is upwards of 2,000 animals. Because of this significant recovery, the U.S. Fish and Wildlife Service determined that the Florida population was no longer in danger of extinction and consequently reclassified the Florida population in 2007 as threatened and the remaining populations throughout the species range as endangered.

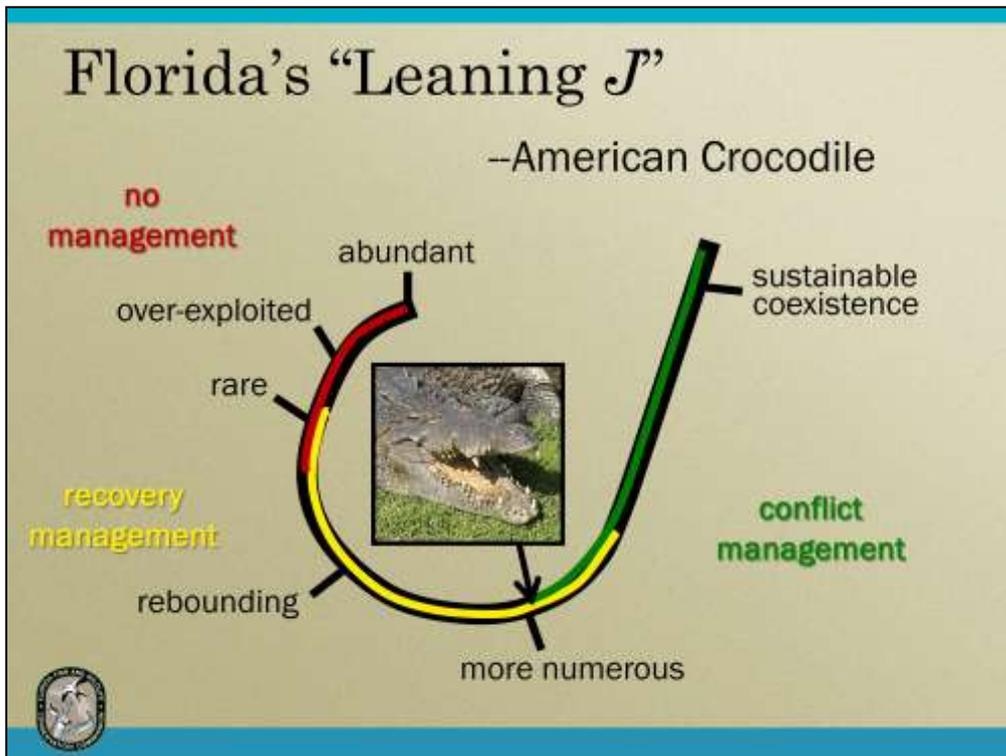
In their 2007 reclassification and analysis, the U.S. Fish and Wildlife Service concluded that the crocodile continues to require protection under the Act as a threatened species because population size and distribution is insufficient to be free from threats.

# Emerging Issue

- Crocodiles now in places not seen in decades
- Individual crocodiles don't mind living and basking near people
- People expressing increasing expectations for management responsiveness
- First documented crocodile bite to a person in Florida
- Shared management
  - FWC lead on conflict response



Because the American crocodile in Florida has made a strong recovery, has recaptured most of its historical range, and is showing up in places people haven't seen them in decades, this species is an emerging management issue. American crocodiles don't mind living in the same developed coastal habitat with people and often find themselves basking in backyards, docks, entering swimming pools, or more often simply swimming in the canals dug to create the developments. In fact, while people are just now starting to realize that these coastal developments are in the heart of the American crocodile's historic range, interactions and management response expectations are ramping up. This emergence was further heightened in August 2014 by the first documented American crocodile bite incident in Florida. FWC shares management responsibilities for this imperiled species with the U.S. Fish and Wildlife Service, and our piece of that is handling responses to conflict situations.



As a reminder, we have suggested that one way to conceptualize the dynamics of changes in populations of imperiled species over time is to think about a “leaning J” shape to illustrate a common platform that these species and their management share. While there are many differences at the individual action level, overall they can be grouped into six areas: 1) historically abundant, 2) over-exploited, 3) rare-nearly extinct, 4) rebounding, 5) more numerous, and 6) sustainably managed. Three management areas overlap across this platform: 1) no management, 2) recovery based management, and 3) conflict/ coexistence based management. The loop doesn’t quite close back to historic conditions because management intervention at some level will be needed for all of these species.

The American crocodile is a wildlife species in Florida that is primarily still in the recovery management zone, likely somewhere near the more numerous level, which has caused it to enter the conflict management zone. This has resulted in FWC placing more emphasis on management strategies, developed with our federal partners and research colleagues, designed to achieve enduring coexistence. This joint vision of being as proactive as possible with conflict management will help ensure the American crocodile resource can fully recover.

# Concerns, Successes, & Opportunities

## Concerns:

- Public concerns with the species repopulating its historic range
- Continued loss of coastal habitat, including nesting habitat

## Successes:

- Everglades restoration improving nesting habitat
- Manmade habitat increasing nesting success
- Crocodile Lake NWR

## Opportunities:

- Building long lasting, strong partnerships to aid and monitor recovery
- Maintaining natural and artificial nesting habitat
- Improving willingness of public to coexist with American crocodiles
- Involving local communities in outreach and education efforts



The U.S. Fish and Wildlife Service has identified the following measures are still needed to support further recovery of the American crocodile in Florida:

“(1) Crocodile habitat in Florida continues to need maintenance and enhancement to provide protection for all life stages of the existing crocodile population and to ensure that available habitat can support population growth and expansion; and  
(2) Further acquisition of nesting and nursery sites and additional crocodile habitat by Federal, State, and local governments and implementation of management on these publicly-owned properties are necessary to ensure protection to crocodiles and their nests and enable expansion of populations size and distribution.”

# Partnerships

- University of Florida, Dr. Frank J. Mazzotti
- U.S. Fish and Wildlife Service, Crocodile Lake NWR
- U.S. Fish and Wildlife Service, South FL Ecological Services
- National Park Service, Everglades National Park
- Joint effort to produce conflict resolution guidance document



Key partnerships to aid in the recovery and management of the American crocodile include the University of Florida's Dr. Frank Mazzotti, who has been studying and monitoring this animal since the 1970's, U.S. Fish and Wildlife Service staff at Crocodile Lake NWR and the South Florida Ecological Services Office, and National Park Service staff at Everglades National Park. These partnerships and strong working relationships were used to develop the initial American Crocodile-Human Interaction Response Plan in 2005. These partners currently are revising this plan based on knowledge gained since 2005 and to reflect the upgraded status of the crocodile.

# Crocodile Response Program

- Crocodile Response Coordinator
  - OPS response agents to provide needed assistance
  - Nuisance Alligator Hotline for complaint logging
- Emphasis on public safety
- Emphasis on education and co-existence
- Recognition of species recovery and conservation needs
- Key: Prompt response to complaints through phone calls or site visits
- Key: Clear guidelines for when to capture and move and/or place animals into captivity



The Crocodile Response Program was developed to implement the American Crocodile-Human Interaction Response Plan. The program is led by the Crocodile Response Coordinator in FWC's Division of Hunting and Game Management, utilizing OPS crocodile response agents and the Nuisance Alligator Hotline. The program's primary purpose is to address public safety concerns while improving understanding and tolerance of American crocodiles and communicating their recovery and conservation needs. Program success depends on being highly responsive to incoming complaints and having clear and transparent guidelines for when a crocodile needs to be handled.

# Types of Conflicts

- Sightings
- Encounters
- Depredations
- Incidents
- Bites
  - Defensive/provoked
  - Unprovoked/attack
  - 8/2014: First substantiated bite to a person in FL
- Conflicts with crocodiles are increasing



Sighting: An observation of a crocodile from a distance.

Encounter: An unexpected direct meeting between a human and a crocodile. The crocodile displays non-threatening behavior, such as:

- Crocodile retreats at the sight of humans.
- Crocodile takes a defensive posture but then immediately retreats.
- Crocodile shows signs of curiosity; swims nearby and submerges when approached.

Depredation: A crocodile that preys upon domestic pets (e.g., dogs, cats) or farm/ranch livestock.

Incident: A serious interaction between a crocodile and humans whereby the crocodile displays threatening behavior, such as:

- Crocodile does not retreat when humans approach within 5-10 feet if out of the water.
- Crocodile that is not being offered food comes out of the water to approach humans.
- Crocodile stalks humans or leashed pets

Defensive/Provoked Bite: Reaction by a crocodile to protect itself when surprised or in response to harassment.

Unprovoked Bite: Unprovoked, intentional physical contact of a human by a crocodile that results in human injury or death.

The number of crocodile complaints over the period of 2009 through 2013 has increased from 83 to 198, annually.

# Crocodile Captures

- Usually a result of a sighting, and sometimes a depredation, encounter, or incident
- Permanently marked
- Moved far from capture location
- Not unusual for animals to return to capture site
- Placed into permanent captivity on subsequent capture
- Risk to response agents and animals



American crocodiles usually are captured only in response to sighting, depredation, encounter, or incident events. Many situational variables influence whether capturing a crocodile is the most effective resolution action, including the type of property where the crocodile is located, the circumstances of the incident, the size of the crocodile and the reliability of the reported information. When a crocodile is captured, the animal is usually moved as far away as practical to established remote release sites in good crocodile habitat. It is not unusual, however, for a crocodile to return to its capture site and rekindle the complaint. If captured again, placing the crocodile into permanent captivity is considered in order to resolve the conflict. Capturing crocodiles is not easy and comes with risk to the safety of response agents. Captures can, on occasion, lead to the death of the crocodile due to the stress of capture and handling. Capturing crocodiles, therefore, is used with prudent restraint.

# Striving For Balance – Different Points of View

- Local communities and government
- Conservationists and wildlife watchers
- Marina and condominium owners
- General public



Different stakeholder groups have varied expectations concerning the American crocodile resource, as with most large predator species. Attitudes and opinions typically are strongly held and range from zero tolerance for the presence of any American crocodile near people to the belief that crocodiles should be left alone and people must adapt to living with crocodiles.

# Education and Outreach

- UF American Crocodile Brochure
- FWC Living With Crocodiles Brochure
- Crocodile Advisory Signs
- American Crocodile Website ([www.myfwc.com/crocodile](http://www.myfwc.com/crocodile))
- Presentations at community meetings and forums
- Relationships and communications between agency staff and stakeholders



UNIVERSITY OF FLORIDA

American Crocodile  
*Crocodylus acutus*



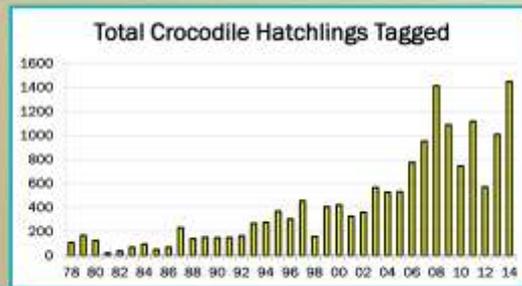
A guide to living with  
**Crocodiles**



Florida Fish and Wildlife  
Conservation Commission

# Future

- Record hatching success documented for 2014
- Conflict potential will likely rise as species continues to recover



The future of Florida's American crocodile population is bright, with a record level of hatching success documented in 2014. Continued species recovery will increase potential for conflict. Agencies have developed and used key messages to assist the public and media with understanding American crocodiles and the limited risk they pose to people. However, a larger scale, more comprehensive outreach and education strategy is needed as we look to the near future. To be successful in continuing population recovery and conflict resolution, management actions will need to be continually adaptive and highly responsive.

## Next Steps

- Maintaining strong partnerships and proactive approaches
- Updating response plan
- Developing comprehensive messaging and outreach
- Management actions need to be adaptive and highly responsive



Agencies have developed and used key messages to assist the public and media with understanding American crocodiles and the limited risk they pose to people. However, a larger scale, more comprehensive outreach and education strategy is needed as we look to the near future. To be successful in continuing population recovery and conflict resolution, management actions will need to be continually adaptive and highly responsive.