

Avoiding negative interactions between humans and crocodiles in Mexico

By Giovany A. González-Desales, 21st May 2021

Human-wildlife coexistence is an important conservation issue that requires careful investigation to provide solutions to possible conflicts. In the case of crocodilians, negative interactions affect people, resulting in injury or even death, which in turn can lead to the retaliatory killing of the animals concerned. These incidents are caused by various factors, including human activities in crocodilian habitat, the effects of temperature and precipitation, and crocodilian physiology and territoriality. In Mexico, as of February 2021, there have been 277 recorded cases of negative interactions between people and crocodiles (*Caiman crocodilus*, *Crocodylus acutus* and *Crocodylus moreletii*), according to the Worldwide Crocodilian Attack database (CrocBITE). We focused our analysis on *C. acutus* as in Mexico this is the species with the most recorded cases of negative interactions with people: there were 121 incidents recorded as of June 2018, and by February 2021 this had increased to 182.



Caiman crocodilus chiapasius reproductive female in Isla La Concepcion, La Encrucijada Biosphere Reserve. Photo: Giovany A. González-Desales

In our [study](#) we analysed the frequency of incidents with *C. acutus* and how these related to

nesting season, proximity of human settlements to nesting sites, crocodile abundance, and socio-economic characteristics of the municipalities where incidents occurred. At the local level, we analysed negative incidents in the largest protected natural area on the Chiapas coast. We identified that incidents between people and *C. acutus* occurred more frequently during the nesting season (February–September) and in sites close to nesting areas. There was a greater probability of incident occurrence when human activities or human settlements were located less than 30 km from a nest. We did not find a relationship between the number of incidents and crocodile abundance. In municipalities where the incidents occurred, the principal economic activity was tertiary, or services such as tourism, with a low human population density.



Left: Crocodile *Crocodylus acutus* hatchlings in Isla La Concepción. Photo: Humberto Yee. Right: *Crocodylus acutus* neonate in Isla La Concepción, La Encrucijada biosphere reserve. Photo: Giovany A. González-Desales

In El Hueyate estuary within the La Encrucijada Biosphere Reserve, Chiapas, we carried out unstructured interviews with local inhabitants to obtain information on negative interactions in the area and their possible causes. Most interviewees mentioned that incidents occur as a result of the area's high crocodile abundance, which lead to the retaliatory hunting of 30 individuals of 1.5–3.7 m length and the destruction of nests. The incidents occurred during the nesting season and hatchling care, less than 13 km from a nest, and there did not seem to be a relationship between the frequency of the incidents and the abundance of crocodiles.



Left: Octavio Monroy Vilchis interviewing people in a region of the Mexican Pacific coast to document negative incidents with crocodiles. Photo: Giovany A. González-Desales. Right: Humberto Yee and Tio Abel, the main promoters of the conservation of *Crocodylus acutus* and *Caiman crocodilus* in the Estero el Hueyate. Tio Abel was the victim of an incident with a spectacled caiman in May 2012. Photo: Humberto Yee

How can we reduce negative incidents between people and crocodiles? The response to this challenging question is complex and researchers are continuing to investigate these incidents to better understand their causes. We propose several potential solutions:

- Reduce human activities in the vicinity of crocodile nests during the nesting season, both by tourism service providers and managers of natural areas.
- Disseminate information about the potential for negative incidents, using various media platforms and with an emphasis on season, and increase the use of visual material such as posters in nesting areas.
- Rescue and incubate crocodile eggs in areas where nests are being destroyed.
- Consider the socio-economic aspects of the local population, to identify the most vulnerable areas with the highest probability of incidents with crocodiles.



The sighting of crocodiles in their habitat is a very popular tourist activity in Mexico. Pictured is a spectacled caiman *Caiman crocodilus*. Photo: Humberto Yee. Right: *Caiman crocodilus chiapasius* reproductive female in Isla La Concepcion, La Encrucijada biosphere reserve. Photo: Giovany A. González-Desales

A particular success story is that of the ecotourism site within El Hueyate estuary, known as Isla La Concepción. The conservation programme that runs here for *C. acutus* and *C. crocodilus* includes activities such as wild nest monitoring and protection, talks for tourists to explain the importance of crocodiles in the area, and the use of posters to warn of the potential for incidents with crocodiles. Participants in this project have suffered negative incidents with crocodiles (incidents in April 2011 and May 2012). Fortunately none were fatal, but in the 2011 incident the affected person lost his arm. The members of this ecotourism project who have suffered negative incidents mention that it was their fault, not the crocodiles', for invading the species' habitat. Since 2013, the members of this ecotourism project, including members affected by negative incidents, have supported the authors of this work to generate more information about crocodilians in the region.



Left: Information poster about crocodile presence in Isla La Concepción, mentioning some restrictions to avoid negative incidents with crocodiles. Right: *Caiman crocodilus chiapasius* neonate in Isla La Concepcion, La Encrucijada Biosphere Reserve. Photo: Giovany A. González-Desales

The open access article [Factors influencing the occurrence of negative interactions between people and crocodilians in Mexico](#) is available in *Oryx—The International Journal of Conservation*.



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