

STATUS OF THE AMERICAN CROCODILE (Crocodylus acutus) IN
VENEZUELA. A REVIEW.

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INTRODUCTION

In a previous paper (Seijas 1986a) I presented data on the status of the American crocodile (Crocodylus acutus) along the Venezuelan coastal region. That paper summarized information collected in the field from 1979 to 1984 concerning the species distribution and population structure. Since then, additional information based on my own work and the work of other people has been obtained relating to the status and population structure of C. acutus in Venezuela, including the discovery of some new populations. This paper will summarize the recent findings of crocodile surveys, present additional data on C. acutus population structure and on the some of the most important factors that threaten the species or delay population recovery.

NEW LOCALITIES CONFIRMED

Rio Aricuaisá

This river is located in Zulia state in western Venezuela. Together with the Lora River it forms the Santa Ana river, which

is the northern boundary of the Wildlife Reserve of "Ciénagas de Juan Manuel" a vast freshwater swamp in the southern corner of Lake Maracaibo. According to reliable information from the biology student Alexander Acuña at the "Universidad del Zulia" in Maracaibo, the American crocodile is relatively common in the Aricuaisá. Occasionally, individuals of this species are killed for their meat by the Bari Indians.

Golfete de Coro

This gulf, located in the Falcón state, contains several reported C. acutus populations. Hedelvy Guada (in litt.) visited the area in May 1988 and reported that adult and hatchling crocodiles were seen last year in a creek near the town of Tacuato. Adult female C. acutus are still found near Punta Caimán where nests are frequently found. Fishermen in the area will occasionally kill crocodiles to sell the meat, which they claim to be from capybara. The fishermen will also take crocodiles teeth, presumably to be sold or to be kept as trophies.

At the mouth of the Mitare river, very close to the "Golfete de Coro", C. acutus is occasionally found entangled in fishing nets. The skull of a juvenile American crocodile, killed last year in Mitare river, was seen and measured by Hedelvy Guada (in litt.) on May 14 1988.

Cumaripa

This is a freshwater reservoir located along the Yaracuy river, only a few kilometers from the city of Chivacoa in Yaracuy state. The area was censused for the first time on June 20 1984 (Seijas 1986b), but only spectacled caiman (Caiman crocodilus) were seen. Similar results were obtained during censuses on March 19 and March 27. However, during the fourth survey of the reservoir, on April 1 1987, two American crocodiles were spotted. One of the crocodiles was an individual with an estimated size of 210-240 cm Total Length (TL), and the another was a juvenile approximately 90 and 120 cm TL. During a later survey on July 8 1987, 13 American crocodile hatchlings were caught, tagged and released in Cumaripa, all of them surely belonging to the same nest. One of the hatchlings had a serious injury in the back with no chance to survive. In the last visit to Cumaripa, on December 29 1987, none of the hatchlings were located, which suggest a very high mortality. Because the hatchlings were initially found in some coves together with Caiman, it is possible that at least some of the hatchlings crocodiles could had been killed, and eaten, by the Caiman.

Paria Peninsula

In a previous paper (Seijas 1986a) I mentioned that there were some data indicating the presence of C. acutus in the eastern tip of the Paria Peninsula (see Laiz-Blanco 1979). A recent report by Cattini Peña (1986) present the first precise

locality information for C. acutus in the area. This author reported seeing 6 American crocodiles, from 40 to 120 cm TL, in a mangrove area close to the Aricagua valley.

NEW DATA IN OLD LOCALITIES. BAD NEWS AND GOOD NEWS

In 1987 I visited several localities that had been previously surveyed during the period 1979 to 1984 (Seijas 1986a,b). Table 1 summarizes the results of the new surveys. A brief description of the status of the American crocodile in those places follows:

Jatira Reservoir

In a previous paper (Seijas 1986a) I reported the presence of C. acutus in Jatira reservoir. However, these surveys were insufficient to reveal the total population size of crocodiles in the reservoir. I also erroneously reported that Tacarigua reservoir was larger than Jatira. Actually, the surface of Jatira is five or six times greater than that of Tacarigua, the two being connected by a small canal. Surveys conducted in 1987 revealed an unexpectedly high number of American crocodiles more than 60 cm TL, most of them represented by adults or individuals close to adulthood (Seijas 1988).

The highest number of crocodiles larger than 60 cm TL spotted in Jatira was of 51 individuals (March 15 1987). This

figure is an underestimate because in no survey it has been possible to cover the whole reservoir and because, as has been showed in several other studies, the crocodilians spotted at night represent only a fraction of the animals present in a particular area. In Tacarigua reservoir, for example, the greatest number of crocodiles less than 180 cm TL counted during 1987 (18 individuals), represented just 60.7% of the crocodiles of that size known to occur in the area (Seijas 1988). According to that, a minimum of 84 crocodiles, larger than 60 cm TL, should be present in Jatira reservoir.

Even though the population of crocodiles in Jatira is mainly represented by adults, the number of nests that have been found in the area is very small. Carlos Chávez (in litt.) found the remains of only three nest in 1987. The lack of beaches with the appropriate soil or substrate for nesting is maybe the most important factor that limits the C. acutus population in Jatira.

Individuals of C. acutus in Jatira may move between the reservoir and the nearby Tocuyo river. However, in contrast to the population structure of crocodiles in Jatira, all of the 60 American crocodiles spotted in Tocuyo River on March 16 1987 were individuals less than 120 cm in TL. It is possible that the relative high number of adult crocodiles seen in Jatira on March 1987 is the consequence of the aggregation of individuals, some of them migrating from the Tocuyo River, during the mating season.

Tacarigua Reservoir

Tacarigua reservoir is connected, through a narrow channel with Jatira reservoir. That channel is closed most of the time by mats of aquatic macrophytes. The macrophytes seem to form an effective barrier that isolates the populations of crocodiles in both water bodies. However, that isolation may disappear temporarily in periods of high waters, as in December 1985. I surveyed Tacarigua reservoir twice in 1984 (Seijas 1986a). The maximum number of non-hatchlings crocodiles counted on that occasions was 4. After 8 surveys conducted in 1987 (Seijas 1988) the number of non-hatchling crocodiles counted ranged from 7 (April 19) to 18 (May 7). The increase in the number of crocodiles in Tacarigua is probably the result of migration of individuals from Jatira.

Turiamo

This coastal lagoon, located in Aragua state, was visited twice in 1987. The number of C. acutus counted on March 6 1987 was 26, eight more than the maximum number reported previously for that locality (Seijas 1986a). Even though this apparent increase could be considered as satisfactory, this small population of American crocodiles is threatened by the occasional killing of individuals by the military in the San Miguel river, which flows only 300 m from the lagoon.

Another factor that threatens this population is habitat modification. A channel was constructed in 1984 to connect the

lagoon with the sea. This channel seems to have modified the salinity regime of the lagoon. Previous to the construction of the channel the salinity in the lagoon was 9 ppt (January 12 1982). The salinity of the lagoon was measured twice in 1987. On March 6 it was 80-90 ppt (almost three times the salinity of sea water) and on June 11 1987 the salinity ranged from 56 to 64 ppt. The high concentration of salt in the lagoon is probably affecting the survival of hatchlings. A very thin hatchling and a juvenile (72.8 cm TL) captured on March 6 1987 had an epidermal pox infection in the ventral region.

Tacarigua Lagoon

The population of C. acutus in this National Park seems to be larger than I reported previously. According to the data collected in 1984 (Seijas 1986a) there were at least three nesting females. Last year, however, 10 nests of these crocodiles were depredated by just a person, who apparently sold the eggs for 2 bolivars apiece (Hedelvy Guada, in litt.). In a visit to Tacarigua Lagoon, on September 23 1988, Hedelvy Guada (in litt.) found the remains of 9 nest in the vicinity of a place called "Pozo Hondo".

Other Localities

The Wildlife Refuge of Cuare, the Yaracuy River, and Pueblo Viejo reservoir were also visited in 1987. The status of C. acutus in Cuare has not changed since 1984 (Seijas 1986a). A much

more detailed survey conducted in that wildlife refuge by López (1986a) confirm that the American crocodile is in danger of extinction there. The most important factor that threatens the survival of C. acutus in Cuare is the occasional death of individuals in fishing nets.

The sector of the Yaracuy river from the town of El Chino to the mouth of the Marcano (or Macagua) River was surveyed for the first time ever on March 10 1987. This section could not be visited previously and therefore was not included in the results reported in 1984 (Seijas 1986a). The total of 43 non-hatchling crocodiles were seen. If we considered that the number of crocodiles reported for the other sections of the Yaracuy River was of 111 individuals (Seijas 1986a), we conclude that the Yaracuy River constitute the most important C. acutus population in the country. This important population of the American crocodile is threatened by habitat destruction (channeling and deforestation) and pollution.

Pueblo Viejo reservoir was visited in four opportunities in 1987 (Seijas 1988). The status of C. acutus there, if compared with the one reported in 1984 (Seijas 1986a), could be considered as stable. The existence of negative interaction between the American crocodile and the spectacled caiman, which had been suggested previously (Seijas 1986b), was confirmed. The remains of a hatchling crocodile was found in the stomach of a caiman (Seijas 1988). This support the idea that the abundance of

spectacled caiman could be one of the factors that delay the recovery of the American crocodile, particularly in places where caiman outnumber crocodiles, such as occurs in the reservoirs of Cumaripa, Tacarigua and Pueblo Viejo (Table 1).

DISCUSSION

The status of the American crocodile in Venezuela is better than it was though a decade ago. The reports by King et al. (1982) and Maness (1982), for example, just mentioned that the species was extinct over much of its former range and that there were small isolated populations in a few places. A more detailed account was made in 1984 (Seijas 1986). By that time, 14 localities along the Venezuelan coastal region were known to support remnant populations of C. acutus with information about the number of reproductive females in some of those places. Recently, the number of confirmed localities where C. acutus exists has increased and more detailed information on its population status and ecology are available.

Although it is now known that there are more reproductive females than the 22 reported in 1984, and more non-hatchling crocodiles than the 293 mentioned before (Seijas 1986), there is no reason to believe that population of the American crocodile in Venezuela are recovering. The better understanding of the population status of C. acutus in Venezuela is the result of a

much more detailed work in the field.

On the contrary, the American crocodile still must be considered an endangered species in the country. The factors that attempt against its survival are still acting. That is particularly true in places like Morrocoy National Park, the mangrove areas near Carenero (Miranda state), and the delta of the Yaracuy River. In the first two places habitat modification and heavy use of the area for tourist purposes are the most important threats. In the case of the Yaracuy River Delta, channelization and deforestation are surely going to affect the integrity of C. acutus population.

Interest in the conservation and recovery of the American crocodile is increasing in Venezuela. The management plans of protected areas such as the Wildlife Refuge of Cuare and Tacarigua National Park, both of which are in preparation, will take into account the species. However, there is no coordinated plan for the recovery of C. acutus at a national level. A few efforts of rearing and restocking have been made (Seijas in prep.) but they have had neither the scope nor the necessary continuity to be successful.

Population of C. acutus should be given the same attention and interest that has been demonstrated for the recovery of Orinoco crocodiles (Crocodylus intermedius) in Venezuela. The distribution range of C. acutus in Venezuela occupy the coastal region, which is the most developed and heavily populated of the country. The degradation of the habitats of the species, in

particular in rivers such as the Tocuyo, Aroa, Yaracuy and Neveri and in Mangrove areas such as Carenero and Morrocoy, will have to be stopped or lessen in some way. The Wildlife Refuge of Cuare and the "Laguna de Tacarigua" National Park are ideal places to implement coordinated recovery plans. It is also necessary to accomplish a policy of protection of the species in the other localities where populations still remains. A necessary step should be to include the Jatira reservoir to the Wildlife Refuge of Cuare.

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