

***CROCODYLUS INTERMEDIUS* (Orinoco Crocodile). AGE AT FIRST**

REPRODUCTION. Hunting pressure has extirpated or nearly extirpated many crocodilian populations. As a consequence, conservation efforts in many countries have focused on both protecting land and head-starting wild-caught or farmed neonates that are then reintroduced to protected areas. Orinoco crocodiles, *Crocodylus intermedius*, were nearly extirpated in the Venezuelan llanos prior to a ban on their commercial harvest during the 1970s (Thorbjarnarson. 1992. Crocodiles: An Action Plan for their Conservation, IUCN/SSC. 136 pp.; Muñoz and Thorbjarnarson 2000. J. Herpetol. 34:397- 403). Since 1990, conservation efforts have resulted in the release of > 1,300 juveniles in protected private and public lands (C. Chávez, *pers. comm.*). Yet, to date, only modest efforts have been devoted to assessing success of reintroduced individuals. Available data show that animals survive and remain in protected areas (Muñoz and Thorbjarnarson, *op. cit.*), but whether re-introduced individuals were reproducing was uncertain. Here, we document the successful nesting of reintroduced crocodiles in two large cattle ranches located in Distrito Muñoz, State of Apure, Venezuela (7° 30' N, 69° 18' W).

Both ranches, Hatos El Frío (80,000 ha) and El Cedral (54,000 ha), are located in the flooded savannas of the Venezuelan llanos that previously harbored *C. intermedius*, where hunting pressure had locally extirpated the species (Arteaga and Hernandez 1996. Proceedings of the 13th Working Meeting of the Crocodile Specialist Group. Pp. 207-222, IUCN). In 1990, an initial group of 31 juveniles 1 to 4 years of age was released in Hato el Frío. In 1994, five juveniles were released in Hato El Cedral; four of these were born in 1993 (sizes ranging roughly from 60 to 80 cm in total length) and the remaining

juvenile was between 3 and 5 years old. These reintroduced juveniles were regularly observed, but lack of appropriate nesting habitat in the near vicinity limited opportunities for reproduction. As a result, from 1996 to 2001 management built artificial nesting sites. These artificial sites consisted of $\sim 1 \text{ m}^3$ holes excavated in the edges of the water bodies that were filled with river sand from beaches where *C. intermedius* had nested historically.

In March 1998, we found the first two nests (52 and 56 eggs) with fertile eggs. The females that laid these clutches were not captured, so their age is uncertain; however, this site had animals up to 12 years old. In March 2001, at least two of the females released in El Cedral laid eggs. Clutch fertility (30+ eggs in one case; predators destroyed the other nest) could not be assessed since ranch workers mistakenly removed the eggs and they were not incubated for any length of time.

Females that laid the eggs at El Cedral were not caught, but the only *C. intermedius* present were from the 1994 release. Thus, minimum reproductive age for females is no greater than 8 years since only one older *C. intermedius* was known to be present and two clutches were laid. Two of the released females caught in January 2001 were 322 and 342 cm total length, and weighed 145 and 175+ kg, respectively.

Some release sites selected for *C. intermedius* have been on public lands protected only on paper (Arteaga and Hernandez, *op. cit.*; Muñoz and Thorbjarnarson, *op. cit.*). Fishing and poaching has resulted, at best, in limited success for such public land re-introductions. Our data show that re-introductions on private lands where with systematic protection is enforced can be successful, at least over a few years. Continued investigation of this promising pattern is needed to determine whether it will continue.

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Submitted by **JESÚS A. RIVAS**, National Geographic Television, 1145 17th street NW, Washington DC 20036 and **RENEE Y. OWENS** 1152 Sloan Canyon Road, Jamul CA 91935; e-mail (JAR): anaconda@prodigy.net.