

caiman), *Caiman crocodilus* (Common caiman) and *Paleosuchus palpebrosus* (Cuvier's Dwarf caiman)]. *Melanosuchus niger* and *C. crocodilus* occur in the Javaés River that surrounds the eastern side of the Araguaia National Park, Bananal Island. Bananal Island is the largest fluvial island in the world and the Araguaia National Park is considered a RAMSAR site.

Population studies are being carried out in the Javaés River (12°50' W, 94°40' S) and the resulting data can contribute to updating the status of these species, especially for *M. niger*, which may warrant downlisting from CITES Appendix I to Appendix II. Distribution patterns in different environments along the river (eg beaches, ravines, fringing vegetation and river basin), density and population structure (size and sex) of *M. niger* and *C. crocodilus* are being assessed.

Data collection was carried out during the dry season (May-October) and the wet (flood) season (November-April) (Table 1).

Table 1. Density and proportion of *Caiman crocodilus* sighted during surveys. *onset of dry season.

Date	Season	No.	Density	% C. c.
October 2004	Dry	893	17.9	69.6
March 2005	Wet		0.28	30.0
June 2005	Dry *		2.28	82.4
August 2005	Dry	577	10.5	72.5

Overall density and the proportion of *C. crocodilus* sighted in the dry season were higher in the dry season than in the wet season (Table 1). Almost 70% of sightings in August 2004 and August 2005 were eyeshines.

Based on the August 2005 survey, the size structure of *C. crocodilus* consisted of: 10.2% Class I (<50 cm), 37.2% Class II (50-140 cm), 37.9% Class III (140-180 cm) and 14.6% Class IV (>180 cm). For *M. niger* it was 0% Class I, 21.5% Class II (50-190 cm), 34.6% Class III (190-210 cm) and 43% Class IV (>210 cm). No small (<50 cm) *M. niger* were sighted.

Most (65.6%) of *M. niger* were sighted in fringing vegetation, compared with 83.7% for *C. crocodilus*. With respect to size class, Classes III and IV were observed in ravines, beaches and the river basin. Classes I and II appeared to prefer fringing vegetation environments.

In general, both species are concentrated in larger numbers along the river during the dry season, when water levels are low. At this time, the number of *M. niger* was higher. It was observed that as an individual's size increased, so did its territory. This study is in its initial phase and we will

continue with population studies, and we intend to include observations on thermoregulatory behavior and nesting (incubation temperature, sex ratio and hatching success, parental behaviour) of both species.

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Africa

Gabon

CROCODILES AND NATIONAL PARKS IN GABON. The well-preserved natural environment in Gabon is home to all three species of African crocodiles. These species were protected by a Gabonese Decree in 1966, with provision for a hunting period. The commercial hunting for skins ceased in 1975, when the wild stocks were too depleted (especially for *Crocodylus niloticus*), and the decree was therefore no longer published. Since then, crocodile hunting for meat has continued throughout the country, although crocodiles presently benefit from partial (but mostly unapplied) protection according to current Gabonese laws. After our interviews with old hunters and fishermen, the scarce available literature data and our field observations, the original distribution and population densities of crocodiles within the country were much affected by hunting, especially in the Ogooué River (type locality of *Osteolaemus t. tetraspis*) and adjacent lakes and swamps, and the Gabon Estuary. Depletion of Nile crocodile populations appeared so severe that some authors (Dupuy *et al.* 1998) thought it was probably extinct in Gabon.

Pending field surveys dedicated to the evaluation of the impacts of hunting and environmental changes on population status at a national level, an important step is to record the current respective representations of crocodile species in the recently (2002) established network of 13 national parks and in the other protected areas. Our field work and literature searches (see Pauwels *et al.* 2004, 2006b,c) led to the record of the current presence of *Crocodylus cataphractus* in three national parks (Ivindo, Loango and Moukalaba-Doudou), *C. niloticus* in two (Loango and Moukalaba-Doudou), and *Osteolaemus t. tetraspis* in six (Akanda, Loango, Lopé, Minkébé, Moukalaba-Doudou and Pongara) (see Fig. 1).

Little herpetological fieldwork has been done to date in Gabon's national parks, and it is obvious that more of the 13 parks have crocodiles. Due to its ecological requirements, it is however possible that the Nile crocodile won't be recorded from more parks, except perhaps Mayumba, along the coast near Congo. It is still common in Loango N.P., but in Moukalaba-Doudou N.P. it is always

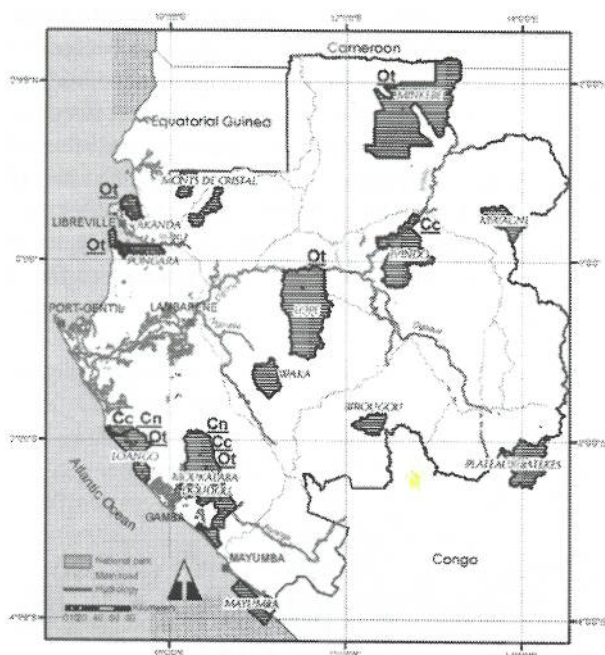


Figure 1. Map of Gabon, showing the 13 national parks. Known occurrences of crocodile species in the parks are indicated (Cc= *C. cataphractus*; Cn = *C. niloticus*; Ot = *O. t. tetraspis*).

observed in very small numbers (personal obs., 2005). It is still hunted in the Nyanga River along Moukalaba-Doudou, and frequently seen, along with *C. cataphractus*, in the nearby Mayonami market (pers. obs., 2004-2005). It was probably once present in the mangroves and rivers of Akanda and Pongara National Parks near the capital of Libreville, but seems to have been extirpated from there because of hunting (see Vande Weghe 2005).

The future record of *C. cataphractus* from several additional parks, in particular Lopé, Minkébé and Mwagna (= Mwagne), is very probable. Blanc and Frétey (2000) recorded *C. cataphractus* from a locality just outside Lopé N.P. It is urgent to make sure that viable populations inhabit some parks, because this species is heavily threatened by hunting wherever it occurs in the country. Thanks to its ubiquity and ecological plasticity, it is expected that *Osteolaemus* will eventually be recorded from all parks. It is much hunted in Gabon for its meat, but still widely distributed and common. Possibly only Loango and Moukalaba-Doudou National Parks, both situated in the Gamba Complex of Protected Areas, host the three species. The Gamba Complex is thus important in terms of crocodile conservation, and it moreover includes Lake Divangui, right between both parks, which would be an adequate sanctuary for *C. cataphractus* (Pauwels 2004; Pauwels *et al.* 2003), and which is also home to *Osteolaemus* (Barr 2004). In December 2005 we examined the skulls of 7 recently-killed adult and subadult *C. cataphractus* in a village along Lake Mandjé (also called Cachimba) in the southeastern part of the Gamba Complex, and the villagers report the species to be locally common.

Priority conservation actions for Gabonese crocodiles include: better control of the meat trade (especially for *C. cataphractus* and *C. niloticus*) and the parallel development of alternative protein resources; species inventories in national parks and other protected areas, contributing in the same time to increase their ecotouristic value; and, definition of important, still unprotected localities, to be proposed as biodiversity sanctuaries. Touristic boat circuits to observe crocodiles are already operational in Loango National Park. Tourist guides, park ecoguards and students from the Forestry School (Ecole Nationale des Eaux et Forêts, Cap Estérias) should be involved as much as possible in crocodile monitoring and conservation programs.

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West Asia

Iran

NEW SITUATION FOR MUGGER POPULATION IN IRAN. After the long years of harsh drought in Mugger crocodile habitats in Iran, there were heavy rains in the area. The resulting flooding caused destruction and damage to many small villages. Bridges and most parts of the roads were destroyed. On the other hand, most of the ponds, and especially Pishin Dam filled completely, and for some weeks it exceeded its maximum capacity (175 million cubic metres) and overflowed. Later rain kept it full, guaranteeing a water supply for crocodile ponds.

Water runoff from the reservoir keeps Sarbaz (Bahukalat) River flowing, and enough water reaches the next smaller Dam (Kahir Borz). The Department of Environment (DOE) has no responsibility for the amount of runoff, and the local staff of the Ministry of Power are authorized to apply any management. On the contrary, the situation along Kaju River is still not suitable, and only a few ponds over a long distance contain some water; a dam is under construction on this river.

The main part of the Mugger population was aggregated in the reservoir during the water shortage, and the amount of water and intensity of flow during the flooding caused

some of the crocodiles to fall through the overflow into the overflow pool (Fig. 1), which holds water because of blockages to its drainage pipe. The trapped crocodiles have no way to escape from this pool. During the first flooding, 9 crocodiles which had fallen were captured and released back to the reservoir by local DOE staff from the cities of Chababar and Rask. The second time, three crocodiles were caught and released. These incidents are likely to be repeated in any later flooding, and we have yet to find a solution.

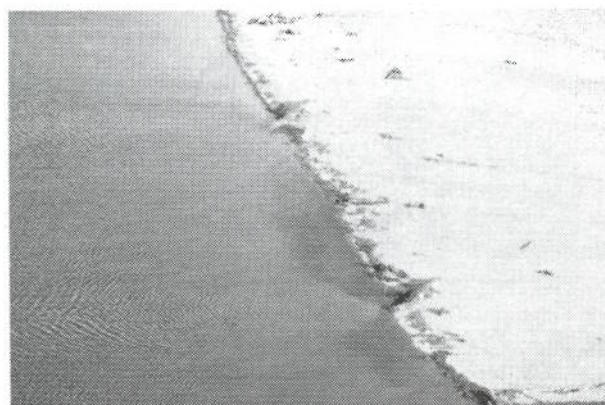


Figure 1. Mugger Crocodiles in the overflow pool.

In order to make legal support and protection more effective, the Environment High Council approved an article in May 2005, doubling fines for killing crocodiles from 16,000,000 Rilas to 32,000,000 Rilas (\$US350).

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Nepal

A recent publication from the International Institute for Sustainable Development examined the impact of Maoist rebel activity in Nepal on the environment and on the ability of conservation organizations to work in conflict-affected regions (Murphy *et al.* 2005).

The study was carried out between August 2004 and January 2005, a period that coincided with a marked increase in Maoist activity in Kathmandu. The conflict has resulted in over 12,000 people being killed, more than 200,000 people being internally displaced, and hundreds of thousands fleeing to neighbouring India. Dwindling government control in rural regions has interrupted or halted effective development efforts for many NGOs, international organizations and donors.

Gharial crocodiles were one of the species examined in the study. The Kasara Gharial Breeding Center has been successfully raising gharials in captivity since 1977, and