Broad-snouted Caiman *Caiman latirostris*

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Common Names: Broad-snouted caiman, Yacaré overo, Jacaré-de-papo-amarelo, Caiman de hocico ancho, Ururan, Yacaré mariposa

Range: Argentina, Bolivia, Brazil, Paraguay, Uruguay

Figure 1. Distribution of *Caiman latirostris*.

Conservation Overview

CITES: Appendix II (ranching) Argentina; Appendix I in other Range States

CSG Action Plan:

Availability of survey data: Argentina and Uruguay good; Bolivia, Brazil and Paraguay poor.

Need for wild population recovery: Variable throughout distribution (low to high).

Potential for sustainable management: Variable throughout distribution (low to high).

2009 IUCN Red List: LRlc (Lower Risk, least concern; IUCN 2009) (last assessed in 1996).

Principal threats: Habitat destruction, illegal hunting (in some States of Brazil, where population is low), and construction of large hydroelectric dams.

Ecology and Natural History

The Broad-snouted caiman is a medium-sized crocodilian. Although its maximum reported size is 3.5 m, animals longer than 2.0 m are presently rare in the wild. This species' geographic distribution includes the drainages of the Paraná, Paraguay, Uruguay and São Francisco River systems, spreading over regions of northeast Argentina, southeast Bolivia, Paraguay, and northern Uruguay. It also includes a large number of small Atlantic coast drainages from Natal, at the eastern tip of Brazil, to northeast Uruguay. Although this species is eventually sympatric with *C. yacare*, Medem (1983) reported that *C. latirostris* was generally found in more densely vegetated, quieter waters. In Paraguay, Scott *et al.* (1990) found *C. latirostris* to be a habitat generalist, but when in sympatry with *C. yacare* it tended to be found in more ephemeral habitat, and was a better colonizer of isolated cattle stock ponds. This kind of man-made habitat has been also reported to be colonized by the species in Brazil (Verdade and Lavorenti 1990) and Argentina (Venturino 1994). Urbanization is also a threat, especially in eastern Brazil, but the species can still be found in urban lakes of the southern region of Rio de Janeiro City (Freitas-Filho 2007). *Caiman latirostris* has also been found in the mangroves of coastal islands of southeast Brazil (Moulton 1993). According to Yanosky (1994), the Broad-snouted caiman can be found from sea level up to 800 m altitude.

Caiman latirostris is a mound nester, laying 18-50 eggs during the wet season, with a maximum of 129 eggs in a nest from a multiple-laying (Larriera 2002). As its common name implies, it has proportionally the broadest snout of any crocodilian. It has a generalized diet, with the most important food items being snails, shrimp, fish and birds (Diefenbach 1979; Melo

Verdade, L.M., Larriera, A. and Piña, C.I. (2010). Broad-snouted Caiman *Caiman latirostris*. Pp. 18-22 *in* Crocodiles. Status Survey and Conservation Action Plan. Third Edition, ed. by S.C. Manolis and C. Stevenson. Crocodile Specialist Group: Darwin.

1995; Borteiro 2005; Freitas-Filho 2007). Passive feeding behavior has been described (Piña and Larriera 2003), but as a single individual and not cooperative feeding like that described for *Alligator mississippiensis* (F. Wayne King, pers. comm.) and *C. yacare* (Schaller and Crawshaw 1982).

Recently, Verdade and Piña (2006) have prepared the *Caiman latirostris* account for the Catalogue of American Amphibians and Reptiles, which includes details of most of the research on the species.

Figure 2. Adult *C. latirostris*. Photograph: Alba Imhof.

Conservation and Status

Adult *C. latirostris* have well-developed ventral osteoderms, but the skin is still considered better for finished products than that of the other species of the genus *Caiman* (King and Brazaitis 1971; Brazaitis 1987). Commercial hunting began in the 1940s and 1950s throughout most of the species' range, but not in Uruguay (Medem 1983). Although still occurring in some places, illegal hunting is no longer the major threat for this species - probably due to a combination of reduced density, improved protection, increased cost of illegal hunting, and legal skins becoming more attractive to traders.

In northeastern Brazil, illegal hunting still supplies local markets for meat in small cities along São Francisco River basin. The meat is sold as salted carcasses like codfish. For this reason, it is locally called "São Francisco codfish" (Verdade 2001a). In Argentina, illegal hunting has been reduced, as local rural people ("gauchos") are currently rewarded for locating nests for the local ranching program (Larriera *et al*. 2008). On the other hand, habitat destruction has significantly increased in recent years, mostly in Brazil and Argentina.

Surveys for *C. latirostris* were recently conducted in Argentina (Siroski 2004; Piña *et al*. 2009), Bolivia (Aparicio and Ríos 2008) and Uruguay (Borteiro *et al*. 2006, 2008). Habitat destruction due to agricultural purposes has occurred in all of these countries. Populations are considered to be severely depleted in Bolivia, which is on the limit of the species' natural range (Verdade and Piña 2006; Aparicio and Ríos 2008). No recent survey data are available for Paraguay.

Most of the natural wetlands of the Paraná and São Francisco River systems in Brazil have been dammed for large hydroelectric stations. Vast areas have also been drained for agricultural purposes and pollution has been a considerable problem in rivers that flow through large cities in Brazil. Studies on the impact of the construction of large hydroelectric stations on the density and reproduction of Broad-snouted caiman populations have been conducted using aerial surveys (Campos and Mourão 1995; Mourão and Campos 1995), alerting to the major damage of these dams due to destruction of floating vegetation used for reproduction.

The State of São Paulo, in Brazil, is located in the central portion of the species distribution range. In this region there are no vast wetlands but the species inhabits small wetlands and artificial reservoirs. Although these habitat patches are connected by watercourses, there seems to be some isolation among patches on a meta-population level and even on a micro-geographic scale, possibly due to pressures such as poaching and urbanization (Verdade *et al*. 2002).

The geographic distribution of the species seems to follow the major river basins of southeastern South America: Paraná and São Francisco (Villela *et al*. 2008). However, genetic analyses revealed that a former Pleistocene coastal drainage led to a consistent genetic flux along the coastal region of Brazil, even though the sea level rise resulted in current small isolated drainages (Villela *et al*. 2008).

The successful results of the ranching program carried out in Santa Fe, Argentina, since the early 1990s (Larriera 1993a, 1994), have demonstrated the great potential of sustainable use programs for the conservation and management of this species. There are currently four ranching programs operating in Argentina (Larriera *et al*. 2008), producing approximately 12,000 skins per year. In addition, a second generation (F2) has been obtained in captivity in São Paulo, Brazil (Verdade *et al*. 2003), where a small farming program is maintained, producing skins and meat (Verdade 2001b).

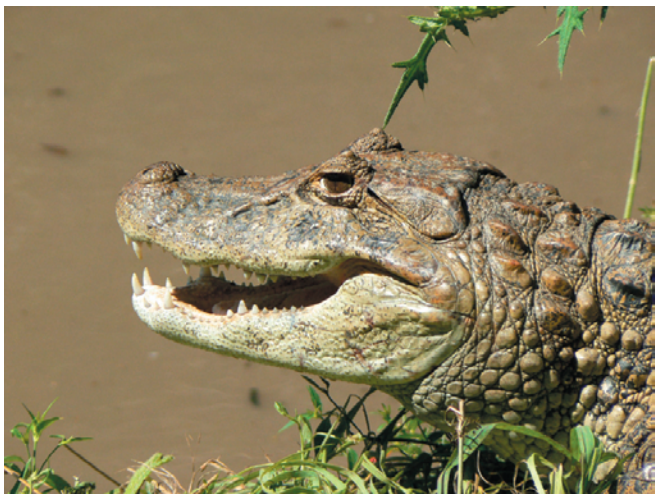

Figure 3. *Caiman latirostris*. Photograph: Alba Imhof.

Knowledge about the species' biology and management has consistently improved since the early 1990s due to regional

workshops (Verdade and Santiago 1991; Verdade and Lavorenti 1992; Verdade *et al*. 1993; Larriera *et al*. 1994), research (Piña and Larriera 2002; Piña *et al*. 2006; Verdade *et al*. 2006; Iungman *et al*. 2008; Poletta *et al*. 2008; Parachú Marcó *et al*. 2009; Siroski *et al*. 2009) and a combined effort between Argentine and Brazilian research teams (Larriera and Verdade 1995; Verdade and Larriera 2002). As a consequence, the Argentine population of the species has been transferred to Appendix II of CITES (Larriera *et al*. 2008) and the Brazilian population is no longer considered as endangered in Brazil (IBAMA 2003). Notwithstanding the significant recovery of the species, it is still listed as endangered in the USA - which restricts trade from management programs that are providing positive incentives for conservation.

Figure 4. Considerable research on *C. latirostris* has been undertaken in Argentina. Photograph courtesy of Virginia Parachu Marco (pictured at a *C. latirostris* nest).

Priority Projects

High priority

Of the four high priority actions identified in the previous Action Plan (Ross 1998), only two of them were effectively tackled: ranching programs in Argentina (Larriera *et al*. 2008) and investigations of population biology (Amavet *et al*. 2003, 2007, 2008; Piña and Larriera 2003; Piña *et al*. 2003, 2009; Larriera *et al*. 2004, 2006; Siroski 2004; Borteiro *et al*. 2006; Montini *et al*. 2006; Parachú-Marcó and Piña 2008; Simoncini *et al*. 2008, 2009; Villela *et al*. 2008). The other two actions were partially addressed; in Brazil a farming program is growing, and a new results of surveys within Brazil presented (Guix *et al*. 1997; Fusco-Costa *et al*. 2008).

1. **Survey of status and distribution in Brazil, Bolivia, Paraguay and Uruguay**: The largest part of the range of *C. latirostris* is located within Brazil but only scant information is available on status in that country. Hydroelectric dams, wetlands drainage for agriculture, and pollution are still affecting large portions of its geographic distribution in that country, possibly affecting the whole species. This scenario should be considered in the planning of conservation and management of this species in Brazil. The utilization of Geographic Information Systems (GIS) and DNA analyses might help to survey the current available habitats and the actual population structure of the species (eg Verdade *et al*. 2002; Villela *et al*. 2008). In addition, radio-telemetry studies might be useful to clarify the species' use of space on the individual level.

2. **Implementation of conservation and management programs in Bolivia, Brazil, Paraguay and Uruguay**: Once surveys are carried out, political authorities should have enough information to start working on the implementation of management plans in these countries. The wide geographic distribution of this species resulted in different scenarios for its management and conservation. In some regions, where original habitat still remains, sustainable programs might be implemented, like the one established in Argentina in the early 1990s. In some other regions, there is considerable demand for increasing habitat conservation or even restoration and/or reclamation before implementing ranching programs. The development of successful management programs should include conservation of habitats, public education, professional training, caiman husbandry research, the adaptation of local existing tanning industries, the utilization of a skin marking system, and the stimulation of local caiman meat consumption.

Moderate priority

3. **Investigations on population biology**: The capacity to colonize man-made habitats in response to original habitat destruction should be studied, in order to guide future conservation and management programs in areas of fragmented habitats. Use of microsatellite markers could provide valuable information on mating systems and reproductive success of individuals, allowing correlation to specific characteristics. Long-term behavioral-ecological studies should guide the development of sustainable management programs as well as the establishment of conservation areas.

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