Transfer of the American Crocodile *Crocodylus acutus* population in the Bahia Cispata of Colombia from Appendix I to Appendix II

Proponent: Colombia

Summary: The American Crocodile *Crocodylus acutus* is a widely distributed New World member of the family Crocodylidae, found in 17 range States in southern North America, Central America, the Caribbean and northern South America. It was assessed at species level by IUCN in 2012 as Vulnerable. In Colombia, it is found in a number of mangrove swamps and river deltas, including the Bay of Cispata, municipality of San Antero, Department of Cordoba. The proposal applies to this population only, delimited by the perimeter of the Integrated Management District (IMD).

Cispata Bay mangroves extend over a total area of 115 km^2, within which around 14 km^2 is considered to be suitable habitat for *Crocodylus acutus*. Since 2003 the species has been the subject of an active management programme involving the construction of artificial nesting areas and head-starting based on release of juveniles hatched from eggs taken from the wild. Nearly 3000 individuals were released in total between 2003 and 2011. Population trends are unclear. Surveys between 2003 and 2010 variously counted between 67 and 122 animals with no obvious trend. A survey in 2011 counted just over 200 individuals; nearly one third of these were in the smallest size category, in which few animals were recorded in previous surveys. The number of recorded nests increased from 15 to 67 in the period 2003-2005. Subsequently (i.e. during 2006-2012) it has fluctuated between 50 and 60 per year. There are some indications of increasing average clutch size (from around 25 eggs per nest in 2004-2006 to around 30 in 2010-2012), associated with an increasing average size of reproductive females in the population. Annual hatching rate has varied from 40% to 80%, averaging around 65%, although has declined in the last two years.

In 2006, Cispata Bay mangrove forests and surrounding areas were declared an Integrated Management District of natural resources (IMD). A management plan for the conservation of *Crocodylus acutus* in the Cispata Bay IMD has been drawn up, including activities such as monitoring, research, practical conservation and environmental education. Community participation is a major component of the Cispata Bay conservation programme, including ex-hunters of crocodiles, which have formed a conservation co-operative ASOCAIMAN. There are plans to use this as a pilot for developing national conservation of the species in the future. In 2012 Colombia introduced a new policy for the integrated management of biodiversity (PNGIBSE) which aims to ensure the conservation and equitable sharing of benefits derived from use of biodiversity. The supporting statement estimates potential skin production and export from the Cispata Bay population at 1500 to 4500 skins per year.

The Colombian population of *Crocodylus acutus* was originally included in CITES Appendix II in 1975 and transferred to Appendix I in 1981. Commercial hunting of *Crocodylus acutus* has been banned in Colombia since the late 1960s. The proposal seeks to transfer the population of the Bay of Cispata to Appendix II with a note stating the intentions of the project are predominantly conservation; if there is a surplus of animals in the immediate future they could be used for commercial issues, and indicating an intention to submit a ranching proposal to CoP17.

There is an international market for *Crocodylus acutus* skins. Colombia exports predominantly raw and salted products produced in six CITES-registered captive-breeding facilities. Principal destinations for these skins are France, Italy, Japan and Singapore, and between 2001 and 2011 importers reported importing around 3500 skins from Colombia, nearly 60% of these in 2011.

Analysis: The *Crocodylus acutus* population of Cispatá Bay, Colombia, remains very small, with a restricted range and occurrence at few locations. Population trends are unclear, but there is no indication of an increase in the number of nesting females, despite considerable management efforts, including head-starting, in the past 9 years. It would appear that the population still meets the biological criteria for inclusion in Appendix I as set out in Annex 1 to *Resolution Conf. 9.24 (Rev. CoP15)*.

Adoption of the proposal would result in the split listing of Colombia's population of Crocodylus acutus; Annex 3 of *Resolution 9.24 (Rev. CoP15)* states that when a split-listing does occur, it should generally be on the basis of national or regional populations.

Para A 2 of Annex 4 of the Resolution sets out a series of precautionary measures regarding transfer of species from Appendix I to Appendix II. It is not apparent that these are met in this case. The species is in demand for trade, with export of skins of captive-bred *C. acutus* from Colombia recorded up to 2011. The proposal is not a ranching proposal, and no export quota or other special measure has been proposed. Management measures are set out in general terms in the supporting statement but enforcement controls, for example with regard to the tagging of skins for export, are not specified. It is thus not clear how skins from this source might be distinguished from those of other wild *C. acutus* in Colombia, which would remain in Appendix I. The basis for the suggested productivity of the population in supplying skins for export is not clear.

Supporting Statement (SS)	Additional information
Taxonomy	
Synonym: *Crocodylus americanus.*	
Range	
Bay of Cispata, municipality of San Antero, Department of Cordoba, Colombia. **Range of species**: Belize, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru, USA, Venezuela (Bolivarian Republic of).	
IUCN Global Category	
	Assessed as Vulnerable A2cd in 2012 (ver. 3.1).
Biological criteria for inclusion in Appendix I	
A) Small wild population **(i) Population or habitat decline; (ii) small sub-populations; (iii) concentrated geographically during one or more life-history phases; (iv) large population fluctuations; (v) high vulnerability**	
The population being proposed for transfer from Appendix I to II is from the Cispata Bay in the municipality of San Antero, department of Cordoba. In Cispata Bay surveys have been carried out since 1999, and in 2004 a standard methodology was introduced – once a year, once around the route checking nests in three areas, covering 80% of the natural habitat.	*Numbers and units provided in the text of the proposal and the various figures and tables vary, with total numbers of animals sighted in 2011, for example, quoted as 214, 221 and 231 in different sections.*
Average number of *Crocodylus acutus* sightings in Cispata Bay from 2002-2011 was approximately 107 animals per year. However, the average in 2002-2010 was only 93 animals, with there being a large increase in sightings in 2011, to ~220 animals	*No estimate of absolute population size in the bay is provided and an overall increase in population size appears to have been extrapolated from a near doubling of the number of animals counted in 2011 versus 2010. Between 2002 and 2010, counts*

Supporting Statement (SS)	Additional information
sighted in a 14 km^2 area. This population increase has been attributed to the release programme that has been in place since 2003, with over 3000 eggs and juveniles having been re-introduced into the wild during this period (derived from eggs collected from within the area).	*fluctuated between 67 and 122 animals. Then in 2011, ~220 individuals were counted, 59 of which were of the smallest size class of which very few had been counted in previous surveys. It is highly likely that these represented recently hatched nests.*
From 2002 to 2010, on average one crocodile was sighted for every one km surveyed, increasing to two per km in 2011. Similarly individuals per km^2 of area between 2002 and 2010 ranged from five to 10 animals, but in 2011 this increased to nearly 15 animals per km^2.	*The increase in total population size has been attributed the release programme, however, the survey data do not show the large number of hatchlings/juveniles that have reportedly been released. There is no indication in the proposal as to what has happened to these thousands of animals, such as whether they are surviving the release but not being counted or have migrated elsewhere (due to the site having reached maximum carrying capacity), or whether they are being lost to anthropogenic or natural mortality.*
According to survey data, authors infer that the Cispata Bay population structure is unbalanced, with a low proportion of juveniles. From 2008, there is a slight increase in sightings of the smallest class individuals (3 to 5 individuals compared to zero in previous years), with a sudden increase to 59 in 2011. Nesting females are thought to make up only 5-10% of the population.	
Females lay 10-60 eggs after each copulation. Between 2004 and 2012 over 13 000 eggs were counted in 490 nests. Over this time there was a gradual increase (17%) in the number of eggs laid in each nest due to the increase in the age of females in the population over this time (older females are known to produce more eggs). On average 73% of eggs hatch.	*Using values in Table 5, between 2003 and 2011, on average only 65% of eggs hatched. Hatching success ranged from 78% in some years (2005 and 2009) to only ~40% in others (2003 and 2011).*
Since 2003 approximately 3500 “individuals” (including eggs, hatchlings and animals at various stages of development) have been released.	*Table 5 also records the numbers of crocodiles released over the period, and when compared to the number of hatchlings, the numbers that were actually released vary from 2 to 88% of hatchlings. Percentage releases were consistently low from 2007-2011 (17, 13, 2 and 21%), suggesting large quantities of eggs did not contribute to the restoration of the population in the wild. In 2011, no crocodiles were released, due to lack of husbandry facilities, but the eggs were replaced in their nests once having been measured and weighed.*
It is difficult to estimate efficiency of detection of nests, however, in Cispata Bay detection is thought to be more efficient due to knowledge and expertise of former hunters, with up to 80% of nests being found.	
B) Restricted area of distribution **(i) Fragmented or localised population; (ii) large fluctuations in distribution or sub-populations; (iii) high vulnerability; (iv) decrease in distribution, population, area or quality of habitat, or recruitment**	
The perimeter of the Integrated Management District (protected area) delimits the area of distribution of the crocodiles in the bay (10 coordinates around the boundary are provided in the proposal), which are the focus of this proposal.	
Cispata Bay mangroves extend over a total area of around 115 km^2. Only 14 km^2 of this area was identified as suitable crocodile habitat (area of occupancy).	

Supporting Statement (SS)	Additional information
C) Decline in number of wild individuals **(i) Ongoing or historic decline; (ii) inferred or projected decline due to decreasing area or quality of habitat, levels of exploitation, high vulnerability, or decreasing recruitment.**	
Based on monitoring data for the last ten years, the population appears stable or possibly increasing due to management and re-introduction of juvenile specimens hatched from eggs taken from the wild.	*According to tables in the proposal summarising total numbers of eggs counted/collected from nests, hatchling success and released individuals, a large quantity of eggs appear to be have been lost to the natural system due to low release percentages. It is unclear whether the lack of releases is related to low hatchling success or survival or alternative uses of these eggs/juveniles by the community.*
Trade criteria for inclusion in Appendix I	
The species is or may be affected by trade	
There is an international market for *Crocodylus acutus* skins, with predominantly raw and salted products being exported from Colombia. Bones, bile, gallbladders and teeth are also internationally traded for medicinal purposes.	*Since 1975, when* Crocodylus acutus *was included in CITES Appendix II, over 80 000 items/specimens composed of this species have been traded, according to the CITES Trade Database. The majority of trade in this species over that last 40 years has been composed of skins and various leather products. The principal range State exporters have been Paraguay, Panama, Colombia and Honduras and the main importers Italy, Germany and Switzerland.*
There are currently six *Crocodylus acutus* captive-breeding facilities registered with the CITES Secretariat, authorised to produce and export skins. In total they have exported 647 skins, with principal destinations being France, Italy, Japan and Singapore. According to the proposal, there are no wild populations that would be "able to support an illegal market". There are records of low quantities eggs and meat traded illegally; however, subsistence hunting is legal in Colombia.	*According to CITES trade data extracted in November 2012, between 2001 and 2010, Colombia reported exporting 1624 skins for commercial purposes and under source code D (animals bred in CITES registered operations). Importers reported importing just under 1500 skins from Colombia in same period. In 2011 France reported import of just under 1400 skins from Colombia and Italy just under 700. Colombia has yet to submit its annual report for that year.* *In addition to the four principal destinations, small quantities were also exported to Austria, Belgium and Spain.* *Reported trade in other* Crocodylus acutus *products from Colombia includes two skulls exported to the US in 1996 for scientific purposes (this is the first reported export of this species from Colombia in the CITES database), 20 units of large leather products imported into Belgium in 2007 and 2009 and nine small leather products exported to Bahrain, the latter reportedly derived from ranching.* *In addition, for this period the CITES trade database contains 182 records of re-exports of* Crocodylus acutus *with Colombia reported as the origin of the specimens. The majority of these are of skins and leather products and occurred between 1977 and 1984, after which there was a break until 2001. From 2001 onwards, according to re-exporter records 74 skins, 485 small leather products and 45 garments were re-exported, and according to importers 11 skins, 53 small leather products and seven garments. The majority were for commercial purposes (source code D) and were re-*
The Cispata Bay population is considered small and potential skin production and	

Supporting Statement (SS)	Additional information
export would be a negligible proportion of the global crocodile skin trade. It would be important, however, to local communities and it is projected that once wild populations recover, they could harvest from 50 to150 nests per year, resulting in the production of 1500 to 4500 skins per year.	*exported from the four principal destinations for skins exported from Colombia – namely Japan, Singapore, Italy and France.* *Tables 4 and 5 provide numbers of nests surveyed between 2003 and 2012, and the maximum was 67 during this period. The number of eggs derived from these nests averaged ~1400 per year, however, only 65% of these hatched (and in recent years significantly less). Therefore, it is unclear how proponents have reached the estimate for potential skin production, which suggests that every egg would result in a skin for sale and that all nests and eggs would be exploited every year.*
Precautionary Measures	
The proponent states that the State of Colombia will help communities and ensure provisions are implemented correctly, and that the responsibility is totally with the Colombian State.	*Importers records suggest larger quantities of skins have been exported from Colombia than reported by Colombia. Therefore, verification of these records would be recommended to ensure illegal trade is not currently occurring.*
At the international and national level, Colombia implements CITES and all the specific requirements for management and trade in crocodile species. It counts on the support of INTERPOL when dealing with cases of illegal trade. Rights, duties and obligations of the local community are outlined in the Cispata Bay Management Plan, ensuring local control measures are also in place. The national police and various local, regional and national authorities provide control and monitoring support in the area.	*Colombia restricts the commercial use of* Caiman crocodilus *to production by captive-breeding and rearing. Due to concerns over illegal harvesting from the wild, Colombia uses skin size limits as a regulatory measure to exclude illegal wild-caught adults of* Caiman crocodilus *entering "legal" trade. Trimming and cutting of skins has made compliance with the limits problematic to enforce, however, and Webb* et al. *(2012) researched predicting total lengths of caiman from skin measurements in an attempt to provide a tool for authorities to establish meaningful skin limits and a better mechanism for CITES Parties to assist Colombia with compliance. With* Crocodylus acutus *being a more threatened and valuable species than* Caiman crocodilus, *details on measures to ensure compliance with Government regulations for this species would be an essential component to any down-listing proposal (C. Manolis,* in litt.*, 2012).*
The current proposal for transfer to Appendix II is accompanied by an annotation stating: "although the project is for conservation…if there is a surplus of animals in the immediate future it could be used for commercial issues, with international projections. Later, when the amendment of the Appendices is achieved, a ranching of eggs and community farm breeding will be consolidated". The proponents indicate the possibility of putting forward a ranching proposal for this population at CoP17.	*The proposal does not state what would be considered an appropriate "surplus" in order to initiate commercial trade, nor is there a mention of a quota or another "special measure" as an integral part of the proposal, as per the precautionary measures outlined in* Res. Conf. 9.24 (Rev.Cop15) *Annex 4 A 2c.*
Other information	
	<u>Threats</u>
Indirect threats to the species include rising sea levels and increasing temperatures, which could cause flooding of nests and lead to higher proportions of males being born, respectively. Hunting and collection of eggs are also still possible threats. Commercial hunting of *Crocodylus acutus* has been banned since 1965, however,	Crocodylus acutus *was hunted and overexploited for its skin across its range until it was protected in the 1970s, however, illegal hunting is still believed to occur. It is also threatened by habitat degradation from coastal development, including destruction of nesting grounds and the destruction of mangrove swamps for shrimp aquaculture.*

Supporting Statement (SS)	Additional information
subsistence use is still permitted. Meat and eggs are consumed, abdominal fat is considered a medicinal and teeth and bones are used for traditional rituals.	*When young, individuals of this species may also be predated by birds, raccoons, coati, dogs, and by adult crocodiles (Ponce-Campos* et al., *2012).*
Conservation, management and legislation	
Commercial hunting of *Crocodylus acutus* has been banned in Colombia since the late 1960s. Articles 250-252 of Decree Law 2811 of 1974 establish rules on the use of wildlife (hunting), and this law in turn is governed by the national code of natural resources outlined in Articles 142-155 of Decree 1608 of 1978. Law 99 of 1993 has resulted in the update of a number of the provisions of these laws. In 2012 Colombia introduced a new policy for the integrated management of biodiversity (PNGIBSE) which aims to ensure the conservation and equitable sharing of benefits derived from use of biodiversity. In 2006, Cispata Bay mangrove forests and surrounding areas were declared a protected area in the category IMD (Integrated Management District of natural resources), regulated by Colombian law. A management plan for the conservation of *Crocodylus acutus* in the Cispata Bay IMD was drawn up, including activities such as monitoring, research, practical conservation and environmental education. There are plans to use this as a pilot for developing national conservation of the species in the future. Consequently, once the status of additional sub-populations and/or the entire national population has improved, and there are at least five years worth of monitoring data supporting this, they may be proposed for down-listing to CITES Appendix II in the future. Community participation is a major component of the Cispata Bay conservation programme, including ex-hunters of crocodiles, which have formed a conservation co-operative ASOCAIMAN. Management has included the creation of artificial nesting mounds of 60-80cm. Eggs have been collected from 505 nests in the last 10 years and 65% were collected from artificial platforms. 30-40% of platforms were used every year by nesting females. From 2003, eggs have been collected and juvenile crocodiles re-released into areas of the bay where population imbalances were most apparent from survey work. All released individuals are marked by removing their caudal peduncle scales and in some cases also with a microchip. Since 2003 approximately 3500 “individuals” (including eggs, hatchlings and animals at various stages of development) have been released. In 2011 and 2012 eggs were weighed and measured and returned to their nests, due to lack of husbandry facilities. Monitoring of populations has been running since 2002 and from 2004 both the perimeter and total area of the survey area has been consistent – 112 km and 14.4 km^2, respectively.	*The Colombian population of* Crocodylus acutus *have been listed in Appendix II of CITES since 1975 and in Appendix I since 1981.* *The autonomous region of the Magdalene Valley and Sinu banned commercial hunting of the species in 1965 (Resolution 125) and in 1968 a national ban was implemented by Resolution 411 of the Ministry of Agriculture (Barrera, 2004).* *The species was recorded in the Tayrona National Natural Park for the first time in 2006, and since then ten individuals have been spotted in the area (Balaguera-Reina, 2012).* *According to Table 6 provided in the proposal, it appears that animals of different ages have been raised and released into the wild. For example of the 151 eggs collected in 2003, 36 hatchlings were released into the wild in 2004, and then 60, 5, 6, 15 and 24 animals of increasingly larger sizes were released between 2006 and 2010. Of the ~8000 reportedly successful hatchlings between 2003 and 2012, only ~3000 appear to have been released back into the wild – the proposal does not provide any indication on what happened to the remaining hatchlings.* *Bergen (2010) reported that eggs are incubated, hatched and raised in captivity until the animals reach one to one-and-a-half years of age, at which point they are released into the wild and that so far the programme had released over 1700 crocodiles into the wild.*

Supporting Statement (SS)	Additional information
Similar species	
The only closely related species found in Colombia is the Critically Endangered *Crocodylus intermedius.* This species is only found in the Orinoco region.	
Artificial Propagation/Captive breeding	
Close-cycle captive-breeding of *Crocodylus acutus* occurs in Columbia. In 1994 there were 43 experimental captive-breeding programmes in place; however, only 8 are still operating. There are currently six farms registered with the CITES Secretariat authorised to produce and export skins. In total they have reportedly exported 647 skins.	*According to CITES data extracted in October 2012, Colombia reported exporting 1624 skins for commercial purposes and under source code D (animals bred in CITES registered operations) and importers records suggest even more skins were exported – 3501.*
Other comments	
The species was recorded in large quantities, along the Valley of the Magdalena, at the Sinú, San Jorge and Cauca rivers, and some of its tributaries and wetlands complex of the Caribbean coast, especially in mangroves at the deltas of large rivers. Its distribution is discontinuous in the Pacific coast but it also commits to the mangrove swamps and rivers deltas. In the census conducted between 1994 and 1997, there were 5 small populations as the most important and 70 Sites were also identified with isolated individuals or small and fractional groups.	*The proponents note that the species has been recorded in large quantities within Colombia; however, the information provided in the proposal does not support this statement. This may, however, relate to the recent discovery of a large population by Ulloa-Delgado (2011), see below.* *A review of the status and distribution of* Crocodylus acutus *throughout its range was carried out in 2006 by Thorbjarnarson* et al*. and although they found that the species was recovering in most parts of its historic range, recovery in Colombia appeared to be limited.* *The Colombian population is considered critically endangered. It is estimated to be composed of less than 250 adults, severely fragmented sub-populations and these sub-populations do not contain more than 50 adults (Rodriguez, 2000).* *Barrera (2004) carried out a survey of a* Crocodylus acutus *population in the Magdalene River Valley, and found 1.07 animals per km surveyed (14 animals in 13 km). From this and interviews with local communities, it was estimated that a total of 38 animals inhabited the area. They were predominantly juveniles and sub-adults. The author noted their concern over this low population density.* *Population structure, density and habitat of* Crocodylus acutus *were studied by Balaguera-Reina and Gonzalez-Maya (2008) in 2006 in the Via Parque Isla de Salamanca (VIPIS), Magdalena Department, Colombia. A total of 14 individuals were sighted in one creek and one lagoon complex out of the 14 marshes, 10 creeks, and one lagoon complex surveyed that comprise 8% of total of flooded and aquatic habitats in the VIPIS. An estimated density of 7.78 ind/km was calculated for creeks and 2.56 ind/ha for lagoons. The population structure was eight individuals (61.54%)*

Supporting Statement (SS)	Additional information
	of Class I (total length <60 cm), one individual (7.69%) of Class II (TL 61-120 cm), four (23.08%) of Class III (TL 121-180 cm), none of Class IV, and one (7.69%) of Class V (TL >241 cm). *In 2010 and 2011, Colombian scientists identified what is believed to be the most important population of* Crocodylus acutus *in Colombia in the Sardinata River basin. 196 crocodiles were found during a 132 km survey of the Sardinata, San Miguel, New President and Tibú Rivers (total density of 1.48 animals/km), and it was estimated that there are several thousand crocodiles in the basin (Ulloa-Delgado, 2011).* *This species is hybridizing with* Crocodylus moreletii *in Belize and the Yucatan of Mexico and with* Crocodylus rhombifer *in Cuba, a factor that has not yet been factored in to conservation efforts (Ponce-Campos* et al., *2012).* *It is unclear whether any other* Crocodylus acutus *range States were consulted concerning this proposal.*

Reviewers: C. Manolis,

References:

Balaguera-Reina, S.A. and Gonzalez-Maya, J.F. (2008). Population structure, density, and habitat of *Crocodylus acutus* Cuvier 1807 in the Via Parque Isla de Salamanca, Magdalena Department, Colombia. *Herpetotropicos* 4: 59-63 http://www.academia.edu/471376/POPULATION_STRUCTURE_DENSITY_AND_HABITAT_OF_CROCODYLUS_ACUTUS_CUVIER_1807_IN_THE_VIA_PARQUE_ISLA_DE_SALAMANCA_MAGDALENA_DEPARTMENT_COLOMBIA

Balaguera-Reina, S.A. (2012). First Report of Caiman Aguja *Crocodylus acutus* population in the Tayrona National Natural Park. Colombia. *Crocodile Specialist Group Newsletter*, Vol 31 (1): January-March 2012. http://www.academia.edu/1511372/FIRST_REPORT_OF_CAIMAN_AGUJA_Crocodylus_acutus_POPULATION_IN_THE_TAYRONA_NATIONAL_NATURAL_PARK_COLOMBIA

Barrera, L.F. (2004). *Estado actual de un relicto poblacional del Caimán Agujo (*Crocodylus acutus *Cuvier, 1807) en una zona del Magdalena Medio.* Fundación Omacha http://www.proaves.org/IMG/pdf/Final-Crocodylus_IEA_ProAves.pdf

Bergen, H. (2010) *Hunting for better lives.* Conservation International, 25 February 2010. http://www.conservation.org/FMG/Articles/Pages/hunting_for_better_lives_colombia_crocodiles.aspx

Manolis, C. (2012. In litt. to the IUCN/TRAFFIC Analyses Team, Cambridge, UK

Ponce-Campos, P., Thorbjarnarson, J. and Velasco, A. (IUCN SSC Crocodile Specialist Group) (2012). *Crocodylus acutus*. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2. http://www.iucnredlist.org/details/5659/0 Viewed on 12 November 2012.

Rodríguez, M. (ed.) (2000). *Estado y distribución de los Crocodylia en Colombia*. Republica de Colombia, Sistema Nacional Ambiental, Ministerio del Medio Ambiente, Instituto Alexander Humboldt: Bogota.

Thorbjarnarson, J., Mazzotti, F., Sanderson, E., Buitrago, F., Lazcano, M., Minkowski, K., Muñiz, M., Ponce, P., Sigler, L., Soberon, R., Trelancia, A.M. and Velasco, A. (2006). Regional habitat conservation priorities for the American Crocodile. *Biological Conservation* 128: 25-36.

Ulloa-Delgado, G. A. (2011). Natural populations of crocodiles discovered in the Cataumbo Region*. Crocodile Specialist Group Newsletter,* Vol 30(4): October-December 2011.

Webb, G., Brien, M., Manolis, C. and Medrano-Bitar, S. (2012). Predicting total lengths of Spectacled Caiman (*Caiman crocodilus*) from skin measurements: a tool for managing the skin trade. *Herpetological Conservation and Biology* 7(1):16-26.