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AMERICAN CROCODILE COMPLEMENTARY INFORMATION

This document has been presented by Colombia in relation to amendment proposal COP17 Prop.21 on the American crocodile (*Crocodylus acutus*)^{*}.

^{*} *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat (or the United Nations Environment Programme) concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.*

SYNTHESIS OF THE MANAGEMENT PLAN (PRELIMINARY DOCUMENT V.1)

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I. INTRODUCTION

The document Specific Management Plan (SMP) of *Crocodylus acutus*, constructed with the participation of local communities is part of the "Conservation project of *Crocodylus acutus* in the Regional District of Integrated Management (RDIM-protected area) of the Bay of Cispatá, Colombia. This SMP must be interpreted as a technical and operative initial document for the planning and effective management of the species, and complementary to the Management Plan of the RDIM, which is being implemented with communities under the leadership of the regional environmental authority, Regional Autonomous Corporation of the Valleys of Sinú and San Jorge (CVS).

The RDIM of the Bay of Cispatá has around 27.600 hectares (15.335 of which are mangroves) and is equivalent to the Category VI of the IUCN, where there is a combination of conservation actions and those for sustainable use. The activities of research and conservation of the populations of *Crocodylus acutus* are part of the implementation of the management plan of the RDIM and the SMP of the population of *C.acutus* that are being carried out will be incorporated as an integral part of this said management plan. Since the year 2001, the area counts with zoning for the management of the mangrove (figure 1) which it defines the types of use, additionally to a sustainable use management plan for the implementation with the communities since 2007.

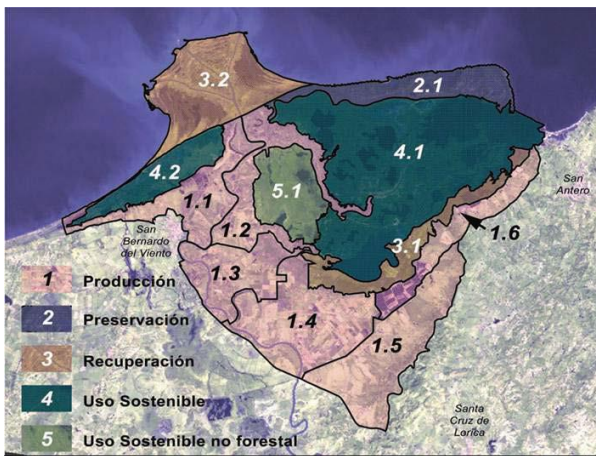


Figure 1. Bay of Cispatá, Colombia.

Zoning of the areas of Management in the mangrove.

1. Producción
2. Preservación of the mangrove
3. Recuperación of the mangrove
4. Sustainable use
5. Non-forest sustainable use (Ulloa et al. 2006).

The SMP proposes actions oriented to the conservation *ex situ* and *in situ* of the populations of *C.acutus* from the combination of strategies of preservation, recuperation and sustainable use. This instrument with views for short, medium and long term, aims mainly to generate social, economic, and ecological benefits, especially with a positive impact in the quality of life of local communities and of the species.

Livelihoods of the rural communities that are present in the area covered by the SMP depend in greatly in the taking advantage of wild species, turning these communities into primary actors when it comes time to implement conservation strategies. Consequently, and in line with Res. Conf 16.6 of the CITES and Livelihoods, empowerment of these communities constitutes as one of the main elements for the implementation of measures for management of the species. With this in mind, the SMP was designed taking into consideration the main components:

- 1) RECUPERATION OF THE POPULATION, based on a standardization of the research taking in six aspects: a) census and monitoring of wild populations (15 years); b) management of the habitat (11 years); c) recollection of

nests (14 years); d) controlled incubation (14 years); e) *ex situ* management of neonates and juveniles (14 years); and f) liberation program (12 years).

- 2) STRATEGIES FOR CONSERVATION, includes 5 key strategies to guarantee the conservation of the population: a) declaration of protected area; b) education; c) support for the development of the communities; d) proposal for amendment in the CITES; and e) Specific Management Plan.

The SMP provides the fundamental tools to guide the sustainable use of the resource and its transformation and/or commerce in the national and international markets, covered by the conservation principles of sustainable use, supported by scientific research, and monitoring of the population.

Additionally, the design and implementation of the SMP has allowed the establishment of a base line and the setting of thresholds for sustainable use, that permits the planning of clear strategies for management and monitoring, directed towards the double purpose of finding sustainability for the long term of the population of *C. acutus*, and the improvement of the economies of the local communities; the latter contributes to the compliance of the SDGs of the Agenda 2030 of the United Nations, specifically in the eradication of extreme poverty.

II. SYNTHESIS

The SMP adjusts itself to the conditions that are particular to the Bay of Cispatá and the basic components of the programs of sustainable use recommended by the IUCN/CCS (Ross, 1998). For the construction of this document, we also took into considerations experiences in programs of sustainable use for Crocodylidae that have been implemented during various years in countries like Papua New Guinea (Genolagani and Wilmot 1990), Venezuela (Quero de Peña 1993), Zimbabwe (Hutton and Child 1989), USA (Joanen *et al.* 1990) and Australia (Webb *et al.* 1992). The following components have been prioritized, and already count with advances in its development:

2.1 **Baseline for research and monitoring of the population and habitat**

The area of Bay of Cispatá counts on with characterization of the habitat (structure and composition), for the crocodile's population: abundance, structure, demographic and dynamic; and criteria of viability (ecological and population). The only way to guarantee the sustainability of the resource is through a constant improvement of the scientific knowledge of the crocodile populations, including characterization, diagnosis and monitoring (population and habitat). In relation to these aspects, there are activities being carried out yearly to maintain current all the base information and inform on important decisions regarding the management in the region, especially related to the protected area.

2.2 **Guides for sustainable use of the population**

This component refers to norms, dispositions, orders, agreements and/or mandates that relate to the objective of attaining levels of sustainable use of *Crocodylus acutus* in the Bay of Cispatá and must take on all legal, administrative, socioeconomic, moral, scientific and ecological aspects. It also includes the elements to define quotas and safeguards of management, as well as alternatives that complement the direct use for ecotourism, education and research.

2.3 **Control and traceability for legal commerce**

Within this component, It incorporate control measures and institutional guides for the implementation, control and follow up to illegal commerce, but also to combat illegal trafficking to guarantee the sustainability of the species.

2.4 **Community and livelihoods**

The experience of working with the local communities of the Cispatá Bay for more than a decade has been a determining point for the transformation of their productive practices. It went from a society that was dependent on hunting and over exploitation of *C. acutus*, to a society involved in the improvement of the conditions of the population of the species. This component of the SMP aims to widen the perspectives of the use of the resource as a means of livelihoods for the communities living in this region.

2.5 Participative Monitoring

The follow up of the plan is a fundamental component to ensure the compliance with the objectives we are aiming for with the Management measures. The type of follow up that will be developed in the Plan will be participative. This with the aim that, in its different levels of implementation, institutional and social actors will have the opportunity to intervene in the information needed to understand the state of advance in the different strategies of management, generating a greater commitment in the long term from these two groups in the implementation of the SMP.

III. BASELINE OF RESEARCH AND MONITORING OF THE POPULATION AND HABITAT

This component within the SMP is the oldest and is in constant evolution. So much so, that here are various documents that reference the RDIM of the Bay of Cispatá regarding its geophysical, environmental, social, economic, and administrative aspects, as well as references about the species in a global and local level (Annex 1). The keeping of the base line of the species and its habitat will be ensured through strategic programs with protocols that are standardized just how it shows in the following Table 1.

Table 1. Strategic programs component base line for the effective monitoring of the species *Crocodylus acutus* and its habitat.

Program	Focus	Frequency	Expected results	Obtained results
1. Monitoring (*)	Wild populations	Annual	Density and natural distribution	Increase of 376%, between 2002 (50 animals) and 2015 (194 animals with 188 > 60 cm). For a total of sightings of 1,084 individuals.
2. Liberation	Return of embryonated eggs	Annual	Reproduction monitoring	If the proposal passes in CITES, 10% of the annually obtained animals will be reserved in ranching and maintain a program of liberation in the long term.
	Animals between 70 and 100 cm	Annual	Monitoring of wild populations	
3. Recollection of nests	Recollection of the wild and taken to the Station of Amaya	Annual (2 to 3 months)	Recollection of nests to ensure high survival.	80% hatchlings
4. Controlled incubation	Station of Amaya	Annual (5 to 8 months at 31.5 °C)	High survival and relation females-males, 1:1	Liberation of juveniles
5. Management of habitat (**)	Placing of posture platforms in strategic areas	Annual (100 areas each year)	High survival	Increase in volumes of posture using criteria of adaptation to climate change

(*) This program has existed for 14 years. (**) This program has existed for 11 years.

IV. GUIDELINES FOR SUSTAINABLE USE OF THE POPULATION

For the case of the population of crocodiles of the Bay of Cispatá, the objective of conservation of the species will continue with the involvement of the local communities and must take on the aspects described in Table 2.

Table 2. Aspects for the sustainable Management of the population of *Crocodylus acutus* in the Bay of Cispatá.

Aspect	Description
Technical	Scientific base that guide technical criteria for decision making for management, considering location, intensity, safeguards, etc.
Administrative	Decisions based on technical, ecological and legal aspects, in the framework of the implementation of the SMP
Social	Determining factor that aims that the local communities gain knowledge that allow

Aspect	Description
	for a sustainable management of the population of crocodiles and a better quality of life
Legal, ethical, normative	Mandates that integrate technical, ecological, social and administrative aspects and guide institutional control and social autoregulation activities based on community awareness, ethic, honesty and capacity building.

The guidelines for the use will include indications on actions to determine the sustainable use of the population of *Crocodylus acutus* in the Bay of Cispatá and the safeguards in the management and will base itself in three main principles:

- (1) The population of *Crocodylus acutus* can only be taken advantage of commercially by the communitarian groups of the Bay of Cispatá under management measures and administration of the environmental authorities and CITES authorities of Colombia.
- (2) The commercial management will adjust to the modality of ranching and captive breeding of which there can be a guarantee a number of returns to the natural habitat of 10% of net production. This, as long as the states and tendencies are kept.
- (3) The community and authorities will help each other out in the upgrading of base information and in the implementation of monitoring and follow up of the natural population and its habitat, including the incorporation of indicators that show benefits on a social, economic and ecological level.

4.1 Preliminary definition of quotas and extraction

The quota of annual harvest of nests (eggs) will be obtained from the 9 routes of monitoring and recollection of nests zoned in the mangrove system that cover close to 10.116 ha. (Fig. 1, Zones 2.1, 4.1 y 3.1). This harvest will depend on various aspects, including safeguards in the baseline, markets and its tendencies, capacity of the community to incubate and raise the animals and implementation of the community programs, amongst others. Based on historic information where we have observed natural and stable production, we estimate a multi-annual average of 54 nests and 27 eggs per nest. The quota expressed in quantity of eggs per year, would be around 1166 eggs (80%).

In order to maintain the wild population, there are strategies planned: recollection of eggs on standardized routes of monitoring and recollection of eggs, 10% of the animals obtained will be reserved for a structured liberation and research program, which will be developed under a special protocol for management. Additionally, it is expected that the undetermined percentage of nests not detected in the RDIM also contribute new individuals to the population dynamic.

4.2 Safeguards

As one of the main elements for sustainable use, safeguards derived from viability criteria involving monitoring of the wild population and reproductive events will be implemented. Given that we have multi-annual information, viability will be given for 4 levels of trust that could modify the management. Table 3 shows parameters to be evaluated and the respective criteria of viability and tentative trust.

Table 3. Assessment of the parameters indicating the viability or of trust for the safeguard of the populations of *Crocodylus acutus* in the Bay of Cispatá from commercial exploitation

PARAMETER		(1) OPTIMUM	(2) NORMAL	(3) IN OBSERVATION	(4) IN STUDY
POPULATIONS	Structure (cm) (20-60) (61-120) (121-180) (181-240) (>241)	Representation of the 5 kinds of sizes and evidences of reproduction and recruitment	Representation of the 5 types of sizes	Absence of the classes 2 or 3	Absence of the classes 2, 3 and 4
	Density ani/k ²	7,1	1,8-7,1	<1,8	<0,9

PARAMETER		(1) OPTIMUM	(2) NORMAL	(3) IN OBSERVATION	(4) IN STUDY
REPRODUCTIVE	No. nests/year	67	47-67	< of 47	< of 23
	eggs/nest	30	24-30	< 24	< 20
	% fertility	95	90-95	< 90	< 45
	% of hatching	80	60-80	<60	<30
Scope of the Parameters					
<i>OPTIMUM RELATIVE (1)</i>		The best parameter to date and the reference to improve			
<i>NORMAL (2)</i>		Variability observed or multi-annual range of the last 7 years, or time estimated so that the <i>Crocodylus acutus</i> reach their sexual maturity			
<i>UNDER OBSERVATION (3):</i>		When the value of the parameter is below normal level and causes are unknown, this can guide the management of a conditional situation			
<i>UNDER STUDY (4):</i>		When the parameter is below of the 50% from the minimum range and it is not knowing the causes, the management will be oriented to recovery and not to use.			

4.3 Alternatives different from direct use

Besides the use of skins and sub products of the exploited animals, other alternatives must be considered that complement the process of conservation of the population and privileges community development. Ecotourism, environmental education and research are within the alternatives for use, being the first one the main alternative, and in this sense, the RDIM has guides for its development. The training for the ex-hunters of *Crocodylus acutus* to turn them into conservationists and legally organize them as an association (ASOCAIMAN) was the first step in the community development. With the help of the National Service for Learning (SENA), trainings in ecotourism are being developed.

V. CONTROL AND TRACEABILITY OF LEGAL COMMERCE AND TRAFFICKING

The Regional Autonomous Corporation of the Valleys of Sinú and San Jorge–CVS is the public entity in charge of the administration, conservation and vigilance of the populations of crocodiles in the Bay of Cispatá, and has under its responsibility that to establish, on a regional level, adequate regulatory measures for the use of the population of this species by the communities. These functions are established in Law 99 of 1993 and Decrees 1076 of 2015 and 2372 of 2010. In this sense, in the implementation of the SMP, coherent procedures will be established with the national norms and what CITES states regarding the amendment.

Once the amendment passes, the Ministry of Environment and Sustainable Development, the CITES Management and Scientific Authorities along with the CVS, will proceed to lift the closed season specifically for the RDIM (Annex II Resolution 11.16 Vi (i)).

5.1 Control measures

Control measures will be applied on two levels: on the regional level by CVS and on a national level by the CITES M.A. The control is directed to the specimens to be exploited and its posterior exportation, according to the existing judicial ordinance and the CITES dispositions for objects product of exportation. Measures like marking of animals by amputation of scales and genetic characterization of the population and of the products will be part of the possibilities to better control illegal trafficking.

Additionally, the SMP aims to also determine with the benefactors, rules or social local control, keeping in mind the strategic role of these communities in the keeping of healthy populations of *C. acutus* and the relevance for their livelihoods.

5.2 Other mechanisms for control and viability

Parting from a base line of more than 10 years of research of the population of *C. acutus*, 5 criteria are identified that are part of the justification regarding which environmental Authority has been developing research since 2004. Table 4 have the details of these criterias.

Table 4. Criteria that guide control mechanisms and viability for the effective Management of *Crocodylus acutus* in the Bay of Cispatá, Colombia.

Criteria	Description
1. Legal aspects	<i>Crocodylus acutus</i> is a species in danger of becoming extinct according to CITES (App.1) and is listed in the IUCN Red Books.
2. Quality of habitat	The mangroves in the Bay of Cispatá is the natural habitat for the species, is in good conditions, and is adequate for the conservation of the species.
3. Preliminary diagnostic	The wild population of <i>Crocodylus acutus</i> detected in the Bay of Cispatá was not in equilibrium, but always was active in reproduction terms.
4. Participation of communities	The processes of conservation of biodiversity, on top of generating benefits in social and economic benefits, must involve the local communities to generate these benefits. Especially those who depend directly on these resources for their livelihoods.
5. Processes for land use and planning	The country has been carrying out activities for years now, directed towards proper land use and planning, and the formulation of Management plans for the conservation of the mangroves and its components.

VI. COMMUNITY AND LIVELIHOODS

The activities for conservation of the components of biodiversity must involve the local communities, and if possible generate social, ecological and economic benefits. For now, and keeping in mind that the project is only finalizing its research phase. When the amendment passes and the communities can obtain the economic benefits for the sale of skins and the sub-products of *C. acutus*, these must be distributed equally and in accordance to the participation of the community members.

VII. SMP MONITORING PLAN

The SMP proposes a follow up system and systematic control parting from technical, scientific and social parameters based on an existing base line on the development of the resource and management actions, along with indicators previously incorporated in the SMP of the RDIM. Consequently, and once the amendment is approved by CITES, the design of the SMP will be finalized, which will be done under the technical supervision of the CVS with the approval of the Administrative and Scientific Authority CITES. These entities, with the support of the communities, will work on actions directed towards:

- The official adoption of the SMP for the management of *C. acutus* populations in the Bay of Cispatá, which incorporates a strategy for financial sustainability long term.
- Strengthening of governmental institutional framework, including the availability of technical and financial resources for implementation and follow up to the SMP. For this, based on indicators of follow up, scientific and social.
- Capacity building in instances of concertation and local social participation for the follow up and oversight of adaptable and flexible actions to the local conditions.
- Conformation of a consulting committee, integrating environmental authorities, CITES authorities and community groups for a co-administration scheme.
- Inclusion of social actors to the processes of identification and prioritization of needs for research.
- Communities have more disposition to support and accept management measures
- Achieve appropriate control and monitoring by the CVS and community organizations.

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