

## CITES and their legal framework in the conservation of crocodriles

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### INTRODUCTION

The Convention on the International Trade of Endangered Species of Wild Flora and Fauna (CITES) was signed on March 3<sup>rd</sup>, 1973. The Convention is the result of the Conference of the United Nations on Environment and Development, Stockholm (Sweden), 1972, concerned for the speed in which the wild fauna and flora species of the world were exposed to threat caused by not regulated international trade. The Convention went into effect on July 1<sup>st</sup>, 1975. After 28 years, the Convention has more than 140 countries as parties and it is considered in general as one of the most important legal instruments to achieve the conservation of biodiversity and sustainable development. During this period, the Conference of the Parties demonstrated its capability of adaptation to the evolution of the circumstances and, by mean of resolutions, it proved that to be able to find practical solutions to face the more and more complex problems of wild species trade.

Since the creation of CITES, the Parties established three protection categories for the wild flora and fauna species, according to the perceived grade of extinction threat and the amount of international trade: Appendix I, includes all the species in extinction danger whose trade must be subjected to a particularly strict regulation and it is authorized solely under exceptional circumstances. Appendix II, includes all the species that are not necessarily in extinction danger, but they could arrive to that situation unless its trade is subject to a strict regulation in order to avoid an use incompatible with its survival. And Appendix III, includes all the species that any of the Parties declares that are subjected to regulation inside their jurisdiction in order to prevent or to restrict its exploitation, and need other Parties in its trade control.

Historically, among the species of wild fauna with a larger grade of exploitation are the crocodilians. The over-exploitation of the populations of these species for international trade of skins, together with the destruction of habitats, has caused the decline and local extinction in many parts of the world. From the creation of CITES in 1975, all the crocodilian species were listed in Appendixes I or II, and since then, a number of local populations has been transferred from the Appendix I to the II for different reasons, using a great variety of mechanisms (Hutton, 1992). The international trade of the crocodilians and derived products are controlled by CITES through their mechanisms, which are more complex than for any other group. At the moment, there are at least five control levels exercised by CITES on crocodilian trade, from the listing in Appendix I, to its transfer to Appendix II by means of captive breeding, farm breeding, quota basis and listing in Appendix II (Hutton, 1992, Table 1).

The concepts to market species included in Appendix I have always been controversial. Paragraph 4, Article VII of the Convention, establish that specimens of wild animal or plant species included in the Appendix I, breed in captivity or artificially reproduced with commercial purposes, were considered specimens of species included in the Appendix II. But really, the registration of establishments for captive breeding of Appendix I species with commercial purposes, has been subject to numerous resolutions to interpret the text of the Convention. Meanwhile, the Parties can carry out any sustainable management of species Appendix II species, and the scientific authority of the export state should certify that the exportation would not affect the survival of that species.

## DEVELOPMENT

### Captive Breeding

Since the second encounter of the Conference of the Parties (San José, 1979), numerous resolutions have been edited for an effective interpretation of the Article VII (4 and 5) concerning the terms: captive breeding, artificial propagation, and other matters. But always keeping in mind that they have no impact in detriment of the wild populations and without the introduction of wild specimens, except for the occasional addition of animals, eggs or gametes coming from wild populations in order to avoid noxious endogamy. It was recommended that "captive breeding" be interpreted as the offspring, including eggs, born or obtained in a controlled environment. Also, the sustainability of the captive breeding was identified as an important element, and it was required for its operations the application of a management method able to guarantee the production of two offspring (F2) generations in a controlled environment. However, this does not mean that the reproductive lineage in an establishment should produce two offspring generations to consider the first generation as captive breed, in the terms of that resolution. It was evident that the definitions contained in that Resolution, should also be applied to the captive breeding and to artificial reproduction of species included in Appendixes II and III. At that moment, very few farms fulfilled that definition and some that did it, like in Thailand and Cuba, were not Parties of CITES.

In 1985, the registration of captive breeding establishments began for species of Appendix I (Res. Conf. 4.15), applied to all establishments of this type with commercial purposes, except those, private ones included, that occasionally raised specimens (Zoos, amateurs, etc.) that could be included in the exception foreseen in paragraph 5 of article VII. In Ottawa, 1987, the Registration of captive breeding establishment with commercial purposes of species included in the Appendix I, became a necessary condition to authorize the trade (Resolution Conf. 6.21). Examples were *C. niloticus*, *C. porosus* and *C. siamensis*. For species without registration in that moment, the establishments should have the approval of the Conference of the Parties. The establishments that raised species already included, could be registered in the Administrative Authority, simply informing to the Secretary. In Lausanne, 1989, criteria were approved for the inscription proposals in the Registration of commercial establishment of captive breeding for Appendix I species (Res. Conf. 7.10). According to these criteria, practically any establishment completed the requirements of the registration. In the Conf. Resolution 8.15 (Kyoto, 1992), it was recognized that the captive breeding of species with commercial purposes can be an economic alternative to the traditional cattle rising, and therefore rural populations that share its distribution area can be encouraged to be interested in its conservation. In the same conference, the Conf. Resolution 8.22 was adopted, which is contradictory with this disposition referring to crocodylians, mentioning the danger that represents to grant more incentives for the creation of captive breeding establishments that can affect the efforts for wild population conservation. It is considered that the farm breeding favors the crocodylian conservation in more grade that captive breeding establishments do (Davis,1994). Since the main objective of the Convention is to conserve wild populations of the species included in the Appendixes, the Conference of the Parties recommended to the countries that authorized the creation of captive breeding establishments with commercial purposes of crocodylians included in the Appendix I, do not allow that captured wild animals serve as reproductive parents, unless a national plan consider it as a benefit for the conservation. During the last meeting of the Conference of the Parties at Gigiri 2000, a new system of registration of captive breeding establishments for Appendix I species with commercial purposes was proposed, where the registration will apply exclusively to wild species in critical danger and/or it is known that they have difficult to be raised or to maintain in captivity (Res. Conf. 11.14), and the expression "breed in captivity" is defined. Also, it was determined that:

a) The expression "breed in captivity with commercial purposes", as used in paragraph 4 of Article VII of the Convention, will be interpreted in the sense that makes reference to any specimen of an animal breed

with the purpose of get an economic benefit, including profits in money cash or goods, or with the intention of selling it, change it or lend a service, or any other use form of economic benefit. While:

b) For the Appendix I species, the paragraph 5 of Article VII of the Convention makes reference to a specimen raised in captivity with any commercial purposes when each donation, exchange or loan does not have the purpose of obtain a profit and is carried out between two establishments, participating in a cooperative conservation program which take into account the participation and support of one or more countries within the species distribution area.

The Administrative Authority of each Party, in consultation with the Scientific Authority, will be responsible of the authorization of this type of establishments, and will facilitate the requested information to authorize and maintain the inscription of the establishment to the Secretary (Annex 1, Res. Conf. 16.14). The inscription should follow the procedure (Annex 2, Res. Conf. 16.14), notifying to all the Parties and giving complete information (Annex 1) to who requests it. The authorizing Party should also be sure that the establishment provides a lasting and significant contribution to the conservation of the breed species.

The registered captive breeding establishments should look for an appropriate and sure marking system to identify the reproductive parents and the marketed specimens. Also, establishments need the commitment to adopt more sophisticated marking methods. An important aspect is the intentional introduction of a species in the distribution range of other; in this case, the resolution urges to the Parties an evaluation of the ecological risks, before the creation of captive breeding establishments of exotic species, in order to prevent any negative effect on the local ecosystems and the native species. It is really a very important topic for the conservation of crocodiles, as in the cases of Brazil and China with the introductions with *C. niloticus* and several species to be raised in captivity. Which would be the impact on the strategies of conservation of native species of these countries, and at world level?

### **Breeding in Farm**

The captive breeding definition contained in Resolution Conf. 2.12, does not embrace the commercial exchange of the Appendix I species captured in the wild. Also, the farm breeding in Zimbabwe based on the collecting of eggs did not fulfill that Resolution. For this reason, the New Delhi 1981 Conference adopted the Resolution Conf. 3. 15, on the concept of breeding in farms, are based on wild captured specimens raised in a controlled environment. The farm breeding establishments introduce eggs or young animals in a controlled environment and raise them until a convenient size for their commercial trade, and farms should perform this operation mainly for the benefit of the wild population conservation. In 1983, Zimbabwe was the first country that could transfer in this way the population of *C. niloticus* to the Appendix II, and in 1985 Australia made the same with *C. porosus* (Luxmore, 1992).

The Gigiri 2000 Conference of the Parties did recognize that the farm breeding, in principle, are more efficient for crocodile conservation than the captive breeding, and recommended that all proposals of transferring the population of a species to the Appendix II, with the aim of start a farm breeding program, only can be approved by the Conference of the Parties if it contains the following items:

- Proof that the gathering in the environment has no significant harmful repercussion on the wild populations
- Demonstration of the biological and economic feasibility of the farm breeding
- Guarantee that the activities of the establishments will be carried out humanly in all their stages

· Documented proofs of the benefits for the wild populations of the program, by means of reintroduction or other actions

The program needs to fulfill the following criteria:

a) It should benefit the conservation of the national population of the species, increasing its wild population or promoting the protection of its habitat

b) All the products (even alive specimens) of each establishment should be identified with a uniform marking system, so that they can differentiate from products of Appendix I populations

c) The program should have appropriate inventories, control of captures and mechanisms to supervise the wild populations

d) It should watch the liberation to the environment in the needed number of animals and in the appropriate time.

It must be pointed out that, when a proposal includes a component of capture of wild adults specimens, it should be examined more carefully than when it only includes the gathering of eggs, hatchlings, larvae or other phases of juvenile life.

All proposals referred to the Res. Conf. 11.16, should be submitted to the Secretary 330 days before the meeting, which in consultation with the Committee of Fauna will ask for pertinent scientific advice to verify the mentioned criteria.

## **DISCUSSION**

The commercial exploitation is one of the major causes of exhaustion of natural resources, second in importance after the habitat destruction (Topkov, 1998). This is the CITES importance as regulator of the species trade, and that their products are obtained from legally sustainable resources. There is not doubt that application of the legal policy of CITES, together with the sustainable use of crocodiles, has generated benefits to the wild populations conservation of these species. The extension and nature of those benefits differ among countries depending upon the particular species, their situation and habitat, and management strategy. Also, CITES requires that the Administrative and Scientific Authorities of each Party have the capacity and facilities for determining that the commercial use of a species is not acting in its detriment, and that are able of monitoring the wild populations subject of trade.

The Parts of CITES recognize that the programs for captive breeding, farm breeding and crops from the wild populations, have been and are now fundamental components in the strategy of the conservation of the crocodylians. Each one of these strategies has advantages and disadvantages in conservation, control, costs and economic returns. Both the captive breeding and the farm breeding require high investment of capital for facilities, personnel and appropriate technology, to be able to develop a good management. But there are dissimilar approaches, mainly concerning on the benefits of the captive breeding strategy for the conservation, due to its independence from the natural environment, which gives no value to the wild populations (Micucci and col., 1995). Although the captive breeding has a high cost for the maintenance of the reproducers and is difficult to demonstrate its benefits for conservation of the wild species, it has contributed to the conservation of some crocodylian species that have lost or transformed their habitat and/or have been intensely exploded commercially, like: *C.sinensis* (China), *C. siamensis* (Thailand), and *C. rhombifer* (Cuba). Undoubtedly, this strategy can benefit local communities associated to tourism, allowing the increase of labor occupation as in Cuba, and it can contribute to the education for learning and understanding the importance of the crocodylians in nature. Part of its production can also be used in

programs of reintroduction, like: *C. siamensis* (Thailand), *C. rhombifer* (Cuba), and *C. intermedius* (Venezuela). They are reservoirs of genetics reserves of the species and are easier to regulate and control their trade than other programs. It is true that after implementing this type of programs there is little incentive to conserve the wild populations and their habitat, but I believe that this depends upon the capacity, conservation philosophy and strategy that intends each country.

The farm breeding only has been applied for crocodiles to allow the gathering of eggs and/or juvenile, which exhibit a high natural mortality. It is considered that this strategy favors the conservation of crocodylians in more grade than the captive breeding. This management type has the smallest biological risk and gives a better recognition to the conservation of some Appendix I species, which can be increased by an adaptive management of the wild resource. Some of the direct benefits obtained with this program type, are that it involves local communities with the species, taking advantage of the population potential with the extraction of the most abundant and dispensable segment. It also preserves the species, the habitat and the ecosystem (helping to preserve another species), and favors the tourism. However, it needs capital for infrastructure of collecting eggs and/or juvenile, and facilities for breeding. Also, in some crocodylian species, the access to the habitat and the location of nests or hatchlings is extremely difficult, thus the implementation of this strategy could be complex as in the case of *C. rhombifer* (Cuba). Other obstacles for carrying out this strategy are the climatic fluctuations and seasonality, time of reproduction of the species (while larger duration, diminishes the effectiveness), possible lack of understanding with the local residents (Zimbabwe), and need of a great administrative capacity to regulate the program in a large scale, specially when it is performed in remote areas of developing countries.

The adoption of any management program, captive breeding, farm breeding, crops from the wild or its interrelation, will depend on the conservation status of the species and its habitat, the socioeconomic conditions and the administrative capacity of a country to regulate and control this program. Any activity, which its final result is a positive conservation, should be considered (Lever, 1994). This is a wise sentence.

## **CITES AND THEIR FUTURE CHALLENGES**

The crocodylian conservation programs have been based mainly on the consumptive use of the skins. As any other international merchandise, the crocodylian products are object of market forces and price changes that are beyond the control of the producers (Woodward and col., 1999). The increase and stability of the skin production of many sustainable programs, the existence of a limited market, and the competition with other cheaper exotic skins, offer an uncertain future to crocodile conservation programs (Thorbjarnarson, 1999). Really, different causes, as the world economic crisis, the resistance movement to natural products consumption, the competition with other cheaper skins, among others, has impacted in the fall of skin prices of some crocodile species, which had rebounded in a restriction of crops in Venezuela, and several countries of Africa have closed their ranching programs or are near it (GSC, 1998). The temptation to return to a not sustainable overexploitation of wild leathers is strong (Ross, 1995), for which at the present time the role of CITES should be to increase its regulation capacity in order to prevent the trade of endangered species. A restrictive factor of CITES in crocodylian conservation is its capability to influence in the conservation of species that mostly have lost their natural habitat, as in the cases of *C. sinensis*, *C. mindorensis*, and species with low or any commercial value. Other challenge is to examine the reason by which Zimbabwe, a pioneer country in the farm breeding, is turning more and more to operations of captive breeding. It should also be analyzed the contribution for crocodile conservation of the captive breeding of exotic species (Brazil and China) and the hybrid breeding.

Facing the serious reality of the current economic world crisis that influences all aspects of life, the humanity's challenge is try to conserve and protect our environment, and CITES, GSC and all the other

conservationist organizations should work more united than never to look for new ways and flexible solutions that allow the conservation of crocodilians, their habitat and other species of the ecosystem.

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Table 1. Lists of the crocodilian species in CITES (up to 07-19-00).

Famy Alligatoridae	Appendix
<i>A. mississippiensis</i>	II
<i>A. sinensis</i>	II (captive breeding)
<i>C.c crocodilus</i>	II
<i>C.c fuscus</i>	II
<i>C.c apaporiensis</i>	I
<i>C.c chiapasius</i>	IIG
<i>C. latirostris</i>	I y II (Sta. Fé, Argentina)
<i>C. yacaré</i>	II
<i>Melanosuchus niger</i>	I y II (Ecuador, captive breeding, subject to zero quote 1997)
<i>Paleosuchus palpebrosus</i>	II
<i>Paleosuchus trigonatus</i>	II
Family Crocodylidae	
<i>C. acutus</i>	I y II (Captive breeding, Colombia, Honduras, CITES COP 10)
<i>C. cataphratus</i>	I
<i>C. intermedius</i>	I
<i>C. johnstoni</i>	II
<i>C. mindoresis</i>	I
<i>C. moreletii</i>	I y II (Captive breeding, Sinaloa, México)
<i>C. niloticus</i>	I y II (Captive breeding, in farms and quotes)
<i>C. novaeguineae</i>	II
<i>C. palustris</i>	I
<i>C. porosus</i>	I y II (Australia y Papua New Guinea) and Indonesia
<i>C. rhombifer</i>	I y II (Captive breeding)
<i>C. siamensis</i>	I
<i>Osteolamus tetrapis</i>	I
Subfamily Tomistaminae	
<i>Tomistoma schlegelii</i>	I
Family Gavialidae	
<i>Gavialis gangeticus</i>	I