

CROCODILE SPECIALIST GROUP

NEWSLETTER

VOLUME 17 No. 4 ■ OCTOBER 1998 - DECEMBER 1998



IUCN - World Conservation Union ■ Species Survival Commission

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IUCN--The World Conservation Union
Species Survival Commission

Prof. Harry Messel, Chairman
IUCN Crocodile Specialist Group
School of Physics
University of Sydney
Australia

EDITORIAL OFFICE:

Prof. F. Wayne King, Deputy Chairman
Dr. James Perran Ross, Executive Officer
Florida Museum of Natural History
Gainesville, Florida 32611, USA
Compilation and layout, Erika Simons

COVER PHOTO: Adult male *C. siamensis* at Dusit
Zoo, Bangkok. Ralf Sommerland photo.

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EDITORIAL

CSG AND CAPTIVE BREEDING. I recently had conversations with a couple of CSG members who are involved in closed-cycle captive breeding of crocodilians, one with 30 years of captive breeding experience and another developing his production of captive bred eggs to offset the costs and uncertainties he perceives with wild egg collection. Both of these people expressed the idea that CSG did not 'approve' of their activities and of captive breeding crocodilians in general and that they felt

excluded, and in one case discriminated against, by CSG. I was dismayed by this perception and spent some time trying to re-assure them of our true position and intentions, but it is indicative to me that we are still not clearly articulating what we want and what we mean in regard to captive breeding.

A quick glance through the CSG membership list indicates that about 20% of our members are directly involved in crocodilian production and of these I counted 43 (more than half) conducting captive breeding, so clearly CSG does not exclude those captive breeding. Another quick review of recent Steering Committee minutes and Newsletter articles indicates again that we routinely and extensively report upon and provide support for captive breeding activities (for example most recently in Cambodia – see page 7 this issue). A superficial count of where crocodilian skins are produced suggests that approximately 90% of caiman skins and perhaps 30 % of classic skins are produced by captive breeding. Clearly captive breeding is a significant part of the global industry, it's not going to go away and CSG recognizes this in its policy development and recommendations.

How then has the perception arisen that CSG is opposed to captive breeding? It probably arises from expressions of our concern (some written by me) about how to ensure that crocodilian production is harnessed to provide conservation for wild crocodilians and their habitat. There is no doubt that a substantial majority of CSG members consider that the conservation advantages of ranching are direct, obvious and almost unavoidable. You cannot effectively ranch crocodiles (i.e., obtain eggs from the wild in a sustainable manner) without maintaining substantial populations of wild crocodiles in their natural habitat. This in turn requires a commitment to habitat protection, regular surveys and other management action. Funding for such activities can be derived from charges to farmers for access to the wild eggs such as user fees, license fees, etc. Thus ranching has the potential to provide immediate conservation benefits and to fund them. We routinely advise those considering crocodilian production to first consider ranching.

In contrast we have often stated that captive breeding of captive adult stock unlinks the commercial process from the conservation benefits. Once they acquire captive stock it is easy to imagine captive breeding operations proceeding and succeeding while wild populations decline or disappear. This is not to say that captive breeding has no (or can have no) benefits for conservation. If we have said so we are mistaken. This topic has been exhaustively discussed at CSG Working Meetings. John Lever, among others, has eloquently discussed the many conservation

advantages which can accrue from captive breeding operations including public education, genetic reserves for rare species, animals for restocking, research, financial support for management and habitat protection, (Proceedings of the 12th Working Meeting, Vol. 1, pp.155-258). In the same volume (pp. 274-309) Dennis David presents the thoughtful analysis of the advantages and disadvantages of different modes of crocodylian production, noting that captive breeding is generally more expensive, but easier to regulate and often less subject to climatic variations and seasonal uncertainty – a substantial benefit to the businessman and regulatory agency. As Lever suggests, "... any activity that supports crocodile conservation should be embraced...." The question is therefore not whether captive breeding is good for crocodile conservation but rather 'How can captive breeding programs be structured to generate conservation benefits and funding?'

Recognizing that the benefits may not be inherently part of captive breeding as we believe them to be for ranching, we need to develop connections between captive-bred production and conservation of wild populations by regulation and financial links (e.g., by allocating severance or tag fees on captive bred skins to management and conservation). The voluntary cooperation of farmers in conservation should be recognized as a useful component of this linkage. But we must also apply that same yardstick to ranching programs and equally ensure that the alleged conservation benefits are actually achieved. There appears to be a growing trend toward increased captive-bred production. The most usual reason given is that it reduces uncertainty and improves predictability of quantity and possibly quality of eggs. An additional advantage cited by some farmers is freedom from what they consider to be intrusive regulation that is worth the increased costs. The great variability between species of crocodylians, local conditions, cultures and business structures ensures that there are a wide variety of different 'correct' answers to the problem of economically producing crocodile skins. Empirically we can observe that a great many successful national programs involve both captive breeding and ranching- each benefiting from the advantages of the other in a complementary fashion. A schism in CSG based on captive breeding or ranching would be false and unproductive. Instead we need better communication and clearer thinking to ensure that all commercial production of crocodylians provides benefits for the conservation of wild crocodylians independent of the mode, or modes, of production. – Perran Ross, *Editor*.



FROM THE CHAIRMAN

FUNDING CRISIS. In Singapore, members told us how they wished the CSG to become more active in promoting the conservation benefits of trade. Taking them at their word I have established a working group to develop this important issue. However, the CSG cannot fulfill this mandate, or even continue its day to day conservation work, if the necessary funds are not available.

It seems that every year at this time we examine donations received and expenses for the year and issue a panicked call for more donations. This year is no exception; it's worse than usual this year. Despite generous donations from some of our Patrons, the CSG has spent over \$3,000 US more this year than it has received. This has been despite holding expenditures to their lowest level in five years and the allocation of nearly 15% of the Executive Officer's time to activities funded from other sources, relieving the CSG of about \$14,000 of additional expense.

Our annual request for donations sent out to 66 potential donors in October received only seven responses and raised only \$3,500 ! This raises the awful specter of the CSG running out of money sometime in mid-1999. The Executive Officer and I have been calling donors individually, and their response has been gratifying with substantial pledges for future funding received. However, we remain in a deficit situation for the current year, we will soon exhaust the cash reserve built up at great effort over previous years, and the low rate of current donations received offers bleak hope for the immediate future. If the financial picture does not improve I will have no option but to institute drastic economy measures which can only damage our effectiveness and set back our conservation efforts. Once again I must appeal to all of you who value the CSG's activities to provide the financial support on which we rely. – H. Messel, *Chairman*.

VIEWS & OPINIONS

BRAZAITIS, WATANABE AND AMATO REPLY. *The following was printed in the December 1998 issue of Scientific American in response to comments submitted by CSG (see CSG Vol. 17 No. 1, pp. 2-5):* "Other than a production error on a map, corrected by *Scientific American* ["Errata," Letters to the Editors, May], we fail to identify the pervasive problems with our article that Ross describes. Indeed the focus of this letter on minutiae diverts attention from the main issues. The

trade data were largely based on IUCN Crocodile Specialist Group reports – from Ross’s own office. His comments that “every species mentioned in the article remains abundant in many locations” parrot the leather trade philosophy of citing numbers of caimans that might still be killed. The abundance of caimans today is, in fact, immaterial, as the habitats remain unprotected, 40 percent of the skin trade is unregulated, monitoring and law enforcement are inadequate, and many regions have declining or absent populations. Ross’s enumeration of current, serious threats to wild caiman populations, however, is consistent with our concerns.

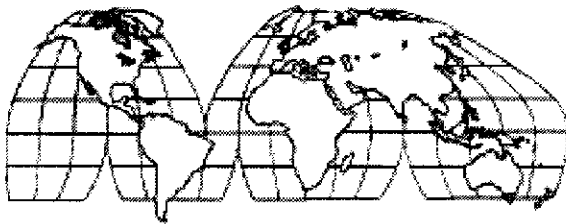
“Although Ross may disagree, there is no scientific disagreement about molecular taxonomy within the Caiman crocodilus complex, which contains different taxonomic units, or phylogenetic species. Our work has been published in at least seven peer-reviewed scientific journals and books in four countries. Publications from the Crocodile Specialist Group – an organization largely funded by crocodile leather and tanning industry – are unreviewed and unedited. Our concern is the preservation of wild caimans, not the preservation of the crocodilian leather trade.” – Brazaitis, Watambe, Amato, *Scientific American* December 1998 pp. 10.



Andreas Brieger photo.

forest. His son, standing next to the hunter, is carrying a turtle of which I have not managed to find out the species name. Some people from the next village are watching. I took this picture on our 16 km walk from the Likouala-aux-herbes River to the small settlement of Mboukou in Northern Congo/Brazzaville.” – Andreas Brieger, *Wredestrasse 2 30173 Hannover, Germany. Cell-phone: (+49) 177-2741496, e-mail: abrieg@stud.tiho-hannover.de Internet: http://www.dght.de/krocodil.htm*

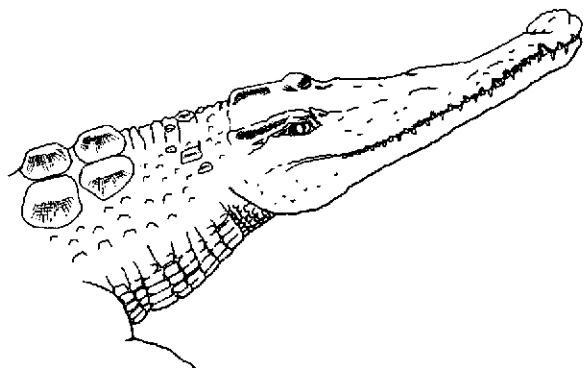
AREA REPORTS



AFRICA

Congo

A TYPICAL METHOD TO CARRY BUSHMEAT OUT OF THE DEEP FOREST. This picture “shows a quite unique motive from the forest: a native hunter carries a dwarf crocodile (*O. t. osborni*) to the next village. The croc is alive, but obviously bound in a ring-like fashion – the typical method to carry this sort of bushmeat out of the deep



Crocodylus cataphractus. Dale Johnson drawing

years in Northern Zambia based at Kasaba Bay on Lake Tanganyika and, at that time, Adrian Carr had a crocodile

farm near Ndoli Bay on Lake Tanganyika and actually had one *Crocodylus cataphractus* which he had caught at nearby Lake Mweru Wantipa.

The local Bemba tribesmen were familiar with this animal and gave it the name 'luposa' as opposed to the more common *C. niloticus*, to which they give the almost universal African name ngwenya. They were also aware of its different breeding biology and the fact that it builds a mound nest as opposed to the *C. niloticus* excavated nest. I was advised that it was, in fact, locally fairly common, but I was only able to make one trip to Lake Mweru Wantipa and didn't have a boat, so was unable to search for them. However, all the local people I spoke to knew luposa and stated that, although seldom seen, it was none-the-less not uncommon and, unlike the ngwenya, it is perceived to be a relatively harmless animal.

The main threat at the time of my stay (1989-1991) was poaching for meat to sell in neighboring Zaire (now Democratic Republic of Congo) where meat was traded for second hand clothing which had been donated free by various aid agencies! – Peter Taylor, P.O. Box 242 Banket Zimbabwe, Africa.

South Africa

MOTHER CROCODILE SCULPTURE. This interesting photograph of a Zimbabwean stone sculpture of a mother crocodile holding her young one, was seen recently at an exhibition of contemporary Zimbabwean art at Kirstenbosh Botanical Gardens in Cape Town. Although not very naturalistic or realistic, it is very surprising against the background of general vilification of crocodiles in South Africa.



Zimbabwean mother croc sculpture. Fritz Huchzemeyer photo.

WEST ASIA

Pakistan

DRAINAGE PROGRAM THREATENS INDUS GHARIALS. I am



G. gangeticus family sunning by the river.
T. Speik illustration.

writing to inform you of a project that could further endanger the status of the gharial (*Gavialis gangeticus*) in southern Asia, as well as other wildlife in the lower Indus River. Already under severe ecological stress, the river and its inhabitants are faced with a new threat, the Pakistani National Drainage Program.

The National Drainage Program (NDP) is a \$285-million project of the Pakistani government, funded with the World Bank development grants. NDP plans to funnel agricultural runoff into the river from almost a million acres of farmland. The effluent being dumped into the river through this project has already destroyed two inland lakes, most recently Lake Manchar. A preliminary Environmental Impact Assessment by the Right Bank Master Plan Committee has

predicted that water will become undrinkable in many areas along the river. In addition, the mouth of the river, including the world's sixth largest mangrove forest, will also suffer severe damage. The entire Lower Indus will be degraded as gharial habitat within a few years, if nothing is done.

The main focus of our efforts is a campaign to convince the World Bank's Operation Evaluation Department to re-evaluate the Bank's funding of the project and to hold funds until such an investigation is complete. – Ian Rose, *President, The Tropical Conservation Fund P. O. Box 947 Doylestown, PA 18901. E-mail: tropicon@tropicon.org*

Sri Lanka

AN ECOLOGICAL STUDY OF CROCODILES IN THE RUHUNA NATIONAL PARK, SRI LANKA. Two species of crocodile, namely the freshwater or marsh crocodile, *Crocodylus palustris*, and the estuarine crocodile, *C. porosus*, occur in Sri Lanka. Both are listed in the Appendix I of CITES. Crocodiles have declined in both range and number throughout Sri Lanka. A study was carried out in Block 1 (140 km²) of the Ruhuna National Park, opportunistically from October 1991 to October 1994, in which a total of 341 sightings of the two species of crocodiles were made on 77 occasions. Solitary animals made up most of the observations (55.8%) while pairs accounted for 13%. Of the 22 waterholes that were surveyed, 13 (59%) had only one crocodile. Although crocodiles could be seen at any time of day, the number basking increased with the increase of ambient temperature and peaked around noon. *C. porosus* basks alone, while *C. palustris* basks communally. Population structure consisted of 44% hatchlings, 6% juveniles, 24% subadults and 26% adults. Hatchling losses can be very high through predation from birds and mammals. Crocodiles are opportunistic and indiscriminate feeders, and their prey size tends to increase with body size. They feed on a variety of foods that range in size from aquatic insects and crustacea (in hatchlings) to fish, frogs, birds and large mammals (in adults). *C. palustris* outnumbered *C. porosus* 10:1. The minimum crude density value for *C. palustris* and *C. porosus* are estimated to be 1.98 and 0.21 animals per km² respectively. Crocodiles in Block 1 appear to be both secure and viable. If managed properly, they can become an economic asset. However, outside the protected areas, their long-term survival in the wild appears bleak, depending on how they are tolerated by the local people who share their habitats.

We have recorded crocodiles of both species from 113 localities, of which the *palustris* occurred in 100 and the *porosus* in 31. The two species are sympatric in

20 localities. Of the 113 localities from which *palustris* was recorded, it was considered rare in 67, common in 37, abundant in 5 and possibly extinct recently in 4. Of the 41 large river systems in Sri Lanka, 32 were found to support crocs. We estimate that about 1,220 *palustris* and no more than 300 *porosus* occur in Sri Lanka today. The biggest threat to crocs is habitat modification (draining of wetlands for human settlements, and prawn farming or aquaculture). We have made a special plea for ranching crocodiles, and I have written a special popular article entitled, "Making wildlife pay for its own conservation" in the popular press with the view to introducing the concept of farming wildlife including crocodiles in this hypocritical country of ours where all life except human is sacred! We are killing over 2,000 people a year and are finicky about utilizing wildlife - arrant nonsense indeed.

The paper has 2 figures showing the exact locations of all the crocodile habitats, and the distribution of the two species. I hope this will be useful contribution after Whitaker and Whitaker's pioneering survey in 1977. During the past 20 years, while the number of localities where crocs occur has increased, the number of crocodiles has decreased. – Prof. Charles Santiapillai, *110 Wattarantenne Passage, Kandy Sri Lanka. Tel: 94-8-224 784. E-mail: <csanti@slt.lk*

EAST ASIA, OCEANIA & AUSTRALIA

Australia

TOWNSVILLE'S NEW CROCODILE RESEARCH FACILITY. On 3 November 1998 a new 'grower' facility for farmed crocodiles was opened at Oonooba, Queensland, Australia. The opening was attended by the Minister for Primary Industries, Hon. Henry Palaszczuk; local member for Townsville Mike Reynolds; Mayor Tony Mooney; Dr. Peter McInnes, Coordinator of the Rural Industry Research and Development Corporation (RIRDC) and CSG Chairman Professor Harry Messel. In his opening comments the Minister noted that the new facility was a joint venture between DPI, the Queensland Crocodile Industry and RIRDC. The facility provides a research environment for studies of saltwater crocodiles over three-year term of their growth to commercial size. As a government-industry partnership the facility benefits from receiving eggs for incubation from commercial farms and the farms benefit from diagnostic investigations of infertile eggs and post mortem examination of farm hatchlings that die.

A significant topic of research is nutrition of saltwater crocodiles, which have a discerning palate and quite finicky eating habits. Pelletized diets developed for alligators have proven unacceptable to salties and the development of a suitable and palatable local pellet is underway at the facility. Research and development to improve management of saltwater crocodiles has taken on a greater importance with the recent downturn in prices for crocodile products. "The Australian industry as been able to sustain inefficient production methods in the past because of the premium price commanded by saltwater crocodile skin," said DPI researcher Mr. Bob Mayer.

Since 1992, the Townsville Crocodile Research Group has established a world class research facility at Oonoonba dedicated to studying farmed crocodile growth and health. The main research emphasis to date has been incubation and the first year of the animal's life but the new facility will allow the extension of research into the commercial growth period. The facility has space allowing the simultaneous rearing of cohorts of up to 250 crocodiles under controlled conditions. Current research interests include the effects of environmental factors such as light, temperature, hide-areas and water volume on crocodile growth; nutrition; management strategies such as grading animal density, fungal and bacterial pathogens and meat quality science. A recent success has been the development of a wet pellet feed acceptable to saltwater crocodiles without an introductory wean-on period. The facility is temperature controlled, has water quality control and includes a feed mill and processing facilities. The Townsville group has also developed extensive technical communication network for the crocodile industry including regular research bulletins and the newsletter 'Crocodile Capers'. Aussie Croc Net has been created as an electronic discussion group within the industry. Current cooperative research with the University of Queensland on causes of adult infertility in crocodiles and with the Northern Territory Department of Primary Industry and fisheries to provide coordinated extension services to the industry further expand the scope of this active group.

The opening of the new facility also served as an opportunity for CSG and industry representatives to discuss the possibility of a CSG regional meeting in Queensland in 1999 and a preliminary invitation to host such a meeting has been proposed. — Submitted by Professor H. Messel, CSG Chairman, from DPI informational bulletin and press releases.



JAPANESE MEN SEARCH FOR CROCODILE PENISES. "Brisbane — Orders are pouring in for crocodile penises from Japanese men looking to boost their sex life, an American producer said yesterday.

"We've had a lot of inquiries from Japan for crocodile penises, which sell for 3000 Australian dollars a kilogram, and I intend to tap into that market," said Andrew Cross, owner of Southern Cross Crocodile Farm in Queensland state.

Just bigger than a man's little finger and weighing about an ounce (30 grams) each, it would take more than 30 animals to fill one order, he said.

Mr. Cross said that Japanese herbalists dry the penises, which are then ground into a powder for sale to men anxious to increase their sex drive.

"I have no idea if it works, but crocodiles are mysterious animals and apparently Japanese men believe the powder helps them take on all the reptile's mysterious powers," he said. — The Citizen, November 12, 1998" — Mail Guardian 13-19/11/1998 .

Cambodia

The following comments were submitted in support of the Cambodian proposal to register six captive breeding facilities.

16 December, 1998

Mr. Ger Van Vliet
CITES Secretariat
15 Chemain de Anemones
CH-1219 Chatelaine
Geneva
Switzerland

Re: Cambodia, registration of captive breeding facilities for Siamese crocodile.

Dear Mr. Van Vliet:

We received a copy of the final proposal from Cambodia to register six farms for captive production of *Crocodylus siamensis* in August and I have circulated this to the CSG Steering Committee for review. Based upon comments received and from our discussion of this issue with a representative from Cambodia at our Working Meeting in Singapore in July, we offer the following comments and recommendations.

Overall, we find the proposal to be complete and accurate and recommend that the requested farms be added to the CITES register of captive breeding operations. The regularization of international trade achieved by approving these registrations will

directly promote the economic incentives on which conservation can be based and provide structural and policy platform from which it can be developed. We draw the attention of the Secretariat and Cambodia to the very high priority accorded to *C. siamensis* for conservation action in our recent Action Plan for Crocodiles 2nd edition. From the little information available on wild populations (more on this below) we consider that Cambodia probably has the largest remaining wild populations of this Critically Endangered species. We see the approval of this proposal as another step in a process that will ensure the survival of wild crocodiles in Cambodia. We note that it is not the first such step. Cambodia has already undertaken an enlightened policy of protected area development and protection of crocodile resources, which is particularly admirable given the recent history and limited technical capacity in that country. It is our experience that the authorities in Cambodia, and many of the individuals engaged in crocodile farming, are genuinely interested in conservation and willing to take the necessary steps to achieve it. Based on this confidence we offer the following comments and recommendations on the proposal and the proposed crocodile management system.

The proposal is technically complete and describes a system of management for captive crocodilians, which appears to be robust and functional. At the technical level there are some small details concerning the apparent number of founder stock and the success of current incubation and hatchling survival on which we would hope the Cambodian authority will continue to improve data collection and reporting. Hatch rates at some of the farms are at the lower level of economic viability (32.7%- 48.7%) and a steady improvement of these would be a good indication of improving technical capacity. However, in the farms as described, these levels are adequate to support the enterprise. The declining nest production at the Siem Reap farm is most likely a result of crowding and would be expected to reverse as animals are moved to the breeding farm and annex facility. We emphasize to Cambodia the necessity of maintaining good records from the registered farms that will be useful for tracking progress and quickly identifying problems in the future. Careful collection and reporting of farm production data provides a very valuable credibility to the program.

We have a small apprehension regarding the common exchange of farm stock between the 6 large registered farms and the very many small unregistered farms. We note that such exchange might mask the

transfer of animals illegally taken from the wild, through small unregulated farms to the registered farms. We recommend that the Cambodian Authorities recognize this potential problem and remain vigilant to ensure that the integrity of the registered farms (and their continued registration) is not jeopardized. Good stock management and recording and adequate inspection and enforcement will minimize this possibility.

Our major concerns and recommendations address the development of a conservation program for crocodiles and their habitat in Cambodia as an integral component of a National Crocodile Management Plan of which captive breeding is one part. We suggest that there are strong economic incentives for Cambodia to ensure that the wild resource on which its present captive program is based is preserved for use in the future. While captive breeding may meet Cambodia's present needs and capacity, we remain confident that the greatly cheaper costs of production of ranching crocodiles (collecting eggs from the wild and raising them in captivity) will become an attractive option in the future. The wild crocodile resource represents a potential source of crocodiles for trade that can easily be harvested at a sustainable rate. To support this notion we offer the example of Thailand, which has not been able to retain wild crocodile populations, and now seeks to purchase crocodile stock from Cambodia!

To retain a wild crocodile resource in Cambodia several steps need to be initiated. Of primary importance is to identify where crocodiles occur and ensure that competing land use or unregulated removal to captive breeding facilities does not endanger this resource. The technical capacity to monitor crocodile populations, assess sustainable harvest levels and coordinate legal egg collection needs to be developed through technical assistance from countries where these activities have become routine.

We understand that such a program is not a requirement for farm registration. Nevertheless, we recommend that the necessity for such a program be recognized at this early stage of development and included in planning and policy development. A robust and well-managed captive breeding industry could be the basis for expansion to a more productive system utilizing (and conserving) wild crocodiles and their habitats in the future. We are pleased to report that the Association of Crocodile Producers in Cambodia has already recognized this necessity and offered to establish a trust fund to support crocodile surveys. We strongly support this kind of

responsible linkage between the economic benefits and the long-term conservation perspective. We hope that the crocodile captive breeding industry in Cambodia will continue to be the catalyst for sensible conservation action and the approval of the current proposal for registration is one step in continuing this process.

Yours sincerely,
James Perran Ross, Executive Officer CSG

China

LIVE IMPORT DIFFICULTIES. One thousand live hatchling Nile crocodiles exported from South Africa were received by the Yinlong Group Co. Ltd. in Guangshui, southern China, in April this year. These hatchlings of approximately 2 months age arrived in debilitated condition due to the rigors of air transport and 411 were dead. With additional mortalities over the next several days a final number of 535 survivors were placed into the farm.

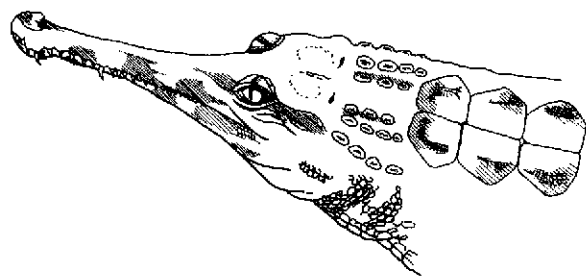
In early May, a second shipment of 249 Nile crocodiles of 3-5 years were received in Guangshui with a female to male ratio of 5.5:1. When inspecting the hatchlings of the previous shipment, a representative of the shipper suggested that inadequate feeding may be the cause of mortality and suggested doubling rations until the daily food amount was not completely eaten. Unfortunately when this procedure was started, many of the remaining hatchlings became ill and died, with larger individuals being more susceptible. It is possible that the digestive system of the hatchlings had not recovered from the stress of transport and many were observed to have blockages, inflammation and necrosis of the intestines. These sick and weakened hatchlings also contracted pneumonia and at the time of writing only 356 survive.

On 8 May, an additional 250 Nile crocodiles were received at Guangshui. These were shipped as breeding adults but the average body length was 159.4 cm and weight 16.38 kg and these appeared to be too small for breeding. The Chinese buyers are hoping to receive technical assistance on crocodile husbandry from South Africa to improve their rearing success of these exotic crocodilians. – Zhang Zheng-dong, *Anhui Research Center of Chinese Alligator, Xuancheng, Anhui, Peoples Republic of China.*

Indonesia

SIX PEOPLE WERE KILLED BY TOMISTOMA IN CENTRAL KALIMANTAN. I received a report from Palangkaraya (Capital city of Central Kalimantan) that six villagers from Katanjung, Supang and Tumbanpuruk villages were killed by a group of *Tomistoma* in Kapuas Hulu district

(12 hours by boat from Palangkaraya) in the Sirat River. The river is known for its strong current and habitat for the senyulong crocodile (*Tomistoma*). This accident occurred on two consecutive days in 9-10 October 1998, when the villagers were on their morning activities in front of their house. Traditionally the Kalimantan people build their house right at the edge of the river, known as Lanting. Apparently the *Tomistoma*, which were reported in a group of 12-15 animals, were spread under the lanting waiting for the tenants to come out and grasped them immediately. One man can be saved, but with 120 stitches and still under intensive care at the local hospital. The rest can only be found in pieces spread all over the river. One person was taking his morning bath in the river accompanied by his wife when the group of *Tomistoma* suddenly attacked the husband and dragged him into the river. During that time the



Tomistoma schegelii. Dale Johnson drawing.

river was in flood condition after a heavy rain the night before. To the local people this is a very unusual behavior for the senyulong attacking humans. No clear explanation can be obtained for this accident.

My hypothesis is that during the past two years (1997 to mid 1998) the Borneo areas had been under El Niño effect and followed by intensive forest fire. Numerous reports mentioned the severe damage to the habitat as well as the victims of wild animals (large and small) because of this phenomenon. To a certain degree I believed this has affected the availability of food for the *Tomistoma*. Now La Niña has been reported approaching Borneo and flooding almost all the main rivers in Borneo. Hypothesis that the flood has displaced the *Tomistoma* could be right. Heavy terrestrial rain with lack of food in their native habitat might put the *Tomistoma* in the situation where they have to find new hunting areas. This is also being supported by the local government hypothesis. – Hellen Kurniati, *Research & Development Center for Biology, Indonesian Institute of Sciences, Bogos, Indonesia.*
e-mail: <mzb@indo.net.id>



Philippines

DRAFT NATIONAL RECOVERY PLAN FOR THE PHILIPPINE CROCODILE. Following meetings held during the 14th Working Meeting of the CSG in Singapore last July, Gerry Ortega of Crocodile Farming Institute (CFI), Josephina Leon of the Department of Environment and Natural Resources (DENR) and Chris Banks of Melbourne Zoo, developed the idea of a National Recovery Plan for the Philippine crocodile. CSG lent its support to the concept and the idea has been enthusiastically received by DENR. A draft document has been presented to DENR for consideration and members of a national recovery team have been proposed.

The draft plan summarizes current distribution and status of the Philippine crocodile and presents a brief review of recent events concerning its conservation. Drawing from detailed information presented by Gerry Ortega at the Singapore Meeting (in press in the Proceedings), the current wild distribution of the Philippine croc is thought to be restricted to Naujan lake on Mindoro, Aguasan marsh and Linguasan marsh on Mindanao, the Dipuyai and Busuanga rivers on Busuanga and possibly Tuguegarao in northern Luzon. However, reliable recent sightings and captures are only known from Labagan River on Busuanga and Najuan Lake in eastern Mindanao in 1993. The plan analyses current threats including habitat loss, community perceptions of crocodiles and some technical difficulties of managing and breeding the species in captivity. The current ex-situ captive breeding programs at CFI, Silliman University, Manila Zoological and Botanical Garden, Melbourne Zoo (Australia) and Gladys Porter Zoo (USA) are described and recent research on the species summarized.

A series of recent activities in education and community involvement coordinated by CFI represent the major work which is ongoing and the need for protected areas for the species is outlined.

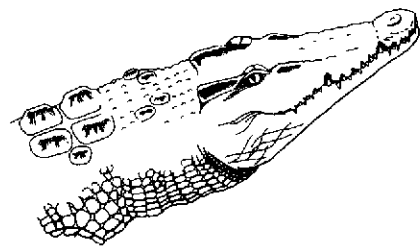
The Plan finally outlines a series of goals and objectives with criteria to judge their successful completion and allocation of activities and responsibilities to participating entities. The primary goal is to re-establish *C. mindorensis* in the wild and ensure its long term survival throughout its historic range. A series of specific conservation objectives include the establishment of a National Recovery Team, identify appropriate habitats and protect them, identify captive crocodiles which are suitable for release to wild areas, to create positive community attitudes to wild crocodiles and to coordinate the management of the captive populations. Defining the extent of remaining wild populations and resolution of the genetics and

systematics of the species are additional goals and the whole plan proposes to link the conservation of crocodiles to wetlands conservation in the Philippines.

A five year schedule for implementing this bold plan is proposed and the formal acceptance of the plan by DENR and the location of funding to support it have been initiated. Meanwhile field studies to develop several aspects of the plan are already underway (see next article). – Summarized from *Philippine crocodile National Recovery Plan, first draft*, Chris Banks, Melbourne Zoo, Australia.

NEW CONSERVATION STUDY OF THE PHILIPPINE CROCODILE. This study will provide information that will be used in establishing criteria for the restocking and reestablishment program of wild populations of the Philippine crocodile. We hope to be able to recommend the protection of newly discovered crocodile populations and the designation of its habitat as protected areas, as well as provide data in support of existing protected areas. The study will yield key information for a comprehensive national Philippine crocodile conservation plan. The project is funded by a Research Fellowship Grant from the Wildlife Conservation Society, Bronx, New York.

We will verify the presence of *C. mindorensis* at six sites in the Philippines where the species is known or reportedly exists. The number of individuals in each population will be estimated, together with demographic characteristics such as the proportion per age-class and the sex ratio of captured individuals. These values will help in determining how many individuals of each class



Crocodylus mindorensis. Dale Johnson drawing.

and sex to release later on. We aim to bridge the captive breeding of the animals to the establishment and maintenance of protected areas for the species. The phylogeography and population genetics of *C. mindorensis* will be studied by comparing mitochondrial control region and cytochrome b DNA sequences. This will help us determine the extent of genetic variation among populations and whether individuals from one

population can be used to restock or reestablish another population. The genetic relatedness of the Philippine, New Guinea, and mugger crocodiles will also be studied. The environmental quality of crocodile habitats will also be assessed. — U. Frederick A. Pontillas, *LSU Museum of Natural Science 119 Foster Hall, Baton Rouge, LA 70803 U.S.A.* and Dr. Gerardo V. Ortega *Crocodile Farming Institute Palawan, Philippines.*

LATIN AMERICA

Colombia

FORMATION OF AN ORINOCO (*CROCODYLUS INTERMEDIUS*) NURSERY IN THE ATILLANURA COLUMBIANA. In 1995 the Tropical Biological Station Roberto Franco, in Villavicencio, Meta, Columbia, had a total of 127 Orinoco crocs born in captivity between 1991 and 1995. The low mortality and good growth made the Nursery's spaces inadequate for such a load of animals especially the specimens born in 1991 that exceeded 200 cm in length. Looking for an alternative, the Yamato Foundation, was contacted, which had a

fish hatchery in the village of San Miguel de Puerto Gaitan. This foundation agreed to collaborate in the Nursery's Orinoco croc conservation program by providing a 900 square meter area of fish culture ponds of a depth no greater than 80 cm. Three ponds, two 14x12 (no. 1 and 2) and another 20x24 (no. 3) were enclosed in a metallic mesh fence and adapted with a small beach, 2 m wide on one side of each pond (see photo). In April and August of 1995, 22 males (born in 1991) and 14 females (born in 1992) were transferred from Villavicencio to the farm in San Miguel. The largest specimens, 22 males and 1 female were placed in the largest pond (no. 3), 1 male and 6 females were placed in pond no. 1 and the 7 smallest females were placed in pond no. 2. In 1996 nine males of pond no. 3 died of hypothermia and because of a malfunction in pond no. 2, the females were transferred to no. 1.

The animals were fed primarily with fish entrails (100-120 kilos) and occasionally with pieces of beef or

Sex (no.)	Initial Length (cm)	Final Length (cm)	Increased Length	Initial Weight (kgs)	Final Weight (kgs)	Increased Weight
M (13)	196.38	282.36	85.98	36.04	112.37	76.33
F (14)	163.48	24.1	77.7	18	55.8	37.8

Table 1. Total Average Lengths and Weights of *C. intermedius* at time of move and at time of registration in April 1998

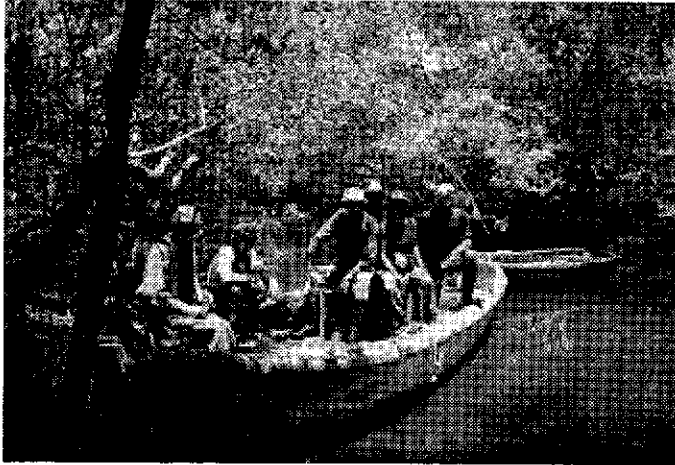


Adapted fish pond with Orinoco crocs. Myrian Lugo Rugeles photo.

pork from animals that died accidentally or were left over from internal consumption at the farm. Table 1 represents the average sizes and weights of males and females at the time of the move and the registration in April 1998. During the last year some males and the female from pond no. 3 have exhibited courtship behavior, which makes us think that they are reaching sexual maturity. Future plans (if funds become available) are to adapt other ponds with nesting beaches, improve the quality of the diet, select breeding pairs and obtain births that correspond to the F_2 of the 2 pairs who have been in captivity at the Estacion Roberto Franco since 1970. — Myrian Lugo Rugeles, Biologist. *Estacion de Biologia Tropical Roberto Franco. Apartado aereo 2261, Villavicencio, Meta, Colombia.*

Cuba

MEXICO-CUBA BILATERAL TECHNICAL EXCHANGE. In June 1998, Beatriz Figueroa, president of the Mexican Society for Conservation of Crocodiles (SECOCOM) visited crocodile projects in Cuba and submitted the following



Participants of the expedition. Beatriz Figueroa photo.

report. The visit was undertaken between 30 May and 15 June 1998, thanks to an invitation for academic interchange offered by the National Enterprise for Conservation of Flora and Fauna, Crocodile Project, Havana. The exchange was an opportunity to share experiences in the assessment, management and conservation of crocodile populations in Cuba and Tabasco, Mexico. I was met and accompanied by Roberto Soberon and Manuel Alonso Tabet. We visited the center for crocodile reproduction at Cayo Potrero in the Lanier swamp on Isla de Juventud, which is dedicated to the reproduction, captive raising and research on *C. rhombifer* to support the reintroduction and recovery program for this population. At the center we reviewed the operating program, observing methods of egg incubation, feeding, diets and practical techniques for handling animals and monitoring the wild population. We also captured specimens of *C. rhombifer* and *Caiman crocodilus* in the nearby swamp. We then went to Nuevo Gerona where I participated in the second consultative council meeting on Research on Flora and Fauna and explained the program of crocodile management we are developing in Tabasco, Mexico. This meeting provided an overview of activities in conservation and sustainable use for

Cuban natural resources which can serve as a reference mark for the authorities of the Crocodile Project and to begin a collaborative agreement between the National Enterprise for Conservation of Flora and Fauna, Cuba, and the Autonomous University of Juarez in Tabasco. The meeting outlined the national crocodile program in

Cuba and enabled us to meet the specialists working in this program, involving 8 crocodile farms and to share our experiences in crocodile management and husbandry. We also discussed the different methods of management being applied to natural areas in each region.

We then went to the Monte Cabaniguan Faunal Refuge in Las Tunas province, site of the very successful *Crocodilus acutus* workshop in 1996. There we visited the new biological station "Don Miguel Alvarez del Toro" named and dedicated for the well know Mexican pioneer of crocodile studies. There we undertook a workshop in field methods applied to sustainable use of *C. acutus*, visiting the several group nesting areas near the coast as well as estuarine and inland freshwater habitats in the protected area. We examined methods used for the study of nest ecology,

embryonic development analysis, reproductive productivity and survey methods to examine population dynamics of the crocodile population.

We then visited the crocodile farm/growout center for *C. acutus* at Jobabo next to the protected area. As



Biologists tag a juvenile *C. rhombifer*. Beatriz Figueroa photo.

we returned to Havana we also visited the crocodile farm for *C. rhombifer* at Boca de Guama in the Zapata Swamp where, under the guidance of Toby Ramos, the

farm program is divided between technical husbandry and production from the captive breeding population and the management and protection of the wild population in the nearby swamp. Here we had extensive discussions on the similarities between *C. rhombifer* and *C. morletii* in behavior and habitat and had a productive exchange of experiences and ideas for their management.

To close the visit, we finalized the collaborative agreement between our two institutions to continue an exchange of information, experience and combined studies. We confirmed the basis, contents and strategy for a collaborative project for the conservation and sustainable use of crocodiles through population studies and an evaluation of the resource potential of crocodile populations in Tabasco and in the Monte Calbaniguan Faunal Refuge in Cuba. We proposed an international workshop on conservation and wild population assessment to be held in two parts one in Cuba and the other in Mexico and we arranged for exchange of students between universities in the two centers. We agreed to receive Cuban specialists at the UJAT in Tabasco to undertake courses, workshops and technical enrichment in collaboration with the Crocodile Program at the University.

We thank the following people who provided extensive assistance during the visit and field work: Roberto Soberon, Chief, National Crocodile Program, Cuba; Manuel Alonso Tabet, Director of the Monte Calbaniguan Faunal Refuge; Roberto (Toby) Ramos Targarona, Chief, Boca de Guama Crocodile farm; Alfredo Olvera Herrera, Technician, Crocodile Program UJAT, Tabasco, Mexico. – Beatriz Figueroa Ocana, *Universidad Juarez Autonoma de Tabasco, Mexico*.

Guatemala

MANAGEMENT PLAN FOR CROCODILES IN LAGUNA DEL TIGRE NATIONAL PARK. This investigation was undertaken in the area of influence of the Las Guacayas biological station on the Sacluc and San Pedro rivers in the Peten of Guatemala. The area is in the Laguna del Tigre National Park and the work was conducted under the auspices of Propeten and Conservation International. The objectives of the study were to estimate the size and structure of the *Crocodylus moreletii* population, determine habitat use, describe aspects of their reproduction, identify threats and to draft a proposal for a management plan of these populations in the study area.

To achieve these objectives the following methods were used: nocturnal counts using spotlights (to establish population size and structure); direct observations (habitat use), daytime examination

(reproductive aspects), unstructured observations (threats) and discussion groups (the management plan).

Population densities were estimated at 4.35 crocodile/km in the Sacluc River and 2.1 individuals/km in the San Pedro River. Population structure in both transects were dominated by juveniles followed by subadults then adults. The different size classes also showed distinctive habitat use. Reproductive activities (laying, incubation and hatching) began at the end of March and were complete by October. The principle threats to the population of *C. morletii* in the Peten are hunting, the explosion in the human population as it affects habitat loss and the use of nets for fishing.

It was concluded that the estimated population densities were relatively low compared to other studies. The population structure obtained was typical of stable populations of crocodiles. There are differences in habitat use of the different size classes. The reproduction of the species is strongly influenced by climatic conditions through the year. The population of *C. morletii* in the Peten is strongly in danger of extinction and for this reason the implementation of a management plan to protect the species is necessary. – Francisco Casteneda Moya, *Propeten & Conservation International, Guatemala* <fmoya@conservation.org.gt>

Nicaragua

SEX AND LENGTH OF CAIMAN IN LOS GUATUZOS WILDLIFE REFUGE, COSTA RICA. The Los Guatuzos Wildlife Refuge is located in southeastern Nicaragua on the border of Costa Rica and is continuous with the Cano Frio protected area in Costa Rica. Research on the caiman population and the development of community based management and harvest systems has been underway in both countries. In Nicaragua, the rivers in the refuge were surveyed and caimans (*Caiman crocodilus*, known locally as 'guajipal') were captured. A sample of 119 individuals were captured and the snout-vent length and total length of each was measured and their sex determined. From these data, a pyramid of percentages by size and sex was constructed, with each level of the pyramid representing a cohort (animals of the same age). To do this, the caimans were assigned according to their length into 10 consecutive classes of 15 cm interval corresponding to an [assumed —Eds.] increase of one size class interval per year. This follows the protocol of the Ministry of Agriculture of Guyana (Gorzula and Pilgrim 1990 report to the CITES Secretariat) which indicated that caiman grow at 15 cm/year.

From this pyramid we observed the interesting result that the population presents an extraordinary quantity of hatchlings, few juveniles and very few adults

which may be interpreted as a result of the selective hunting of inhabitants of the refuge. The sex ratio observed was 1.3 females for every male.

Once the size class pyramid was calculated we were able to construct a population model to predict the population trajectory of the caiman population under four hypothesized harvest levels for a period of ten years: no harvest, annual harvest of 25%, harvest of 50% and harvest of 75% of the caimans in the refuge. The results of this model predict that under the first hypothesis of no hunting, the population will increase by 300% in ten years. In the second case the population will increase approximately 100%. With a harvest rate of 50% the population would remain stable for 10 years and in the last case, with 75% harvest the population would be considerably reduced (but still present) after ten years.

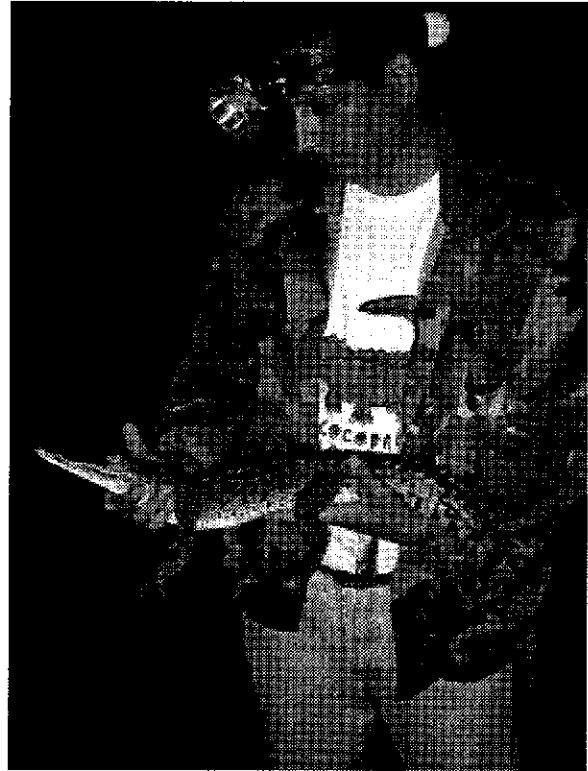
From this analysis we can say that the caimans in the refuge could be managed from the present moment and could be used as a way to augment the quality of life of the human population in this locality and also guarantee the survival of these prehistoric reptiles. This work was conducted under a cooperative agreement between the University of Central America (UCA) and Friends of the Earth-Spain as part of the implementation of the Sustainable Use Project for the Los Guatuzos Wildlife Refuge, Rio San Juan, Nicaragua. — Fabio Buitrago V., *Universidad Centroamericana, Managua, Nicaragua.*

NORTH AMERICA

Mexico

CROCODILES IN THE CHAMELA-CUIXMALA BIOSPHERE RESERVE, JALISCO, MEXICO. At the invitation of the Fundación Ecológica de Cuixmala, I made a short visit to the Chamela-Cuixmala Biosphere Reserve to review and make recommendations concerning the current situation of a population of American crocodiles. The Chamela reserve has been protected since 1971 and has long been a center of ecological research at the Universidad Nacional Autónoma de México (UNAM). In 1987, lands adjacent to the Chamela reserve were set up as a private reserve by the English-French billionaire Sir James Goldsmith. This region, referred to as Cuixmala, was combined with the Chamela reserve in 1993 to create the Chamela Cuixmala Biosphere Reserve. Most of the reserve is covered by a low-stature dry forest, however, one section adjacent to the Goldsmith family homes contains coastal habitats including mangrove lagoons and canals that harbor a significant population of American crocodiles. The Cuixmala reserve and adjacent areas contains three distinct areas with crocodiles: the

Careyes area of natural mangrove canals and lagoons, the Cuixmala sub-region with canals and highly altered habitats (man-made lagoons, road construction and water-level control using floodgates), and the lower reaches of the Cuitzmala River, which is located just outside the reserve. In 1987, initial surveys of crocodiles



Marciano Valtierra, biologist at FEC with a juvenile *C. acutus*. John Thorbjarnarson photo.

in the reserve were conducted by Gustavo Casas Andreu and co-workers, and revealed the presence of a good population (10 nests/yr.) of crocodiles. Subsequent surveys were carried out by Marco Lazcano in 1989, and were the subject of a thesis project by Luis Octavio in 1993. Crocodile work has continued in recent years under Andres Garcia and Marciano Valtierra of the Fundación Ecológica de Cuixmala (FEC). Marciano is currently the only full-time biologist employed by FEC and among his responsibilities is the monitoring of the crocodile population. Since the late 1980s the number of nests in the reserve has grown from 10 to nearly 30 per year. The total crocodile population in the area is probably 500-600 and it is amongst the largest known for Mexico. I spent four days with Marciano in the reserve, visiting the different crocodile habitats and conducting nocturnal spotlight counts in different parts of the reserve.

During the last year, the first reports of a crocodile

attack (non-fatal) on a fisherman (April) and on cattle (3 in December, one died). While the attacks on cattle have not been confirmed as having been due to crocodiles, strong suspicions have been awakened in the minds of people in the neighboring village of Zapata and the Cuixmala administration. Potential threats to people and cattle are greatest in the lower Rio Cuitzmala, which is located just outside the reserve. Fishing pressure in the river is greatest during periods of low water. While some fishing is done using cast nets or hook and line, other fishermen work by swimming in the river with spearguns, or by hand-grabbing freshwater prawns (langostinos) living in cavities along the riverbank. The fisherman who was attacked was spearfishing in the river with a mask and fins, and had a bag with several kilos of fish with him. He was bitten on the foot, and after a struggle with the crocodile managed to escape. When we censused it, the river contained a moderately high density of crocodiles (28 crocodiles seen over 2 km), which included a few adults. Clearly fishing by swimming and diving in the river risks the potential attack of crocodiles confused by the smell of fish and the sudden movements of the fishermen. From the viewpoint of logistics, this is one of the best populations of American crocodiles that I know of for study. The reserve is criss-crossed by roads, which provide the principal nesting habitat for crocodiles in the Cuixmala section of the reserve. Most areas where crocodiles are found are readily accessible by small boat. The crocodiles are concentrated in a relatively small area (ca. 100 ha). Furthermore, as the reserve is equally divided among natural mangrove habitat and human-altered areas (construction of roads, lagoons), it offers an excellent opportunity to examine how American crocodiles adapt to disturbed habitats. -- John Thorbjarnarson, 2300 Southern Blvd., Wildlife Conservation Society, Bronx, NY 10460.

USA

HURRICANE GEORGES FREES NILE CROCS. In the debate about exotic species introduction one concern that has been frequently voiced is escape of exotics due to unexpected catastrophes. Mike Duran, the alligator coordinator from Mississippi reports that one of the fall outs from Hurricane Georges passage across the State of Mississippi in late September is that one of their alligator farmers lost most of his stock. When the hurricane surge and flooding inundated most of the Mississippi coast the alligators were able to swim out to freedom. When the State officials went down to check the place out, the owner told him that he also had five Nile crocodiles, approx. 4-foot long, that had also escaped. The farm is in extreme southern Mississippi—

an area where the Nile crocs could most likely survive with ease. In addition, Nile crocs are not known for their sunny dispositions! Just another example of what can happen when we least expect it. We will be watching with interest to see the outcome of this escape.—
Information from Mike Duran, coordinator for the alligator program, Mississippi Dept. of Wildlife, Fisheries and Parks, submitted by Carol Carson, US CITES Management Authority, Washington DC, USA.
Editor's note: A later news cast announced that all five crocodiles have been recovered and are safely confined.

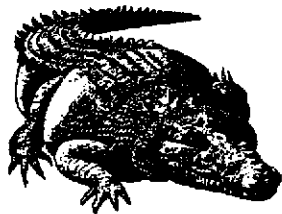
NEW US RULES ON YACARE. At last, the US Fish and Wildlife Service (FWS) has published draft new rules concerning the Endangered Species status and import of *Caiman yacare* (= *Caiman crocodilus yacare*). Draft rules were published in the 23 September US Federal Register Vol. 63 Page 50850, available at <http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=1998_register&docid=98-25266-filed> calling for public comments to be submitted by 22 December 1998. Based on the comments received, the Service will issue a final rule in 1999. This information was immediately circulated to the CSG Steering Committee and a wide selection of members thought to have an interest in *yacare*. Members were encouraged to both submit their own comments and to advise CSG on the content of a CSG response.

The published draft rule is a mixture of changes. On one hand, the Service proposes downlisting *Caiman yacare* from 'Endangered' to 'Threatened' on the Endangered Species List (ESA). This would allow commercial importation of *yacare* and a special rule describing the conditions for import is proposed. On the other hand *Caiman crocodilus crocodilus* and *Caiman crocodilus fuscus*, previously not listed on the ESA are proposed for listing as 'Threatened by Similarity of Appearance' (the same status as the American alligator) and will also be covered by the same special rule for imports. While this may appear to increase US import controls on *Caiman crocodilus/fuscus*, in fact the proposed special rule requires only that skins be accompanied by valid CITES certificates and be tagged in compliance with the Universal Tagging Resolution of CITES (Res. Conf. 9.22), i.e. no change from the current requirements and the same rule for all. Following the format established in the 1996 rule covering *Crocodylus niloticus* and *C. porosus*, the Service also reserves the right to reject imports from producer countries or intermediate re-exporters which are deemed not to be in full compliance with CITES and Res. Conf 9.22. Non-compliance will be determined by the notification from CITES that a country has not

designated Scientific and Management Authorities or a CITES trade ban. However, the Service may also make its own determination based on 'other reliable sources'.

The rule will significantly simplify import inspections, as inspectors should no longer be concerned about the differences between *C. c. crocodilus*, *C. c. fuscus* and *yacare*. However the admixture of other Appendix I or Endangered species (e.g. *Melanosuchus*, *Crocodylus* sp.) in products is a specific concern of the FWS for which they will remain vigilant.

Response to the proposed rule by CSG members has been mixed. Support for the long awaited relaxation of the import ban on *yacare* has been widespread but concerns have also been expressed that the inclusion of *C. c. crocodilus* and *C. c. fuscus* in the same rule will discourage imports of these non-endangered species. Many experts knowledgeable on the status of all these caiman argue that there is no biological justification for listing them in the ESA at all as they remain widespread and very numerous. Their CITES Appendix II status provides adequate protection and trade control and their sustainable use has encouraged substantial recent improvement in their management and conservation. However, complete removal of a US Endangered Species from the ESA has never been done in a single step. The proposed listing should probably be regarded as consistent with rules on alligator, *C. niloticus* and *C. porosus* and the proposed import regulations a practical and feasible process to allow import but retain some 'stricter domestic measure' of control of trade. A stated goal of the new rule is to 'enhance the conservation of *yacare* and other caimans through support for properly designed and implemented programs and enforcement of CITES tagging resolutions,' a goal the CSG shares. A key factor will be the flexibility in the application of the new import rules and based on previous experience with FWS enforcement branch, potential importers should carefully read the new rule and ensure that their shipments are in complete compliance particularly in regard to tags and permits. CSG has submitted comments reflecting these views. Additional comments can be submitted to FWS at Office of the Scientific Authority, Mail stop Room 750, Arlington Square, 4401 Fairfax Drive, US Fish and Wildlife Service, Arlington, VA 22203, USA. - from US Federal Register and comments received, Perran Ross, Executive Officer CSG.



22 December, 1998

Dr. Susan Lieberman, Chief
Office of the Scientific Authority
Mail Stop: Room 750, Arlington Square
4401 North Fairfax Drive
US Fish and Wildlife Service
Arlington, Virginia 22203

Re: Reclassification of the *yacare* caiman, Federal register 63 No. 184.

Dear Dr. Lieberman:

I submit the following comments on behalf of the Crocodile Specialist Group of SSC-IUCN after consultation with our members and Steering Committee. Please note that individual CSG members may send you their independent comments in addition.

We applaud the Service's stated goals to enhance the conservation of *yacare* and other caimans through support for properly designed and implemented programs and enforcement of CITES tagging resolutions. We support the proposed change of listing and special rule for import of caimans, although we have some remaining concerns about the implementation of the rule and the effect that may have on existing caiman conservation programs and trade controls. We will detail these concerns in the following comments and also wish to draw your attention to recent published data on caiman biology, population status and use which additionally and strongly confirm the Service's conclusion, "...this species should more properly be considered as not in danger of extinction throughout all or a significant portion of its vast range...."

We contend that based upon currently available information there is insufficient evidence to support even a Threatened listing for this species. We have applied the IUCN listing criteria and conclude that the species is "Low Risk of Extinction" (CSG 1998 and references therein, copy attached) as is the species *Caiman crocodilus* (including *C. c. chiapasius*, *C. c. fuscus* and *C. c. crocodilus*). The Service's contention that "some populations of *yacare* still may be threatened by trade in portions of its extensive range" is given completely without quantified or published evidence. We continue to believe that both these taxa do not require listing by the US Endangered Species Act at all. However, we accept that removing species from the US Endangered Species list is necessarily a step by step process and that the proposed rule is a strong step in the correct direction. We suggest that eventually removing *C.*

yacare and *C. crocodilus* from the list would successfully resolve all the US similarity of appearance and enforcement problems.

The Service's presentation fails to note or acknowledge the very extensive efforts in status surveys, changes in laws and regulations, establishment of sustainable management practices and elimination of illegal trade which have been implemented in the majority of caiman range states. These improvements in both the information on wild populations and on the new management actions in place are directly germane to the Service's concerns regarding alleged illegal trade. We explicitly draw the Service's attention to the extensive documentation of these improvements in Mexico, Nicaragua, Colombia, Venezuela, Brazil, Guyana, Bolivia, Paraguay and Argentina which are fully documented in reports to the CITES Secretariat and the national gazettes and laws and government reports of these countries. We suggest it would be both courteous and accurate for the Service to both record and applaud these actions by range states. I have attached as an appendix to this comment a list of recent published works omitted or overlooked in your review. I have annotated these with their relevant conclusions. We do not want the Service to re-open the fact finding phase of this rule making – it has taken over 10 years to get this far and we urge the Service to rapidly conclude the matter – but the attached reference list will indicate the quite extensive scientific support available for our position and comments.

The new listing of *Caiman crocodilus crocodilus* and *C. c. fuscus* as Threatened by similarity of appearance is contrary to several recommendations made to the Service and we have received a number of very concerned comments from our members. The basic issue is a fear that this listing will exert an inhibitory effect on trade on species which are (also) not Endangered and which benefit substantially from the conservation associated with their well regulated use and trade. Successful caiman management programs in Colombia, Nicaragua and Venezuela and perfectly legal CITES trade between intermediate countries which implement CITES properly (e.g., France, Singapore) may suffer from the perception that *Caiman crocodilus/fuscus* has somehow recently become threatened with extinction. This perception may even extend to the retail trade and consumers. The loss of revenues that a reduction in this perfectly legal trade may suffer will directly and immediately impact conservation programs for the species – a result directly contrary to the Service's professed goal.

However, we recognize that as a practical matter,

treating all of these taxa in the same way is a sensible and workable solution. Until such time as the Service delists both taxa, the remedy for the apprehensions about inhibition of legitimate trade in *Caiman crocodilus/fuscus* will therefore lie very strongly with the implementation of your new rule. Except for the 25% restriction on replacement tags for importing from re-export countries, a point which we deal with separately below, we note that the new rule makes no other change to the requirements for importing *Caiman crocodilus/fuscus*. As before, these require CITES certificates and approved tags. However, we note with regret that in our experience the enforcement branch of the Service is sometimes insensitive to these subtleties. We would therefore strongly urge that the Management Authority explicitly and prominently state that the conservation status of *Caiman crocodilus crocodilus* and *Caiman crocodilus fuscus* remains unchanged, noting that they have the same listing, and require the same level of import control, as American alligator. Additionally, special efforts should be made to communicate the true nature of the listing to enforcement and inspection personnel – they do not have a new species to be concerned about, on the contrary they have one less species (*C. yacare*) requiring US ESA permits.

We note that the proposed rule allows US commerce in caiman skins, other parts and products from individual countries of origin and countries of re-export subject to conditions pertaining to proper implementation of the CITES resolution on the universal tagging of crocodilian skins (Conf 9.22) by these countries. However we would like to point out that the special rule goes beyond the requirements of this CITES resolution in restricting the replacement tags in a shipment to not more than 25%. In addition, current US regulations on import of *Caiman crocodilus/fuscus* do not have such a restriction. This 25% restriction on replacement tags will cause difficulties to existing *Caiman fuscus* trade in the US with re-export countries. Feedback from major tanners indicate that the tags of the country of origin on the *Caiman fuscus* skins are usually removed before tanning process. This is because most *Caiman fuscus* skins are relatively small and the tags and skins have a tendency to get entangled in the tanning and finishing processes resulting in damage to the skins or in poor tanning and finishing. Secondly, many of the raw *Caiman fuscus* skins are tagged at the throat area of the skin in the country of origin (rather than at the tail as it is commonly practiced with other crocodilian species) in order to preserve the commercial use of the full tail and therefore deriving

full value of the skin. Feedback from tanners indicates that such tags will have to be removed before tanning. We therefore strongly urge the Service not adopt a 25% limit on replacement tags from re-export countries where such retagging is conducted by the competent CITES authority and indicated on the CITES permits.

Regarding the wording of the rule itself. We cannot find any mention of the situation regarding live specimens of caiman and note that there is an extensive trade in live caiman specimens for the US pet trade. From a conservation perspective there is absolutely no difference in the conservation benefits accruing from a well regulated sustainable production system whether it exports live caiman when they are small or their skins when they are larger, as long as CITES regulations are properly implemented. We suggest that Service may need to clarify what, if any, permits will be required for imports of live caiman.

We are also concerned that in 17.42 (g) 4. iii that criteria for issuance of a Schedule III Notice of Information restricting trade in caiman from specific countries includes "...information from... other reliable sources..." We must note that a great many seizures of alleged yacare caiman materials in recent years are based upon sources which are refuted by published scientific work and contested by the majority of knowledgeable experts on caiman. The differentiation of caiman species cannot be reliably made based on examination of small pieces of the lateral skin, as noted in the Service's presentation. We are concerned that seizures based on unreliable identifications could be used to build a case for a Schedule III Notice and result in a completely unjustifiable ban. We therefore propose that the Service amend its rule to indicate that sources consulted on this issue will include a broad diversity of knowledgeable experts such as the Service's Forensic Laboratory in Ashland, Oregon; reputable taxonomic authorities; the Crocodile Specialist Group and the experts and Management Authorities of the countries of origin. Some members of CSG have suggested that a concrete indication of the commitment to strong management and enforcement by range states of *C. yacare* should be obtained from range states. These might include indications of the harvest level objectives and features which guard against excessive harvests. Reference to existing management plans, national regulations, staff responsibilities, ongoing studies and management programs should be provided by range states.

We believe, based upon empirical evidence in many countries and on a number of recent published analyses of crocodilian sustainable use programs,

that the current world trade in crocodilian skins and products is a powerful force for their conservation. Factors which facilitate this trade, under sensible and effective regulation, promote conservation of crocodilians and their habitat. Factors which inhibit this trade set back conservation, and particularly the funding of conservation and habitat management. The Service's proposed listing changes and rule are a small step in the right direction and although we had hoped for a bolder, larger step, we hope that the Service will promptly and effectively implement the new rule taking into consideration the concerns we have raised.

Yours sincerely,

James Perran Ross, *Executive Officer CSG*

ANNOUNCEMENTS

CROC VET SECTION. The formation of a Crocodile Vet Section within the CSG was proposed at the last CSG Working Meeting in Singapore. Diseases affect individual crocodiles as well as groups or populations in collections and on crocodile farms. As with other intensively farmed species there is a close interaction between intensive farming conditions, nutrition and disease on crocodile farms as well. There also is the possible danger of spreading diseases to wild crocodilian populations through translocations and releases of farm-reared crocodiles into the wild.

The Crocodile Vet Section aims to collect, document and exchange information on crocodile diseases and related matters, to advise the CSG on veterinary aspects and to identify research needs and priorities. By sharing information it will be possible to reduce duplication of research efforts and thereby make the most of always-limited resources. The aims are to liaise between crocodile veterinarians and other interested people, to form a platform for discussions, to find solutions to veterinary problems as they occur, to pool our knowledge and disseminate it by submitting short case histories (\pm 100-200 words), and to address on a broad basis ongoing problems like the humane slaughter of crocodiles, pre-release vetting, guidelines for crocodile anaesthesia, and drugs and dosages commonly used in crocodiles.

All this is to be achieved by individual contacts and exchanges, principally by e-mail, by making use of a veterinary column in the CSG Newsletter (short case histories and other interesting observations) and by organizing veterinary sessions at future CSG working meetings.

Membership of the vet group should not be limited

to qualified veterinarians, but open to people working in related fields as well as people having a particular interest in veterinary aspects of crocodile work.

It is planned to have a regular column in the CSG Newsletter with the above-mentioned case histories and other relevant matters. However, the main communication will be by e-mail for those group members who have e-mail addresses. Interested colleagues and other persons are asked to write to the Acting Vice Chairman, Fritz Huchzermeyer, <fritz@moon.oivi.ac.za> or: P.O. Box 12499, 0110 Onderstepoort, South Africa. Those who gave their e-mail addresses on the lists in Brisbane and/or Singapore are asked to check whether these addresses still are up-to-date. If your address has changed or you do not receive the circulars, please e-mail Fritz again. - F W Huchzermeyer, P.O. Box 12499, Onderstepoort, 0110, South Africa, fritz@moon.oivi.ac.za

Venezuela as a stimulus for improving conservation action. On the other hand, previous inattention to the proper recording of capture location in the wild, coupled with limited space and mixed populations, has compromised the utility in the conservation programs

Zoo or Aquarium	Orinoco Crocodile (<i>Crocodylus intermedius</i>)	American Crocodile (<i>Crocodylus acutus</i>)
CARICUAO	1.2	3.2
PQUE DEL ESTE	1.1	0.3
LAS DELICIAS	2.2	0.3
J.V. SEIJAS	0.1	0.1
M.R. ANTONI	2.1	3.1.1
GUSTAVO RIVERA	2.0	1.2.2
CHORROS DE MILLA		1.1
SUR DE MARACAIBO		3.11.1
LÖFFLING	3.3	
TOTAL	11.0	12.22.4

Table 1. Distribution of *C. intermedius* and *C. acutus* in Venezuelan Zoos and Aquaria

ZOOS



CURRENT STATUS OF THE ORINOCO CROCODILE (*CROCODYLUS INTERMEDIUS*) AND THE AMERICAN CROCODILE (*CROCODYLUS ACUTUS*) IN VENEZUELAN ZOOS. Crocodiles are considered by many zoos in Venezuela as animals with poor exhibit potential and hence visitor attraction. However, the living groups of native species that one can frequently find in zoos represent an opportunity for education and study offering the chance to enhance people's appreciation and understanding of the natural world.

The objective of this paper is to present the current status of Orinoco and American crocodile in the zoos of

in the Venezuelan zoos.

The first step to resolve these difficulties is to provide information to institutions interested in crocodile conservation on the location of crocodiles in their natural areas.

Venezuela is one of the countries with five (5) different species. The Venezuelan Foundation of Zoological Parks and Aquaria (FUNPZA) since 1992 with the support of Venezuelan Crocodile Specialist Group (GECV) and lately Conservation Breeding Specialist Group (CBSG) has been working to upgrade Venezuelan zoos and has been given sufficient information on the requirements in captivity. Though breeding in captivity is considered not too easy it will be a priority to safeguard their conservation.

At the same time, the increase in number and effectiveness of cooperative breeding programs, as outlined in the *Species Survival Plan* (SSP), indicates a growing concern by the zoological community that it has no real alternatives but to multiply its resources for crocodile conservation.

These programs, also include publishing useful information about where captive crocodiles are located, population sizes and dynamics through studbook analyses and multiple aspects of captive management.

TAXA	IUCN Category	# of Zoos	# of Specimens			ISIS	
			M	F	T	Pop.	# Zoos
Orinoco Crocodile (<i>Crocodylus intermedius</i>)	EN	7	11	10	21	8	3
American Crocodile (<i>Crocodylus acutus</i>)	EN	8	12	26	38	29	17

Table 2. Number of specimens for each species and number of institutions in Venezuela & other countries.

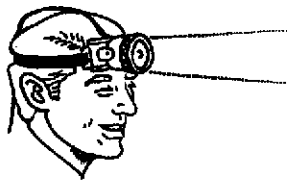
The data obtained from nine (9) zoos, which held individuals of Orinoco and American crocodile and currently recognized by the FUNPZA, were available for analysis.

The representation in captivity of this species in other countries was also included by means of the *International Zoo Yearbook (IZY)* and the *International Species Information System (ISIS)*.

Table 1 lists the species occurring in Venezuelan zoos, the number of specimens for each and the number of institutions involved in their maintenance. Table 2 indicates the number of specimens for each species and the number of institutions in Venezuela and other countries.

The author would like to acknowledge the different zoos that provided their inventories, and Dr. Pedro Trebbau and Lic. Esmeralda Mujica de Jorquera for their comments and revision of this paper. – Israel Cañizales DVM. *Venezuelan Foundation of Zoological Parks and Aquaria*. AP. 68387 Caracas 1062-A, Venezuela.

PERSONALS

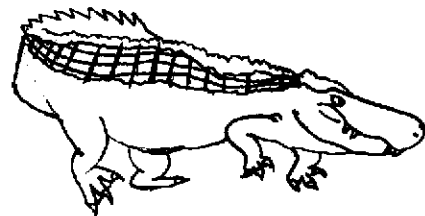


Santiago Ron,
Departamento de
Ciencias Biologicas
Pontificia Universidad
Catolica del Ecuador,
Apartado 17-01-2187,
Quito Ecuador, South

America, e-mail: sron@hoy.net, or:
sron@puceuiio.puce.edu.ec, last summer, after finishing his graduate studies at the Department of Systematics and Ecology, Kansas University, returned to Ecuador. He is now working as a full-time Professor at the Department of Biology of the Universidad Catolica del Ecuador and has recently published "Ecology of Equadorian Populations of Black and Common Caimans" *J. Herp.* 32(3): 320-324.

Quentin Castel (age 8) from Le Vieux Bourg 69620 Ternand, France, would like to speak about the black caiman. The problem is the poachers.

Before there were hundreds and hundreds. Now there is only one in each swamp. If we don't catch one woman and one male and if we don't let them make eggs, in five or six years they will be eliminated from the earth. – *English translation by Liana DesHarnais 299 Summerland Circle, Chapel Hill, NC 27514, USA.*



Quentin Castel drawing.

CHEAP GATOR SHOES ARE HARD TO FIND. A young blonde was on vacation in the depths of Louisiana. She wanted a pair of genuine alligator shoes in the worst way, but simply could not afford the prices the local vendors were asking. After becoming very frustrated with the "no haggle" attitude of one of the shopkeepers, the blonde shouted, "Maybe I'll just go out and catch my own alligator so I can get a pair of shoes at a reasonable price!" The shopkeeper said, "By all means, be my guest. Maybe you'll luck out and catch yourself a big one!" Determined, the blonde turned and headed for the swamps, set on catching herself an alligator. Later in the day, the shopkeeper was driving home, when he spots the blond standing waist deep in the water, shotgun in hand. Just then, he sees a huge 9 foot alligator swimming quickly toward her. She takes aim, kills the creature and with a great deal of effort hauls it up on the bank. Laying nearby were several other dead alligators. Just then the blonde flips the freshly killed alligator on it's back, and frustrated, shouts out, "SON OF A BITCH! This one ain't wearing any shoes either!"

PROCEEDINGS OF THE 14TH WORKING MEETING OF THE CROCODILE SPECIALIST GROUP.

(i-x + 410 pages, illustrated, softbound)

Proceedings of the very successful Singapore meeting in July 1998 are printed and being distributed to authors and registered meeting participants. Unfortunately, financial constraints have limited the first printing to just enough copies to meet this need. However, we can print and bind additional copies to meet additional demand. To order a copy, complete and return the enclosed Newsletter registration form including U.S. \$40.00 payment. Your Proceedings will be sent surface mail after 1 April 1999.

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