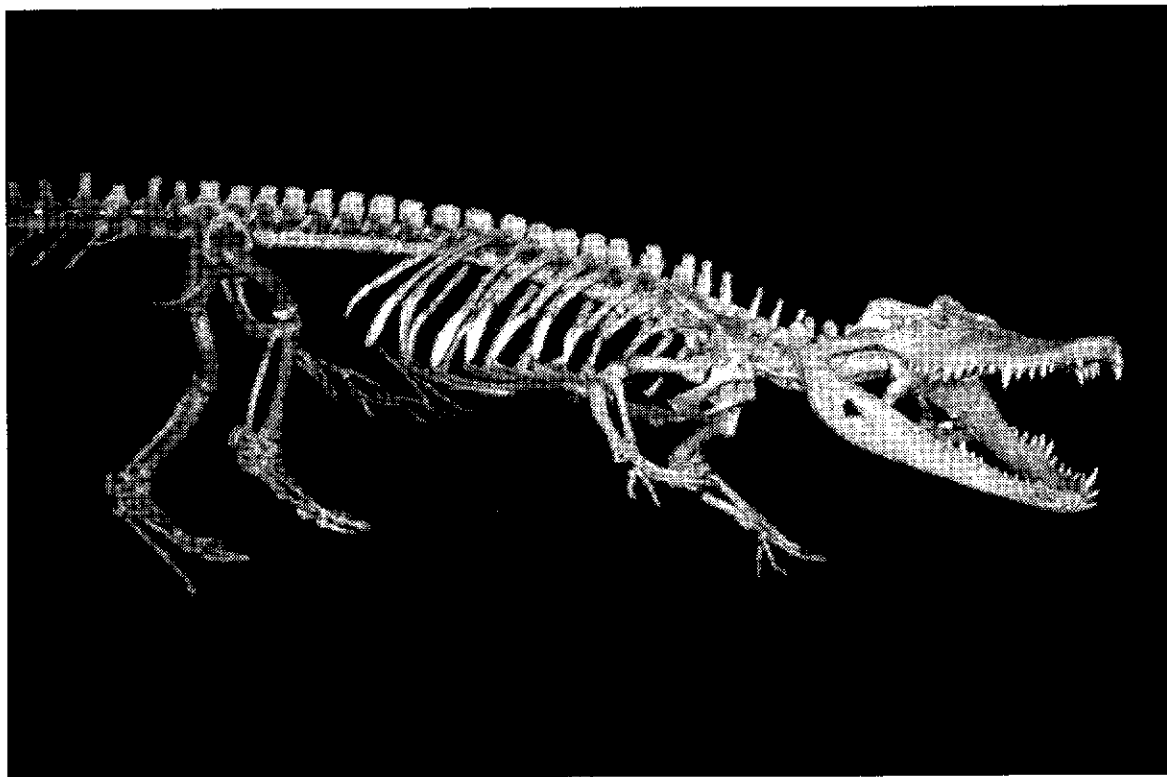


CROCODILE SPECIALIST GROUP

NEWSLETTER

VOLUME 20 No. 2 ■ APRIL 2001 – JUNE 2001



IUCN - World Conservation Union ■ Species Survival Commission

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IUCN--The World Conservation Union
Species Survival Commission

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COVER PHOTO. *C. siamensis* skeleton, hanging
mounted specimen at Clyde Perling's alligator
display North Carolina, USA. K. Vliet photo.

The CSG NEWSLETTER is produced and distributed by the Crocodile Specialist Group of the Species Survival Commission, IUCN - World Conservation Union. CSG NEWSLETTER provides information on the conservation, status, news and current events concerning crocodilians, and on the activities of the CSG. The NEWSLETTER is distributed to CSG members and, upon request, to other interested individuals and organizations. All subscribers are asked to contribute news and other materials. A voluntary contribution (suggested \$40.00 US per year) is requested from subscribers to defray expenses of producing the NEWSLETTER. All communications should be addressed to: Dr. J. P. Ross, Executive Officer CSG, Florida Museum of Natural History, Gainesville, FL 32611, USA. Fax 1 352 392 9367, E-mail prosscsg@flmnh.ufl.edu

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Editorial

MISCELLANEOUS. In this editorial I will present a variety of comments and information on ongoing CSG activities. First and foremost, the **S.E. Asian Regional Meeting** of the CSG has been authorized for 30 August - 3 September 2001. In view of the very short lead-time to prepare for the meeting, registration information has been widely distributed by electronic means, e-mails, Lists, etc. The meeting will be held in Guangzhou City, easily accessible from Hong Kong and we hope that Asian region and other CSG members will try to attend the meeting. Interested participants should immediately return a preliminary registration with their contact information to meeting coordinator Tom Dacey at <tom.dacey@env.qld.gov.au> to receive current details.

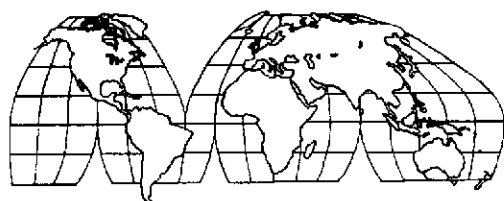
New Pagination. Alert readers may have already noticed that this is page 20 of the Newsletter. We have adopted a new pagination system consistent with that used by most major journals. Newsletter pages will be numbered consecutively through all the numbers of an annual volume. The last numbered page of Vol 20, No. 1 was page 17. The Steering Committee list of that number and the inside title page of this number are pages 18 and 19 and therefore this is page 20 of Volume 20. This system makes it much easier to retrieve citations from a multi-volume quarterly publication such as ours.

Newsletter subscriptions, Nag! Nag! Nag! It would really assist the editors in distributing the newsletter to your current address in a timely fashion if you would return the subscription notice included with the last issue. Keep us advised of your correct address and keep sending in materials for the newsletter. If the address label on the envelope for this issue has a check in top right corner-we have no record of hearing from you in quite a while and are considering inactivating your subscription. All it takes is any kind of contact from you to keep your subscription active.

Membership renewal. The IUCN Species Survival Commission has finally got around to

asking us to renew CSG memberships for the coming (2000-2003) triennium. Remember, you are a CSG member if you received a letter of invitation from Professor Messel in November 1997 and if you responded to him and IUCN headquarters as requested. That 3-year membership is about to expire. Lists of current and potential new members are circulating among the CSG Vice Chairs who will make their recommendations to the Chairman. Membership invitation letters should be sent out over the next couple of months. — Perran Ross, *Executive Officer*.

Regional Reports



Africa

MAN-EATING CROCODILES ARE HUNGRY. In Mozambique, six people were killed by crocodiles in the flooded Luabre area while trying to cross a river near their village. Other village people were spared by air-lifting them from the flooded village. Elsewhere, Malawi has instituted emergency cull measures to protect indigenous people in that country who live near water bodies. In some parts of the Lower Shire River the crocodile population is so dense that 15 to 25 crocodiles are taken each night and the stomachs of the larger ones contain remains of cattle, goats, dogs, other crocodiles and people. The government is developing a more formal Crocodile Management Plan with a sustainable use component to provide local people with incentives to conserve the species. TRAFFIC International reports that the local people have "negative attitudes towards crocodiles" and quotes one Chief as stating, "I don't think these animals are the type that we should conserve for the future generation . . . I don't think our children need to have such beasts around. After all, we do not benefit anything from these beasts." (Malawi does not currently have safari hunting.) Meanwhile, in the St. Lucia area of

South Africa, there were three fatal crocodile attacks in November and December. The first was a staff member of "Kwazulu-Natal Wildlife" who was taken while she was fishing close to the water edge in the Greater St. Lucia Wetland Park. The second and most publicized attack took place on 8 December while a 22-year old woman tourist was attacked at the Umfolozi River mouth while skinny dipping in the night with her boyfriend in the croc infested waters! The St. Lucia Estuary staff have put up more warning signs to replace those that had been stolen. A third fatal attack occurred four days later to a local woman who was crossing the Enseleni River. The croc held on to her body without attempting to feed so her body was recovered intact. The local authorities report that most attacks occur from November to April which coincides with the breeding and nesting season and higher river stages with more discolored water. Apparently the crocs see their victims but not vice-versa. — *Extracted from "Hunting Report Supplement for May 2001" circulated by Conservation Force, Louisiana, USA. Submitted by John A. Jackson.*

Asia, Oceania and Australia

Australia

AUSTRALIA'S WILDLIFE TRADE BILL SETS NEW STANDARDS The Australian government has introduced a bill that goes beyond Australia's international obligations in the management of wildlife trade. The Environment Protection and Biodiversity Conservation Amendment (Wildlife Protection) Bill 2001 will integrate the existing Act dealing with wildlife trade within the Environment Protection and Biodiversity Conservation Act 1999. It was introduced into the Australian Senate recently by Environment Minister Senator Robert Hill.

"The strength of this national legislation has the potential to set a new benchmark for countries in the region, and around the world, in addressing the management of wildlife trade," says Glenn Sant, director of TRAFFIC Oceania, the Pacific Ocean branch of the wildlife trade monitoring program of the World Wide Fund for

Nature and the IUCN-World Conservation Union. TRAFFIC Oceania, part of the global TRAFFIC Network that has 25 years experience dealing with wildlife trade legislation and its implementation, welcomed the bill.

"Australia has a unique and fragile biodiversity, the integrity of which is potentially threatened by both unsustainable practices sometimes associated with the export of wildlife, and the import of invasive species," said Sant. "This Bill addresses these problems directly and marks Australia's legislation as of a high standard at the global level."

Australia is a member of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). This convention has 154 parties who co-operate in the banning of commercial international trade in an agreed list of endangered species, and by regulating and monitoring trade in others that might become endangered.

The new bill adds protections to those already mandated by Australian law. It provides for the assessment of the potential invasive threat posed by an imported species, and the impact of harvesting a species is assessed on the ecosystem as a whole. It incorporates tougher enforcement provisions which require that a person caught in possession of a CITES specimen must produce evidence that it was legally imported.

If passed, the new bill would allow for the prosecution levels already incorporated into the current Environment Protection and Biodiversity Conservation Act to be used. But Sant said, "The success of the Bill will be dependent on the approval of key amendments that TRAFFIC Oceania intends to recommend after a full review of the Bill," Sant said.

"The crucial test of the bill's potential will be the government's guarantee of adequate funding to implement and enforce the legislation to ensure it is more than just a paper Tiger," he said. — CANBERRA, Australia, May 24, 2001 (ENS), Submitted by F. Wayne King, FLMNH, Gainesville, FL 32611, USA.

Laos

THE PROTECTED CROCODILES, WETLANDS AND FORESTS AT BAN BEUNG BOUA THONG AND BAN NAO NEUA, XAIBOULI DISTRICT, SAVANNAKHET PROVINCE, SOUTHERN LAO PDR. Ban Beung Boua Thong and Ban Nao Neua are two adjacent

and long established ethnic *Lao* villages situated a few km south of the Xe Bang Fai River in Xaibouli District, Savannakhet Province, Southern Lao PDR. Although previously a single village, in 1972 the community was separated into two villages, which presently have a total combined population of about 1400 people within 250 families. These villages are exemplary in terms of their traditional forest and wildlife conservation practices. The villages are situated adjacent to two large perennial oxbow lakes, called Nong Boua (500 m long and 200 m wide) and Beung Boua Thong (800 m long and 800 m wide), which is fed by an underground spring. There is also a third oxbow lake, the largest of the three, called Beung Saiyan (4000 m long and 1000 m wide), which is situated within easy walking distance from the villages. The two villages are exclusively responsible for the first two lakes, while a total of six villages utilize Beung Saiyan for fishing. Fish migrate into this wetland from the Xe Bang Fai River.

Villagers from Ban Beung Boua Thong and Ban Nao Neua have long believed that Nong Boua and Beung Boua Thong are protected by powerful spirits, and the village spirit house ("*ta ho*") is situated directly adjacent to Beung Boua Thong. Villagers have reportedly restricted fishing practices in the wetlands for as long as anyone can remember. However, the necessity of doing this became clear to everybody in 1966 when a very large fish (reportedly 1.6 m long) was supposedly taken from Nong Boua and eaten by villagers, in violation of customs. Shortly afterwards people started becoming seriously ill, and within a relatively short period of time between 86 and 160 people (two separate reports) had died. The water in the swamps is said to have turned red on the same day, although there was no blood in the water. Convinced that the deaths were due to the fish being taken from the wetland, villagers became increasingly vigilant in protecting the wetland from being fished or damaged in any way by humans. No fishing is presently allowed in Nong Boua, and only fishing around the edge of Beung Boua Thong is allowed. The two villages' spirit house ("*beung ho*") is situated adjacent to Beung Boua Thong, but is related to both of the villages' swamps. There is a man in the village who acts as "*chao ho*", and is responsible for communicating with the spirits.

Despite the fact that Nong Boua is less than 50 m from the village school, and just a 100 m or

so from the village, the wetland forest surrounding the area is in pristine condition, with no gardens having been established adjacent to the swamp. The main wetland tree species surrounding the marsh are "kok ben", "kok va" and "kok seng". There are some "choke" water plants at the edge of the marsh, and unfortunately "phak top" (water hyacinth) was introduced into the swamp a number of years ago. Now villagers are trying to reduce the amount of *phak top* by pulling it out of the water and leaving to dry out and die around the edge of the swamp. Only the collection of water for domestic use is allowed, along with a small amount of small frog ("khiat") and crab ("kapou") collection from periphery areas. "Nam mak chap" plants, which have edible leaves and stems, can also be collected. However, boats are never allowed on the waters of Nong Boua. Women used to not be allowed to bath in the swamps, but this rule has been relaxed in recent years.



Siamese crocodile, captive female, Madras Crocodile Bank, nest defense posture see also page 27. N. Whitaker photo.

The fish in Nong Boua are abundant, but are never harvested. This is because the spirits of the area are believed to be within the Siamese crocodiles (*Crocodylus siamensis*) ("khe" in Lao) that inhabit all three swamps, which they move between according to the season. The fish cannot be eaten, because they are the food for the crocodiles. Although we heard about the crocodiles in the area before arriving at the village, as they are well known throughout the district, we did not actually expect to see one of these extremely rare and endangered wild animals, since they are only known from a few

places in Laos. However, to our surprise we did see one at Nong Boua, and the second author was able to take photographs of it from a relatively close distance as it bathed in the mid-day sun (see photograph).

Villagers are not certain how many crocodiles remain in the area, but they believe that there may only be two animals, since they only see single animals of two sizes. There were apparently a number of crocodiles speared in the swamp and sold to Thailand in the early 1960s, before all the people died in 1966. Since then, however, none have apparently been captured or killed. While they know where the crocodiles lay their eggs each year in May or June, in a spring-fed damp area near Beung Boua Thong, they claim that the eggs have not hatched in many years. Villagers have therefore concluded that there may only be female crocodiles remaining in the wetlands. Local people are not fearful of the crocodiles, which have never been known to

attack people (although they do occasionally snatch small dogs and pigs that forage near the edge of Nong Boua). Instead, they widely believe that their welfare as a community is closely linked to the welfare of the crocodiles. Villagers keep pieces of crocodile dung in their houses for good luck, and whenever an animal is killed in the village as part of some kind of ceremony, some of the meat is brought to the edge of the pond to feed the crocodiles. According to the villagers, they are able to call one of

the wild crocodiles up to the edge of the wetland, and they then feed it the meat, before it slithers back into the water once it is full. Even if there are hundreds of people watching, the crocodiles still come up to get the food.

Villagers would actually like to expand the crocodile population in the area through introducing a male crocodile to the wetlands, so it could breed with the remaining females. While a full assessment of the crocodile population in the area is required before any new crocodiles are introduced to the area, the uniqueness of the situation certainly warrants further investigation. There is certainly a great deal of potential for

building up crocodile populations in the wetlands.

Apart from protecting the crocodiles, wetland forests and fish in Nong Boua, the villages also ban all hunting around the Nong Boua and Beung Boua Thong. As the village headman of Ban Nao Neua explained, "*We do not allow the sound of a gun to be heard in this area.*" Even sling-shots cannot be used within 100 m of the wetland. As a result, bird life in the area is relatively plentiful, and there is a large flock of hundreds or thousands of lesser whistling ducks ("*pet deng*") that moves between the wetlands. There are also other species of wild ducks (*i.e.* "*pet bong*") in the area, as well as various other species of water birds. Soft-shelled turtles ("*pa fa*") and hard-shelled turtles ("*tao sam san*", "*tao khwai*" and "*tao na*") are also reportedly found in the wetland area.

The community is also exemplary in that they have a large protected community terrestrial forest adjacent to Nong Boua that is apparently three km long and two km wide. Logging in this forest is not allowed, and villagers are determined to protect the area for future generations. Traditional medicine doctors are allowed to collect small amounts of plants not available in other forests from the community forest. A limited amount of firewood collection from the protected forest is also allowed. Interestingly, it seems that all the above regulations have been initiated by the villagers themselves, without any involvement of the government. — By Ian G. Baird, P.O. Box 5988, Vientiane, Lao PDR <ianbaird@laonet.net>

Philippines

PHILIPPINE CROCODILE RECOVERY PLAN – a framework for conserving the world's most endangered crocodile. The Philippine Crocodile (*Crocodylus mindorensis*), or "Buwaya", is now recognised as one of the most threatened species of crocodile in the world and is listed by the IUCN as Critically Endangered. It is legally protected in the Philippines.

Previously distributed through many parts of the Philippines, it is now thought to only exist in the wild as small remnant populations and scattered individuals in central and eastern Mindanao, north-east Luzon and, possibly, south-west Negros Occidental.

The first Global Crocodile Action Plan recommended establishment of a "national crocodile management program", as the highest priority for the species. This was reiterated in the second edition of the Plan.

With the support of Melbourne Zoo, the Protected Areas & Wildlife Bureau and Crocodile Farming Institute were represented at the 1997 meeting of the CSG in Singapore. This led to agreement on developing a National Recovery Plan for the Philippine Crocodile. The Foreword is written by the DENR Secretary at



Chris Banks (l) presents the new plan to Antonio H. Cerilles, Secretary, Department of Environment & Natural Resources, Philippines. C. Banks photo.

the time and is followed by a two page Executive Summary. The next chapter sets out the known biology and life history of the species, as well as its taxonomy, conservation status, distribution and the tenure of the land on which the species still occurs.

"Issues & Challenges" underpins the basis for the necessary conservation actions:

Habitat loss: *C. mindorensis* is restricted to freshwater lakes, swamps and rivers, which have suffered greatly from pollution, over-fishing, siltation and drainage.

Negative community attitudes: all crocodiles in the Philippines have a poor image within the general populace and are viewed negatively at almost all levels of society.

National policies: although there are several laws that provide for the protection of Philippine wildlife, only one piece of national legislation specifically includes crocodiles as protected animals. The new Wildlife & Conservation Act updates many of the existing laws, but its impact on *C. mindorensis* conservation is unclear.

Captive management: in most respects, captive management of *C. mindorensis* does not differ greatly from that of most species in the genus. However, the seasonal incompatibility that manifests itself in most groupings and pairings presents difficulties for intensive captive management.

Ecology: the ecology of *C. mindorensis* remains poorly understood and most of our current knowledge of the species is based on captive animals.

Chapter Four details previous and current initiatives for field surveys, research, education/community awareness and captive breeding. The key section of the Plan sets out eight Conservation Objectives, each with a number of Performance Criteria and defined Actions. The primary conservation goal is to re-establish viable wild populations of *C. mindorensis* and ensure its long-term survival throughout its historic range. Recognising the implications of this objective, protection and survival within sections of its historic range may be the reality over the short-term.

Objective 1: establish protected wild populations of *C. mindorensis*. Actions:

Identify and protect areas of habitat which are appropriate for *C. mindorensis*.

Develop a Philippine Crocodile release and restocking program.

Monitor protected wild populations.

Objective 2: promote and encourage positive community attitudes to, and a good understanding of crocodiles in the Philippines. Actions:

Develop and deliver community and school-based programs for crocodiles.

Promote the Philippine Crocodile and its conservation in relevant forums.

Objective 3: co-ordinate the management of captive *C. mindorensis*. Actions:

Establish and maintain a national registry of all captive *C. mindorensis* in the Philippines.

Establish a co-ordinated global captive management program for *C. mindorensis*.

Appoint a 'captive management co-ordinator' for the global program.

Objective 4: determine the ecology of *C. mindorensis*. Actions:

Collate and assess all available ecological data on *C. mindorensis*.

Define the ecological questions that need to be answered for *C. mindorensis* and implement appropriate research.

Objective 5: define the extent of remaining wild populations of *C. mindorensis*. Actions:

Collate and assess all available survey data and reports.

Develop and implement a co-ordinated survey program for *C. mindorensis*.

Objective 6: resolve the systematic relationships of *C. mindorensis*. Actions:

Define the research questions to be answered and develop the appropriate research project(s).

Objective 7: integrate *C. mindorensis* conservation with the conservation of freshwater wetlands and other threatened freshwater wildlife in the Philippines. Actions:

Identify programs targeting conservation of freshwater wetlands and species in the Philippines.

Assess above programs for relevance to Philippine Crocodiles and integrate materials/programs accordingly.

Objective 8: ensure that all relevant Philippine Government policies support the conservation of *C. mindorensis*. Action:

Review all relevant Philippine Government policies to ascertain their support for the conservation of crocodiles, but specifically for *C. mindorensis*.

The Plan discusses the consequences of implementing the agreed actions, particularly biodiversity benefits. There will be both positive and negative social and economic consequences – given that the Philippine Crocodile is seen as a flagship species for the conservation of freshwater wetlands, conserving this species will have significant flow-on benefits for wetlands.

The Plan will be implemented by the Philippine Crocodile National Recovery Team.

The Team was created by a Special Order of the DENR on 3 March 2000 and has eight members drawn from the DENR/PAWB, PWRCC, Silliman University, Melbourne & Gladys Porter Zoos, and relevant DENR Regional Offices. The Team is supported by a four person secretariat drawn from the PAWB and PWRCC.

All the actions have been costed, within the limits of available knowledge and noting that the Plan extends over seven years. Where possible, the lead agency or person has been identified for each action. The total estimated cost of implementing all the actions set out in the Plan, over the seven years, is P. 79.4 million, or approximately US.\$2.1 million (at USD = P.37, which was the conversion rate in 1999).

The Plan reflects the views of a range of organisations and individuals directly involved with the management and conservation of the species, and focuses their experience and commitment on the common goal of the conservation of this highly threatened crocodile. Its development has coincided with a number of exciting other developments, including the findings in the Northern Sierra Madre region, which relate directly to specific goals in the Plan and which will support its implementation.

[copies of the Plan are available from the author]. — Chris Banks, *Melbourne Zoo, PO Box 74, Parkville, Victoria 3052, Australia.* <cbanks@zoo.org.au>

Thailand

RARE SIAMESE CROCODILE SIGHTING. An expedition mounted by ITV and the Royal Forestry Department of Thailand have observed a live siamese crocodile in a remote jungle sanctuary in central Thailand. The Ang Lue Wildlife Sanctuary covers parts of several provinces. During a 9 day expedition in the jungle in March, members of the expedition saw and photographed a freshwater crocodile of approximately three m length. The sex of the animal is unknown and indications and local reports indicate that it is the only specimen present. However, local people questioned by the expedition said that in March of 2000 they had observed three other crocodiles in another swamp in the region.

Mr. Plodprasob Surassawadee, Director General of the Royal Forestry Department stated

that explorations will continue to find out the exact number of crocodiles living in the Ang Lue Nai Sanctuary. He also guaranteed that there would be a tight security system to prevent unauthorised activity in the area. The exploration is expected to take another month. This is the first demonstration of a wild siamese crocodile in Thailand since sightings of single specimens were made at Ang Lue Nai and at Pang Sida National Park and signs noted at Yod Dome and Sanam Chai Kate in 1993. It appears that small remnants and single individuals of Siamese crocodile persist in some well protected and inaccessible areas. — *from correspondence submitted by Utai Youngprapakorn and Charoon Youngprapakorn, Samutprakan Crocodile Farm and Zoo, 555 Taiban Rd, Samutprakan, Thailand.*

Vietnam

SIAMESE CROCODILE REINTRODUCTION. CSG member Ab Abercrombie has spent the last several months as a Fulbright scholar in Vietnam. During a recent visit to Cat Tien National Park with colleagues Paul Moler and Robert van Devender, they offered the following observations to the Park's Director to assist the planned reintroduction of Siamese crocodiles.

Dear Sir: It has been our pleasure to visit Cat Tien National Park, to observe natural habitats, to meet with park personnel, and to offer our opinions about the most effective way to conduct the crocodile reintroduction program. We are most impressed with the work that has been done to this point, and we are convinced that the project has an excellent chance for success.

From our brief analysis, we believe that ecological conditions at Bao Sao offer a near-perfect environment for the crocodile reintroduction. There are probably no predators that would have a significant impact on crocodiles greater than one meter in length, and protection against human hunters appears to be more than adequate.

We believe the most appropriate time for a crocodile release would be early in the dry season, as soon as the water levels at Boa Sao are sufficiently low to isolate the area. Releasing crocodiles then would allow the animals to begin their life in the wild at a time when their prey is densely concentrated. Also, because the released

animals would be effectively contained within the Bao Sao system for several months, they would be more likely to remain in the immediate area even after water levels rise during the subsequent wet season. Because DNA-test results should be complete within the next month, it would be appropriate to release some animals in January or February of 2002 - as soon as the retreat of the water isolates Bao Sao from the surrounding area. We believe it is critical that the crocodiles be released as soon as possible for at least two reasons. First, under captive conditions, crocodiles begin to associate their human keepers with the provision of food. Prolonging this relationship excessively greatly increases the chances that an animal will eventually attack some human being. Second, the longer these crocodiles remain in captivity, the greater the chances that the entire captive population will eventually be destroyed by disease.

We see no reason to confine crocodiles in the Bao Sao area; this would merely increase the risk of habituating animals toward potential human prey. We also believe that the crocodiles will rapidly adjust to wild conditions on their own, especially since park personnel have had the foresight to feed them living fish. On the other hand, if crocodiles are caged temporarily at Bao Sao it is likely that at some point (particularly during high water season) some will escape. Furthermore, animals released (intentionally or otherwise) during high water season will be more likely to leave the area of Bao Sao.

We believe that concerns about minimum-viable-population size (e.g. the idea that a successful reintroduction would require at least 100 animals) are not directly applicable in this case. (If you like, we can make our reasoning more explicit in a longer document, which would take somewhat longer to prepare.) An initial founder stock of 15-25 animals would probably be sufficient, and if you like, these might be released in two annual steps (perhaps in February of 2002 and February of 2003). On the other hand, if additional founder individuals are located in the future, and if they can be demonstrated to be

Crocodylus siamensis, then they could be released at whatever time park authorities believed appropriate.

We believe that this crocodile-reintroduction program is an exciting project, and we would encourage park personnel to monitor the status of the released animals for several years. We believe the most appropriate method for this would be nightlight counts. Monitoring by radio telemetry might be interesting, but the cost of the monitoring would be extremely high and on going. We would strongly recommend against radio-telemetric monitoring unless several personnel can be assigned this as a full-time duty and extensive aircraft time is firmly scheduled in the initial budget.

Again we thank Mr. Mui and the personnel of Cat Tien National Park for their courtesy and help during our very enjoyable stay. And we would reiterate our opinion that at least some of these animals should be released as soon as possible. — Paul E. Moler, *Florida Fish and Wildlife Conservation Commission, 104 S. Main St., Gainesville, FL 32611, USA.*

Western Asia

India

SIAMESE CROCODILE BREEDING AT MADRAS CROCODILE BANK. The following photographs demonstrate collection of eggs from our breeding pair of *C. siamensis*. These were originally acquired from the Bronx Zoo and have been breeding regularly at MCB since 1991. Several features of the species are demonstrated in the



photos. Females are quite aggressive in nest defense (see page 23) and some vigilance to ward her off with poles is needed. The position of the nest at the base of a tree is very typical. — Nikhil Whitaker, *Madras Crocodile bank, P.O. Bag 4, Mamallapuram, Tamil Nadu 603 104, India.*



Latin America

Argentina

FUNDACIÓN BIODIVERSIDAD – ARGENTINA. We are pleased to announce the birth of *Fundación Biodiversidad - Argentina*, a fundamental tool in which the energy and skills of a group of people are concentrated, with the aim of facing a complex challenge such as the conservation of biological diversity. Herewith, a summary of the Foundation's mission. We hope that by reading it, a link may become established between you and ourselves that helps us move ahead with our endeavour.

Argentina is characterized by its geographical, biological and cultural heterogeneity. This legacy is actually under threat, due to the continuous deterioration of the country's various ecosystems. Sustainable development is viewed as the most viable alternative to revert this trend. Indeed, sustainable use involves development – to meet the needs of present generations – but in a way and at a rate that will not threaten the needs of future generations.

This approach places humans as a fundamental and central component of the ecosystem and as such, as the beneficiary of all political, scientific and technological efforts in the field of nature conservation. Fundación Biodiversidad has adopted this sustainable development approach when conceiving its research programs, in the belief that Argentina is in an excellent position to conciliate legitimate socio-economic interests with environmental concerns.

Fundación Biodiversidad has therefore proposed the following strategic aims:

- To carry out studies on the different ecosystems in the country; and
- To develop alternatives of resource utilisation, within the limits of their intrinsic capacities.

These strategies also aim at integrating sustainable development into a broader context, by incorporating human inhabitants directly related to those ecosystems into the process.

The members of Fundación Biodiversidad are qualified professionals and conservationists, with a wide scope of knowledge and expertise, who have focused their work in:

Scientific and technological research policies in Argentina and the rest of countries in the southern hemisphere that share similar ecosystems.

Surveys and inventories of natural resources of different ecosystems with the aim of assessing potential productivity.

Scientific and technological research and communication of results obtained.

Transfer of appropriate technologies for productive and sustainable use of natural resources, aimed at enhancing the life quality of human populations closely linked to those resources.

Research activities linked to universities and other public and private institutions.

Elaboration of legal instruments for natural resource utilisation, in the framework of sustainable use policies.

On the other hand, the Foundation hopes to gain national and international recognition in matters related to international environmental treaties and conventions. — Obdulio Menghi,

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Brazil

RESEARCHER DEFENDS MANAGED BLACK CAIMAN EXPLOITATION - Researcher Ronis da Silveira, from INPA (National Amazon Research Institute) defends the managed black caiman (*Melanosuchus niger*) hunt as an economic alternative for the poor people of the region. Nowadays, these animals, called 'alligators' in Brazil, are included in the endangered species list, but da Silveira says that they are not at risk and that, actually, there are millions of them. The management is supposed to take part on Mamirauá Sustainable Development Reserve, on the Amazon flooded forest, in Amazonas State. The following exclusive interview was presented on the Amazonia.org.br website:

Amazônia: What is the situation of the large Black caiman management plan in the Mamirauá Reserve presented to IBAMA?

Ronis da Silveira: For now, everything is going slowly. There is now a law, known as SNUC, which stands for the National System of Conservation Units, which deals with the management of natural resources in the sustainable development reserves, which obviously includes fauna.

Amazônia: If the management plan is approved, will the species be at risk at all?

RDS: In Mamirauá, of course not. Not even the "Brazilian Army" could take those populations to extinction, because in their natural habitat (floodplain) there are an infinite number of hiding places for Black caimans, which are logistically inaccessible. If there was any risk, I would be the first to speak against the management plan, because I am the person in the world with the most interest in maintaining the natural Black caiman populations in Brazilian Amazonia. Obviously not every area has the potential for economically viable resource management, as some areas have naturally small Black caiman populations. In these areas, the type of management plan that we want to implement would be impractical. Amazonia is not homogenous, so we have to identify areas with potential and areas where exploitation should be avoided. And we cannot lose sight of

the fact that, as well as the large Black caiman, there are also other caiman species in the Amazonian region, with populations of millions of animals.

Amazônia: Do you think that there is a real possibility that the large Black caiman will be taken off the list of endangered species?

RDS: If it depends on the Brazilian crocodilian specialists, yes. Things are already looking favourable. It remains to be seen if IBAMA and society at large believe in the scientists or prefer to stick with theoretical puritanism, which in my opinion is much more damaging. In the meantime, I'll wait and see. If what we recommended doesn't happen, I confess that I will be even more disappointed with Brazil's environmental institutions. In Brazil, we think that to place a species on the list of animals in danger of extinction is a good policy which will protect the species. If we do not change this philosophy, we will become the nation of endangered species, which is not true! On this official list should be only animals in real danger, which deserve the special attention of the government, society and scientists. If we overload this list, we lose sight of the species that really need effective protection. For example, one of the species which is really threatened with extinction in Amazonia is the "Sauim-de-coleira" monkey, which lives in the Manaus region. It is thought that there are only around a hundred of these animals in the wild. To put the large Black caiman, which has a population of millions, together with this monkey, seems ridiculous, doesn't it?

Amazônia: Do you have any estimates of the current exploration of Black caimans in terms of numbers of animals or tonnes of meat?

RDS: In Amazonia? It is impossible to calculate because it is a black market and we do not have the means to monitor it. If there is a management plan, the situation is reversed. We know that Black caiman populations are under pressure on the Solimões, Japurá, Purus and Amazonas rivers. Every year, hundreds of thousands of animals die, which means hundreds of tonnes of meat. The worst thing is that the state does not earn anything from this trade. Biodiversity is threatened and the rural population becomes poorer. No illegal activity is in the interests of the social good.

Amazônia: How much could be exploited annually according to the management plan?

RDS: Between 5% and 10% of the animals which were counted during nocturnal surveys. If 100 were counted, we take 10. If 1000 were counted, 100, and so on. Surveys conducted before animals are killed will indicate how many animals will be removed. We have to begin before we can improve exploration techniques. It is what is internationally known as adaptive management, or, the rules changes in relation to the evolution of the market, new scientific research and principally, how the Black caimans are responding to management. As a result of these factors, the percentage of the population exploited could increase, decrease or even be blocked. It is nothing more than the management of resources. If you have more money in the savings account, you can waste more. If you have less, you waste less. If you do not have anything, it is obviously not worth getting into debt.

Amazônia: Do you have anything to add?

RDS: You have to be very careful with this subject. We are not defending the legalization of Black caiman hunting in Amazonia. It is not that. I defend self-sustainable exploitation, based on scientific data and with the rigorous monitoring of activities. My intention is to break the black market and make legal management more attractive, generating legal jobs at the local level, as well as the resources to continue research and monitoring. The idea of protecting Amazonian Black caimans 100% is an illusion. We have to let some go as a means of getting the local population to help us preserve the remaining 90%. — Submitted by Ronis Da Silveira from <www.amazonia.org.br> web site of Friends of the Earth - Brazilian Amazon. r. Bento de Andrade, 85, São Paulo - SP - Brasil 04503-010 and used with permission.

French Guyana

BLACK CAIMANS (*MELANOSUCHUS NIGER*) IN THE KAW SWAMPS NATURAL RESERVE, FRENCH GUIANA: A FIRST YEAR SURVEY. The 4 species of guianan caimans: *Paleosuchus palpebrosus*, *P. trigonatus*, *Caiman crocodilus* and *Melanosuchus niger*, are present in the Kaw swamps (north French Guiana). Despite its interest, this disjunct black caiman population had still not been studied, and only anecdotal reports referred to this area. After a preliminary work in December 1999 (Ouboter et al. CSG

Newsletter Vol 19 (2):13-15), caimans surveys have been undertaken in order to assess the black caiman distribution and the space and temporal variations in habitat use, and to observe the impact of former harvest.

From February 2000 to January 2001, a monthly count was conducted on the Gabrielle creek, a tributary of the Mahury river, on the lower Approuague and the Kaw river (map). The last river comprised 3 distinct habitats: a swamp, a gallery forest, and a mangrove down to the sea; it served as principal study area. This river has been disturbed by a strong hunting pressure until the early 1980's, and is now facing a strong tourist pressure. Cattle breeding is also located in the swamp. Surveys were done monthly by 3 persons equipped with 4.5V and 6V headlights from a 4m motorized aluminum boat. Three additional surveys have been made in 20 to 50 ha ponds in the center of the swamps. Since these areas are inaccessible by boat, a small aluminum canoe and 4 persons were dropped by helicopter for 2 days in each site.

First, the survey highlighted the difference of density of *M. niger* between the accessible areas formerly hunted (0.1 to 0.5 individual / km on the Kaw river), and non-disrupted areas (25 to 48 individuals / km in the ponds). On the west side of the reserve (Gabrielle creek), the black caiman has been observed only twice, and may actually be considered as extirpated. Adults (size > 2 m) were also much more frequent in the inaccessible parts (15 % of the sample, vs. less than 5% on the Kaw river). In pristine areas, caimans were much less shy than those of the river. Secondly, on the Kaw river, the black caiman was more particularly observed in wooded areas, mostly during the wet period, as opposed to the spectacled caimans which were more abundant in the swamps. This spatial repartition may be a adaptive behavior to the past hunting pressure (Behra 1997; da Silveira 2000).

A supposed breeding area was identified in the swamp: at the end of the dry season (December), we located during a helicopter flight about 50 large adults *Melanosuchus* (from 4 to 6 m) together in a small pond (approx. 3000 m²). Caimans were nervous and aggressive, trying to bite the helicopter when passing at low altitude. Three days before, and 7 later, no caimans was present on this pond. Two laying spots (> 30 animals together, 20 cm length) have been located, one in an inaccessible area and one on

the Approuague river, both at the beginning of the wet season (February).

After Ouboter (2000), we assume that the size of this habitat and the inaccessibility of its main part has permitted the maintenance of a important black caiman population, despite dramatic decreases on the edges of the swamp. This first survey year raises many questions such as the relationship between the laying spot from the River Approuague and the Kaw Swamp, the dispersion of individuals into and from the inaccessible areas, and the ability of recolonization from refuges to depleted areas. For this last point, control of the tourist pressure should be an urgent concern for the Natural Reserve. *Acknowledgments.* This first study year was funded by the "association Arataï", managing the Kaw-Roura swamps natural reserve. — Michel Blanc & Benoît de Thoisy, Kwata NGO "Study & Conservation of French Guianan wildlife" BP 672, F-97335 Cayenne cedex, French Guiana. email: <thoisy@kwata.org>

Uruguay

FIRST SURVEY OF CAIMAN LATIROSTRIS IN NORTHERN URUGUAY. Broad-snouted-caiman (*Caiman latirostris*) is known to occur in Uruguay, at the southern boundaries of this species range, but no survey data are available from this country. A project about surveying *C. latirostris* populations has been started, being the first of its kind in Uruguay. This study is partially supported by the State University with \$12,000 US for a two-year period, to be carried out through the Veterinary Faculty. Prior to field activities we took part in a training visit to the Proyecto Yacaré, courtesy of Alejandro Larriera. Another CSG member acting as scientific advisor is Luciano Verdade, Univ. of Sao Paulo.

The project focused its attention on the relative abundance and population size structure of caimans inhabiting anthropic habitats, and the identification of environmental factors relevant to their colonization. Dietary studies, sustainable use potential and the selection of sites for long term monitoring are also underway. The selected area to be surveyed is northern Uruguay (Department of Artigas) where the main populations of *C. latirostris* are suspected to occur. The most important water bodies in the

area are streams which are tributaries of the Uruguay River. Artificial habitats surveyed are impoundments used for agricultural purposes; they are in private farms and often located in secondary creeks of the streams or even along the streams. These artificial lagoons are the water reservoir for rice and sugar cane culture mainly, and in some cases they are used for cattle.

Impoundment size varied from 0.49 to 5.2 km². The survey method most suitable for such habitats was night-light counts performed with a slow moving boat. Preliminary results from the Ñaquifá stream basin impoundments (n=11), January-March 2001 (30° S), showed a mean caiman density of 2.5 / km of shoreline along 17 km of total survey. No caimans were present in 2 impoundments, which comprised 2.42 km of shoreline survey. All counts were performed above 18.0 and 24.5 °C water and air temperature respectively.

Hatchlings were neither captured nor seen, perhaps because hatching was just starting. An interesting point is that small juvenile categories were present, as well as nests. This suggests that reproductive activities take place in relationship to artificial habitats, as reported by Larriera (1995) in Argentina.

In spite of the fact that *C. latirostris* is considered an habitat generalist (Verdade 1998), accumulation of data is needed to assess the viability of populations in altered habitats (Magnusson 1994). For the next survey seasons we are trying to identify accessible transects of streams to estimate abundance and population size structure in non-altered habitats.

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- Verdade L. M. 1998. *Caiman latirostris*. Pp.: 18-20 In J. P. Ross [Ed.] CROCODILES: Status Survey and Conservation Action Plan..
- Claudio Borteiro, Marcelo Tedros, Francisco Gutiérrez, Francisco Kolenc, Gustavo Speranza & José Pedro Dragonetti. Instituto de

Meso-America and the Caribbean

Belize

BELIZE CROCODILE CRECHE. The idea for the Crocodile Crèche was conceived after discussion with Steve Platt during preparation of the report that he and John Thorbjarnarson submitted to the U.N.D.P. G.E.F. and the Belize Coastal Zone Management Authority, in November 1997, on the Status and Life History of the American Crocodile in Belize. In 1998 a partnership was formed between The Crocodile Crèche and I.T.C.F. (the International Tropical Conservation Foundation of Marin-Neuchatel Switzerland) with Shipstern Nature Reserve to instigate a project to aid in the recovery of *C. acutus* populations in Belize.

The Crocodile Crèche is not yet incorporated as an independent body. We do, however, operate very much under the wing of I.T.C.F. who have full charitable status in Europe, and are the parent organisation for Shipstern Nature Reserve who are a registered Belize non-profit organisation.

The objectives of The Crocodile Crèche are as follows:

- i. To promote and ensure the conservation of the endemic crocodilians of Belize.
- ii. To monitor known important habitat, locate new areas and try to gain some form of protection for them.
- iii. Provide an environmental Education Resource for the use of local schools, student and adult groups. Thereby getting across the conservation message to the local population.
- iv. Try to attract tourism to this remote corner of the country, underlining the economic advantages of conservation to people who if they can't eat it or sell it see no reasons to preserve it.

Present activities are concentrated on a head start operation for *C. actus* using hatchlings collected from various areas of the range in Belize. A total of 55 *C. acutus* are currently held. Growth of hatchlings collected in 1999 has been good with those specimens now averaging

68.5 cm TL (range 46-86 cm). The first twenty or so should be ready for release late this year. Prior to release they will all be fitted with electronic tags in addition to the coded clipping of the single and double crest whorls of the tails to facilitate future monitoring of the species in Belize. — Steve & Magaly Nichols, *The Crocodile Creche, Belize*. e <croccreche@btl.net>

Costa Rica

RENEWED CONFLICT IN TARCOLES RIVER. Reports received from concerned investigators in Costa Rica indicate that the fragile accord between crocodiles and local people in the Tarcoles river area in western Costa Rica has again broken down. Relations between crocodiles, local fishermen and residents, and crocodile tour operators became strained in 1998 (Newsletter Vol 17 No.3:8-9) after several fatalities from crocodile attack were reported and conflicts arose over access to fisheries and ecotourist resources. Alerted by local researchers and members of the new Asociacion for Meso-American Crocodile Investigators (AMICRO), CSG appealed directly to the Minister of Mines and Energy and through the regional office of IUCN for dialogue to resolve the situation.

Enforcement of fisheries and wildlife protection laws, discussions between rival ecotourist interests, outreach and education in local communities and a crocodile nuisance control program were all proposed. However, while local NGO's struggled with the problems, official action on the problem was deferred pending a proposed PHVA analysis that was designed to bring the stakeholders together and seek solutions. The PHVA was postponed following the tragic killing of CSG member Mario Orjuela at Tarcoles in late 1999 and subsequently due to lack of funds.

Currently the situation is reported to again be in chaos. Illegal fishing within the coastal estuary protected area has resulted in numerous crocodile net entanglements. Frustrated fishermen are alleged to have deliberately killed as many as 40 crocodiles and neither private, commercial interests nor civil authorities appear to be able to deal with the problems. At press time the situation is under urgent review by

regional CSG Steering committee members and additional direct intervention to Costa Rica's government is anticipated — from correspondence and confidential sources, Alejandro Larriera, *Regional Vice Chairman & Perran Ross, Executive Officer.*

Guatemala

TRI-NATIONAL WORKSHOP FOR MORELET'S CROCODILE MANAGEMENT. Between 5 and 9 June, 29 participants from Mexico, Belize and Guatemala convened at the Estacion Biologica las Guacamayas on the upper San Pedro River in the Peten region of Guatemala to develop a coordinated strategy for conservation and management of *C. moreletii*. The meeting was convened by Oscar Lara of Consejo Nacional de Areas Protegidas and Francisco Casteñeda Moya of Propeten/Conservation International and was hosted at the rustic research station on the southern border of the Laguna Tigre National Park and Biosphere Reserve.

After two days of presentations of different aspects of the participants work, the meeting spent two days in workshop format developing strategy statements in three areas, captive husbandry and commercial activity, regulation of domestic production and export and biological and research needs. A summary of the sentiments of the meeting was prepared as the 'Manifesto of Laguna Tigre' which is translated below.

Following the workshop some participants conducted crocodile surveys on the upper Usumacinta river at the border of Mexico and Guatemala. The meeting was hosted and funded by Propeten and Conservation International as part of the contributions of their Global Environmental Facility program at the Station. CSG gratefully acknowledges this assistance and thanks the organizers and participants for this excellent regional effort. — Perran Ross, *Executive Officer CSG.*

Manifiesto de Laguna del Tigre, Petén, Guatemala

During the week of 5 – 9 June 2001 representatives of México, Guatemala and Belize participated in the Tri-national workshop convened by Consejo Nacional de Áreas Protegidas (CONAP, Guatemala) and with the host institution of ProPetén (Proyecto Petenero

para un Bosque Sostenible), with the goal of developing a tri-national strategy for conservation and sustainable use of *Crocodylus moreletii*.

Represented at the meeting were the government agencies of Mexico (SEMARNAT) and Guatemala (CONAP), the CSG, Non-governmental organisations including Asociación de Rescate y Conservación de Vida Silvestre (ARCAS), TRAFFIC, el Corredor Biológico Mesoamericano, ProPetén/Conservación Internacional, Fundación Defensores de la Naturaleza; private initiatives such as The Belize Crocodile Creche, Industrias Moreletii S.A de C.V., Criadero de Caimanes El Palomo; PANAGATOR S.A., Asociación de Reservas Naturales Privadas, Sociedad para el Estudio y Conservación de Cocodrilos en México, A.C.(SECOCOM), Asociación Mesoamericana de Investigadores en Cocodrylia (AMICRO), Fundación Ecológica de Cuixmala, Academic representatives from the Smithsonian Institute, Laboratorio de Genética Molecular, Universidad Juárez Autónoma de Tabasco, Centro de Investigación para la Conservación de Especies Amenazadas (CICEA), Universidad de San Carlos de Guatemala, Instituto Tecnológico de Ciudad Victoria Tamaulipas, Instituto de Historia Natural y Ecología de Chiapas (IHNYE) as well as other researchers and commercial interests..

Among other activities this forum served to present advances in research and results of projects and investigations in the three range states and later form working groups for discussion and analysis of:

- a) The distribution and size of the crocodile populations in the three countries.
- b) Management of the species in controlled conditions.
- c) Legislation and control mechanisms for the species.

This permitted the identification of the following priority activities:

- The need to compile existing information.
- The determination of the conservation status of wild populations.
- Standardization of methods and development of research protocols.
- Definition of priority areas for the conservation of the species.
- Capacity building among control agencies..

- Demonstrations and technical improvements in the management of captive and wild populations.
- Compilation and coordination of control procedures in the three countries.
- Analysis of existing laws.
- Diffusion of information on regulations in the three countries.
- The elaboration of manuals of procedure for regulation.
- The elaboration of environmental education programs on the conservation and sustainable use of the species.
- Elaboration of programs of veterinary medicine (preventative and curative)
- Construction of a data bank for various lines of investigation on the species.
- Production and distribution of a directory of regional specialists in conservation and sustainable use.
- Studies of the feasibility, financial analysis, channels of commercialization and alternative financing for production projects.
- Formation of a consultant group to follow up on the recommendations of this workshop.

The group considered that the participation of government agencies and the advances in understanding and management of the species shown during the development of the workshop justify the establishment of a tri-national strategy that would have regional application and a positive impact on protection, conservation and sustainability of the populations of Morelet's crocodile in Belize, Guatemala and Mexico. The meeting calls on these governments to politically endorse the strategy proposed here as a priority of their national action plans.

Adopted 8 June 2001 at the First Tri-national Workshop for the conservation of and management of *Crocodylus moreletii*, at Estación Biológica "Las Guacamayas", Laguna del Tigre National Park, San Andrés Peten, Guatemala.

Jamaica

In recent years the conservation and management of crocodiles in Jamaica has emerged as an important wildlife issue. From 22-26 March 2001, I visited Jamaica to get a better understanding of the current situation. During my stay I was hosted by Mr. Charles Swaby, the

managing director of the South Coast Safaris and recognized expert on crocodile in Jamaica. Mr. Swaby took me to several areas in southwestern Jamaica to view crocodiles in their habitat.

Most of Jamaica's principal wetlands are coastal and offer a variety of potential crocodile habitats. Spreading urbanization, agriculture and fish farming are all encroaching upon these fragile wetlands which ring the island. In many areas, natural habitats are being replaced by artificial wetlands such as canals or fish ponds, which, when used by the crocodiles, can lead to conflict with local people. This problem is compounded by the tendency of people to unwittingly provide food for the crocodiles by throwing small fish or entrails into the water, by dumping dead dogs into the mangrove ponds, or simply by creating garbage dumps along the coastal wetlands. Under these conditions the adaptable crocodiles find food readily available in areas close to human habitation.

Based on this short visit to SW Jamaica and discussion with Charles Swaby, it appears that crocodiles remain relatively widespread. However, while they are found in a variety of coastal habitats, there is virtually no information on current status. Anecdotes, reports of nesting and small groups or individuals are known from at least 53 sites, primarily on the southern coast between Hanover (west) to St. Thomas (east) counties.

Given proper safeguards, people and American Crocodile can live together with minimal problems. There are a number of actions that could be taken to attain this goal, several of which are discussed below.

Provide a secure habitat - Habitat loss and the resulting movement of crocodiles into human areas in one of the contributing to conflicts.

Public education - A public education campaign that highlights the usually non-aggressive nature of the crocodile and ways to avoid the inadvertent feeding of crocodiles or risky activities in areas with crocodile would be beneficial.

Problem Crocodile Program - A government managed program to deal with crocodile that show up in inappropriate areas will need to be defined.

Crocodile Use Programs - These types of programs must balance offtake of animals to ensure the harvest is sustainable and follows management guidelines.

Jamaica shares the same species of crocodile with its two larger Caribbean island neighbors: Cuba and Hispaniola. In both Cuba and the Dominican Republic, wildlife authorities are in the preliminary stages of developing crocodile management plans that may involve some form of commercial use. It would be opportune to initiate a dialog among the three nations and perhaps to plan a tripartite workshop to discuss respective plans for the crocodile surveys, management alternatives an issues related to the conservation of crocodiles and their coastal wetland habitats. — John Thorbjarnarson, *Extracted from trip report, Wildlife Conservation Society, 185th and Southern Blvd., Bronx, NY, USA.*

Nicaragua

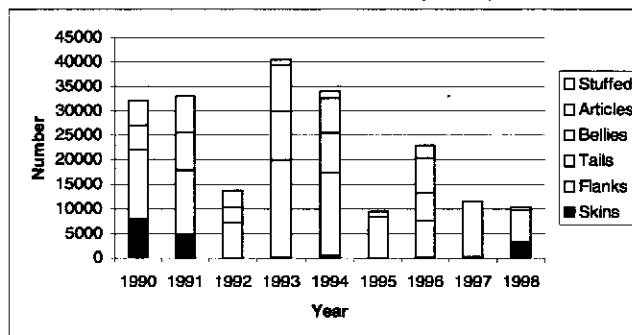
CAIMAN MANAGEMENT AND USE. During a trip to Nicaragua in early February to attend a conference in the Atlantic coast town of Bluefields, I took the opportunity to make some notes on things crocodilian in the hope that they could add to the extensive survey work previously conducted (King et al. 1994) and underway (Fabio Buitrago's program). Since 1990 there have been two skin markets in Nicaragua, a legal trade in *Caiman* skins > 3 ft long that are tanned in Nicaragua and exported, and an illegal market for undersized caiman and crocodile skins that supplies an artisanal trade within Nicaragua, principally for tourists. Based on reports of the number of exported *Caiman* skins parts and or products, the total number of caiman harvested appears to have declined during the 1990s. However, during the same period the number of manufactured articles exported has increased, perhaps reflecting a shift to produce finished articles rather than export tanned skins (see figure 1.).

The conference I attended - on wetlands conservation - was co-sponsored by the Proyecto de Conservación y Desarrollo Forestal (PROCDEFOR)(funded by the Dutch government), which, as part of their joint programs with the government agency MARENA, have been conducting caiman

surveys in the area around Bluefields. Surveys carried out over the last several years suggest that *Caiman crocodilus* is widespread along the Caribbean coast in the vicinity of Bluefields. Mean density in surveyed areas was 0.71/km (Castrillo and Ramos 1999).

Based on interviews with residents of Pearl Lagoon, a large coastal lagoon to the north of Bluefields, caiman hunting is carried out on both an opportunistic basis and by professional hunters. I met two Garifuna hunters who the night before had taken five caiman, ranging from 1.2 to ca. 1.9 m TL. All were males, and had been skinned with the lightly salted skins each rolled up on sticks for easy transportation. The meat, and skin from the limbs is not used. The hunters reported that they concentrate primarily in the open streams and lakes that are accessible to hunters in canoes. Hunting in marshes is limited, and this may result in a male-biased harvest. Regional buyers store skins and sell them regularly to a buyer in nearby Managua. In the early 1990s, King et al. (1994) reported that there were approximately 400 hunters and 19 regional skin buyers in the country.

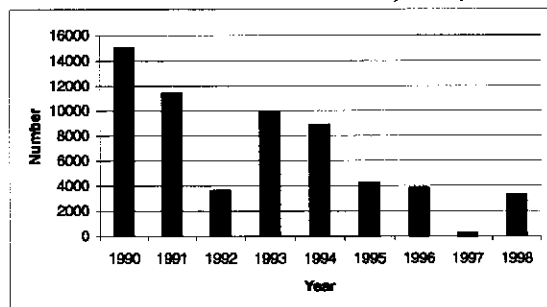
Fig 1. Recent Nicaraguan Caiman skin exports (from Castrillo and Ramos, 1999).



Based on information from interviews, hunters will also take crocodiles and undersized caiman. These skins apparently enter a market for tanning and elaboration into artesanal products sold principally in Managua, particularly in the central market and the airport. Products ranged from keychains and coin purses to shoes, handbags and briefcases. I saw one item with a small patch of crocodile skin included. The results of a survey of 12 kiosks at the Managua airport on 8 February is summarized in a graph below. A total of 646 items were seen. There were also two higher-priced shops in the airport transit area that were

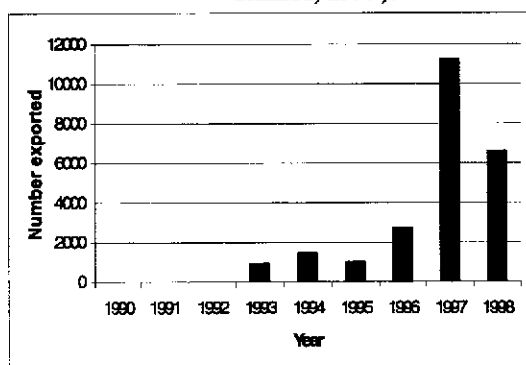
selling caiman skin products, including one that

Fig 2. Estimated total number of Caiman harvested to supply exports (from Castrillo and Ramos, 1999).



had jaguar skin/caiman bags. Virtually all the kiosks were selling hawksbill shell products as well. The export of products made from caiman is not illegal, but these items are being manufactured from skins obtained from outside the managed program set up by MARENA with assistance from the CSG. One of the principal recommendations of the CITES-CSG team was, in fact, to control this artisanal trade. However, based on my brief visit it remains a thriving business.

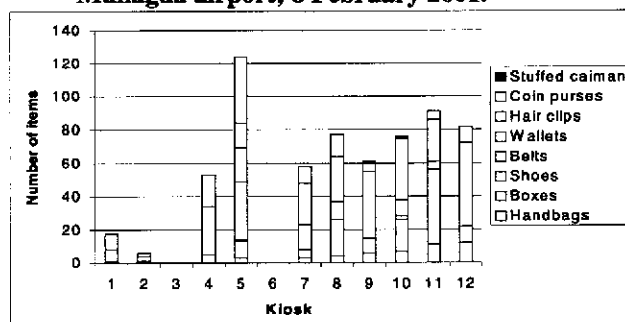
Fig 3. Exports of articles manufactured from Caiman skins (from Castrillo and Ramos, 1999).



Crocodiles are not common in the region of Pearl Lagoon. To some extent crocodiles in this area may be limited by habitat factors. Due to the high rainfall (ca 4 m/yr) and limited tidal flux (in lagoon is ca 40 cm), there is a large amount of freshwater marsh and swamp (which according to the hunters and residents of Pearl Lagoon are inhabited by caiman and not crocodiles) with a narrow and stable border with

brackish water habitats. At the time of my visit, the lagoon salinity was 10-15 ppt. Furthermore, the lagoon and lower river courses have few suitable beaches for nesting. Under these conditions, nesting females may have to move out of the lagoon mouths and use ocean beaches. Alternatively there are a small number of freshwater streams that drain out to the ocean side. One area I visited (Steadman - Tuiraya creek system) was freshwater but the creek banks were lined with mangroves. Salinity in this system is said to increase during the dry period of March-May. According to local fishermen, some 2-3 female *C. acutus* nest around the mouth of Tuiraya creek each year, with more near

Fig 4. Survey of caiman skin items in 12 kiosks, Managua airport; 8 February 2001.



Steadman creek, and suggestions that others may be found at mouths of small creeks found behind the community of Set Net. In these areas crocodiles are reported to be up in the creeks for most of the year, and come down to mouth during dry season, nesting around April (hatch in June?).

I conducted two surveys: Awass Creek; (5 Feb. 2001)- a brackish water tidal creek near Pearl Lagoon village: 2.08 km; I saw 2 EO and captured & released a 77 cm TL *C. acutus*. Tuiraya Creek-(6 Feb. 2001); 2.25 km, freshwater mangrove creek (hunters took 5 *Caiman* from this area 2 nights previous) - I saw one *C. acutus* - ca. 1.5-2.1 m TL. I also saw three sites on mudbanks where animals have been hauling out. One interesting note is that residents and hunters agree that a major hurricane that passed through the area in 1988 had been beneficial for crocodiles by closing off streams and canals that had previously been open and accessible to hunters.

Castrillo López, M. S. and Ramos Bendaña, Z.S. (1999). El Cuajipal, una especie amenazada de extinción en los humedales de Bluefields. Humedales de la RAAS. Región Autónoma del Atlántico Sur, Nicaragua — PROCODEFOR. 1(2):1-8.

King, F. W., J. P. Ross, J. V. Morales M. and D. Gutierrez. 1994. Survey of the status of the crocodilians of Nicaragua. pp. 121-161 In: Crocodiles. Proceedings of the 12th Working Meeting of the Crocodile Specialist Group, IUCN-The World Conservation Union, Gland, Switzerland. Vol. 2. 340 p.

— John Thorbjarnarson, *Wildlife Conservation Society, Southern Blvd and 185th St., Bronx, NY 10460, USA.*

Europe

Germany

POLICE SEARCH RHINE FOR CROCODILE. Swimmers were barred from a stretch of the Rhine on Wednesday as German forest rangers searched an island for a crocodile that has eluded authorities for five days.

Police are searching with helicopters and boats for a 1.5 m crocodile, sighted in the Rhine near Speyer some days ago. The nearly 5-foot-long reptile was first sighted in the waters last Friday in the state of Baden-Wuerttemberg. Two days later it was reported near Ruedesheim, more than 100 km downstream - and it was reportedly now grown to 3.0 m! Police boats and helicopters entered the hunt Tuesday after the crocodile was spotted downstream on Mariannenaue island, west of the city of Wiesbaden, in the state of Hesse.

Hesse state police told bathers to stay out of the waters around the island while the search continued. Police said the crocodile was likely released by a private owner who could no longer cope with its size and appetite.

The Rhine is heavily frequented by ships and boats. The poor beast will have some problems there as the water temperature is not more than 18-20 degrees Celsius, mostly colder. Further horror scenes are anticipated when a 1.5 m croc attacks some ducks or some similar prey. — *Report from NY Times submitted by Terry Heaton-Jones P.O Box 140309, Gainesville FL*

32614, USA, with additional comments on the scene from Ralf Sommerlad, Alexander Str. 11 Frankfurt Am Main 60489 Germany.

North America

USA

LOUISIANA'S RETAIL EDUCATION ON EXOTICS- A PASSIONATE PROGRAM! A recent market survey revealed that 50% of manufacturers of crocodilian products were not aware that American alligator is no longer an endangered species. Of those surveyed, 78% stated that they would NOT buy leather of endangered animals. Educating manufacturers, designers, retailers and the public in general about legality and sustainable use is crucial in eliminating such misconceptions. The importance of an economic incentive for maintaining a habitat, and therefore a species, is a concept that bears repeating. No economic incentive, no conservation program!

The Louisiana Fur and Alligator Advisory Council has just completed its second year of retail education in the US and Canada on these topics. Christine Brewton provides this in-store training for sales managers, staff, marketing VP's, and buyers. It has been very well received, with requests for additional training, seminars, etc. She currently has over 150 retail clients including Tod's, Salvatore Ferragamo, Versace, and Judith Leiber. Both Neiman-Marcus and Sak's take advantage of the Louisiana booklets, "alligator passports," and Christine's lectures. In August, she will present to the accessories' department heads for all Neiman's stores at their annual conclave in Dallas, TX.

She teaches the retailer how to speak intelligently about exotics. "Word of mouth is the number one way that manufacturers and designers create interest, and promote and advertise their products. Words must be provided at every step to increase the demand for and retail sales of genuine Louisiana alligator." She shows pictures of other wildlife that thrive in the wetlands, and explains that maintaining a healthy alligator population is an investment in the ecosystem. She displays samples from a range of tanned hides and finished products. She shares the marsh-to-market story, and explains the 22 hands that a product goes through, and the passion of the craftsmen involved at every step.

Christine also teaches the differences between alligator, crocodile, and caiman. Care of finished product is a popular topic with the retailers. Along Madison Avenue, a reoccurring problem with exotics bags has been damage from Windex sprayed inside display cases, permanently marring the skin. One group admitted to an inexperienced sales clerk actually trying to polish an alligator bag with cleaning spray!

For more information on the marsh to market education program Christine can be contacted at <LittlestarTGSal@aol.com>.

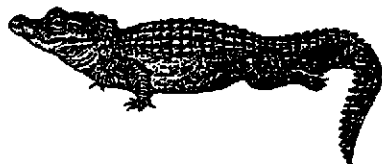
ALLIGATORS GROW BIGGER IN BUFFALO. A 4-foot American alligator, weighing about 80 pounds, was in custody Wednesday after being snared by a city animal control officer.

It wasn't a chicken-baited trap that led to the critter's capture, but a wild rat that swam too close to its jaws. Animal control officer Chuck Loubert Jr. spotted the gator late Tuesday in Scajaquada Creek, in an area where the stream runs under highway bridges. "I seen the two eyes glowing in the water," Loubert said. "There was a rat practically 2 feet from me. (The gator) was just treading water until he seen that rat." With the gator distracted by the rat, Loubert looped a dog snare around the reptile's neck.

The animal, first reported on Saturday, was believed to have been set free by someone who had it for a pet. Earlier Tuesday, animal control officers had to suspend their hunt because of spectators and amateur gator trappers.

"Everybody was using motorboats, and people on the bridge were throwing rocks and spitting at my men," said Frank Poincelot, the city's head pest control and wildlife officer. "We had guys setting traps with chicken up and down the creek. Shame on everybody for doing this."

Last week, a relative of alligators, a caiman, was captured in a pond in New York City's



Central Park. The Central Park reptile measured only 2 feet long and Poincelot called it "a kitten compared to this one." His agency was contacting Florida animal preserves on Wednesday trying to find a new home for the

gator. — from a report in the NY Times submitted by Terry Heaton-Jones, P.O. Box 140309, Gainesville FL 32614, USA,

Request

WANTED, CHINESE ALLIGATOR PHOTO. Paul Weldon would like to submit a photograph suitable for a journal cover with a paper he has prepared on Chinese alligator skin chemistry. A close up, good quality, side or front view of the head would be suitable. If anyone can assist him with such a photo please contact him at <pweldon@osfl.gmu.edu> or — Paul Weldon, Conservation and Research Center, 1500 Remount Rd, Front Royal, VA 22630, USA.

Zoos



CROCODYLIAN ADVISORY GROUP TRAINING SCHOOL. The Crocodilian Advisory Group (CAG) of the American Zoo and Aquarium Association (AZA) conducted its first Crocodilian Biology and Captive Management training school on 6-10 May 2001 in St. Augustine, Florida. The school was generously hosted by the St. Augustine Alligator Farm and Zoological Park and held in the Anastasia Island Conservation Center, a newly dedicated education center on the grounds of the Alligator Farm. The course was officially sanctioned by the AZA's Board of Regents and is the first AZA professional development course offered by a taxon advisory group and with hands-on animal experience. Dr. Bruce Carr, Director of Conservation Education for AZA, officially opened the school and observed the first two days of the curriculum. Twenty-one students attended the first croc management course, including international students from Canada and Australia. The core faculty included John Behler (Bronx Zoo), Peter Brazaitis (Central Park Zoo, retired), Rick Hudson (Fort Worth Zoo), Greg

Lepera (Jacksonville Zoo), Andy Odum (Toledo Zoo), Bonnie Raphael (Wildlife Conservation

advisors also served as lecturers, including Adam Britton from Wildlife Management International,



Participants of the Crocodilian Biology and Captive Management training school assembled by the St. Augustine Alligator Farm's new Anastasia Island Conservation Center. K. Vliet photo.

Society), and me. Ten other CAG members and



AZA course students dissect a small crocodilian. K. Vliet photo.

Australia. The curriculum included: an introduction to the Crocodylia; husbandry and enclosure design; diet and nutrition; reproduction; health, chemical immobilization; methods of identification; records; transport; behavior; genetics and demographic management; and crocodilian conservation in zoos. The CSG's own Perran Ross gave a stimulating and challenging lecture on international crocodilian conservation efforts. Marty MacPhee of Disney's Animal Kingdom presented an informative and thought-provoking discussion of behavioral training methods, including case studies of training in crocodilians. Students had numerous opportunities for practical, hands-on experience in working with crocodilians, including the safe capture, restraint and handling of crocodilians, the use of dichotomous keys for identification of specimens, collecting morphometric data, tagging methods, sex determination, and collection of blood. Students dissected crocodilians during an outdoor anatomy lab conducted by Mason Meers. To accompany the course curriculum, the students received a 350 page monograph written by CAG members and advisors and edited by John Groves (North

Carolina Zoo) and me. Following the five day course, many of the students and instructors participated in a fieldtrip to view the tremendous concentration of American alligators on drought-stricken Payne's Prairie in Gainesville, followed by a visit to the herpetology collection at the Florida Museum of Natural History to examine crocodilian specimens.

The CAG intends to offer this course again next spring. Priority of enrollment is given to employees of AZA institutions, though, if spaces are available, anyone with an interest in crocodilians is invited to apply. — Kent A. Vliet, Ph.D, *University of Florida, Department of Zoology, Gainesville, FL 32611-8525 USA.* <kent.vliet@zoo.ufl.edu>

SURPLUS CROCODILIAN STOCK. Madras Crocodile Bank and Trust advises the following specimens available to properly qualified and permitted collections.

Species	Number	Size TL
<i>C. palustris</i>	2000*80	– 260 cm
<i>C. moreletii</i>	bred on request	hatchlings
<i>C. siamensis</i>	15*	55- 100 cm
<i>C. niloticus</i>	2 female	200-250 cm
<i>Caiman crocodilus</i>	60 *	120 –180 cm
<i>A. mississippiensis</i>	1 female	210cm
<i>O. tetraspis</i>	1 female	200 cm

* both males and females available

All inquiries to — Nikhil Whitaker, *Madras Crocodile Bank, P.O. Bag 4, Mamallapuram, Tamil Nadu 603 104, India. Fax 91 44 491 0910* <mcbtindia@vsnl.net>

Research

FIRST OBSERVATIONS OF PARENTAL CARE IN CROCODILIANS. In a recent paper Bohme and Nickel (2000) reviewed the first published reports of parental care in crocodiles. These are generally credited in the modern literature to Pooley in 1974 and 1977 but they point out that earlier authors, e.g. Bartram in 1792, made similar observations nearly 200 years earlier but these were discounted until recently (e.g. by Neill

1971). Bohme 1977, had earlier discovered another early detailed report of parental assistance to hatching juveniles by an anonymous German author in 1774. In the present paper, the authors report investigations following the rediscovery of isolated populations of Nile crocodiles in the desert oases of Mauretania and their review of early literature on these populations. They note the description by Coulson 1999 of some well known life size rock engravings of crocodiles at Wadi Mathendus, Fezzan, Libya, and draw attention to a previously overlooked detail. An earlier German observer (Staudinger 1929) apparently interpreted the images as parent and offspring, but the absence of scientific knowledge at the time concerning crocodile parental care obscured the true significance of the image. The engraving quite clearly depicts a large crocodile with a smaller one closely following it and the authors suggest that the Neolithic artists of the Saharan region were aware of the associations of crocodile parents and their young as much as 10,000 years ago. — Bohme W. & H. Nickel. 2000. *Herpetological Bulletin Number 74: 16-18* (other references contained therein—Eds).

Meetings

ANNOUNCEMENT

EAST ASIA, AUSTRALIA AND OCEANIA, REGIONAL MEETING OF THE CSG.

30 AUGUST – 3 SEPTEMBER 2001, GUANGZHOU CITY, PEOPLES REPUBLIC OF CHINA.

The meeting is a follow-up to the technical workshop on Chinese alligator conservation to be held a few days earlier. Registration materials and additional details can be found at the CSG web site

<<http://www.flmnh.ufl.edu/natsci/herpetology/crocs.htm>> or by contacting meeting coordinator Tom Dacey at <tom.dacey@env.qld.gov.au>. The meeting is open to all participants. Travel visas to China require an invitation from an official body and this will be issued by the State Forestry Administration to all registered applicants. Interested participants should immediately contact Tom or the meeting organizers directly at <wildlife@public.east.net.cn>. A two day program of presentations focussing on critically

endangered species of the S.E Asian region is in preparation. The meeting will also discuss the results of the technical workshop on Chinese alligator conservation and assist the development of a conservation strategy for this critically endangered species.

Guangzhou City (formerly Canton) in southern China, is easily reached by major air carriers via Hong Kong or Beijing. The meeting will be held in an international standard hotel where participants will also be accommodated. The organizers are providing a 'package' that will provide airport pick-up, local transport, hotel, all meals, meeting registration and a day field trip for one all-inclusive price of \$800. Despite the relatively short notice, this meeting provides a unique opportunity to directly experience China's rapid development of crocodilian production and engage in crucially important discussion for crocodilian conservation.

PRELIMINARY ANNOUNCEMENT

16TH WORKING MEETING OF THE CROCODILE SPECIALIST GROUP. An invitation has been received from a consortium of agencies to hold the 16th Working meeting in Gainesville, Florida, USA 7- 10 October 2002. The host consortium of Florida Fish and Wildlife Conservation Commission, University of Florida Cooperative Wildlife Research Unit, Florida Caribbean Science Center, USGS-BRD and Florida Museum of Natural History have assembled a proposal for venue, services and costs. After review by the CSG Steering Committee, the Chairman professor Messel, has accepted the invitation. Further details will appear in the next Newsletter.

SECOND INTERNATIONAL WORKSHOP ON DNA IN CROCODILIANS, 7 – 10 November 2001, in San Diego, Zoo, San Diego CA, USA. The meeting is organized by Valentine A. Lance, Llewellyn D. Densmore, and Travis C. Glenn and hosted by San Diego Zoological Society.

Sessions are planned for discussions focusing on:

- Major Classes of DNA Markers
- Use of DNA Markers in Research and Management of Wild Crocodilians
- The Crocodilian Genome

- DNA Markers for Research and Management of Captive Crocodilians

For up to date information see:
<<http://baddna.srel.edu/CrocDNAWebPages/CrocDNAWorkshop01.html>> If you lack internet access, you can obtain printed copies of the information from the web site by contacting — Travis Glenn, *Savannah River Ecology Lab, PO Drawer E, Aiken, SC 29802, USA.*

Publications

PROCEEDINGS OF THE 15TH WORKING MEETING OF THE CSG, VARADERO, CUBA, JANUARY 2000.

One volume, soft bound, 543 pages. Seventy original papers, including 28 in Spanish. The volume includes papers presented at the main sessions of the meeting.

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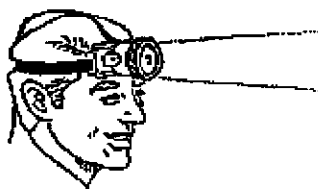
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Personals



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NSW 2006, Australia Phone 61 29 351 8952,
Fax 61 29 351 4119
<fseebach@mail.bio.usyd.edu.au>

Christopher Brochu, announces, "The theropod exile is over! and I am diving back into croc phylogeny, paleontology and biogeography" After a period at the Field Museum of Natural History in Chicago working on the famous 'Sue' the Tyranosaurus project, Chris is now a faculty member at Department of Geoscience, University of Iowa, Iowa City, IA 52242 USA. Phone 1 319 353 1808, Fax 1 319 335 1821 <cbrochu@blue.weeg.uiowa.edu>.

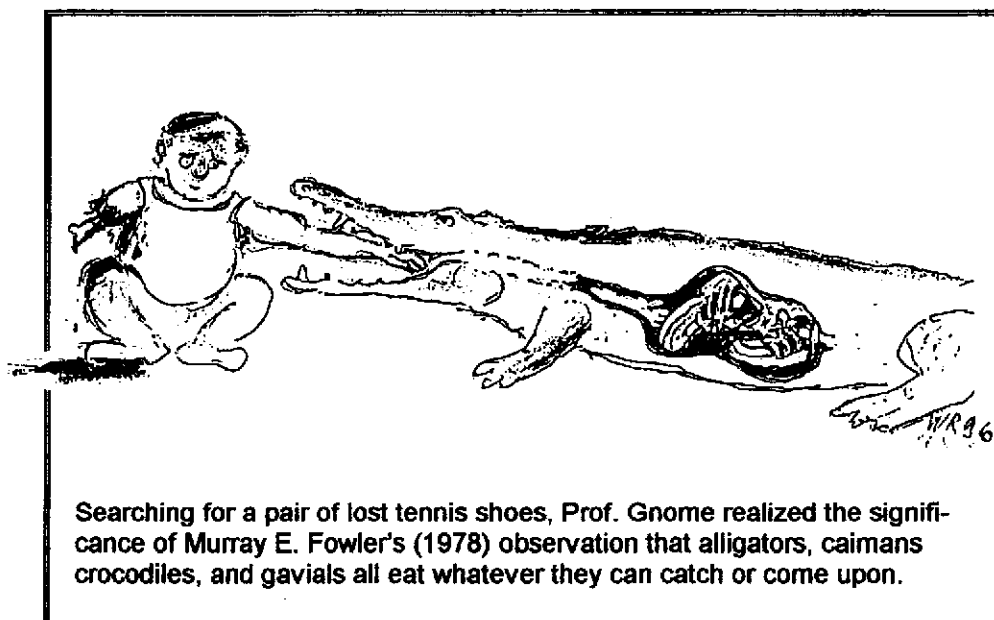
Alvaro Velasco, Deputy Vice Chair for Latin America, announces a career move from his previous position with the Venezuelan government to PROVITA, a conservation NGO. His new contact information is Provita, Edif. Catuche, nivel of 1, ofic. 105-106, Parque Central, Apto 47552, Caracas 1041-A, Venezuela Phone 58 0212 576 2828 Fax 58 0212 576 1579 <tecnica@provitaonline.org>

Alfredo Arteaga has joined Alvaro at PROVITA (same contact address) and announces the birth of a new daughter, Laury Giselle. Oh, oh! CSG meeting effect again? (See Newsletter 15 (3):23. 1996). Seriously, our best wishes to Alfredo and family.

Tom De Meulenaer is now with the Scientific Coordination Unit, CITES Secretariat, 15 chemin des Anemones, CH-1219, Chatelaine, Switzerland. Phone 41 22 917 8131 fax; 41 22 797 3417 <tom.de-meulenaer@unep.ch>



EDITORIAL POLICY - All news on crocodilian conservation, research, management, captive propagation, trade, laws and regulations is welcome. Photographs and other graphic materials are particularly welcome. Information is usually published, as submitted, over the author's name and mailing address. The editors also extract material from correspondence or other sources and these items are attributed to the source. If inaccuracies do appear, please call them to the attention of the editors so that corrections can be published in later issues. The opinions expressed herein are those of the individuals identified and are not the opinions of CSG, the SSC, or the IUCN-World Conservation Union unless so indicated.



Searching for a pair of lost tennis shoes, Prof. Gnome realized the significance of Murray E. Fowler's (1978) observation that alligators, caimans crocodiles, and gavials all eat whatever they can catch or come upon.

This cartoon by Wolfram Rietschel, zoo veterinarian of Wilhelma Zoo, Stuttgart, is reprinted from European Association of Zoo and Wildlife Veterinarians-Newsletter No 3/96 with permission of the editor and artist.

Notification

International Workshop on the Captive Breeding of and Control of Trade in *Crocodylia* in China, & Regional Meeting of the Crocodile Specialist Group Guangzhou, China, Aug. 30-Sept. 3, 2001

1. Background

Since mid-1990s, China has witnessed rapid development of captive breeding in *Crocodylia*. While the overall scale for the breeding in *Crocodylia* increases on a daily basis, we are gradually entering an age when alligator products can be developed and applied. In order to meet the demands of their conservation and streamline the market operation for its sustainable development from international advanced experiences, the Workshop will focus on reviewing the current state and existing problems in the captive breeding and application in *Crocodylia* in China, with its target to submit suitable suggestion and strategies on strengthening its management and ensuring its sustainable development and to appeal to the international communities for further support and aiding.

2. Organization

Co-sponsored by the Department of Wild Fauna & Flora Conservation of the State Forestry Administration of China and the Crocodile Specialist Group of IUCN SSC, the Workshop will actually prepared and organized by the Forestry Department of Guangdong Province and the Research and Development Center of Wild Fauna & Flora of SFA. In addition, China Wildlife Conservation Association and other funding organizations can be the supporters of the Workshop if they are willingly and provide necessary support.

3. Time and Place

The Workshop will convene during August 30th to September 3rd, 2001 in Guangzhou City, Guangdong Province, China.

4. Participants

All the professional and administrative staff that are engaged in, and have rich experiences and keen insights in the conservation in *Crocodylia*, representatives from relevant international organizations or international donor agencies can apply for participating in this Workshop.

Applicants for this Meeting are advised to immediately send their contact, institutional and passport details to the Department of Wild Fauna & Flora Conservation of SFA, China as soon as possible at the following address:

The Department of Wild Fauna & Flora Conservation
State Forestry Administration of P. R. China
No. 18, Hepingli East Street
Beijing 100714, China
Fax: +86-10-84238540
E-mail: wildlife@public.east.cn.net

Steering Committee of the Crocodile Specialist Group

Chairman: Professor Harry Messel, School of Physics, University of Sydney, Australia.

For further information on the CSG and its programs, on crocodile conservation, biology, management, farming, ranching, or trade, contact the Executive Officer or Regional Vice Chairmen:

Deputy Chairmen: (New World) Prof. F. Wayne King, Florida Museum of Natural History, Gainesville, FL 32611, USA. Tel: (1) 352 392 1721 Fax: (1) 352 392 9367.

<kaiman@flmnh.ufl.edu> **(Old World) Dr. Dietrich Jelden**, Bundesamt für Naturschutz, Konstantin Str. 110, D-53179 Bonn, Federal Republic of Germany. Tel: (49) 228 849 1443 Fax: (49) 228 849 1470 E-mail <JeldenD@bfm.de>.

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Trade: Vice Chairman: Kevin van Jaarsveldt, P.O. Box 129, Chiredzi, Zimbabwe. Tel: (263) 31 2751 Fax: (263) 31 2928. Deputy Vice Chairman: Mr. Y. Takehara, Japan Leather & Leather Goods Industries Association, Kaminarimon, 2-4-9, Taito-Ku, Tokyo 111, Japan. Tel: (813) 3 865 0966 Fax: (813) 3 865 6446. Deputy Vice Chairman: Don Ashley, Ashley Associates, P.O. Box 13679, Tallahassee, FL 32317, USA. Tel: (1) 850 893 6869 Fax: (1) 805 893 9376.

Trade Monitoring: Vice Chairman: Stephen Broad, TRAFFIC International, 219 Huntingdon Rd Cambridge CB3 0DL UK. Tel: 44 122 327 7427 Fax: 44 122 327 7237. Lorraine Collins, Gartner Str 20, Rosenharz, Bodnegg 88285, Germany. <IB-Collins@t-online.de>

Ex Officio: Mr. David Brackett, IUCN: Species Survival Commission Chairman. Bernardo Ortiz von Halle, TRAFFIC America del Sur, Ecuador. CITES Observer: Dr. James Armstrong, Deputy Secretary General, CITES, Geneva, Switzerland.

