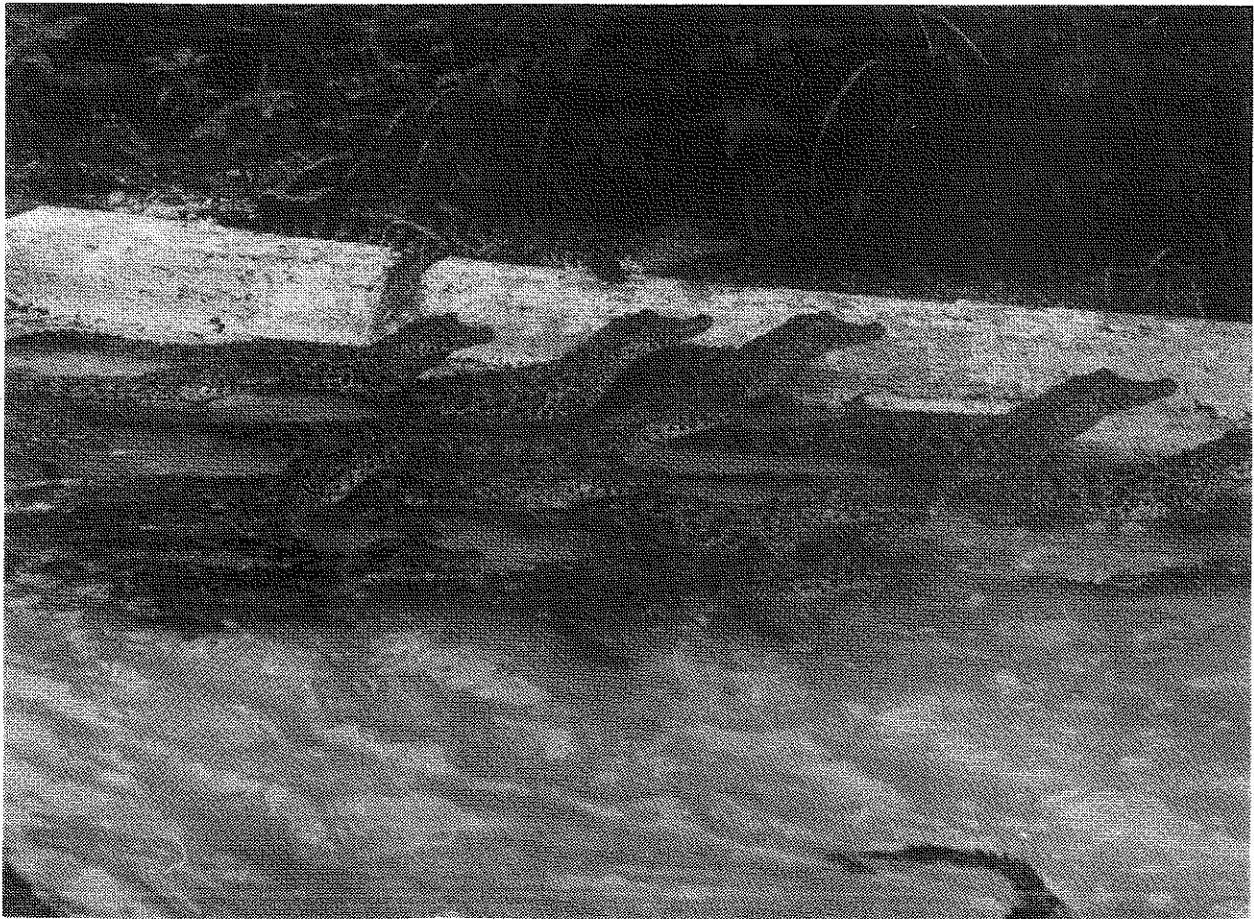


CROCODILE SPECIALIST GROUP

NEWSLETTER

VOLUME 12 No. 3 ■ JULY 1993 - SEPTEMBER 1993



IUCN World Conservation Union ■ Species Survival Commission

CROCODILE SPECIALIST GROUP

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IUCN-The World Conservation Union
Species Survival Commission

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COVER PHOTO: *Crocodylus rhombifer*, captive
bred yearlings raised at the Ministeria Industria
Pescaria Crocodile Farm, Lago Tesoro, Cuba.

PATRONS

The following Patrons of the CSG have contributed more than U.S. \$500.00 during the past 12 months. The funds donated have been deposited with University of Florida Research Foundation, Inc., and are used to support the CSG program:

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Crocodile Management Unit, Department of Environment and Conservation, Boroko, Papua New Guinea.

Vic Onions, Edward River Crocodile Farm,
Cairns, Australia.
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Terry Cullen, Cullen Vivarium, Milwaukee,
Wisconsin, U.S.A.
Gabriel & Miguel Rey, Hacienda el Molino Ltda.,
Bogotá, Colombia.

GUEST EDITORIAL

Sustainable Use is a concept that most crocodile farmers understand but many members of the public do not. Unfortunately for us there are many examples of projects that are supposed to be sustainable but which clearly are not. Many fish and timber species, for example, are under severe threat from harvesting programs that were "scientifically designed" to be sustainable but are not. In complex biological systems it is difficult to determine exactly what the result of a harvest will be. Repeated surveys of the harvested population are essential to verify our predictions. Unfortunately many so called sustainable projects are based on data provided by parties interested in maximizing the short term harvest and there is little encouragement for management authorities to restrain the greed of users or monitor the results. This occurs because of lack of funding and, sometimes, from the fear that more data simply creates more questions from critics. Political expediency and corruption also contribute to inadequate management programs that lead to a reduction in the resource. These projects are then highlighted as examples of failure of "Sustainable Use" rather than the result of poor implementation, lack of funds or political instability.

Critics of sustainable use as a conservation tool take great delight in highlighting such failures but have little to offer as alternatives except

"preservation". Conserving organisms and ecosystems by excluding all human influence was the dominant, and quite successful conservation strategy for much of this century, but expanding human populations and a finite resource base have led to the development of sustainable use as an alternative that will let humans and natural systems survive together. The disruption of natural ecosystems under poorly managed programs that are not sustainable, is a result of poor science, no monitoring or inadequate management and is not proof that the concept of sustainable use is a failure. In contrast, under programs of resource use that are truly sustainable, such as many crocodile ranching schemes, the habitat and many associated organisms benefit. Landowners can serve their own self interest in protecting the salable natural resources but the benefits are spread over the whole ecosystem. Developing countries need to be encouraged to attach value to their natural resources, or else they will have no incentive to protect them. The rainforests will be cleared for timber and agriculture, as were the forests of Europe and North America, because with booming populations it is a matter of survival. It is not useful for rich nations to tell poorer ones "do as we say and not as we did to our natural resources". It may be possible in a few countries to set aside large areas for conservation and leave them purely for native animals and plants, but few countries can afford this ideal. Most countries, even the more developed, can only set aside small, disjunct areas of land that are not really biologically viable. Grahame Webb has calculated that if every country in the world could successfully protect every designated natural park and refuge, we would still only preserve a very small proportion of the biodiversity of the earth. In reality only a few designated natural areas are truly protected. Sustainable Use provides a viable alternative that would encourage benign and non destructive use of natural resources.

Unfortunately the debate over the merits of sustainable use has been hijacked by NGO's and other special interests who are determined to return to the "preservation" conservation theories. While many of these pay lip service to the concept of sustainable use they are in fact totally opposed to any use of natural resources by people at all, particularly if it involves killing animals. Unfortunately they have plenty of ammunition, in the form of poorly planned and poorly managed projects that are not sustainable. A disconcerting

trend among the critics of sustainable use is sensationalization of the "failures". The phenomenal publicity they generate is aimed mainly at boosting their own revenues from a public that is not encouraged to understand the issues. Instead, these complex issues are reduced to simple and emotive images that successfully solicit donations but make little progress in addressing solutions. It would be far more useful and honest for those NGO's who lobby in the interests of wildlife to support studies and monitoring programs, to develop intelligent discussion based on the facts and to participate in the development of solutions to the problems of wildlife needs and human welfare. Unfortunately the facts do not often make sensational journalism. The debate on sustainable use programs has deteriorated to the point where organizations trying to promote sustainable use for the conservation of wildlife, such as CSG, are required to defend themselves from sensational media stories. It is sad that the people actively supporting these destructive attacks mistakenly believe that they are defenders of wildlife. It is also curious to see the groups who are accused of making money out of wildlife being attacked by people who are actually paid to agitate and demonstrate using funds donated by the public who think the money is used to promote conservation.

The idea we need to get across is that sustainable use is not a nice way of exploiting wildlife but is a scientific approach to try and manage vulnerable resources. If the science is faulty then the projects deserves criticism, but in many cases projects are initiated after natural resources are perceived to be in decline due to unsustainable use. The alternative of doing nothing will not promote conservation.

A recent article in Time Magazine 9 May 24 1993, quotes very critical comments by John Robinson of NYZS the Wildlife Conservation Society and adds that "if sustainable use does not work, environmentalists are faced with a huge problem: there is no big idea to fill the void". The article concludes that, "policy makers must try and guide development away from sensitive ecosystems and toward regions where losses of diversity are more acceptable", and finally that a sustainable future will come from "a broad change in values as ordinary people react to the ecological disasters around them". How can anyone say that such an approach is better than our efforts at sustainable

use? — Brian Vernon, 12 Halimah St., Brisbane QLD, Australia.

RESPONSES

The following responses have been received to recent editorial comment in the NEWSLETTER. The editors encourage lively debate on issues relevant to crocodilian conservation. Our normal editorial policy applies; the opinions expressed are those of the individuals identified and, unless specifically indicated as such, are not necessarily the opinions of the CSG, the SSC or the IUCN-World Conservation Union. [Eds.]

CAPTIVE BREEDING. I read with interest, and a little confusion, the comments made in Captive Breeding of Crocodilians, Guest Editorial, NEWSLETTER, Vol 12(2). I may have missed something by entering the discussion late, however one aspect of crocodile conservation that appears to be totally missing from the debate is the educational value that may be accrued from rearing facilities, whether ranches or farms. The argument "that closed cycle breeding is independent of, and has little benefit for, the wild population" may be overstating the case. My qualitative observations are that John Lever's Koorana Crocodile farm in Rockhampton, Australia, of necessity a closed cycle breeding facility, has significantly changed local attitudes towards crocodiles. In the past John's farm also allowed for the removal, as opposed to the death, of a number of mature wild crocodiles. His closed cycle breeding program has therefore provided a vehicle for the conservation of crocodiles, in an area where it is unlikely that there would ever have been enough crocodiles to maintain even a modest ranching operation. Such facilities can therefore, at least indirectly, have a place in the conservation of crocodilians.

In an increasingly overpopulated world, it is difficult to imagine that any large carnivores will be retained in the wild at the expense of human demands, unless there are further substantial attitude changes. Therefore for large crocodilians to continue to have viable wild populations education is vital. When the CSG is discussing support (or otherwise) of such facilities, the educational aspects should be considered.

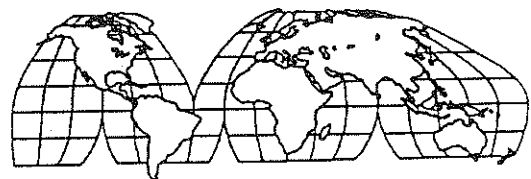
On a slightly different tack, I note with interest the negative overtone of the editorial (I assume a reflection of current thinking among crocodile specialists) towards farmed, as opposed to ranched, animals. I agree that there are those who consider "any use of animals as immoral", however such animal liberationists oppose any exploitation of animals no matter what their origin. There is, however, a slightly more liberal group who oppose the exploitation of native animals for profit. At least part of their opposition is based on the observation that individuals invest in business to make money. The use of wildlife as a basis for industry is not inherently different from any other business in this regard. If the business is successful it is usual for the investors to want to increase their income, i.e. increase the exploitation of the species in question. If the demand continues to exist for the product, ultimately the population will be over-exploited. There are many examples of this worldwide, e.g. numerous fisheries, depletion of rainforests... Why then should the fate of crocodilians be any more secure under such conditions than any other species? Closed cycle farming, with legislation to prevent taking of wild animals is seen to be an acceptable alternative. However, if the crocodile specialists have the ability to overcome the conflict between business interests and wildlife conservation by another method, please share the secret so that businessmen and governments can begin to maintain industries based on wildlife that are compatible with both conservation and business interests. Please educate the world. — Shelley Burgin, *Faculty of Science and Technology, University of Western Sydney-Hawkesbury, Richmond, Australia 2753.*

PEOPLE ARE THE PROBLEM. The most important conservation issue is not whether sustainable use of wildlife will work forever, or whether sanctuaries will preserve enough habitat, or whether an endangered species will get on someone's list. The one issue affecting all the others is human population growth. According to the Association for Voluntary Surgical Contraception there are about 910,000 new humans conceived every day around the world. Seventy five percent of those are either unwanted or unplanned. It is amazing to me that *Homo sapiens* tries to manage everything else on earth but cannot manage itself. Humans exceeding the carrying capacity of a finite earth are a global

affliction and while we argue about how to manage dwindling natural resources, the dwindling continues. The diversity of life decreases as the number of humans increases and we are not doing anything effective to control the human population explosion. Biologists, ecologists and conservationists should be the wailing voice of concern but we have been amazingly silent on matters of human reproduction. Most of us are not active members of organizations trying to do something about human population growth. At meetings with our peers we dance all around this issue. When there is a chance to say something to the news media, we dodge the messy, unpopular subject of how to keep humans from exceeding their carrying capacity and instead talk of disappearing habitat as if it were a magicians evil trick. Unlimited human populations will consume limited resources until the unkind forces of natural order intervene. This message, which is central to all conservation, including that of crocodilians, must get out as often as possible to as many people as possible. — R. Howard Hunt, *Zoo Atlanta, 800 Cherokee Ave SE, Atlanta, GA 30315, USA.*

CSG GOAL IS CONSERVATION. I was glad to see the Chairman's comments on the direction of the CSG, Newsletter 12 (1), page 2. A number of us came away from the Zimbabwe meeting concerned that the CSG was being hijacked by the skin trade. — David Blake, *St. Lucia Crocodile Center, Private Bag X01, St. Lucia Estuary, 3936, Republic of South Africa.*

AREA REPORTS



AFRICA

Ethiopia:

CURIOUS CROCODILE BEHAVIOR. Lake Abaya is adjacent to the Arba Minch crocodile farm and

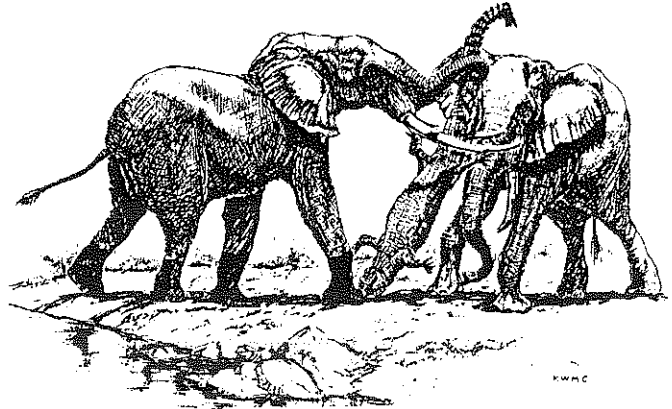
supports a diverse fish population as well as numerous crocodiles (*Crocodylus niloticus*). A fisherman using a local craft called an Ogello was observed to catch a 2.5 m crocodile in his net. Crocodiles are greatly feared locally and imbued with legendary magical characteristics. After recovering from his initial fear and surprise the fisherman began to drag the net to shore in order to release the heavily entangled crocodile. As he dragged the net to shore another crocodile of about the same size was observed to follow the netted crocodile, emerging from the water to watch attentively while the fisherman untangled his companion from the net. After 15 minutes the entangled crocodile was released and both crocodiles quickly returned to the water and disappeared together. — Lakew Berhanu, *Arba Minch Crocodile Farm, Arba Minch, Ethiopia*.

Kenya:

ELEPHANTS KILL CROCODILES. In a recent publication summarizing the early years of elephant research in Kenya the following account and illustrations are given: "...The old matriarch swung (from a pool) to the bank with something in her trunk. When she got onto the beach she was carrying a very big croc, about 5m long; her trunk was wrapped around its tail about midway between the tip and hind legs.... She swung the croc high over her head and repeatedly smashed him to the ground; the croc, much the worse for it all, was still alive. She moved further up the bank and began flailing him against the bole of large tree and then threw the croc on the beach and began stomping it. Another big cow joined the fun. Perhaps the cows protective instinct was aroused by the crocs proximity to small calves.

On another occasion two bulls killed a croc. A group of five bulls was bathing, rolling and playing about in the river. One bull came up on the bank dragging a large croc by the tail. On reaching solid ground the bull stomped on the croc. Then, still holding the

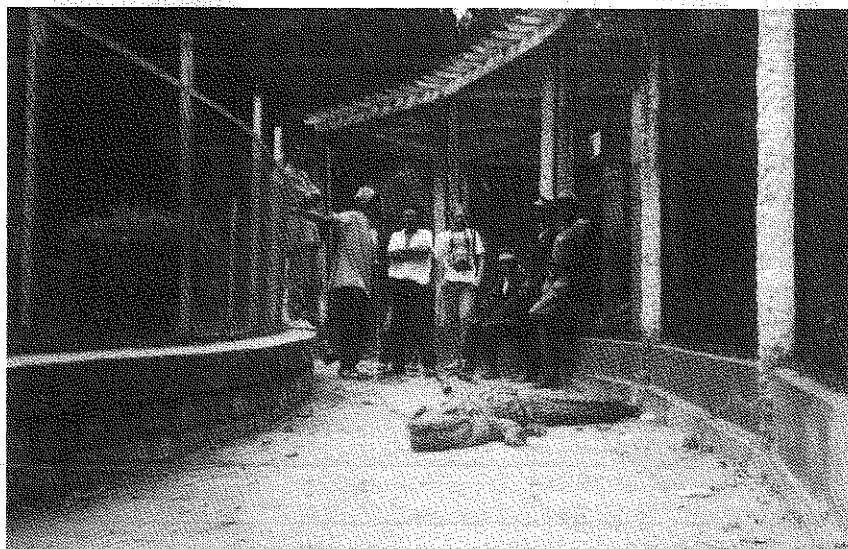
croc by its tail, the bull put his foot on its head and pulled up mightily stretching the croc out. Another big bull joined the fray and they played tug of war with the croc and soon they pulled it apart. — from *ELEPHANT LIFE, Fifteen Years of High Population Density* by Irvén O Buss, *Iowa State University Press*, pages 47–48. Submitted by John Eisenberg, *Florida Museum of Natural History, Gainesville, FL 32611, USA*.



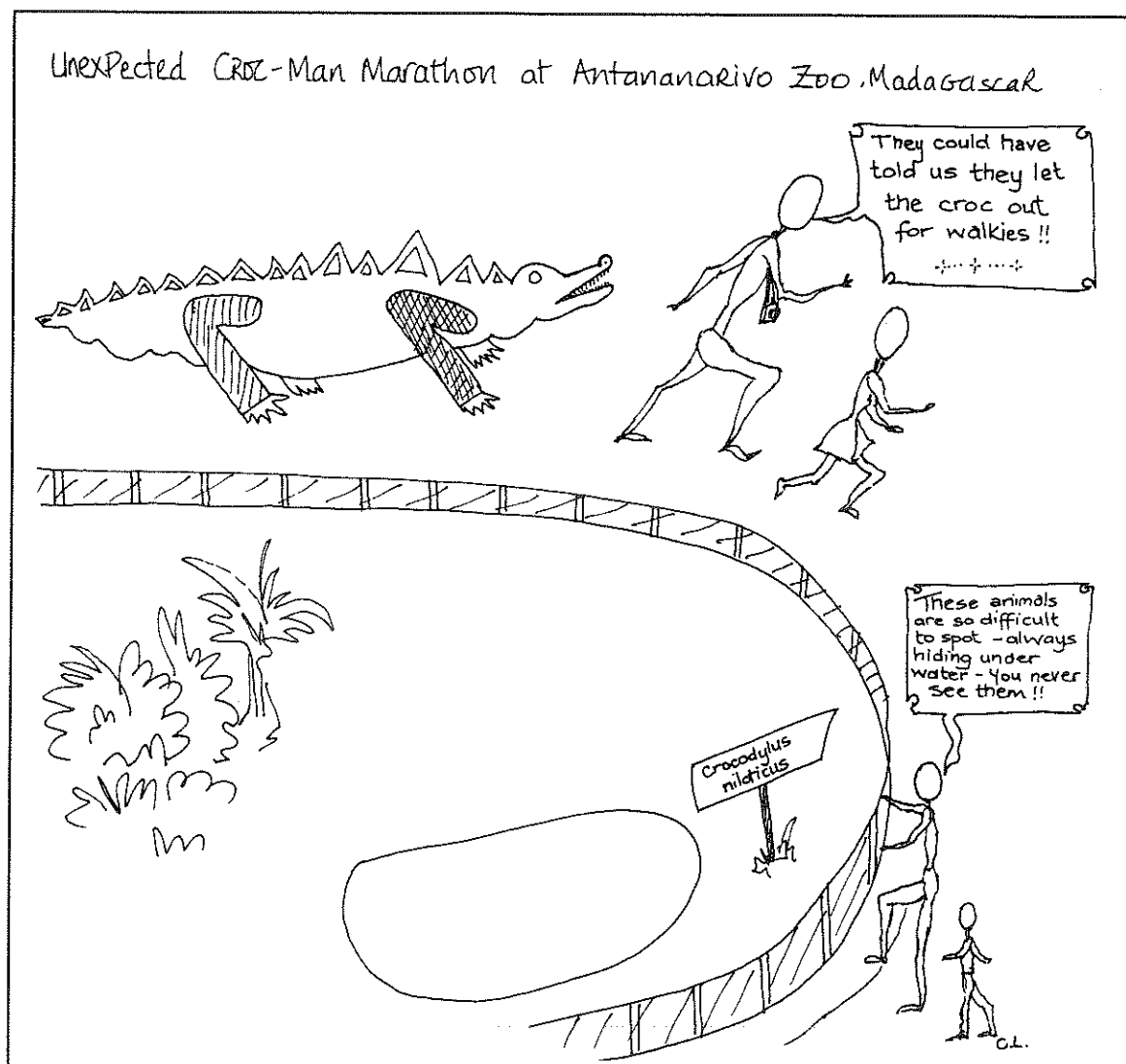
From the original drawing by R.W. 'Mike' Carroll.

Madagascar:

Crocodile Marathon at Madagascar Zoo. The accompanying photograph and cartoon record conversation overheard when a large crocodile escaped from its enclosure. — Christine Lippai, *BIODEV, Lot VX 18 Andrefandova, Antananarivo, Madagascar*.



Escaped crocodile at Antananarivo Zoo, Madagascar. Lucienne Wilme photo.



South Africa:

CROC FARMING A TOUGH BUSINESS. Commercial crocodile farming is far more difficult than conventional farming and it is important that people getting into the business do so for the right reasons. It is estimated that the investment in crocodile farming in South Africa exceed 50 million Rand and despite exports of 4,000-5,000 skins a year in recent years the total gross income from skin exports does not total more than about 6 million Rand. Crocodile farming is a capital intensive long term enterprise with an extended pay back period. It could take as long as 5 or even 10 years before acceptable returns are earned. Crocodile farming started in South Africa in the 1970's with the establishment of a farm in the

Transvaal. At present 35 South African crocodile farms are listed in the INTERNATIONAL DIRECTORY OF CROCODILE FARMING OPERATIONS (IUCN-World Conservation Union). Early farms were stocked with adult breeding crocodiles which were difficult to obtain and very expensive. This resulted in some farmers starting off with young stock which they raised over many years for breeding. Some farms also developed into tourism ventures but did not always get good results. Secondary producers have surfaced in recent years. They purchase hatchlings from primary producers and raise them in controlled environment chambers. The hatchlings are culled within two years and the a return on the original investment is realized much sooner than with captive breeding.

To farm crocodiles a producer needs land, water, sufficient and affordable crocodile food and a healthy cash flow to finance the operations prior to earning acceptable returns. Although breeding animals have become more affordable than two years back when females sold for as much as 13,000 Rand each, the cost of broodstock is still very high, up to 6,000 Rand each.

Skin prices have been low for several years due to an oversupply of hides coupled with a world wide recession. Grading skin quality has become very stringent and many exports result in disputes regarding size and quality of skins. South African producers are finding it very difficult to dispose of skins at favorable prices. At present producers have the choice of selling their skins to local buyers, invariably at low prices, or to market their skins overseas. The export market is very competitive and rather complicated. Many shipments have been delayed at airports for several weeks while disputes over documentation, required for international trade in endangered species, have been resolved. It is apparent that individuals cannot market skins effectively on the international market and cooperation is vital. Farmers will have to look seriously at cooperative marketing whereby they pool their hides and market them on a large scale overseas. It seems unlikely that the international exotic skin market will recover in the immediate future and some producers are already opting for the alternative of marketing their own skins in South Africa. Products are then manufactured for resale within the country. The quality of goods manufactured locally is quite good although not as good as top French and German products. However, the local prices are more favorable for prospective buyers. Briefcases sell for 3,000–4,000 Rand as opposed to more than \$10,000 US in Europe. Ladies handbags sell for SA Rand 450–1,000 compared to Paris prices that often exceed \$5,000 US.

Crocodile farming in South Africa has no future in an unorganized market. Many individuals fear that a cooperative might interfere with free enterprise but this need not be the case. As an example, Zimbabwe has a large crocodile skin industry with an active crocodile farmers association and all their marketing is done cooperatively, managed by very experienced professionals. — Johan Marais, *adapted from an article in Farmers Weekly (South Africa), January 1993*.

ST. LUCIA SURVEY. The annual aerial survey of Lake St. Lucia was completed in July and achieved the highest count to date of 972 crocodiles, compared with the previous highest count of 833 in 1990. This increase can be mainly attributed to there being no water in the pans surrounding the lake due to the extremely low rainfall over the last season. While the salinity of the lake is just above that of sea water there are still a number of streams flowing into it which provide fresh water to the crocodiles. Hopefully, next seasons rains will be back to normal.

Since the beginning of the year two crocodile farms have closed in Natal and one has opened up, making twelve farms registered in Natal. — David Blake, *St. Lucia Crocodile Center, Private Bag X01, St Lucia Estuary, Natal 3936, Republic of South Africa*.

Sudan:

SUDAN CROCODILE SURVEY, UPDATE. The Nile crocodile, *Crocodylus niloticus*, in the Sudan is believed to be found in the River Nile and all its tributaries, with a special concentration in the Sudd area. This region (The Sudd of Nubia) is about 30,000 km² area and is the largest wetland in Africa. The Sudd is natural habitat for crocodiles and since 1983 no crocodile hunting has occurred there. Until recently no systematic survey of Sudan for crocodiles has been undertaken. At the 11th CSG meeting in Victoria falls Zimbabwe a proposal for a White Nile Crocodile Project was submitted to the CSG chairman and the CITES Secretariat and the CSG Vice Chairman for Europe, Dr. Dietrich Jelden undertook to coordinate the survey.

Dr. Jelden was successful in raising funds for the survey from the German leather industry. A preliminary survey was planned and attempted by Ahmed Mohamed Elobied of the Sudan Wildlife Conservation Administration and Mr. R. Ferguson of Zimbabwe. Unfortunately civil unrest in the region made it impossibly dangerous to conduct the preliminary survey and it was not possible to enter the area. Hopefully next year the situation will improve and we will be in a position to conduct the survey. In the meantime I am grateful to the Chairman of the CSG, Professor H. Messel, Dr. Jelden, Dr. J. Hutton, Dr. P. Ross, Mr. R. Ferguson and the German Reptile Leather Industry for their ongoing support and encouragement for this project. — Ahmend Mohamed Elobeid,

ASIA

China:

ARCCA REGISTERED BY CITES. The Anhui Research Center of Chinese Alligator Reproduction (ARCCA) has been included by CITES in the Register of Operations Which Breed Specimens of Species Included in Appendix I in Captivity for Commercial purposes under CITES Notification No. 719 and 732. ARCCA was approved by the Conference of the Parties in Kyoto for breeding Chinese alligator and was inadvertently left out of an earlier Notification (No. 700) on Captive breeding operations. This opens the way for legal trade in captive bred alligators from the farm, accompanied by appropriate CITES documentation from the Chinese management authority. — from TRAFFIC USA, 12(1):12.

India:

MUGGER BEHAVIOR AND CONSERVATION. After 18 years of conservation efforts, mugger crocodiles (*Crocodylus palustris*) in India are no longer a threatened species. Unless something drastic occurs in the 20,000 sq. km of protected areas (including 8,300 sq. km of special sanctuaries) the extinction of the crocodile is only a remote possibility. But though the track record of breeding crocodiles in captivity is excellent, their survival rate in natural habitats is low. People still have negative attitudes toward the lumbering reptiles.

Human encroachment on wetlands - the crocodiles natural habitat- is not only shrinking these areas but also increasing the chances of human crocodile contact. Conflict is most likely to occur when there is an abundance of fish and the crocodile is considered an nuisance. Although mugger are known to exist peacefully in water bodies used by cattle and humans it is better to minimize contact and prevent a conflict of interests.

The mugger crocodile research and conservation unit at Simlipal tiger reserve in Orissa stresses keeping the habits of muggers in mind to reduce human crocodile contact. The

units 29 month study in a mugger breeding enclosure showed how adult crocodiles share space and resources and show great site fidelity. Site fidelity, as well as contact between crocodiles is determined largely by a hierarchical order. When two or more muggers are in proximity they exhibit a fine sense of space partitioning between themselves. The dominant female will often prevent lower ranking females from mingling with dominant males although she will herself mingle with lower ranking males while basking and during mating. Identifying regular basking sites is significant in crocodile habitat management as these are also potential nesting sites. Crocodile site preferences change with the seasons and vary between individuals. During cool winter months the basking sites allow crocodiles to regain calories and improve food assimilation. During the monsoon season crocodiles move into backwaters and side creeks where their prey is abundant but continue to show affinity for particular sites, either from choice if the animal is dominant or from compulsion if it is lower in the hierarchy.

From these studies the unit has recommended that monsoon retreats, basking areas and nesting sites should form the "core area" of a river sanctuary for crocodiles. For example the 570 km Chambal river has several "beads" of intensive crocodile management areas. The study urges that these core areas should be no entry zones to avoid conflict between crocodiles and humans. This means crocodile managers should identify specific mugger zones within a sanctuary. Sanctuaries cannot be completely closed off from humans but the study stresses that while people have some alternatives, the aquatic animals have no choice in choosing their core areas.

The problem of high crocodile production rates in closed circuit farms should be tackled by sustainable culling and by involving industry in the maintenance of a few representative sanctuaries for each species. Surely a greater contribution can be expected from the crocodile industry than mere trade in the guise of solving the problems of overcrowding in captivity. — Lala A.K. Singh, Deputy Vice Chairman for Western Asia, Similipal Tiger Reserve, Khairi-Jashipur, Orissa, India. Adapted from an article in DOWN TO EARTH, March 1993, pages 46-47.



Myanmar:

CROCODILE SANCTUARY PROPOSED. A recent report recommends the Meinmahla Reserve Forest as a wildlife sanctuary primarily for salt water crocodiles (*Crocodilus porosus*) and this has been endorsed by the Forestry Department. Meinmahla is a mangrove island about 30 km length and 8 km width situated in the lower Bogale (= Dalla) River in the center of the least disturbed area of delta forest. It is presently under consideration whether to also include the nearby Thaungkadun islands in the sanctuary to protect nesting sea turtles or to grant them separate status. Whatever administrative arrangement is adopted, protection of these two areas will provide valuable protection for crocodiles sea turtles and estuarine terrapins as well as mangrove and estuarine habitats. The same report details the last record of a mugger crocodile (*Crocodilus palustris*) in Myanmar in 1867-68 by Theobald at Thayet Myo and reports that muggers are now completely unknown in the upper Ayeyarwady river and are probably extinct, although several specimens of unknown origin are kept in zoos at Yangon and Mandalay. The saltwater crocodile is reported at several localities including Meinmahal Island, the Arakan and Tenasserim coasts and the Mergui Archipelago, although actual sightings were apparently not made. A demand for crocodiles for export to farms in Thailand is reported but no data on the volume of trade is available. The status of the gharial (*Gavialis gangeticus*) is unknown but thought to be on the verge of extinction. — *From MYANMAR TURTLES, Report on a Preliminary Survey of the Testudines of the Ayeyarwady Basin, Peter Paul Van Dink 1993, submitted by Harry Andrews, Madras Crocodile Bank, Post Bag No. 4, Mamallapuram 603 104, Tamil Nadu, India.*

Vietnam:

NEW CENTER OF ILLEGAL WILDLIFE TRADE. The Cho Cau Market in Ho Chi Minh City, Vietnam, has become a thriving center for illicit trade in all kinds of wildlife, including crocodiles. With the opening of the Vietnamese economy a vigorous trade from sources throughout Asia, but particularly Laos and Myanmar, funnels through Vietnam en route to China, Korea and other developed countries of the region. A report recently issued by the Earth Island Institute, following field visits to Vietnam in June 1993,

enumerates a large volume of trade in wild birds, tiger parts, deer bones and musk, live reptiles and the skins of crocodiles. "Hundreds" of crocodile skins were reported for sale in the market at a price equivalent to \$7.50 US per m length.

As Vietnam opens its economy to the international world it will become important to ensure that enforcement and control of wildlife trade is instituted. A large illegal trade through Vietnam will undermine the extensive development of legal sustainable use of crocodiles in other countries in the region. — *from THE BLACK MARKET WILDLIFE TRADE IN VIETNAM, Endangered Species Project, Earth Island Institute, Fort Munson Center E-20,5 San Francisco, CA 94123, USA.*

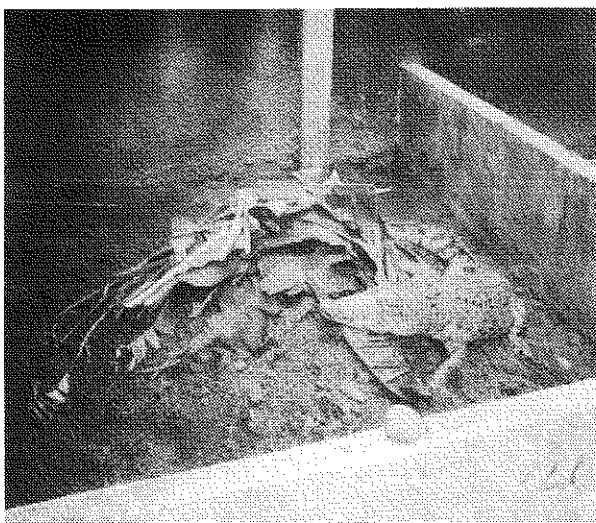
AUSTRALIA/OCEANIA

Indonesia:

PT SINAR GUNUNGMAJAYA FARM. There are three crocodile farms located near Medan in Northern Sumatra. Two are in Medan City (see Newsletter 12(1), page 19) and one is located 110 km south at the village of Simpang Gambus, which is owned by Mr. Alian Ruswan. Mr. Ruswan began farming *Crocodilus porosus* in 1960 in an effort to increase the amount of skins available without taking them from the wild, a laudable conservation action that far predates recent concerns about crocodile conservation in Indonesia. The farm was begun with 10 small crocodiles brought from the southern province of Palembang and of these 3 males and 2 females survived forming the farms original breeding stock. Today, with a greatly improved experience of crocodile farming, Mr. Ruswan has bred more than 1,000 crocodiles to date.

Currently the farm is holding 780 crocodiles with 63 mature females and 13 males used for breeding. Last years yield was 250 live hatchlings from about 900 eggs laid. Mr. Ruswan is looking into using an incubator to increase hatching success. When the time comes for the eggs to hatch the workers place their ears on top of the nest to listen for the squeaking noises the hatchlings produce. They then telephone Mr. Ruswan who immediately requests the presence of the local PHPA representative, Mr. Titus Mulladi, who witnesses and verifies the hatchling count. The farm recently exported 320 skins and was able

to sell 180 live crocodiles to another farm in Jakarta. For the future, Mr. Ruswan has expanded the farm by constructing 8 new breeding enclosures. Each enclosure measures 10 m by 12 m and has a pond 6m X 3m X 1.5m and four nesting enclosures each 3m square. A five year old male and four nine year old females will be placed in each enclosure. Mr. Ruswan projects that the farm will be able to produce 1,000 live hatchlings annually within the next five years and will continue to further the cause of conservation and preservation of wildlife. — Mr. Alian Ruswan, Jln. Amplas No. 1, Medan, North Sumatra 20214, Indonesia.



C. porosus breeding female in nest enclosure, Medan, Indonesia. A. Ruswan photo.



Mr. T. Muladi of PHPA (left) examining newly hatched crocodiles in Medan crocodile farm. A. Ruswan photo.

Philippines:

PRELIMINARY BREEDING RESULTS FROM CFI. The Philippine-Japan Crocodile Farming Institute, a special project of the Department of Environment and Natural Resources in cooperation with the Japan International Cooperation Agency reports early results of this years successful breeding season. As of 21 June CFI had collected 331 eggs laid by 12 *Crocodylus mindorensis* and 909 eggs laid by 25 *C. porosus*. Fertility so far is 72% and 6 *C. porosus* and 1 *C. mindorensis* are expected still to lay. The total farm stock is now 500 *C. mindorensis* and 981 *C. porosus* of which 725 have been bred at the farm. CFI is now listed by CITES as a captive breeding operation for *C. porosus* in the Register of Operations which Breed Specimens of Species Included in Appendix I in Captivity for Commercial Purposes.

Table 1. CFI stock, June 1993.

	<i>C. mindorensis</i>	<i>C. porosus</i>
Hatchling	358	810
Juvenile	85	48
Subadult	24	60
Adult	33	63

— Press Release, CFI, P.O. Box 101, Irawan, Puerto Princessa City 5300, Palawan, Philippines.

EUROPE

Belgium:

UNIVERSAL TAGGING REVISITED. The Animals Committee of CITES reconsidered the implementation of CITES Res. Conf. 8.14, Universal Tagging of Crocodilian skins, in response to communications received from several parties concerning difficulties in implementing this resolution according to the advice previously offered by the Animals Committee and CSG which was communicated to the parties as CITES Notification No. 704. Letters from Switzerland and Singapore were received by the Secretariat describing the difficulties involved in applying the present form of tags to caiman skins and flanks. In particular the large number of such skins, and problems experienced during skin processing, particularly during shaving, were cited. In

addition, the requirement to inventory and tag stockpiles was thought to exceed the wording of 8.14.

In discussion it was recalled that a main objective of 8.14 was to bring caiman skins under the same level of control as presently existed for other crocodilian skins as well as to standardize a skin marking system. It was noted that 8.14 is effectively implemented, without apparent difficulty, by the majority of classic skins in trade. Although inventory and tagging of stockpiles is not required under 8.14 the representatives of the Italian Management authority informed the meeting that inventory and tagging was proceeding in Italy. Representatives from the Venezuelan management authority called for the implementation of 8.14 as a valuable protection for legal sustainable use and trade, although noting that this would involve significant administrative and financial burdens on their program. The special problems encountered with caiman skins and flanks appear to be largely based in the reluctance of the industry to change its present tagging and skin handling procedures rather than any inherent difficulty with 8.14.

A recommendation from the Animals Committee to the Standing Committee calling on the secretariat to issue further clarification on the implementation of 8.14 was drafted and will be considered by Standing Committee at its next meeting. The text of this recommendation is given below but it must be noted that this text is only a recommendation at present and final adjudication and action will be determined by the Standing Committee and the parties officially informed by the secretariat. Until that happens the implementation of Universal Tagging by the parties should be guided by the text of Resolution 8.14 and Notification No. 704.

Report to the Standing Committee on Implementation of Resolution Conf. 8.14.9 (Doc AC 9.4.3)

Resolution Conf. 8.14 recommended to the parties for the implementation of a universal tagging system for crocodilian skins and parts within one year of the Eighth Meeting of the Conference of the Parties. It also directed the CITES Secretariat, in consultation with the Animals Committee, to develop a practical tracking system for monitoring tags.

At the 8th meeting of the Animals Committee this issue was addressed and recommendations formulated as a resolution. This was passed to the

Secretariat who circulated it to the parties as Notification No. 704.

A number of Parties had concerns about the contents of this Notification- specifically that the requirements of Res. Conf 8.14 were exceeded. Practical difficulties were also reported. These were brought to the attention of the Standing Committee and subsequently the Animals Committee. As a result the recommendations of the Animals Committee were reviewed.

The following is presented to the Standing Committee as a result of this review.

1. While Res. Conf. 8.14 does not specifically refer to the inventory and tagging of skins that were legally imported without tags prior to the implementation of this resolution, it is recognized that this would greatly assist enforcement and the subject should be addressed by the 9th meeting of the Parties.

2. The Standing Committee should consider asking the Secretariat to issue a new notification to the Parties which:

a) rescinds that portion of notification 704 which exceeds the requirements of Res. Conf. 8.14 (i.e. paragraph "I REQUESTS..." referring to stockpiles; and

b) contains the following additional interpretation for the implementation of Res. Conf. 8.14

Definition. The term "substantial processing and manufacturing" contained in paragraph (a) of Res. Conf. 8.14 is practically defined as follows:

For whole skins, bellies and flanks:- *Subject to cutting after tanning to finished (dyed) stage.*

For the other parts listed in paragraph (a) of Res. Conf. 8.14:- *Tanning to finished (dyed) stage.*

Export from countries of origin.

i. A tag must be locked on each crocodilian skin at or before the time of export.

ii. Whole skins, bellies and flanks, whether "raw or tanned" shall be individually tagged.

iii. The commercial export of "chalecos"(tinga frames) should be avoided. When chalecos are exported the two sides of any individual chaleco shall bear identically numbered tags, distinguished only by the marks "a" and "b" (for example 561234a; 561234b).

iv. Tails, throats, legs, feet and other parts not described in ii or iii above will be exported in containers, clearly marked with a description of

the contents, the weight of the unit and a single tag locked to the container.

v. Where tags in skins bellies or flanks are found to inconvenience processing the Parties of origin should consider adopting one of the following approaches:

a) Change the cut lines to include a non-economic area of skin in which the tag can be inserted.

b) Liaise with the Secretariat and the Animals Committee to develop tags that do not interfere with the process.

vi. All countries of origin shall begin implementing the requirements of Resolution Conf. 8.14 by January 1st 1994.

Re-exporting countries.

vii. In terms of paragraph (a) and (c) of Res. Conf. 8.14 recommends that countries re-exporting crocodilian skins (that have not been subject to "substantial processing and manufacturing" as defined) implement an administrative system for the effective matching of imports and re-exports.

viii. Where tags have been lost between import and re-export and thus the requirements of paragraph (a) of Res. Conf. 8.14 can not be met, the re-exporting party should attach tags kept specifically for this purpose and indicate this to be the case on the re-export documentation.

ix. Where countries are re-exporting legally acquired untagged skins that pre-date the implementation of Res. Conf. 8.14, this should be stated on the export permit.

x. All re-exporting countries shall begin implementing the requirements of Resolution Conf. 8.14 by January 1st 1994.

[Editor's Note. — As this recommendation is unlikely to be considered by the Standing Committee by 1 January 1994, the date of implementation of this recommendation will likely be changed.]

Italy:

CITES BAN LIFTED. In February 1993, the Secretariat of CITES advised the parties that Italy had made considerable progress implementing the Convention in the last year and that the trade ban, instituted in June 1992, was being suspended. The

ban was imposed following long standing problems with illegal wildlife trade through Italy and its removal was subject to the Italian parliament's adoption of a new law and significant improvements in administrative implementation of the treaty. In March 1993, the Italian parliament passed the new CITES law which provides a budget for CITES administration, a monitoring system for mortality of live animal shipments, an inventory of crocodilian skin stocks and stricter control of captive breeding of Appendix I and II species. Administrative measures adopted on the recommendation of the CITES Secretariat include reducing the number of wildlife entry ports from 38 to 12, production and distribution of a manual for CITES implementation and procedure, establishment of a new Scientific Authority, new procedures for issuing re-export certificates and identification of the authorities authorized to sign CITES permits. — reprinted from *TRAFFIC USA*, June 1993, 12(1): 8.

IUCN AWARDED BLUE PLANET PRIZE. IUCN-The World Conservation Union was announced as a winner of the Blue Planet Prize in Tokyo, 28 June 1993, in recognition of its eye opening results in conserving nature and biological diversity for over 40 years. As part of the reward IUCN will receive 50 million Yen, the largest international prize recognizing environmental research and related activities. The award is given by the Asahi Glass Foundation and they seek to commend individuals and institutions whose achievements have contributed to solving environmental problems. IUCN activities in four categories were cited in the award:

- achievements in conserving nature and biological diversity and developing strategies to solve environmental problems worldwide,
- IUCN's major role in development and operation of international treaties including CITES (wildlife trade), RAMSAR (wetlands), the World Heritage Convention (natural sites),
- IUCN publications such as Red Data Books, World Conservation Strategy and caring for the Earth which have greatly influenced governments and Non-governmental organizations,
- IUCN's close working relationship with the United Nations system, national governments and NGOs demonstrating leadership while

maintaining neutrality, which has won the trust and respect of the world community.

In accepting the award, IUCN thanked the Asahi Foundation for its confidence in the Union and congratulated the Foundation for giving a lead to the corporate sector in Japan in recognizing the importance of the environment — from IUCN Press Release, *Rue Mauverney 28, CH-1196 Gland, Switzerland.*

Portugal:

EDUCATIONAL CROCODILE FARM IN PORTUGAL. The group CROCODOR - Exploracao Turistica de Cocodilos Lta. plans to develop a display of Nile crocodiles as a tourist attraction in eastern central Portugal. The group proposes to maintain approximately 150 Nile crocodiles in small groups according to their size and development and to provide an auditorium and educational materials. The project is being developed with careful consideration for the requirements of local and national laws, CITES and the advice of the CSG. The facility will be designed by the same architects who designed the successful Sun City display in South Africa. Mr. Zeev Grozoviski, representing the developers, has initiated discussion of the new facility with CSG Vice Chairman for Europe, Dr. D. Jelden, and proposes to form an advisory group to direct the scientific activities of the new farm, which would include a CSG representative. — from correspondence from D. Jelden, *CSG Vice Chairman for Europe*, and Z. Gozovinski, *CROCODOR, Av. Almirante Reis 90-5 C, 1100 Lisbon, Portugal.*

CENTRAL & SOUTH

AMERICA

ECUADOR:

IUCN PROGRAMME OFFICER, QUITO. IUCN is seeking a program officer for Species and Protected Areas to be based in their Quito, Ecuador, office. Candidates

should possess an advanced degree in biological sciences and have significant practical experience in biological diversity conservation or protected area management. A minimum of five years experience in South America and working knowledge of Spanish, English and preferably Portuguese is needed. Applicants should send a curriculum vitae, sample of writing and names and addresses of three references to: *Personnel Officer, IUCN, Avenue de Mont Blanc, CH-1196 Gland, Switzerland.*

Brazil:

CAIMAN SURVEYS FOR FLOODED RIVER. An area of 2,250 km² of the Paraná River in the states of São Paulo and Mato Grosso do Sul will be inundated by the Porto Primavera hydroelectric scheme. The area represents natural habitat supporting endangered and vulnerable wildlife such as *Caiman latirostris* and the march deer, *Blastocerus dichotomus*. Surveys are being conducted to assess wildlife present and the impact of the project. Aerial surveys were conducted from a Bell 206 helicopter flying at 61m height and a speed of 111 km/hr. The helicopter position was checked regularly with a Global Positioning System. Surveys were conducted between 29 and 31 January 1993. We searched for caiman nests in areas of open vegetation and counted caiman in 64 transects (957 km²). Mean estimated density of nests was 0.49 nests/km².

We also did night light counts of caiman along the Paraná River and its tributaries. Mean observed density was 0.12 caiman /km. We were able to inspect 5 broad-nosed caiman nests and observed 17 -33 eggs (mean 24.5 eggs/nest). The estimated nest densities in the floating vegetation mats indicated a dense adult population in the area



Guilherme Mourao inspecting *Caiman latirostris* nest, Rio Pauvre, Brazil. G. Mourao photo.

to be inundated by the Porto Primavera Dam. Nest densities also indicated that night light counting is not an efficient method for counting caiman in this area. This study is part of the environmental impact study carried out by Companhia Energetica de São Paulo (CESP). — Guilherme Mourao & Zilca Campos, Lab. Vida Selvagem EMBRAPA/CPAP, Caixa Postal 109, Corumba, MS 79320-900, Brazil.

NOTES FROM BRAZIL. Our secret correspondent recently paid an undercover visit to Brazil and sent in the following report. Dr. William Magnusson is in generous spirit and good health, which is fortunate as he and Albertina are embarking on the stressful route to parenthood. Guilherme Mourao continues his doctoral work on management programs for *Caiman crocodilus yacare* and is also working on a sophisticated analysis of rat-seed evolutionary interactions in the Pantanal and Amazonia. Like Bill, Guilherme is in the parent business and now has a baby boy. Zilca Campos is probably radio tracking *yacare* as you read this and is also working, with Marcos Coutinho, on field ecology of *Paleosuchus palpebrosus*. In a recent field excursion accompanied by mentor and financial supporter Ab Abercrombie, the group captured and marked 38 dwarf caiman in the clear mountain streams of the Serra do Amolar near the Brazil-Bolivian border. The whole EMBRAPA crew have joined forces to establish the Ecological Station of Nhumirim, which is a completely protected piece of land available for research studies by those who do not mind being chased by white lipped peccaries.

Ab Abercrombie spent part of his Fulbright grant exploring *Caiman latirostris* habitat with Zilca Campos and Maria Teresa Melo south of Porto Alegre, and also was able to visit the infamous farm at Osorio where the Nile crocodiles are held. Recognizing that group were all Magnusson clones, the farm management had to be re-assured that the group was not a kamikaze croc destruction team, but after being re-assured, showed them around politely and provided promotional T-shirts. Opposition to the farm remains active in Brazil but Ab's team reluctantly concluded that the present system is technically pretty good although all agreed that having Nile crocodiles in South America is not a good idea. — from our secret correspondent — with apologies to

Ab Abercrombie, Wofford College, Spartanburg, SC 29303, USA, for blowing his cover.

Uruguay:

STUDIES ON THE BROAD-SNOUTED CAIMAN. Research on *Caiman latirostris* has been carried out since 1989 in the fish culture center of Villa Constitución (Dept. of Salto) run by the National Fisheries Institute. Villa Constitución is located near the Salto Grande Dam on the Uruguay River and is in a temperate region with well defined seasons. Average annual temperature is 17.8°C with average maximum (January) and minimum (July) temperatures of 23.7°C and 12.1°C respectively. Extremes fall between 7°C and 31°C.

This species shows markedly discontinuous growth under these natural conditions. During this experiment young caiman were fed live prey such as small fish, tadpoles and arthropods for two and half months and then chunks of freshwater fish and cattle lungs were given as food. Specimens were fed daily during the warm season and food items weighed to calculate the amount ingested. The length and weight versus age curves showed that growth stops for a 180 day period during the cold season although growth can be increased using a sort of greenhouse. Von Bertalanffy and Gompert models were used to analyze growth rates. Both functions fit adequately but Von Bertalanffy's method was more suitable given the variance analysis. We conclude that it is not necessary to do any sampling in the cold season in temperate areas.

This project was carried out with the cooperation of N. Cundines and G. Chediak (Dr. Vet.), M. Bellagamba (Lic. Scien.), Mr. E. Chimanosky and students S. Umpierrez and M. Santos. — Federico Achaval, Faculty of Sciences, Inst. of Biology, Casilla de Correos 10.773, Tristan Narvaja 1674 & Carlos Rios, Fish Assessment Div. Casilla Correos 1612, Constituyente 149, 11200 Montevideo, Uruguay.

Venezuela:

SITUACION ACTUAL DE LAS POBLACIONES VENEZOLANAS DE BABA (*CAIMAN CROCODILUS*), SOMETIDAS A APROVECHAMIENTO. Las poblaciones de la especie baba (*Caiman crocodilus*) en los Llanos Centro Occidentales de Venezuela se encuentran sometidas a

aprovechamiento racional desde hace diez años, con una pausa en 1986. Los estudios realizados en la última década han permitido estimar el tamaño de la población de babas que habitan esta región, y definir una estrategia de aprovechamiento dirigida a obtener beneficios económicos en los diferentes sectores involucrados con la actividad, sin poner en peligro el recurso.

Las bases más importantes que definen el programa son:

- Solo se permite beneficiar babas de tamaño superior a 1,80 m (Clase IV). Esta Clase incluye únicamente machos adultos de gran tamaño. Con esta medida se pretende mantener la capacidad reproductiva de la población prácticamente intacta.

- La cantidad de individuos a beneficiar en cada hato es igual o menor al 5 % de la población censada. Este porcentaje se considera la cifra de incremento anual (tasa de reclutamiento) que experimenta una población natural, y por lo tanto este tope delimita la cosecha anual sostenida.

- Una población se considera excesivamente aprovechada cuando el porcentaje de individuos Clase IV representa una cifra menor al 15 % de la población total.

El objetivo de estudio consiste en medir el efecto de las cosechas sobre la población llanera de babas. Los resultados permitirán corregir las cifras de extracción, si fuere necesario, y ofrecer alternativas al plan de manejo existente en base a las nuevas conclusiones científicas obtenidas como fruto de esta investigación. Las principales labores consisten en la ejecución de un importante trabajo de campo, el análisis de los datos obtenidos, el aporte de conclusiones prácticas de cara a su aplicación en el plan de manejo, la comparación de los datos con los estudios ya existentes y la presentación de posibles alternativas orientadas a

mejorar el plan de manejo de esta especie.

El trabajo de campo abarca una superficie aproximada de 922.581 ha, lo que representa el 10,24 % del área total aprovechada. Los muestreos fueron escogidos al azar uniformemente dentro de las distintas regiones o paisajes que conforman el área de estudio.

Material y métodos. El trabajo de campo ha sido diseñado para cubrir un área suficientemente amplia de forma que los resultados sean representativos, y a la vez moderada, en el sentido de que con tres equipos se realice el trabajo en una temporada o dos fracciones de dos temporadas consecutivas. El periodo de censos para la región llanera se corresponde con los meses de sequía (entre febrero y mayo). Las fechas en que se presenta la estación seca son muy variables de un año a otro, al igual que la intensidad de los primeros aguaceros. De esta forma en el primer año de censos (1991), se trabajó entre abril y junio, y en 1992 entre enero y mayo.

La metodología utilizada consistió en realizar visitas diurnas en las cuales se tomaron los datos relativos a la vegetación, estado del cuerpo de agua y en algunos casos la estructura de tamaños de la población de babas. En la noche se efectuaron los trabajos del censo, y estructura de población cuando esta no se realizó de día.

Resultados. La Tabla I resume los resultados obtenidos.

Conclusiones.

- En los Llanos Inundables después de 10 años de utilización del recurso baba hay una cantidad de individuos Clase IV que permiten mantener el Programa de Aprovechamiento Sostenido.

- Las regiones demuestran tener una entidad propia desde el punto de vista del recurso baba y por lo tanto el programa debe desarrollarse con

Tabla I

Región	Área cubierta ha.	Población Est. ind.	Density Est. ind./ha.	Clase II %	Clase III %	Clase IV %
Guárico	69,296	8,792	0.13	70.4	22.6	7.0
Bajo Apure	78,174	30,672	0.39	42.2	34.5	23.3
Alto Apure	244,175	52,498	0.22	36.0	40.0	24.0
Apure Meridional	239,127	27,300	0.12	38.2	39.9	21.9
Llanos Boscosos	193,873	28,886	0.15	46.3	35.6	18.1
H. de Arismendi	95,154	32,856	0.35	40.2	36.8	23.0
Totals	919,799	181,004	0.20			

criterios regionales.

- El número de babas que pueden ser aprovechadas anualmente oscila entre 50.000 y 70.000 individuos. Aconsejamos utilizar la cifra mas baja debido a las irregularidades que siempre se presentaran por ser imposibles de controlar.

- La Región Guárico debe sacarse del programa por un periodo mínimo de cuatro años. Ha de realizarse un estudio similar antes de reabrirse o no el programa en dicha región.

- En la Región Llanos Boscosos recomendamos que se implemente el programa únicamente sobre los hatos ya que la gran mayoría de fundos y funditos están sobre-explotados y la baja densidad de la región tampoco permite cosechas aceptables sobre territorios tan pequeños. La cosecha recomendada para la región incluye todas las fincas, y de tomarse la medida antes expuesta reduciría la presión de caza sobre una región que esta próxima a salir del programa. Esta norma podría establecerse por un periodo de 4 años y revisarse nuevamente.

- Tres regiones (Bajo Apure, Alto Apure y Hoya de Arismendi), las cuales se corresponden con las áreas de garceros, representan el 46 % de los Llanos Inundables y tienen el 71 % del recurso baba. Estas regiones son indicativas de mayor cantidad de nutrientes en los ríos que las surcan dándoles la característica mas notable de los Llanos Inundables: baja diversidad y altísima abundancia de las especies que habitan las regiones, lo que convierte a esta tierra en un lugar excepcional para el aprovechamiento de recursos naturales renovables. Señalamos que la zona definida como Apure Meridional se comporta con respecto al recurso baba como un área intermedia entre esta región y Alto Apure, mucho mas afín a la última. Por lo tanto en estas conclusiones finales ha sido incluida en la región Alto Apure. — Alvaro Velasco, *Servicio Autónomo de Fauna PROFAUNA, Edif. Camejo, Entrada Oeste, CSB, Caracas 1010, Venezuela.*

PRESENT SITUATION OF VENEZUELA'S SPECTACLED CAIMAN (*CAIMAN CROCODILUS*) POPULATIONS UNDER HARVEST. Spectacled Caiman or Baba (*Caiman crocodilus*) in the Western-Central Llanos of Venezuela have been under an active management program for 10 years, with a break in 1986. In the past decade, studies have estimated the population size of the species in this region, and defined a strategy of management aimed at

producing economic benefits for all involved sectors without jeopardizing the resource.

The most important aspects of the program are:

- Only Babas longer than 1.8 m (Class IV) may be hunted. This class includes only large adult males. This regulation aims to maintain intact the reproductive capacity of the population.

- The harvest quota on each ranch is set equal to or less than 5% of the population size (based on annual surveys). This percentage is considered the annual increment (recruitment rate) of the number of animals in natural conditions. Therefore, this quota determines the annual sustainable harvest.

- A population is considered overexploited when the percentage of Class IV (≥ 1.8 m) individuals is less than 15 % of the total population.

The purpose of this study is to measure the effect of the harvests on the Babas populations in the Llanos. The results will allow correction of the hunting quotas, if necessary. It also offers an alternative to the current management plan based on scientific data obtained in this investigation. The most important work consists of performing the field work, analyzing the data obtained, comparing the data with existing studies and suggesting possible alternatives oriented to improving the management of this species.

The field work covers an area of approximately 922,581 ha, which represents the 10.24 % of the total managed area. Uniform sampling was performed randomly in the different regions and habitats that form the study area.

Material and methods. The field work was designed to cover an area wide enough for the results to be representative and, at the same time, moderate enough for three teams to accomplish the work in one season or in parts of two consecutive seasons. The census period for the Llanos region coincides with the dry season (February to May). The exact dates of the dry season are extremely variable from one year to the next, as are the intensities of the first rains. As a result, in 1991, the first year of census, the work was performed between April and June, and in 1992, between January and May.

The methods consisted of daytime visits to record data on vegetation, the body of water, and in some cases, size composition of the Babas population. During the night, the census was completed and the size composition estimated when it could not be done during the day.

Table I						
Region	Area covered ha.	Estimated Pop. ind.	Est. Density ind./ha.	Clase II %	Clase III %	Clase IV %
Guárico	69,296	8,792	0.13	70.4	22.6	7.0
Bajo Apure	78,174	30,672	0.39	42.2	34.5	23.3
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Llanos Boscosos	193,873	28,886	0.15	46.3	35.6	18.1
H. de Arismendi	95,154	32,856	0.35	40.2	36.8	23.0
Totals	919,799	181,004	0.20			

Results. Table I shows a summary of the results.

Conclusions.

- In the Llanos, after 10 years of harvest, the number of Class IV Babas are sufficient to support a sustainable management program.

- The Baba resource in each region has its own identity, therefore, the management program should be developed on basis of regional criteria.

- The number of Babas that can be harvested annually varies from 50,000 to 70,000 individuals. We recommend use of the lower number due to variables which are impossible to control.

- The Guárico region must be eliminated from the program for a minimum period of 4 years. A similar study, on this region, should be performed before reopening the program.

- In the Llanos Boscosos region, we recommend implementation of the program only on the large ranches, since the great majority are over-exploited and the low population density in the region does not allow acceptable harvest on very small ranches. The recommended harvest in the region involves all the ranches, and limiting the harvest to large ranches will reduce the pressure on a region where hunting is close to being shut down completely. This program could be established for a period of 4 years and reviewed periodically.

- Three regions (Bajo Apure, Alto Apure, and the Hoya de Arismendi), that correspond to the "garceros" (heron nesting sites), represent 46% of the Llanos and have 71% of the Baba resources. The nutrient rich rivers in these regions give the Llanos their most important characteristics: low density and high abundance of the species that inhabit the regions. This makes this region an

exceptional place for the utilization of renewable natural resources. In relation to the Baba resource, the zone defined as Apure Meridional is intermediate between this region and Alto Apure, which is more related to the previous region. Therefore, the Alto Apure region has been included. — Alvaro Velasco, *Servicio Autónomo de Fauna PROFAUNA, Edif. Camejo, Entrada Oeste, CSB, Caracas 1010, Venezuela. English translation by E. Espinosa.*

ECONOMIC EVALUATION OF THE SPECTACLED CAIMAN (*CAIMAN CROCODYLUS*) HARVEST PROGRAM IN VENEZUELA'S PRIVATE LANDS: IMPLICATIONS FOR ITS CONSERVATION is the title of Eduardo Espinoza's M.S. research. Eduardo recently returned from Venezuela where he interviewed land owners, tanners, biologists and government representatives to collect data on the benefits and costs of the program, and also scientific data regarding the impact of the harvest on the wild population. During the last couple of years, land owner and tanner interest in the program has decreased because of the economic recession in the international market for crocodilian products. However, there is still interest in continuing the wild harvest program, as well as the captive-rearing program, with very important initiatives but without any market in which to sell the products. — Eduardo Espinoza, *Center for Latin American Studies and UF-Tropical Conservation and Development Program, 319 Grinter Hall, University of Florida, Gainesville, FL 32611, USA.*

REPORT OF ACUTE MYCOSIS IN BABA (*CAIMAN CROCODYLUS*) IN CAPTIVITY. On one Venezuelan farm with a population of 26,000 Babas, a skin discoloration and erosive lesions resulting in digit loss and death was observed in 7-month old animals with a growth rate of 3 cm/month.

Bacteriological and mycotic studies were performed on infected babas with a average length of 48 cm with the following results:

Symptoms. White cutaneous lesions, erosion of the lower jaw, back, chest, and tail; digit loss; inflammation of the eye with partial or total blindness; emaciation; anorexia; and death.

Histopathology. Skin: hyperkeratosis with partial ulceration of the epithelia and infiltration of cellular detritus into the muscular tissue. Eyes: engrossed corneal epithelia; infiltration of inflammatory cells and lympho mononuclear perivascularitis. Stomach: submucous and muscular layer with inflammatory mononuclear perivascular infiltrate. Pancreas: parenquimatosa degeneration. Liver: fatty degeneration, necrosis, and hemorrhagic focus.

Bacteriology. Tongue, stomach and small intestine: *Escherichia coli*. Heart and liver: *Proteus vulgaris*. Trachea and lungs: *Escherichia coli*.

Mycology. Fingers: *Microsporium nanum* and *Mucor micheli*. Maxilla: *Microsporium nanum*. Skin: *Trichophyton simii*.

The fungi isolated by us, *Microsporium nanum* and *Mucor micheli*, are very frequent in dermal lesions of crocodilians and reptiles under captivity conditions (Reichenbach-Klinke 1977).

The Babas showed bacterial infections of *Escherichia coli* and *Proteus vulgaris*, which contributed to high mortality rates. — Ernesto O. Boede, Apartado 1595, Valencia 2001, Venezuela, and Alvaro Velasco, Servicio Autónomo de Fauna PROFAUNA, Edif. Camejo, Entrada Oeste, CSB, Caracas 1010, Venezuela.

REPORT ABOUT SYMPTOMS AND LABORATORY FINDINGS IN *CAIMAN CROCODYLUS* FROM VENEZUELAN FARMS. Between 1990 and 1993, seventy (70) necropsies were performed on 2-4 month old individuals coming from seven (7) farms located in Barinas and Apure states in Venezuela. Their average length and weight were 26 cm and 50 g, respectively, and the growth rate was 2 cm/month.

The symptoms and laboratory findings in Baba are described for what is known as runt syndrome (Foggin 1987; Jacobsen 1989).

Observed Symptoms. Anorexia, emaciation, lethargy, conjunctivitis, keratitis, dermatitis, stomatitis, white diarrhea, nasal secretions, snoozes and death.

Histopathology. Skin: superficial dermatitis, erosive papulocostrosa with hyperkeratosis and viral type vesicles. Eyes: conjunctivitis and engrossed corneal epithelia. Mouth: erosive stomatitis. Gastro-intestinal tract: atrophy of the stomach vellosities, sub-acute superficial enteritis, chronic hypertrophy and atrophy of intestinal vellosities, especially in the duodenum. Pancreas: sub-acute interstitial pancreatitis. Spleen: atrophy of the spleen. Liver: hepatic lipidosis and sub-acute portal hepatitis. Lungs: pneumonia and chronic bronchitis.

Bacteriology. Mouth: *Enterobacter* sp., *Proteus* sp. and *Pseudomona* sp. Stomach: *Pseudomona aeruginosa* and *Proteus vulgaris*. Intestines: *Escherichia coli*, *Salmonella* sp., *Citrobacter* sp., *Proteus* sp. and *Klebsiella oxytoca*. Liver: *Enterobacter* sp., *Proteus* sp. and *Escherichia coli*. Lungs: *Pseudomona aeruginosa*, *Proteus vulgaris* and *Klebsiella pneumoniae*.

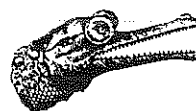
Parasitology. Intestines: Coccidia, trematodes, trichocomas and nematodes. Lungs: Pentastomids.

Mycology. Skin: *Aspergillus* sp.

With these observations and results it is not possible to provide a definitive diagnostic *post mortem*, comparable to Foggin (1978).

Poor absorption of nutrients results from a poor body condition, in which gastric, pulmonary and hepatic atrophies are diagnosed. These gastric-intestinal problems are an open door too secondary bacterial infections, such as *Escherichia coli*, *Klebsiella* sp., and *Salmonella* sp.

We believe the conditions observed are due to inadequate husbandry, chronic stress, unbalanced diets, and an excessive manipulation of the animals, all of which must be improved. — Ernesto O. Boede, Apartado 1595, Valencia 2001, Venezuela, and Alvaro Velasco, Servicio Autónomo de Fauna PROFAUNA, Edif. Camejo, Entrada Oeste, CSB, Caracas 1010, Venezuela.



NORTH AMERICA

Canada:

CANADIAN CROCODILES MOVED TO NEW QUARTERS. On 20 March 1993 the lifetime dream of Mr. Karel Fortyn was realized with the opening of the Seaway Serpentarium in Welland, Ontario, Canada. Along with nearly 300 other reptiles the collection houses 13 crocodilians of 9 different species, with lengths of 30 inches to 9 feet.

One of the major concerns was moving the larger crocodiles in the cool temperatures of a southern Ontario March. Co-owner Alistair Ker DVM has been interested in reptiles since he was a youngster and has gained experience with many species in his position on the Animal Care Committee of the Herpetological Research Institute of the City of Welland. Dr. Ker had met Dr. Paul Cardeilhac of University of Florida who had advised that Valium was a very safe drug to use on crocodilians, especially if it was impossible to obtain accurate weights. The crocs were in cramped quarters and a "jump on em and hog tie em" approach would have resulted in hurt or dead crocs and possibly human helpers.

On moving day the five largest crocs had their pools drained and were injected with Valium with a "bang stick" device at the following dosages: *Crocodylus intermedius* approx 400 lbs/ 9 feet length-20 mg, approx 200 lbs/8 feet -15 mg., *Alligator mississippiensis* (2) 200 lbs/7.5 feet and *C. acutus* 150 lbs/ 7.5 feet - 15 mg. Sizes and weights were approximations but due to the safety margin of Valium they were thought to be well within safety margins. The crocs reacted in true crocodilian style to being stuck with a 16g needle but after 30 mins showed signs of sedation. The crocs were then tied up and wrestled into a heated van for transport to their new quarters about 15 minutes drive away. All were probed while secured and turned out to be males. The crocs were left dry in their new enclosures overnight to avoid possible drowning in their sedated state. Next morning the tanks were filled and all the crocs settled in and were feeding within a week. Nine smaller crocs in the 2-5.5 feet length range were also moved without sedative. Of these one *Paleosuchus trigonatus* (4 feet) died the next day. The remaining crocs, *Osteolemus* (4.5 feet), 3 *Caiman crocodilus* (4.5 feet) 2 *Paleosuchus*

palpebrosus (4 feet) 1 *C. johnsoni* (30 inches) and a *Melanosuchus niger* (5.5 feet) all settled in fine.

Inquiries regarding medical aspects should be directed to Alistair Ker, DVM, Thorold Vet. Hospital, 2B Sullivan Ave., Thorold, ON L2V 2X9, Canada, and inquiries regarding the serpentarium should be sent to Mr. Karel Fortyn, Director, Seaway Serpentarium, Seaway Mall, 800 Niagra Street N. Welland, ON L3C 5Z4, Canada.

Sincere thanks are offered to Dr. Alistair Ker for providing details of this move and to Mr. Karel Fortyn for allowing the author to prepare and submit this account. — G.S. (Scotty) Allen, 77 Baronwood Crt., Brampton, ON L6V 3H7, Canada.

United States:

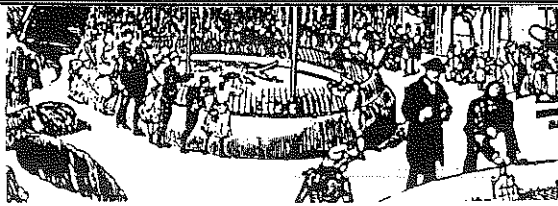
UNUSUAL NESTING MATERIAL FOR AMERICAN ALLIGATOR. On 23 June 1991 we observed an unusual alligator nest on a sanitary landfill near New Orleans, Louisiana. The nest (ca. 2 m diam. x 0.8 m high) was composed almost entirely of layers of various plastic bags. A few curious items included a plastic sandal, a 10cm plastic baby doll and a yellow plastic vegetable oil container. Less than 5% of the nest material was organic. A 2m (total length) female guarded the nest closely. The temperature in the egg chamber was 36.7°C on 13 August 1991. On 1 September 1991 we excavated the nest and found a clutch of 36 eggs. Most embryos died early in development or the eggs were infertile. Seven developed embryos were between 5 cm and 22 cm length and the four largest were in the final stages of development.

On 5 July 1992 a second nest was found 4.6 m from the 1991 nest. The egg chamber temperature was 35°C and contained 39 eggs all of which died in early stages of development. We attribute the high incubation temperatures of these nests to the lack of organic material in the nests. It is not known whether there is enough microbial degradation in either of these garbage nests to facilitate hatching. — reprinted from J.O. Coulson & T.D. Coulson, *Herpetological Review* 1993, 24(2):58.

ALLIGATOR RANGE EXTENSION. An alligator was spotted in a pool of water near the Toad Suck Ferry Lock and Dam by U.S. Army Corps of

Engineers ranger Gary Mitchell. Toad Suck is located on the Arkansas (?) River, and is further north than previous reports of alligators in Arkansas, USA (NEWSLETTER Vol 10 (3) July - Sept. 1991). The alligator may have come from the Holla Bend National Wildlife Refuge where several alligators have been stocked, said Arkansas Game and Fish Commission official Rex Roberg. The sighting is at the northern extreme of the alligator's range in Arkansas. — Randall Berry, Little Rock Zoological Gardens, 1 Jonesboro Drive, Little Rock, AR 72205, USA.

ZOOS



ZOO SURPLUS. Are notifications of the surplus animals available in zoos of any interest to readers? Do any readers respond to these notices, make inquiries to the zoos concerned, or acquire the animals? Does everyone understand the standard coding for zoo holdings? [e.g. 1.2.15 or 1/2/15 means 1 male, 2 females and 15 juveniles or unsexed individuals]. Feedback from interested readers on this service of the NEWSLETTER would be valuable. In the meantime the following surplus animals are reported.

Nile crocodiles, 0.3, one 3m, two 2m: American alligator 1.1, Male 3m, female 2m. Vychodoceska ZOO-Safari, 544 01 Dvur Kralove .n. Lab. Czech Republic. — Rene Honegger, Zoo Zurich, CH-8044, Zurich, Switzerland.

SCIENCE

A CASE OF BICEPHALY IN *CAIMAN CROCODYLUS JACARE*. Anomalies occurring during development have been described in both invertebrates and vertebrates, including reptiles. Early reports include a description of a two headed snake by Aristotle in 480 BC and a description of a two headed sea turtle with four eyes by Edwards in 1751.

In January 1991, we collected a nest of eggs of *Caiman crocodilus jacare* containing 34 eggs at

San Cosme, Corrientes Province, Argentina, which were transported about 5 km to the lab and incubated artificially. After 3 months, 32 live hatchlings emerged which were characterized by spastic movements, enlarged heads and malformation of the cranium. Macroscopic and X-ray analysis of these revealed a duplication of the cranium and three eyes lying in a common medial orbit. They possessed two mouths and 2 tongues but a single digestive tract and a normally formed thorax. Postulated causes of the developmental anomaly include uncontrolled variations of temperature and humidity during incubation or possibly mechanical disruption of the embryo at a critical stage during transport of the eggs. A full report in Spanish is available from the authors. — J.C. Troiano¹, A. Pisano² & C. Outomuro¹, 1. Hospital Escuelas Ciencias Veterinarias, U.B.A, Buenos Aires, and 2. Lab. Investigaciones Embriologicas, Montevideo 126, 4° piso (1019) Buenos Aires, Argentina.

PUBLICATIONS



PROCEEDINGS OF THE 11TH WORKING MEETING OF THE CSG, VICTORIA FALLS, ZIMBABWE, 1992. Proceedings (Vols 1 & 2) of the Zimbabwe meeting are now available. All registered participants have been sent a copy by surface mail. Additional copies are available directly from the CFAZ. Crocodile Farmers Association of Zimbabwe, attn. Mr. Chris Foot, P.O Box HG 11, Highlands, Harare, Zimbabwe. Fax: 263 4 708 554. Price is \$25.00 US. All inquiries concerning this volume should be sent to CFAZ.

ZOOCRIA DE LOS CROCODYLIA, MEMORIAS DE LA I REUNION DEL CSG, SANTA MARTA, COLOMBIA, 1991. Proceedings of the Santa Marta regional meeting are available and are being sent surface mail to all registered participants of that meeting. Information and a limited number of additional copies are available from AZOOCOL, attn. Miguel Stambulie, Calle 19 No. 10-08, Edif. Bogotá, Of. 304, Santa Fe de Bogotá, Colombia. Fax: 571 953 665 296.

Contents:

CONSERVACION, MANEJO E INVESTIGACION EN CROCODYLIA EN COLOMBIA

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Martinelli, G., G. Rodriguez y O. Mantilla. Lesiones epidermicas en babilla (*Caiman crocodilus fuscus*) causadas por Pox virus en la Costa Atlantica Colombiana.

Mosquera, Justina de. Disposiciones que rigen en materia de fauna silvestre.

MANEJO EN CAUTIVERIO Y COMERCIALIZACION

Baquero de Pedret, B., A.E. Seijas y A. Chang. Valores de crecimiento en caiman de la costa (*Crocodylus acutus*) en condiciones de cautiverio.

Baquero de Pedret, B. y E.O. Boede. Dermatitis en crias de caiman de la costa (*Crocodylus acutus*) en condiciones de cautiverio.

Baquero de Pedret, B. y M. Quero de Pena. Manejo del Programa de Zoocriaderos de la especie baba (*Caiman crocodilus*) en Venezuela.

Borges, G.A. y A. Arruda Filho. Avaliacao do potencial de ninhos de *Caiman crocodilus yacare* numa sub-regiao do pantanal de pocone - MT.

Casas-Andreu, G., J.F. Iracheta y H. Saracho. Anidacion de *Crocodylus moreletii* en cautiverio en Tabasco, Mexico.

Continho, Marco E. Aspectos Reprodutivos do jacare (*Caiman crocodilus yacare*) em pantanos; o efeito dos niveis de agua na producao de ninhos.

Chen, Bihui y Yanqin Sun. Diseases of the Chinese alligator (*Alligator sinensis*).

Gutierrez, S. y G. Rodriguez. Efectos del momento de colecta de nidos de babas (*Caiman crocodilus c.*) en la tasa de eclosion.

Larriera, Alejandro. The Experimental Breeding Station of *Caiman latirostris* at Santa Fe City, Argentina.

Pacheco, Luis F. La primera experiencia en crianza de *Melanosuchus niger* en Bolivia.

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Seijas, Andres E. Cria de caimanes del Orinoco en la UNELLEZ, Venezuela.

Szeplaki, Eduardo. Desarrollo de Zoocriaderos abiertos de la especie baba (*Caiman crocodilus crocodilus*) en la Region de los Llanos de Venezuela.

Venega de Anaya, Doris. Algunos aspectos zootecnistas y veterinarios aplicados a una empresa productora de cerdos y lagartos.

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Webb, Grahame J.W. Changing public attitudes to wildlife use: The implications for marketing crocodilian skins.

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Larriera, Alejandro. A program of monitoring and recovering of wild populations of caimans in Argentina with the aim of management. Progress report.

Quero de Pena, Mirna. Avances de los programas de conservacion de los crocodilidos de Venezuela.

Quero de Pena, Mirna. Politica de Administracion del Recurso Fauna en Venezuela.

Thorbjarnarson, John. The IUCN Crocodile Specialist Group Action Plan: Setting Conservation Priorities.

Thorbjarnarson, John. Efforts to conserve the Orinoco crocodile in the Capanaparo river, Venezuela.

INVESTIGACION

Crews, D., A. Tousignant, T. Wibbels y J.P. Ross. Reproduction in Captive Reptiles: Lessons for crocodilian farmers.

Polanco, Beatriz y Argenis Echenique. Nutricion de babas (*Caiman crocodilus*).

Waller, Tomas y Patricio A. Micucci. Relevamiento de la distribucion, habitat y abundancia de los crocodilios de la Provincia de Corrientes, Argentina.

WORLD CHECKLIST OF THREATENED AMPHIBIANS AND REPTILES compiled by the World Conservation Monitoring Centre on behalf of the United Kingdom Scientific Authority for Animals. This

checklist is one of a series prepared for the UK Scientific Authority to assist implementation of CITES. The aim of the volume is to provide a summary of basic information on all species of amphibians and reptiles in CITES or appearing in the IUCN Red List of Threatened Animals. The volume lists these species with synonyms, English vernacular names, a list of countries in which the species is found and an indication of CITES and Red List status.

All species and several subspecies of crocodilian are listed. The listings for *Crocodylus niloticus* and *Crocodylus porosus* usefully clarify the split listing of various populations of these species. The listings are adequately referenced to the primary literature, and the numbered reference system used makes locating references easy. Several anomalies of nomenclature and status are clearly explained in brief notes, for example the uncertain status (both taxonomic and conservation, of *Crocodylus raninus*).

The only drawbacks I found are inevitable for a volume of this kind. Such compendiums of information become dated almost before they are published so that this volume reflects the status under both CITES and IUCN Red List as they were in mid 1992, rather than as they are likely to be following current ongoing revisions. The lack of congruence between the different status listings is evident, for example the Australian population of *C. porosus* is Appendix II of CITES reflecting its substantially recovered and well managed status, while it is still listed by the Red List as Vulnerable, which does not seem appropriate. This, however, is not the fault of the compilers of the World Checklist. I was surprised not to find the various action plans for reptiles and amphibians prominently referenced as the latest information on status. Indeed the bulk of crocodilian references are from 1987 or earlier and much recent information is not included.

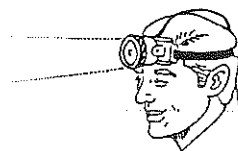
The check list is therefore not a reliable guide to present status but it is a useful desk reference for management authorities, customs inspectors and the like who need a quick summary of the legal status quo regarding reptiles and amphibians. — J.P. Ross, *Florida Museum of Natural History, Gainesville, FL 32611, USA.*

KYOTO FORUM: IN HARMONY WITH WILDLIFE. Proceedings of the Symposium on the Conservation and Sustainable Use of Wildlife.

1993. Ngao Natural Environment Foundation. This is the published Proceedings of the Symposium held in conjunction with the Kyoto Meeting of CITES, 7 March 1992. The full text of keynote speeches by Martin Holdgate, 'Caring for the Earth and Sustainability,' and Marshal Murphree, 'Rural Poverty, Democracy and Sustainable Use of Wildlife in Africa,' and discussion by a distinguished board of panelists including Professor H. Messel, Perez Olindo and Professor Taisitiroo Satoo is given. Copies are available without charge to CSG members courtesy of: Dr. Yoshio Kaneko, *Global Guardian Trust, Toranomon 3-7-5, Minato-ku, Tokyo 105, Japan.*

ALLIGATORS IN CHINA. A.A. Fauvel 1879. A facsimile reprint of the original description of the Chinese alligator published privately in Shanghai in 1879. Includes classical history and legends, natural history, technical description and literature review, 42 pages, 3 plates, 6 x 9 inch format. Cost \$6.00 payable to "SSAR." — from SSAR Publications Secretary, Robert D. Aldridge, *Dept. of Biology, St. Louis University, St. Louis, MS 63103, USA.*

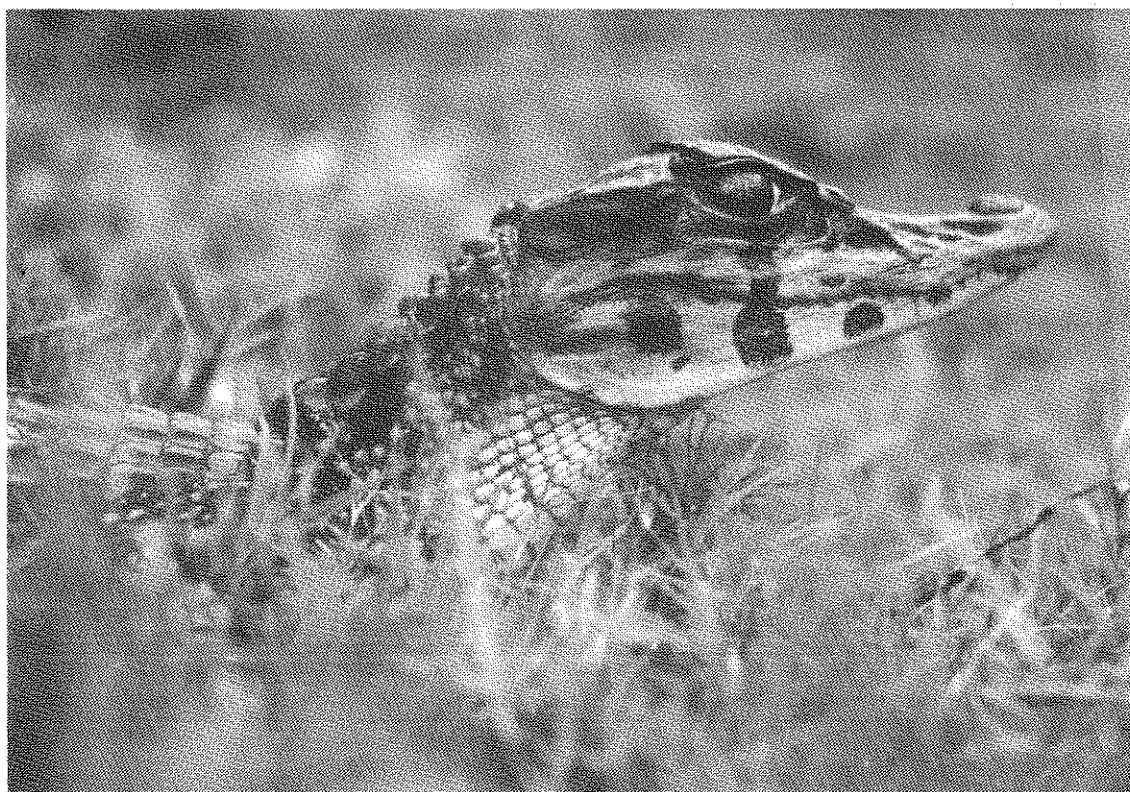
PERSONALS



Anna Maria Trelancia, c/o L. Alcazar, Av. Pardo y Aliaga 695, Lima 27, Perú,

writes that the capture of terrorist leaders in Perú has re-opened the opportunity for fieldwork in rural areas. Anna Maria hopes to return to her study site at Tumbes and complete her work on *Crocodylus acutus*. She noted that mail strikes have slowed her receipt of her NEWSLETTER and we note that her letter to us, dated December 1992, arrived in June 1993!

Santiago Rom M., Moscu # 120y, Republica del Salvador, Ecuador, is conducting research on *Melanosuchus niger* and *Caiman crocodilus* in the lagoons of Ecuador's Amazon region and expects to finish with a mark-recapture experiment by March 1994. He will be looking for postgraduate study opportunities in crocodilian research after July 1994.



Black caiman, *Melanosuchus niger*, 90 cm, Zancudococha, Ecuador. R. Santiago photo.

SUBSCRIPTION – 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 US \$40.00 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.

EDITORIAL POLICY – The newsletter must contain interesting and timely information. 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. The information in the newsletter should be accurate, but time constraints prevent independent verification of every item. 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, unless specifically indicated as such, are not the opinions of the CSG, the SSC, or the IUCN-World Conservation Union.

The 12th Working Meeting of the IUCN/SSC

Crocodile Specialist Group

2 to 6 May 1994

Pattaya, Thailand.

CALL FOR PAPERS

Abstracts of papers and posters for presentation at the 12th Working Meeting, Pattaya, are invited on the following topics:

- **Conservation of crocodiles in Thailand and Southeast Asia.** Current activities, recent advances, national reports from this region.
- **Taxonomy and systematic problems of crocodiles in SE Asia.** Analyses of species characteristics, taxonomic variation, nomenclature. [NOTE. Descriptions of new taxa or taxonomic revisions cannot be accepted for publication in the unedited Proceedings]
- **Status and conservation of priority species.** An update on status, recent advances and conservation action on species identified in the Action Plan as highest priority for conservation.
- **Captive Breeding and conservation of crocodilians.** A critical, in depth, evaluation of the conservation benefits of sustained use, harvests and closed cycle farming; case studies, theory, policy considerations.
- **The Biology of Stress and disease in captive crocodilians.** An update on current results on the interaction of stress, diet, and other factors on growth and reproductive success.
- **Monitoring and Estimation of Crocodilian populations.** An examination of techniques for monitoring and population estimation; the theoretical basis and practical background, case studies and critiques.
- **Effects of Trade and economics on crocodilian conservation.** Continuation of the dialog on the influence of economic factors on the success of sustainable use conservation programs.
- **Other topics and posters.**

Abstracts (including titles, addresses etc.) must fit on one typed page and should present the following information in the order given:

1. The title of the presentation.
2. The topic/session (see above) to which the abstract is submitted.
3. The author(s) full names as they should appear.
4. The address of one author to whom all correspondence can be sent.
5. The text of the abstract, a brief summary of the material proposed for presentation.

Submit abstracts to: Dr. J.P. Ross, Executive Officer CSG, Florida Museum of Natural History, Gainesville, FL 32611, USA. (Fax: 904 392 9367).

The deadline for receiving abstracts is extended to 15 November 1993. They will be reviewed by the session chairperson and authors will be advised of acceptance by 15 January 1994. Where scheduling conflicts dictate it may be necessary to allocate some presentations to poster sessions or alternate sessions.

The 12th Working Meeting of the IUCN/SSC Crocodile Specialist Group

2 to 6 May 1994

Pattaya, Thailand.

In 1994 the 12th Working Meeting of the Crocodile Specialist Group will be held in Pattaya, Thailand. Host and organizer of the meeting is the Crocodile Management Association of Thailand.

Details and Agendas of the Meeting will be sent to you in due course, but initial arrangements have to be made as soon as possible in Thailand to ensure that we can make bookings to accommodate everyone and facilitate your requests. **Please return this preliminary registration immediately to ensure that we secure the space and facilities you need.**

Participants should arrange their own international flight arrangements to Pattaya, Thailand.

A preliminary program is in preparation and will be sent to all registrants and will appear in the Newsletter. Topics that have been proposed for major sessions include : Status of endangered species, Stress in field and farm situations, Molecular genetics and systematics, Management and Sustainable use. A program combining keynote addresses on major topics, shorter working papers and poster sessions is planned. An invitation to submit papers will be issued separately.



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PRELIMINARY REGISTRATION

To receive registration materials and detailed information on bookings, accommodations, and local transport, please return this form by mail or fax to:

Dr. Parntep Ratanakorn
Faculty of Science
Kasetart University
Bangkok, Thailand

FAX: 662 247 9236

YOUR NAME:
YOUR MAILING ADDRESS:

TEL:

FAX:
TLX:

How many people in your party will travel to Thailand?

☞ This is a preliminary registration to allow planning and booking of adequate space. Return this form if you have the slightest intention of attending. Firm commitments to bookings and reservations will follow.

Steering Committee of the Crocodile Specialist Group

Chairman: Professor Harry Messel, Executive Chancellor, Bond University, 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 Chairman: Prof. F. Wayne King, and Executive Officer, Dr. J. Perran Ross, Florida Museum of Natural History, Gainesville, FL 32611, USA. Tel: (1) 904 392 1721 Fax: (1) 904 392 9367.

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1042. Lic. Mirna Quero P. & Lic. Alvaro Velasco B., PROFAUNA, Ed. Camejo, Entrada Oeste, Mezzanina, Centro Simon Bolivar, Caracas 1010, Venezuela. Fax: (582) 545 3912.

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