

CROCODILE SPECIALIST GROUP

NEWSLETTER

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IUCN--The World Conservation Union
Species Survival Commission



Cover Photo: Hatchling alligator, *Alligator mississippiensis*, raised at the Buenos Aires Zoo (see Argentina below). Laura Gravino photo.

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- Mainland Holdings Ltd., Lae, Papua New Guinea.
- Utai Youngprapakorn, Samutprakan Crocodile Farm, Samutprakan, Thailand.
- Jacques Lewkowicz, France Croco, Paris, France.

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- Heng Long Leather Co. Pte. Ltd., Singapore.
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- Philippe Roggwiler, Tanneries des Cuirs d'Indochine et de Madagascar, Paris, France.

- Reptilartenschutz, Offenbach am Main, Germany.
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- Crocodile Farmers Association of Zimbabwe, Harare, Zimbabwe.
- Dr. I. Lehr Brisbin, Savannah River Ecology Laboratory, Aiken, SC, USA.

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- Miguel Stambulie, Zoocriadero Bucaintu, Cartagena, Colombia.
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- Industrias Moreletii S.A., Villahermosa, Tabasco, Mexico.
- Scott Anderson, Cypress Farms, Starke, FL, USA.

CORRECTIONS

I am mortified to announce two serious errors of attribution in the last NEWSLETTER that arose entirely due to my mistakes. I have apologized to the authors concerned and apologize again here.—J.P. Ross, *Editor*.

A MODEST PROPOSAL. In the 'Views Opinions & Ideas' section, NEWSLETTER Vol. 15(1):2-3 was incorrectly attributed to W. Magnusson. The article was written and submitted by John Thorbjarnarson, *Wildlife Conservation Society, 185th and Southern Boulevard, Bronx NY 10460, USA*, and should correctly be cited as:

Thorbjarnarson, J. 1996. A Modest Proposal, Crocodile Specialist Group. CSG NEWSLETTER 15(1):2-3.

ESTADO POBLACIONAL, UTILIZACIÓN DE TIPOS VEGETALES Y CRECIMIENTO DE *MELANOSUCHUS NIGER* Y *CAIMAN CROCODILUS CROCODILUS* EN ZANCUDOCOCHA Y CUYABENO, AMAZONIA ECUATORIANA. In Central and South America, Ecuador Section, CSG NEWSLETTER 15(1):10-11, and the translation following on pages 11-12 was incorrectly attributed to Santiago Ron. The article is the abstract of a thesis by Mr. Andrés Vallejo, P.O. Box 17-11-6025, Quito Ecuador, who submitted it to the NEWSLETTER. It should be correctly cited as:

Vallejo, A. 1996. Estado Poblacional, Utilización de Tipos Vegetales y Crecimiento de *Melanosuchus niger* y *Caiman crocodilus crocodilus* en Zancudococha y Cuyabeno, Amazonia Ecuatoriana. CSG NEWSLETTER 15 (1):10-12.

Mr. Vallejo also pointed out that the photo on the cover of CSG NEWSLETTER 14(1) was incorrectly attributed to Mr. P. Vallejo of INEFAN, when in fact the photographer was A. Vallejo.

REINTRODUCCIÓN DE *CROCODYLUS ACUTUS* EN VENEZUELA. CSG NEWSLETTER 14(4):15. The person shown in the photograph releasing a crocodile is Alfredo Lander, not Alfredo Arteaga as indicated.

Your editors will strive mightily to avoid any more of these errors. Will readers please amend their NEWSLETTER copies by hand to reflect the correct authors, in order to minimize further proliferation of the misattributions.—P. Ross, *Executive Officer and Editor*.

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13th WORKING MEETING

SUMMARY OF THE MEETING

Between 13 and 17 May 1996, 112 participants from Latin America, and throughout the world assembled in Santa Fe, Argentina, for the 13th Working Meeting of the Crocodile Specialist Group. The Meeting was organized and hosted by Alejandro Larriera, Proyecto Yacare and the Fundacion Habitat y Desarrollo. The Meeting received significant assistance from the Government of the Province of Santa Fe, the Municipality of Santa Fe, a number of Argentina conservation organizations and a long list of commercial sponsors. We thank them here. The energetic efforts of the Proyecto Yacare staff, Alba Imhof, Cristina von Fink, Carlos Piña, Paula Donayo, Patricia Amavet, Pablo Sirosky, Ana Costa, and numerous other volunteers and assistants ensured the success of the meeting.

Participants heard a broad selection of presented papers covering topics of crocodylian conservation in Latin America, the biology of *Caiman crocodilus* and *Crocodylus acutus*, incubation and growth studies, disease and nutrition in captivity, field research, national program updates and alligator biology. Some of the more important papers were keynote addresses by Jeff Lang on temperature effects on incubation and sex, Bill Magnusson on the structure of field studies, Steve Busack and Sima Pandya on *Caiman* systematics and Grahame Webb on the general philosophy of crocodylian management. Field results of great interest were reports on surveys in the Colombian Amazon and Brazil demonstrating substantial populations of *Melanosuchus niger*, and a series of papers on *Crocodylus acutus*. Some of these, and other presentations, totaling 45 papers, will be published in the Proceedings. The Proceedings are being assembled under the managing editorship of Perran Ross, and Alejandro Larriera and his staff will arrange printing and distribution with funding assistance from the Provincial Government of Santa Fe.

Two workshops were conducted during the meeting. One, on application of the new IUCN Threatened Species criteria, resulted in a re-evaluation of the status of all Latin American crocodylians. The other on current world trade and anticipated trends, highlighted the increasing production of crocodylian skins in sustainable use programs and focused concern on the need for market expansion to absorb the anticipated production. Full reports of these workshops appear in the Proceedings. Following the workshops a group interested in *Crocodylus acutus* studies have formed a network to communicate and coordinate their activities throughout the wide range of this species.

The meeting was notable both for the very amenable tone of the activities and for the active participation of many new and younger faces from the Latin American region. This new generation of crocodylian biologists demonstrated the quality of their work and their commitment to conservation action that augers well for the future of crocodylians in the region. As we have come to expect at CSG Working Meetings, some of the most stimulating and useful discussions were those which took place informally among participants. The CSG is particularly grateful for the sponsorship provided by Cerviceria Santa Fe and Aguila Galletitas who refreshed the strength and spirits of participants with cookies and beer each afternoon.

Following the meeting, participants dispersed to field trips to *Caiman latirostris* habitats and field study sites in Santa Fe and Corrientes province. Thanks to the generosity of the Governor of the Province of Santa Fe, many of us were able to enjoy low level flights over the marshes in his private helicopter, allowing an unequalled appreciation of the habitat and the density of caiman in the province.



Participants at the 13th Working Meeting listen to presentations. Photo courtesy of Eventos y Congressos, Santa Fe, Argentina.



Working group on *Melanosuchus niger* discusses IUCN Status Evaluations. L. to R. Hank Jenkins, Bill Magnusson, Ronis Da Silveira, Sergio Medrano, Grahame Webb, Fernanda Salcedo, Andres Pachón, Alistair Ward. Photo courtesy of Eventos y Congressos, Santa Fe, Argentina.



Participants enjoying refreshments. L. to R. Paul Stobbs, D. Perez, Alistair Ward, Dorita Roggiano, John Thorbjarnarson, Alejandro Larriera (the meeting host), Steve Busack, Sima Pandya. Photo courtesy of Eventos y Congressos, Santa Fe, Argentina.

We must also thank our bus driver who showed great stoicism under pressure after sliding the bus into a muddy ditch, where it became immovably stuck. We also express our admiration to the Proyecto Yacare staff who had the foresight to bring sufficient wine and food in the bus to make the subsequent party very enjoyable, while we awaited rescue. Our thanks go to all who made this excellent meeting a success.—Perran Ross, *Executive Officer, CSG, Gainesville, FL 32611, USA*, & Alejandro Larriera, *Proyecto Yacare, Santa Fe, Argentina*.

STEERING COMMITTEE

CROCODILE SPECIALIST GROUP STEERING COMMITTEE MINUTES, SANTA FE 11-12 MAY 1996.

Participants—Members: Deputy Chair, F. Wayne King, Exec. Officer, J.P. Ross, A. Larriera, A. Velasco, L. Aquino, M.

Rodriguez, J. Hutton, O. Behra, G. Webb, R. Jenkins, P. Ratanakorn, P. Stobbs, Y. Takehara, D. Ashley, V. Lance, J. Thorbjarnarson, D. David, O. Menghi. Observers: T. Dacey (Australia), S. Frutos, R. Palacio (Paraguay), A. Matsuda (Japan), A.Q. Alba (Spain), C.H. Giam (Singapore), G. Solmu (PNG), H. Zambrano, M. Stambulie, S. Medrano, A. Leivano (Colombia), C. Pina, C. von Fink, P. Donayo, P. Amaret, P. Siroski, A. Imhof (Argentina), G. Hernandez, A. Artega (Venezuela), L. Sigler, B. Figueroa, M. Munez, (Mexico), R. Godshalk, W. Woodward, S. Pandya, P. Wilkinson (USA), U. Youngprapakorn, W. Leelpatra, Chomjet Karnjanakesorn (Thailand), A. Paucar, P. Evans (Ecuador) L. Verdade (Brazil), F. Huchzermayer (Sth. Africa).

[Editors note. The minutes are a record of discussions and decisions of the steering committee as recorded and approved at the meeting. Subsequent events and actions may not be reflected in this record.]

The meeting opened at 10.30 am Saturday, 11 May 1996, and received the apologies of the Chairman, Prof. Harry Messel and his instructions to proceed under the chairmanship of the Deputy Chairman F. Wayne King. Appropriate congratulations were offered to Alejandro Larriera's birthday and Alvaro Velasco's six day old daughter.

CSG Reports.

Membership. The executive officer outlined the process for membership renewal at the end of the present triennium in late 1996. As before, vice chairmen will be asked to nominate members for renewal or addition to the group for the Chairman's approval. A request was made for a full CSG membership list for distribution and this was provided to all meeting participants as part of the 13th Working Meeting registration materials.

Finance. The Executive Officer presented financial summaries for the current year and a draft budget. Expenditures for 1996 are anticipated to be \$62,500 and expenditures to date \$32,636.77. A short discussion of fundraising needs followed. A new fee of 2.5% of all incoming donations to the CSG account at the University of Florida was explained, and accepted as an unavoidable operating expense for which valuable financial, accounting and auditing services were received.

13th Meeting. Alejandro Larriera reported on arrangements for the 13th Working Meeting. About 150 participants were anticipated. Simultaneous translation would be available and the meeting appeared to be financially solvent as long as a promised donation from the Governor of Santa Fe was received. A letter from Professor Messel thanking Alejandro and the organizers was read.

Correction. The Executive Officer informed the Steering Committee that the Opinion article in the current NEWSLETTER 15 (1):2-3 was wrongly attributed to Bill Magnusson and in fact was written and submitted by John Thorbjarnarson. This erroneous attribution was an editorial error and P. Ross apologized to John Thorbjarnarson for this unfortunate mistake. A full correction and explanation will appear in the next NEWSLETTER [see page 2. *Eds.*]. The content of the article was praised by several members and a request made to put the article on the agenda for discussion.

DNA Workshop. Val Lance reported on the very successful workshop on applications of DNA studies to crocodylians recently held in Colombia, South Carolina, USA. Discussion followed on the complexities of international transfer of DNA and other genetic material, involving sensitive issues of national rights to resource value, biodiversity issues, and CITES and national regulations. There is a need for a clear CSG policy that reflected current international concerns. Jon Hutton introduced information on the up-coming CITES evaluation process and proposed that CSG prepare materials on this and other topics and channel them through parties to the CITES Review.

IUCN Red List. P. Ross reported on the recent unsatisfactory response of CSG to the IUCN request to apply the new IUCN listing criteria and evaluate crocodylian status for the IUCN Red Data Book. A request for input from members in the NEWSLETTER had not resulted in any response. Discussion followed on the value and effects of this process. The need for an effective mechanisms to channel available CSG expertise to respond to such requests was acknowledged. The ongoing review of the 1995 revision of the Action Plan was recommended as an available vehicle for summarizing information. Regional vice chairmen were urged to coordinate responses from their regions. A workshop was designed for the 13th Meeting to introduce the new criteria and begin the evaluation process. Jon Hutton proposed that funding for conservation was distorted by the CITES process which channeled funds toward quite common species (e.g. *Caiman crocodilus*) because they were in trade, while very rare species which much greater conservation needs were ignored. He proposed adding this consideration to a CSG input to the CITES Review. A working group of Hutton, P. Ross, John Thorbjarnarson, Hank Jenkins and Obdulio Menghi were asked to draft the necessary document.

New Publications. Wayne King gave a brief report on the new CSG material available on the World Wide Web. Continued use of this valuable communication mechanism was recommended. However, as the majority of CSG members do not yet have access to the web, continued use of traditional materials would be necessary. Wayne King reported on the recent production of

a new CITES Identification Guide and key to crocodiles for customs agents and management authorities prepared by Richard Charrette of Environment Canada, with input and assistance from several CSG members.

Steering Committee. Proposals for changes in the Steering Committee membership were outlined and the subject deferred to allow the committee time to discuss these. Members were asked to review the whole structure of the Steering Committee and make recommendations that could be discussed and passed on to the Chairman (see below).

CITES and Trade issues.

Tanzania. The historic background to the current Tanzanian quota of 1,000 wild caught Nile crocodiles was presented. A letter from Mr. John Kundaali, CITES officer for the African region, informed us that Tanzania exported 177 skins in 1994, 584 skins in 1995 and 100 skins up to March 1996. These exports were well within the allowed quota although information on the number of crocodiles taken and their origins and control mechanisms that were minuted in the CITES 9th Meeting of the Parties have not been received. Regrettably, a delegate from Tanzania invited to the CSG meeting did not attend and no further information was available. Tanzania has expressed an intention to submit a request to CITES to either extend the quota or move its Nile crocodile population to Appendix II following the new CITES criteria (Res. Conf 9.20) and a consultant was being retained to prepare this proposal. The Tanzanian Management Authority has recently been reorganized following a change of government in Tanzania. The Steering Committee proposed that a letter be sent to the new Director of the Management Authority, requesting information on the program, and that Dietrich Jelden be asked to follow up during his CITES activities in Tanzania.

Madagascar. The African representative reported that there was little change in the situation in Madagascar. The farming program continues to have organizational difficulties, but remains the only positive incentive for crocodile conservation, although it is applied to only a limited region. A review of farm stocks recommended at the last CITES meeting had not been completed because of financial difficulties. Reports were received of crocodile products of Madagascar origin being very common on Mauritius indicating that substantial illegal commerce continues. After discussion the Steering Committee concluded that imposition of a zero export quota, or even return of the Madagascar population to Appendix I might be an inevitable and unavoidable result of the failure of the Madagascar program to make progress. No action on this possibility was proposed, however, the meeting felt that the issue of illegal trade to Mauritius was properly the concern of the CITES Animals Committee under the operation of Conf. Res 8.9 Significant Trade in Appendix II species. It was therefore agreed that a letter would be sent to the Madagascar Management Authority expressing the CSG concerns about this issue with cc: to CITES Secretariat and to the African representatives of the Animals Committee. A second letter should be sent directly to the Animals Committee representatives requesting that the matter be brought into the Conf. Res 8.9 process.

USA Regulations on *C. niloticus* and *C. porosus*. The long awaited new US regulations on imports of these species have been completed and were signed recently. This process has taken 13 years! for species that are not endangered and are on Appendix II of CITES. No surprise was expressed when we were informed there will be another "small delay" to effect a new US Congress requirement for all new regulations to receive an analysis of its economic impact. Information has been provided directly to the US Fish and Wildlife Service to assist this analysis, but extreme skepticism remained that the regulations will be made public or come into effect soon. [We were wrong, see update pages 21-22. Eds.]

The content of the new regulations remains unknown in detail but are said to represent a middle of the road position between the CITES minimal requirements and the very draconian draft that was circulated and widely criticized in 1994. The similar new regulations regarding *Caiman yacare* remain deliberately stalled within the Service awaiting finalization of the *niloticus/porosus* regulations, which will be the model for additional crocodylian import regulations for the USA.

Discussion followed on the great frustration this process has provoked among range states of these non-endangered species. The repeated misinformation released by the Service on the process and timing of the regulations were presented. Numerous statements quoted by senior Service officials on the impending completion of the process within weeks or months, dating back to 1978, were read to the meeting. The long term consequences of this recurring difficulty may be to provoke quite extreme modifications to the US Endangered Species Act. It is evident that neither CSG intervention, action through CITES or direct lobbying by range states has been able to affect this process, and that it may take an approach through some wider forum such as the World Trade Organization through the GATT treaty to resolve the matter. Action by CSG would be redundant and ineffective at this time. Representatives of range states were urged to meet and coordinate their efforts.

Northern Territory Management Plan. The Northern Territory has submitted a new management plan for crocodylians following the downlisting of the Australian population of *C. porosus* to Appendix II. The program continues the ranching and nuisance control activities of the past and proposes selective direct cropping of particularly dangerous animals on a sustainable basis. The Group agreed that this program continued the exemplary progress of crocodile management in Northern Territory on a sustainable basis that was of direct conservation benefit to the species and recommended that a letter commending the plan be sent.

Papua New Guinea Crocodile Program Review. Results of reviews on crocodile monitoring and management in PNG conducted by Charlie Manolis were summarized. Godfrid Solmu, representing the PNG crocodile management unit, outlined his department's plans for implementing the recommendations from the review and Paul Stobbs of Mainland Holdings reiterated the commitment of the private sector to maintaining the management program. An independent review of the economic structure of the program and implications for sustainability, conducted by World Conservation Monitoring Center was presented. All these reviews conclude that the PNG crocodile program continues to demonstrate apparent sustainability and that crocodile populations are not declining under the present use regime. Recommendations to improve monitoring and maintain sustainability of the program are being implemented by the PNG government.

Zimbabwe crocodile program review. A very extensive draft review report prepared by Dr. John Loveridge was presented. CSG has been asked to assist the new Zimbabwe Wildlife Department and the Crocodile Farmers Association evaluate the review and implement the recommendations of the report. To achieve this the review document was passed to CSG members Allan Woodward, Alvaro Velasco and Grahame Webb for detailed analysis and comment. Each of these reviewers is intimately associated with running crocodilian management programs and were thought to be very appropriate experts. Their comments will be combined and passed back to the Zimbabwe authority. In addition the meeting recommended letters to Dr. Loveridge, congratulating him on his effort, to the IUCN regional office offering assistance in evaluating the review, and the CFAZ requesting that they assist the evaluation and implementation process with funding.

General discussion followed on reviewing crocodilian management programs. It was noted that the PNG and Zimbabwe reviews were an implementation of CSG policy articulated in Thailand to conduct reviews of established projects. Additionally reviews were being conducted internally by Venezuela (see below) and by CITES in Colombia. The need for CSG criteria or guidelines to focus reviews on appropriate topics received broad discussion. The value of drawing attention to important features was recognized, but the danger of unnecessarily restricting reviews was strongly supported. The consensus of the meeting was that criteria that might be strictly used to qualify or disqualify programs from approval were not useful as they were liable to excessively literal application in a way that could not take into consideration the great differences between countries and programs. The failure of the IUCN Sustainable Use Specialist Group to develop criteria for sustainability, and their subsequent withdrawal from the whole idea of criteria was presented as a case in point. It was generally agreed that a list of "Elements to examine" or "Points to consider" in evaluating programs was valuable as a guide to program managers as to what the CSG's expectations are. Such a guide would be valuable for both the retroactive evaluation of existing programs and as a general guide for evaluation of proposals for new management programs in both CITES and Non-CITES applications. The draft list of such points developed at the Pattaya meeting proved useful in Zimbabwe but needs modification. The meeting finally proposed that the Pattaya draft list be further refined and modified to be presented back to the Group at a future meeting. A draft prepared by John Thorbjarnarson after the meeting is presented below.

Colombia report. Miguel Rodriguez informed the Group about recent developments in Colombia. Colombia has recently signed the Amazon Cooperative Treaty (involving Brazil, Bolivia, Venezuela, Ecuador, Surinam, Guyana) and is an active member of the Commission for the environment of that treaty. Within this commission, Colombia is taking the lead in coordinating a regional plan for the conservation and sustainable use of *Melanosuchus niger*. French Guyana is not a member of the treaty but attends as an observer as it has important *M. niger* populations. Colombia requested technical advice and support from CSG and announced a workshop in November 1996 to initiate discussion of a regional management plan. CITES was supporting the workshop. Additional detailed information concerning recent developments in crocodilian farming in Colombia, technical developments and a series of field surveys to assess wild populations of various species, were being presented to the 13th Working Meeting, demonstrating significant advances in field studies in Colombia. The Group recommended letters to Colombia commending these excellent developments and to the Inter-American Bank for funding the workshop. Colombian representatives were also invited to submit an article for the CSG NEWSLETTER on these activities.

Exotic Species transfers. Reports were received on a number of recent or current instances of transfer of crocodiles into the range of other species for commercial use. These were the completed transfer of 100 *C. niloticus* from South Africa to China, a renewed request for permits for several thousand caiman from Venezuela to Thailand, inquiries made in PNG to buy failing crocodile farms and transfer their live stock to China, the long established introduction of *C. moreletii* into the Pacific drainage of Mexico, and the continuing unresolved issue of Nile crocodiles exported to Brazil in 1990, which are now producing offspring and the skins are being exported. Clarification and additional information was received on several of these. A representative of Samutprakarn farm in Thailand confirmed that they already had many caiman and were trying to obtain more to use them in place of Siamese crocodiles in their tourist facility where they are used to make 'crocodile' soup for tourists. A. Velasco informed the Group that Venezuela was unable to prohibit the exports to Thailand as it would be inconsistent with the current export of 5,000 live caiman annually to the USA for the pet trade. The South African - China transfer occurred despite the explicit advice of the CSG not to recommend it, which was communicated directly to both Management Authorities concerned. In PNG, exports may be approved by the government because of both the political and commercial pressures involved.

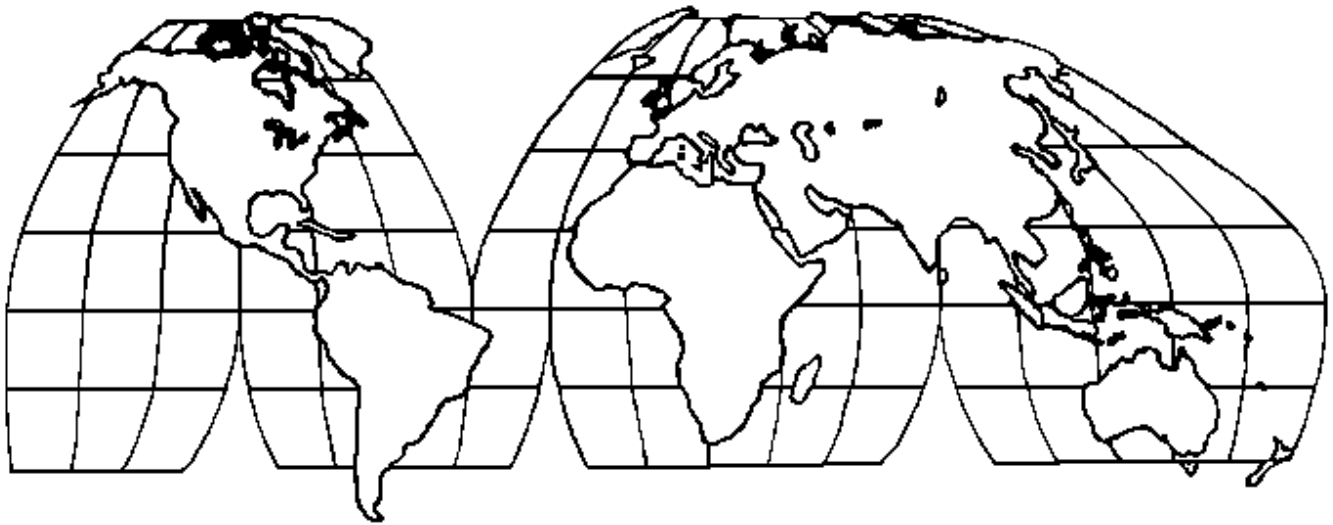
It is self evident that such transfers are common and that the CSG lacks the authority to prevent them. The background to the

development of the CSG policy against exotic transfers was reviewed, and the fundamental reasons for that policy remain valid, i.e. potential negative ecological effects when exotics escape, and erosion of effectiveness of conservation programs for native species. Nevertheless, this issue appears to have got away from us. After extensive discussion it was agreed that the CSG should maintain its policy as our principled stand on the issue continues to provide some support for Management Authorities attempting to oppose exotic transfers. At the same time it would be useful to draw the issue to the attention of a wider body of conservation interests. Exotic transfers of crocodylians could be considered by the Invasive Species Specialist Group of SSC and raises the question of whether ex-situ captive breeding activities have any conservation value, or whether they destabilize existing conservation programs in range states. As in previous discussions, the apparent value of some captive breeding activities for very rare species makes the issue complex. After extensive debate the Group reiterated its basic policy, that the CSG will not recommend the transfer of crocodile species into the range of other species for commercial purposes, and asked a working group to draft a preliminary policy statement on the problem of ex-situ captive breeding for deeper consideration of the Group at a later meeting. As this issue had been raised by John Thorbjarnarson in his NEWSLETTER article he agreed to lead that group. The draft output is presented below.

The meeting adjourned at 6.20 pm and reconvened at 9.33 am, Sunday, 12 May.

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AREA REPORTS



Africa

Nigeria

STATUS OF CROCODILES IN NIGERIA. Supported by a grant from Flora and Fauna Preservation Society, Mathew Dore conducted an extensive investigation into the distribution and present status of crocodiles throughout Nigeria between September 1992 and September 1993. Utilizing a combination of interview techniques, day time river cruises, night surveys and market surveys, the presence and species identification of crocodiles present was established for the major watersheds and significant habitat areas and an estimate gained from local people of the changes in status over recent years.

Nigeria has a land area of 923,850 km² and suitable crocodile habitat remains over much of this area. Nine major hydrological regions are defined around the major drainages and anecdotal accounts of each are given in Dore's report. The Nile crocodile once occurred in all major Nigerian waterways. It is only still occasionally encountered in major waterways of the mangrove creeks of southern Nigeria. The picture presented is a fragmented population scattered discontinuously from the mangrove coastal areas to the fringes of the Sahara in Lake Chad. Although quantitative surveys were not conducted, total population is said to be no more than 5,000 individuals. The west African Dwarf Crocodile was recorded throughout the rainforest zone and extending into the small rivers and gallery forests of the Benue and Niger rivers in the inland savanna area. The dwarf crocodile is subject to extensive hunting for meat for local consumption and skins are used to manufacture artifacts for sale to tourists. Dwarf crocodile meat is routinely available in markets in the south of the country and 263 crocodiles were counted for sale in the market of Benin City during a typical 8 week period surveyed. Wild populations are estimated to exceed 50,000. No specimens of long-snouted crocodile were seen in this survey, although fishermen confirmed its presence in some coastal states. The total wild population is thought to be no more than a few hundred.

Decline of crocodiles appears to be a result of a combination of killing for hides and meat and extensive settlement of people, agricultural activities, industrialization and pollution of rivers. The study concludes that crocodile populations are seriously depressed in Nigeria. The most heavily depleted species is *Crocodylus cataphractus*, followed by the Nile crocodile, *C. niloticus*. The dwarf crocodile, though locally abundant in the southwestern part of the country, is bearing the brunt of the current crocodile trade for both meat and skins. Two major threats are habitat destruction and illegal and uncontrolled hunting.

Recommendations are made for identification of sites for in-situ conservation of crocodiles. These can serve as safe havens for re-introduction programs. Local hunting, capturing and trading in crocodiles should be banned for a period of five years. During the period strict compliance and control of hunting should be enforced. A well articulated effort at captive breeding of samples of the Nigerian population of crocodiles should be embarked upon. The case of the long-snouted crocodile is precarious and urgent action is needed to save the remnants of the Nigerian population. Emphasis should be put on management of crocodiles in conservation areas, reserves generally but particularly conservation zones in coastal states where crocodile diversity is highest. These areas hold the greatest potential for crocodile conservation. The report is a useful contribution to the general distribution and current status of crocodiles in Nigeria and could serve as a basis for future field surveys and conservation. —*Extracted and summarized from STATUS OF CROCODILES IN NIGERIA, undated report to the Fauna and Flora Preservation Society, London: 39 p. and 4 figures. M.P.O. Dore, 46 Akhionbare St. GRA, Benin City, Edo State, Nigeria.*

Southeast Asia, Australia & Oceania

Australia

NEW CROCODILE PUBLICATIONS. Departments of Primary Industries in Queensland and Northern Territory, Australia, are cooperating

to produce CROCODILE CAPERS, a twice yearly with short general interest stories, information, advertisements of upcoming events and research updates. The Newsletter will be circulated to a wide section of the industry and hopefully will generate interest among producers, researchers and manufacturers and will be a vehicle for communication within the Australian crocodile industry. The first issue, January 1996, introduces 'Ozcroc' as the official mascot and logo of CROCODILE CAPERS.

The Oonoonba Veterinary Laboratory, Crocodile Research Complex of Queensland Department of Primary Industries has also launched CROCODILE RESEARCH BULLETIN to report research results and pilot study results undertaken at the facility directly to commercial crocodile producers. The first number (Volume 1, June 1996) has articles outlining the research program and staff responsibilities and presents research results from temperature and feed trials, and preliminary observations on fungal disease, color and temperature changes of growing crocs, market development and product specifications for the meat industry and a bibliography of recent papers. CROCODILE RESEARCH BULLETIN emphasizes the importance of communication within the industry and between different sectors and national and international collaborators. This is a very original and useful vehicle for getting basic research and technical information quickly to the producer where it can be applied.—*From materials submitted by Steve Peucker and Robert Mayer, DPI, Abbott Street, P.O. Box 1085, Townsville Qld. 4810, Australia.*

Sri Lanka

CROCODILES AND ELEPHANTS. In a recent book on Elephants of Sri Lanka the following is reported: 'If (an elephant) is drinking from a reservoir or a source of water where there are crocodiles, it is likely that a crocodile will catch the trunk in its jaws and attempt to drag the elephant down under the water as is the crocodiles habit. Though the crocodile would be unable to drag the elephant down, it could break off a part of the trunk. Two elephants were found dead with their trunks punctured and torn by crocodiles. They had died of starvation. The trampled and mangled bodies of crocodiles have been found hanging in trees where elephants have thrown them after they have done with them. Dr. Indra Katugaha (pers. comm.) says that he observed a herd of elephants coming to drink at Diganwela. The matriarch quickly walked to the water's edge and kicked a large crocodile which went right over the water hole and landed on the opposite bank. It lay there stunned for about two or three minutes and slowly got back into the water.'—*Jaywardene J., 1994, THE ELEPHANT IN SRI LANKA: pp. 45. Colombo, Sri Lanka. Submitted by John Eisenberg, Florida Museum of Natural History, Gainesville, FL 32611, USA.*

Central & South America

Argentina

SPECIALIST NETWORK FOR CROCODYLUS ACUTUS. A group of investigators who work, or previously worked, on *Crocodylus acutus*, participated in the discussions in the workshop on evaluating crocodiles with the IUCN Criteria and met informally during the 13th Working Meeting of the CSG at Santa Fe, Argentina, to exchange ideas on the possibility of developing some uniform criteria for morphological measurements for field studies. From this small meeting, we developed the possibility of inviting all the many people who have information on the status, distribution or other data on *C. acutus* to contact us for a mutually valuable exchange. We hope to develop contact and collaboration with the many countries where this widely distributed species occurs, and to develop some proposals for concrete action for discussion at the Regional Meeting for Central America and the Caribbean which is planned for mid-1997 in Mexico (see Steering Committee Minutes above). An initial network of 13 workers from seven countries are in contact and an additional 15 biologists with this interest are being contacted. Interested persons are invited to contact:—*Ana Maria Trelancia, Ricardo Gutierrez 2049, 1640 Martinez, Buenos Aires, Argentina (fax to 54 1 798 8432), or Alfredo Arteaga, E-mail: [fudena@dino.conicit.ve].*

Costa Rica

POBLACIÓN DE CROCODYLUS ACUTUS EN DOS RIOS DE COSTA RICA. El estudio se condujo durante noviembre 1992 y enero 1993 en los rios Bebedero y Tempisque, Guanacaste Province in the Pacific Northwest of Costa Rica. El rio Bebedero comprendió el area A, y el Tempisque rio se dividió en tres areas: entre la desembocadura del Tempisque en Puerto Moreno y Puerto Humo (area B); entre Puerto Humo y la desembocadura del rio Bolson (area C); y desde la Bolson hasta 10km arriba sobre el Tempisque (area D).

Las densidades en las areas fueron muy variadas. En el area A fue de 4.5 ind/km, en area B de 1.5 ind/km, en el C de 3.7 ind/km y en el D 5.0 ind/km, con una mayor cantidad de individuos en el area D, debido a una menor influencia mareal, mayor disponibilidad de sitios de anidamiento y refugio y, posiblemente, de alimento. El rio Tempisque, compuesto de las areas B, C, y D, con un recorrido de 46.9 km con 138 individuos, un densidad de 2.9 ind/km. Siendo menor la densidad que la encontrada para el rio bebedero (4.5 ind/km).

La distribución en el rio Tempisque fue heterogénea, la mayor parte de individuos de taller I (hatchlings) se localizaron en al area B. Los individuos de taller II en su mayoría, estan distribuidos en el area C: asi como la mayor cantidad de 'ojos'. En el area D habian individuos de todas las talleres excepto IV y VII. Los individuos de taller VI o superiores fueron vistos solo de dia trasladándose con la corriente de acurdo con la marea. Esto sugiere que los individuos de mas de 2m se mueven en el area C, no busca la desembocadura del rio ya que al subir la marea los cocodrilos se desplazan con la corriente rio arriba, regresando cuando la marea esta bajando; aparentemente no viajan mas allá de las zonas aledañas a Puerto Humo. Este estudio se realizó durante la epoca de reproducción cuando los individuos, principalmente las hembras, suben en busca de playones o sitios aptos para anidamiento donde la marea no inunde, lo que ocurre en la parte alta del rio. Posiblemente en épocas no reproductivas, los individuos de tallas mayores se localizan en la parte ancha y caudalosa de los rios y hasta la desembocadura, y ceden la parte alta para que establezcan los individuos de talles menores, lo que confirma Muñoz (1986).

Excluyendo la clase 'ojos' (48%), la mayor cantidad de individuos de las classes I y III, que corresponden a un 36%. Normalmente estas tallas menores son las mas abundantes, pues solo un pequeño porcentaje de los individuos que nacen llegan a ser adultos como consecuencia de la cacería furtiva y la depredación. Los individuos de clase superior a IV se localizaron en las areas C y D, donde se ubica el Refugio de Vida

Silvestre Palo Verde, que les ofrece protección.

Excluyendo la categoría 'ojos', la clase dominante en el área A son los juveniles y reclutas; en el área B los neonatos; en el área C son reclutas, juveniles y adultos; en el área D tanto los adultos como los reclutas presentan los mayores porcentajes. Probablemente los individuos busque la parte media y alta del río donde la influencia humana es menor, hay mayor cantidad de sitios para refugio y, en el caso de los adultos, las zonas de anidación son adecuadas, pero a lo largo del río Tempisque no hay un grupo dominante. En el río Bebedero, la distribución fue al azar, no hay un grupo dominante. La dinámica de poblaciones se encuentra afectada por la reducción del hábitat, cuya consecuencia no fue tanto la disminución de alimento como la falta de escondites debido a la eliminación de la vegetación original en las riberas y la continua presencia humana, que constituye un poderoso factor de perturbación del comportamiento normal del cocodrilo. La baja densidad de adultos reproductores en los ambientes fluviales se traduce en una gran dispersión de los individuos, siendo un factor negativo en la formación de parejas reproductoras (Muñoz 1986).

La clase V o mayor se considera como clase sexualmente madura, como lo proponen Kushlan y Mazzotti en 1989, y su distribución abarca el área C y D correspondiendo a un 12.3% del total de la población contada en el río Tempisque. Las densidades encontradas son muy bajas comparadas con otras poblaciones de cocodrilos tales como Lago Enriquillo en República Dominicana (Thorbjarnarson 1989), Etang Sumatre en Haití (Thorbjarnarson 1984), Río Grande de Tarcoles en Costa Rica (Sassa y Chaves 1992), Golfo de Nicoya, Reserva Forestal Sierpe-Terraba y La Rambla de Sarapiquí (Costa Rica) (Bolaños et al): puede considerarse que es una especie con poblaciones reducidas con baja cantidad de adultos.—Juan J. Sanches, Juan R. Bolaños y Lilliana Piedra C., *Laboratorio de Manglares, Área de Ecología y Manejo Costero, Escuela de Ciencias Biológicas, Universidad Nacional, Apdo. 86-3000 Heredia, Costa Rica.*

POPULATION OF CROCODYLUS ACUTUS IN TWO RIVERS IN COSTA RICA. [Free translation of the preceding article.] This study was conducted during November 1992 and January 1993 on the *C. acutus* populations in the river Bebederos and river Tempisque, in Guanacaste Province in the northwest Pacific coast of Costa Rica. The river Bebederos comprised a single study area (area A), while the Tempisque was divided into three areas, from the mouth of the river at Puerto Moreno to Puerto Humo (area B), from Puerto Humo to the entry of the river Bolsón (Area C) and from the Bolsón, 10 km up the Tempisque (area D).

Crocodile densities in these areas were very variable. In area A there were 4.5 ind/km, in area B 1.5 ind/km, in area C 3.7 ind/km and in area D 5.0 ind/km with the greatest number of animals sighted in area D due to the lesser tidal influence, better areas for nesting and refuge, and possibly better food. In the Tempisque (comprised of areas B, C, and D) there were 138 individuals counted in 46.9 km, for an overall density of 2.9 ind/km. This was less than the density found in the river Bebedero of 4.5 ind/km.

The distribution of sizes in the river Tempisque was very heterogeneous. Most of the smaller animals (size class I = hatchlings) were located in area B. Larger individuals of size class II and above were found upriver in area C, as were most of the 'eyes only' sighted. Area D, furthest upstream, had crocodiles of all sizes except class IV and VII. The larger animals (class VI and over) were only seen during the day swimming with the tidal current. This suggests that animals larger than 2 m move within area C but do not go to the river mouth because when the tide rises they travel with the current, returning, when the tide falls, apparently not travelling further up than the area around Puerto Humo.

This study was conducted during the breeding season when the crocodiles, mostly females, go searching for beaches or other locations suitable for nesting, where the tide will not flood the nests, which occur in the upper part of the river. It is possible that out of the breeding season the larger animals are found in the wider, deeper parts of the rivers, and down to the mouth, and leave the upper river to the smaller size classes, which was suggested by a study by Muñoz in 1986.

Excluding the 'eyes only' class, which was 48% of sightings, the greatest number of animals were in class I and class III (36%). Normally the smaller size classes are the most abundant, but only a small percentage of these reach adulthood due to illegal hunting and natural predation. The largest animals, class VI and over, were found in areas C and D which lie within the Palo Verde Wildlife Refuge, which offers them some protection. Not counting the 'eyes only', the dominant size in area A was juveniles and recruits, in area B- hatchlings, in area C- recruits, juveniles and adults, and in area D- some adults with the recruits that made up the major percentage. It seems probable that the crocodiles look for the middle and upper river where human influences are less, there are more refuge sites and, in the case of the adults, adequate nesting areas, but, along the length of the Tempisque, there is not one single dominant size class. In the river Bebedero the size distribution is random, without a dominant size.

The population structure found is a consequence of the reduction in habitat, not only reduced food availability, but also the elimination of much of the original vegetation on the banks, and the continual presence of people, which is a significant factor in disturbing the crocodiles normal behaviour. The low density of adults in these rivers, caused by the wide dispersion of the individuals, is thought to negatively affect the formation of reproductive pairs. Size class V and larger are thought to be sexually mature, as proposed by Kushlan and Mazzotti in 1989, and they comprise 12.3% of the total population counted in the Tempisque. The densities found are very low compared to other crocodile populations reported, like those of Lago Enriquillo, Etang Sumatre, Río Grande de Tarcoles, Golfo de Nicoya, Sierpe-Terraba Forest reserve and La Rambla de Sarapiquí in Costa Rica, we must therefore consider that this is a species with reduced populations with a low number of adults.

Venezuela

TALLER DE PHVA PARA EL CAIMAN DEL ORINOCO (*CROCODYLUS INTERMEDIUS*) Y CAIMAN DE LA COSTA (*CROCODYLUS ACUTUS*) EN VENEZUELA Y COLOMBIA. Entre los días 28 al 31 de marzo de 1996, se efectuó en el Instituto de Zoología Tropical de la Universidad Central de Venezuela, el taller de Análisis de Viabilidad de las Poblaciones y de los Hábitats del Caiman del Orinoco y Caiman de la Costa en Venezuela y Colombia, organizado por el Grupo de Especialistas en Cocodrilos de Venezuela, el Conservation Breeding Specialist Group (CBSG) bajo el auspicio del Servicio Autónomo de Fauna (PROFAUNA), la Fundación para la Defensa de la Naturaleza (FUDENA), la Fundación Nacional de Parques Zoológicos, Acuarios y Afines (FUNPZA), Instituto de Zoología Tropical (IZT) y el apoyo económico del Zoológico de Cleveland, Maraven, Lagoven, Venepal, Profauna y Funpza.

Este taller fue dirigido por el Dr. Ullyses Seal y la Dra. Susie Ellis del CBSG, asistiendo un total de 24 participantes de las organizaciones gubernamentales, parques zoológicos, organizaciones no gubernamentales, investigadores, universidades, zoológicos, que tienen que ver con ambas especies en Venezuela y encontrándose entre los participantes representantes del Zoológico de Cleveland (Dr. Hugh Quinn), Universidad de Calgary (Dr. Harrie Vrederburg), UICN-Sur (Lic. Bernardo Ortiz), Ministerio del Medio Ambiente de Colombia (Lic. Hernando Zambrano) y la Wildlife Conservation Society (Dr. John Thorbjarnarson).

Entre los objetivos del taller es el definir la estrategia para recuperar las especies en su medio natural, para lo cual se crearon tres grupos de trabajo en las áreas de poblaciones naturales y amenazas, cría en cautiverio y modelaje con Vortex. Estos grupos se basaron en la información disponible en ambos países sobre las especies, donde los especialistas analizaron la información disponible para cada grupo de trabajo, para posteriormente producir un borrador que define las acciones a tomar.

El documento definitivo estará listo para el mes de agosto del presente año con las recomendaciones que proponga el Conservation Breeding Specialist Group, luego de ser revisado por un grupo coeditor de los participantes al taller.—Lic. Alvaro Velasco B. Servicio Autónomo PROFAUNA, Edif. Camejo, entrada oeste, mezzanina, CSB, Caracas 1010, Venezuela. E-mail: profauna@conicit.ve

PHVA WORKSHOP IN VENEZUELA. [*Translation of the preceding article.*] Between 28 and 31 May 1996 at the Institute of Tropical Zoology of the Central University of Venezuela, a workshop was held on Population and Habitat Viability Analysis for *Crocodylus intermedius* and *Crocodylus acutus* in Venezuela and Colombia. The workshop was organized by the Crocodile Specialist Group of Venezuela and the Conservation Breeding Specialist Group (CBSG) under the auspices of the Servicio Autónomo de Fauna (PROFAUNA), la Fundación para Defensa de la Naturaleza (FUDENA), la Fundación Nacional de Parques Zoológicos, Acuarios y Afines (FUNZPA), Instituto de Zoología Tropical and with financial assistance from Cleveland Zoo, Maraven, Lagoven, Venepal, Profauna and Funzpa.

The workshop was directed by Dr. Uly Seal and Dr. Susie Ellis of CBSG, assisted by 24 participants from government, zoos, NGO's, researchers, universities, crocodile ranches having an interest in these species in Venezuela. Also participating were Dr. Hugh Quinn of Cleveland Zoo, Dr. Harrie Vrederburg of Calgary University, Lic. Bernardo Ortiz of IUCN South America, Lic. Hernando Zambrano of the Ministry of Environment, Colombia and Dr. John Thorbjarnarson of Wildlife Conservation Society.

The objective of the workshop was to define a strategy for the recovery of these species in their natural habitat. Three working groups in the fields of natural populations and threats, captive breeding and population modeling with the VORTEX program were established. These groups developed the baseline data from both countries from which the specialists analyzed the information available from each group and later produced a draft document defining actions to be taken.

A final document will be ready by August of this year with the recommendations proposed by the CBSG, which will then be revised by an editorial group of the participants of the workshop.—Lic. Alvaro Velasco B., *Servicio Autónomo PROFAUNA, Edif. Camejo, Entrada Oeste, Mezzanina, CSB, Caracas 1010, Venezuela. E-mail: [profauna@conicit.ve].*

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North America

Mexico

CONTRIBUTION TO THE STATUS OF 'CAIMAN' OR 'RIVER CROCODILE' (*CROCODYLUS ACUTUS*) IN THE JALISCO COAST, MEXICO. Research was based on recent papers and the Action Plan of IUCN/SSC CROCODILE SPECIALIST GROUP about research on the coast of Jalisco^{2,3,5}, and the advice of the Wildlife Rehabilitation Center (SEMARNAP) managed by Veterinarian Andrés González. Field work was conducted during 1993-94, to study problems with *Crocodylus acutus* and its habitat in Colima and Jalisco State specially in Puerto Vallarta. The program includes data obtained during the field work about Population Genetics, Allozymes and Single Probe Multilocus DNA Finger Printing (unpublished), through Chicago Zoological Society Grant, and collaboration with Kodak de Mexico, Molecular Biology Laboratory and the Marine Sciences Laboratory from Universidad Autónoma de Guadalajara (UAG), local people in each locality and students from UAG.

Night counts and partial day counts of adults were reported in earlier surveys (see table) and they will be continued as a contribution to the actual status of this species in the State.

LAGUNA DEL TULE: This species is reported in Jalisco, a village adjoining the estuary. Since 1989, the estuary has been visited to make night census from the shore, no more than 6 crocodiles have been observed during each survey. On November 1994, 10 individuals were observed in all of the estuary. The crocodile population in this place has some problems because of the human pressure. It is fenced by 3 villages and the water of El Tule is polluted with waste water. Reports from previous studies^{3,5} in Laguna del Tule were confirmed. One of these 5 reports the presence of the species in El Tule which the authors named Estero de Melaque. Every year the estuary barrier is opened. Medium size crocodiles (2m) and young ones have been seen in the sea where local people capture or kill them. Some crocodiles travel across the sea to Laguna de Barra de Navidad, which is part of Marabasco hydrologic complex.

Net fishing is another factor of population decrease, according to the observations, the croc's on this place are at risk to disappear. **ESTERO LA MANZANILLA:** By capture and observation, organisms of several ages (sizes) from 30 cm to adults of 2m or more have been found.

ESTERO MAJAHUAS: On November 25th, 1994, the first census was made in a path of 6 km. Only 3 crocodiles were observed because the water level was high.

ESTERO BOCA DE TOMATES (Laguna Boca Negra): Three small tributaries and a pond have been traveled where crocodiles between 30 cm and 1.2m had been observed by capture as well as a pair of adults. The references³ report the species in "Ameca" river.

ESTERO EL SALADO: Since 1993, the municipality of Puerto Vallarta has been visited because of the problems between local people and crocodiles since it is a place with villages and in addition, flooding areas in the rainy season. On August 13th, 1993, people-croc's problems were examined, together with people from the Wildlife Rehabilitation Center, where a pond of 50 m X 150 m approx. at El Basurero was visited and 2 big animals (at day and at night visit) and a young one (at night) were observed. Near El Rastro and El Basurero, on crop areas, 4 croc's (at night) were observed. On September 21st, 1993 in the night one crocodile of 2.5 m aprox. was located in the same place 20m from the road. Near this area, in a brick factory, one crocodile was seen in day time but people reported others. Puerto Vallarta Firemen (Nov 30th, 1993) received 3 croc's of several sizes (1.13 m and less). On January 8th, 1994 in agreement with local people, 1 male of 2.65 m which was trapped in a water hole in Colonia Demetrio Vallejo, was marked and released in situ. Since 1993 this zone is visited to confirm the migration in the area because of the water requirement and to know the problems.

Table: Surveys of *C. acutus* in Jalisco State, Mexico.

Place	Reported	Date	Census	Km	Adults	Total
Lagoon del Tule	4 m, I	10-Nov-94	Night	1	3	10
La Manzanilla	4 a, Cd	11-Nov-94	Night	2.5	8	28
		30, I	12-Nov-94	Night	2.5	6
	16-Nov-94	Day	2.5	9		
	23-Aug-95	Night	1.5	5	16	

Majahuas	2	9-Dec-94	Night	2.5		20
	20 I	24-Aug-95	Night	4.0		33
Boca de Tomates	P	13-Dec-94	Night	*	2	23
		16-Dec-94	Night	*	2	13
		15-Jan-95	Night	*	2	18
		30-Aug-95	Night	*		17

Preliminary Census in some estuaries in the Jalisco coast.

Reported: by Méndez-de la Cruz y Casas-Andreu (1992).

m: medium size, a: adults, Cd: day census, I: by inquiry, P: Just report the presence Km: Kilometers surveyed Adults: 2 Mt. or more, * Whole estuary surveyed.

More studies will be done to investigate the real status of crocodile population because, according to the observations this area has a considerable number of crocodiles.

On March 23rd to 28th 1996, Laguna del Tule or 'Los Otates' (located between Barra de Navidad and San Patricio), Marabasco river mouth and El Verde (in Tenacatita, South of Jalisco) were visited to investigate the problems and we made a census. at El Tule Lagoon, supported by the President of "Cihuatlan" Municipality, Ing. Antonio Morán and Biol. Edgardo Contreras (SEMARNAP). On this survey no crocodiles were seen because the high water level and the high density of Iris (*Eichhornia cassipes*). Marabasco river mouth presented the same problem but, in this place, aquatic lettuce (*Pistia stratiotes*) was predominant.

On the Jalisco's Coast there are 21 coastal lagoons^{1,2,3}, and in five of them, crocodile populations have been seen and recorded and in another six they were reported by inquiries^{2,3} by earlier workers. In this study six localities were confirmed by observation, two by tracks and two by inquiry. We also learned of 5 additional places where the species probably occurs and 6 where the population is extirpated. In La Manzanilla and Majahuas census have not previously been made and in El Tule lagoon, Boca de Tomates and El Salado, croc's population had only been reported by inquiry. The species was reported in Ameca river mouth in the 70's.—P. Ponce-Campos, S.M. Huerta-Ortega AMARSI. A.C. *Fundación de Ayuda para Mamíferos, Aves y Reptiles Silvestres. Apdo Postal 5-515, Av. López Mateos sur # 1836. Col. Chapalita. y C. Magallón-Morineau**. *Universidad Autónoma de Guadalajara, Guadalajara, Jalisco, México. CP 45040.*

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United States

NEW SPECIAL RULES FOR NILE AND SALTWATER CROCODILE IMPORTS FINALIZED. The US Fish and Wildlife Service published its new special rule in the Federal Register on 24 June 1996. These new rules governing the importation of Nile crocodiles from countries where they are listed on CITES Appendix II, and saltwater crocodiles from Australia, will become effective on 24 July 1996. The saltwater crocodile (*Crocodylus porosus*) in Australia is reclassified from Endangered to Threatened under the US Endangered Species Act of 1973. Paragraph (c) of U.S. Code of Federal Regulations title 50, part 17, section 17.42 is revised to allow the import, export, or re-export of, or interstate or foreign commerce in, live crocodiles, crocodilian skins, meat, skulls and other parts or products of *C. porosus* originating in Australia and *C. niloticus* from populations listed in App. II of CITES without a US threatened species permit as long as applicable parts of the new rule are met. These new rules can be summarised as:

1) Applicable sections of 50 CFR part 13, 14 and 23, regarding the labelling, packaging, declaration, and ports of import for wildlife must be satisfied. These are the routine import regulations applying to all US wildlife imports.

2) Imports must have CITES permits from the exporting country and comply with the CITES Universal tagging for crocodilian skins Resolution Conf. 9.22 and these are described in detail as interpreted by the US. Small parts may be imported in transparent

containers accompanied by a parts tag indicating origin, contents and weight, but skins and belly skins wider than 35 cm must bear an intact skin tag meeting the CITES requirements.

3) Imports of skins which are re-exported from intermediary countries must also bear the tags required by CITES; either original country of origin tags, or replacement tags provided by the re-exporting country. All tag numbers must be noted on the accompanying CITES export permits or certificates.

4) Products may be imported without US permits required by 50 CFR 17 as long as they are accompanied by CITES export permits or certificates from the country of export or re-export. These must indicate the country of origin and original export permit numbers. Countries of previous re-export and appropriate permit numbers must also be noted - in other words a complete paper trail from origin to destination must be presented as recommended by Res. Conf. 9.22.

5) Additional sections address personal effects, live animals, sport-hunted trophies, scientific and non-commercial shipments with similar conditions.

6) The US reserves the right to issue a Notice of Information identifying countries which do not comply with CITES requirements and to ban or restrict imports from such countries.

This is an unofficial summary of the requirements and the complete text of the new rule should be examined with care prior to attempting imports. These rules do not alter the current restrictions on other crocodile species or populations not specifically addressed in the rule. The rules bring US import regulations for *C. niloticus* and *C. porosus* into approximate concordance with CITES requirements for Appendix II imports, albeit with a fairly strict interpretation. The rules will probably form a model for the development of similar special rules for other crocodylian species. Copies of the rule can be viewed on the internet at: http://www.access.gpo.gov/su_docs/aces/aces140.html, and are available from:—Carol Carson, *US Fish and Wildlife Service, Office of the Management Authority, 4401 N. Fairfax Dr. Rm. 420C, Arlington VA 22203, USA, fax: 703-358-2281, or E-mail: [carol_carson@mail.fws.gov]*.

HALF-HUMAN, HALF-ALLIGATOR CAPTURED IN EVERGLADES. The discovery of a bizarre half-human, half-alligator in the Florida Everglades has flabbergasted scientists, who say the creature is at least moderately intelligent. Photographs show the strange find has the body of a six foot alligator with a human torso, head and forearms. Paleontologist Dr. Paul Ledbroder studied the creature for almost three hours in his laboratory before State Wildlife officials seized the 180 lb beast and airlifted it to a research facility east of Miami.

Dr. Ledbroder said he found the creature while communing with nature in the Everglades just after dawn on the 18 April. The creature showed an intense fear of humans during its first half hour in captivity. Although it has a distinctly human head it did not speak, but hissed like an ordinary alligator. "It warmed up a little when we offered it some food", he continued. "My assistant gave it a piece of fried chicken and some chocolate cake which it gobbled up. It was eerie to watch it watch us. When I spoke with my assistant I couldn't shake the feeling that the creature understood at least some of what we were saying. It might be a distant ancestor of modern man."

While State and Federal officials continue their studies of the creature, Dr. Ledbroder is combing the area for others. "It's difficult to believe that just one of them managed to survive on its own" he said.—*from WEEKLY WORLD NEWS, 25 June 1996:pp. 2-3. submitted (with tongue in cheek) by Phil Wilkinson, 407 Meeting Street, Georgetown SC, USA, and A. Woodward & K. Rice, Florida Game and Freshwater Fish Commission, 4005 S. Main St, Gainesville FL 32601, USA.*

ZOOS



AZA MEETING. The AZA Crocodile Advisory Group held its annual meeting 25-27 April 1996, in Tampa, Florida. The meeting was hosted by Busch Gardens, who we sincerely thank for their good cheer and excellent hospitality.

R. Andy Odum, Toledo Zoo, was unanimously requested to remain as Co-coordinator for another term, and will act as liaison with AZA. Co-coordinator Peter Brazaitis, Central Park Wildlife Center will act as primary contact for general CAG business, closely assisted by Co-coordinator Bill McMahan, Louisville Zoological Garden.

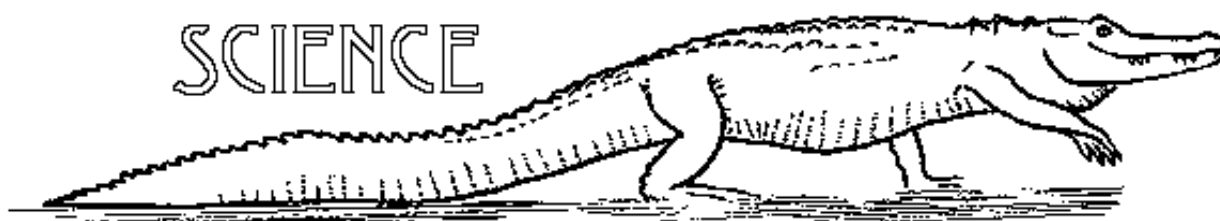
The highlights of the agenda included North American collection master planning and the further development of captive propagation programs for the Malayan False Gharial (*Tomistoma schlegelii*), African slender-snouted crocodile (*Crocodylus*

cataphractus), the critically endangered Philippine crocodile (*Crocodylus mindorensis*) and Cuban crocodile (*Crocodylus rhombifer*). The role of the CAG in educating the public and zoological community about the work of the AZA/CAG in crocodilian conservation was focused on as an important initiative, and designated for special funding.

The complete minutes of the meeting and copies of the Regional Collection Plan are available from the Co-coordinators.—Peter Brazaitis, AZA/CAG Co-coordinator Central Park Wildlife Center, 830 Fifth Ave., New York, NY 10021, USA.

EXCHANGE-LOAN BUENOS AIRES ZOO. In 1986 we started working on captive breeding of broad snouted caiman and black caiman (= *Caiman yacare*) and since 1989 we have also had success breeding a couple of American alligators. This year we have avoided any caiman breeding because we do not have any available space to place the young caimans. We can offer 20 year old broad snouted caiman and 20 year old American alligators for exchange or loan on the condition that the animals are used for exhibition or reproduction following the conservation principles of the Buenos Aires Zoo. Interested institutions may contact—Nadia Boscarol, Reptile Curator, Buenos Aires Zoo, Rep. de la India 2900, Buenos Aires 1430, Argentina, fax 541 805 3882, E-mail: [Moreira@cano.com.ar].

SCIENCE



DNA EXTRACTION FROM CROCODILE SCUTES. At the workshop on Crocodilian DNA, Colombia, South Carolina, USA, 4-6 March 1996, some discussion was held on what tissues would be suitable for obtaining DNA samples from crocodilians. Field workers noted that the removal of tail scutes was routine marking practice in many studies and captive situations and asked if the severed scutes might be useful for DNA. Interest was also expressed in isolating useable DNA from tanned leather or leather products for forensic identification, although it was expected that the tanning process would largely denature any remaining DNA.

To address these questions Ginger Clark at the Biotechnologies for the Ecological, Evolutionary and Conservation Sciences (BEECS) laboratory at the University of Florida, conducted some preliminary tests and reports that she obtained excellent, high quality DNA from a single scute removed from a hatchling alligator provided by Paul Moler of Florida Game and Fish Commission. "A little proteinase K and the DNA all came out in the wash" she reports. Ginger and Paul are working with a tanner to get samples from an alligator hide at each step in the tanning process to see at what point, if any, the DNA is no longer extractable. The results will be reported when available. BEECS associate Angela Garcia is also experimenting with DNA extraction from dry salted caiman tissue with good success. The success with extraction from a single hatchling scute and available non-refrigerated preservation techniques would allow these scutes to be routinely saved and made available for DNA studies. BEECS has a standardized protocol and simple tissue preservation buffer (Saturated Sodium Chloride, 250 mM EDTA 20% DMSO at pH 7.5) that allows tissue preservation for up to several months at room temperature. The preservative is non-toxic, non-flammable.

The DNA Workshop recommended coordinated worldwide studies, exchange of technologies and sample sharing to facilitate examination of many crucial crocodilian questions using DNA. To initiate this process, CSG has received information from Herb Dessauer at Louisiana State University on protocols for managing tissue collections and is preparing a comprehensive import permit application to allow establishment of a crocodilian tissue/DNA bank for research. Craig Moritz at the University of Queensland is developing grant support for PhD student Nancy Fitzsimmons to develop microsatellite primers for crocodiles and will host Scott Davis from Texas A& M University during his sabbatical research in 1997. Further development of international collaboration of this kind is expected.—Eds. *From correspondence from Ginger Clarke, BEECS Genetics Analysis Core, 12085 Research Drive, Room 142, Alachua, FL 32615 USA. E-mail: [aclark@ICBR.IFAS.UFL.EDU]*, Craig Moritz, *Genetics Laboratory, University of Queensland, Brisbane, Qld, Australia. E-mail: [cmoritz@horta.zoology.uq.oz.au]*, Herb Dessauer, *LSU, Dental School, 1100 Florida Avenue, New Orleans LA 72119-2799, USA.*

SCOPULARIOPSIS IN AMERICAN ALLIGATOR. *Scopulariopsis* fungal infections are worldwide and have been reported for many animals, both domestic and wild. *Scopulariopsis* spp. have been recovered from the tissues of insects, birds, lambs, calves and horses but there are no reported infections in reptiles.

Fifty wild American alligators (*Alligator mississippiensis*) were collected from southeast Texas as a part of a parasite and bacterial study. During routine examination of the lungs and respiratory systems, mycelial masses were discovered in two alligators. The fungal masses growing within the air spaces were confined to one lung in each of the two cases and affected less than 5% of the pulmonary tissue. The masses were isolated, rinsed and divided between vials containing distilled water and vials containing 70% ethanol (ETOH). The 70% ETOH served to preserve the mycelial mass while the portion placed in distilled water could grow and sporulate for identification. Tissue samples were placed on Sabourad's dextrose agar and Mycobiotic agar (Difco laboratories) and incubated at 25° C. Lactophenol cotton blue tease mounts were prepared of fungal growth for microscopic observation.

Only one isolate was recovered from the tissue samples. The gross morphology was that of a white mold which developed a slight brownish tint with age. Microscopically the hyphae were septate and non-pigmented. The mature conidia were non-pigmented, approximately 7-8 (µm in diameter, thick walled and lemon shaped. The mature conidia were also characterized by a short 'neck' or flattened area at their base. The conidia and conidiophores were consistent with *Scopulariopsis* sp. A firm mycetoma (>5cm) was also recovered from the lung of another alligator but was not cultured.

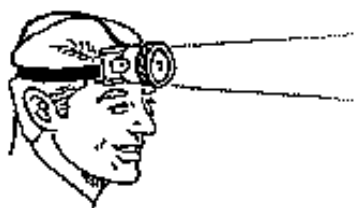
Six genera of fungi have been reported in *A. mississippiensis*. *Aspergillus*, *Beuveria*, *Metarhizium* and *Paecilomyces* have been indicated as the causative agents of pneumonic lesions, necrosis of the lung tissue and death (Fromtling *et al.* 1979, Goodwin 1978, Jasmin *et al.* 1968.). *Penicillium* and *Rhizopus* have been recovered from the scales of alligators (Jasmine *et al.* 1968). This study has revealed another fungal agent in alligators, *Scopulariopsis* sp. Rarely is *Scopulariopsis* sp. involved in deep seated granulomatous lesions, though its role in this pathogenic pathway is still not known (Larone 1993).

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Webster, J. 1980. Introduction to Fungi, 2nd ed. Cambridge Univ. Press, New York.

—T. P. Scott & R. B. Simpson, *Biology Dept. Texas A & M University, College Station, TX 77843, USA.*

PERSONALS



Gilbert N. Buenviaje, *Graduate School of Tropical Veterinary Medicine and Agriculture, James Cook University, Townsville, Qld 4811, Australia*, is undertaking a PhD study of skin diseases of crocodiles under the supervision of Professor Phillip Ladds. Gilbert is eager to obtain any bibliographies and publications on biology and diseases of crocodiles.

Dr. Lala A.K. Singh, *Research Officer, Similipal Tiger Reserve, Baripada, Orissa 75002, India*, writes that in addition to his duties relating to public affairs management, planning, research and interpretation at the Tiger Reserve, he pursues two tasks on crocodiles. He is trying to keep alive the technology of crocodile management in the wild and in captivity so that these disciplines will be ready if, and when, there is a change in the current approach to crocodile conservation in India. He is also pursuing modest activities in education relating to crocodilian biology management and ecological significance.

The Similipal Sanctuary and adjoining areas have been designated as a Biosphere Reserve and he has been preparing a draft management plan with the field Director of the Reserve. Activities on muggers continue at Similipal with the release of juveniles in February bringing the total released to 600. He has also just completed the annual mugger monitoring survey. Several pairs of adults, hoped to be courting pairs, have been sighted and he will be searching for nests this year. Discovery of wild nests will be a significant milestone for the program and stimulate new interest in the re-stocking program.

Tim Wiegmann, *Grossensieker Weg. 121, 32584 Lohne, Germany*, is leading a group of people who are interested in crocodilians. One of their main problems is the lack of updated information available in their area. He has been in touch with Mr. Rene Honnegger of the Zurich Zoological Garden, who referred him to the CSG.

Francisco A. Castillo, *Boulevard de la Luz 777,9, Jardinez de Pedregal, Mexico DF CP:01900*, will finalize his Masters in Fisheries Science at Auburn University, Alabama, USA, with a thesis on 'Feasibility for Farming Crocodiles in Colima, Mexico'. Francisco attended the 13th Working Meeting in Argentina and found himself deeply impressed with the policies and activities of CSG. His thesis will now include a section on the necessity for monitoring wild populations in Colima and conserving wild populations and their habitats.

Tesfaye Hunddesa, *Ethiopian Wildlife Conservation Organization, P.O. Box 386, Addis Ababa, Ethiopia*, has been recently posted to head of the Wildlife Development Unit, with responsibility for wildlife ranching and farming. Three species are presently farmed in Ethiopia, crocodiles, ostriches and civet cats, of which crocodiles are the most important. Mr. Hunddesa is a member of the regional SSC Group and hopes to develop connections to CSG.



Novel means of killing crocodiles.

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.

[\[STEERING COMMITTEE MEMBERS\]](#)---- [\[TOP OF THIS PAGE\]](#)---- [\[TABLE OF CONTENTS\]](#)

Vanuatu. A published report describing an official policy encouraging the extermination of the last crocodiles on Vanuatu was presented. After discussion, it was unclear whether this represented a new policy in defiance of the CSG recommendations of 1992-93 or was a restatement of an earlier policy. The Executive officer was instructed to make inquiries to Vanuatu on the current policy and crocodile situation.

Philippines. Information was presented on a 1993 proposal from the Philippines Dept. of Natural Resources to disperse *C. porosus* from the CFI farm to private farmers for raising and commercial sale. It was not known if the proposal was still active and an inquiry to the DNR had not yet received a response. No objection to this pilot project was expressed should it still be active. After the meeting, information was received from DNR Philippines that the project was still under consideration and that CSG advice would be gratefully received.

Humane treatment in crocodilian farms. Dennis David presented a summary of recent incidents in Florida where members of the People for the Ethical Treatment of Animals obtained access to an alligator farm and filmed workers killing alligators with a baseball bat. This clandestinely made film has been subsequently used to generate a public outcry. The Florida authorities have successfully constrained this attack on the industry by noting that State law prohibits clubbing wildlife and opening an investigation into the incident which determined that no prosecutable offense had occurred. At the same time the State agency has adopted the CSG humane killing guidelines as further commitment to humane treatment of alligators. The incident fulfills our prediction that the industry would eventually come under attack by animal rights and welfare interests and that a consistent policy of humane treatment based on sound veterinary advice was an important defense against wild accusations and public misinformation. Wide distribution of the CSG guidelines, and their adoption as standard practice by farmers associations and management agencies was recommended.

Zambia - Zimbabwe crocodile collection. These countries share jurisdiction of the Zambesi river and both collect crocodiles for commercial purposes along its length. In the recent incident collection of adult crocodiles for captive breeding stock in Zambia on a stretch already heavily used for egg collection for Zimbabwe farms had provoked concern that the two countries might be inadvertently overexploiting their shared resource. The Group recommended a letter be sent to both Management Authorities expressing concern and voicing the principle that if crocodile resources are shared between two countries, then their management and use should be coordinated between those two countries. After discussion it was agreed that this point was a new point of interest for examination in the review of crocodile management programs and should be added to our list (see above).

Mexico. Manuel Muniz, a representative of the new Society for the Study and Conservation of Crocodilians in Mexico, summarized recent activities in the development of commercial farms in Mexico and the development of a National Management Plan to provide a framework for research and regulation for sustainable use. The Group applauded this effort, but expressed caution that the advice presented to Mexico through the CSG and other sources be carefully structured to represent current policy and thinking on methods of sustainable use, needs for regulation and conservation benefits so as to avoid creating a situation in the future where extensive reviews and changes in the program were necessary.

Next meeting of the Steering Committee. The possibility of meeting in conjunction with the SSC meetings that would be held immediately before the IUCN General Assembly in Montreal, Canada

this October was proposed.

Disposition of the old CSG computer. A request was received from the Deputy Vice Chairman, Western Asia region, Dr. Lala Singh, to receive the CSG's obsolete 286 IBM computer. No opposition to this request was raised, but the difficulties of importing computers into India, high import duties and transport costs that would have to met by Dr. Singh caused some members to doubt if the transaction would be financially feasible. The Executive Officer was requested to correspond with Lala and resolve the matter.

Venezuela. Alvaro Velasco summarized the current activities of his office in Venezuela where a hunting moratorium ('Pausa Ecologia') is in place for 1996 while extensive re-survey of caiman habitats is made. Discussion followed on the methods and communication used to prevent disruption of activities of hunters, land owners and intermediate traders in skins. A workshop is being proposed to evaluate the baba use program coordinated by the Crocodile Specialist Group of Venezuela. The example of Venezuela in demonstrating that it is possible to have a principled pause in sustainable use as part of program evaluation based on monitoring results was a very important example of the interaction of monitoring and use. The use program is expected to re-open in 1997 under modified regulations developed as a result of the current surveys and evaluation.

PHVA of crocodiles in Venezuela. A short account was presented of the PHVA exercise on *C. acutus* and *C. intermedius* held in Caracas in March with the participation of the Crocodile Specialist Group of Venezuela, Profauna, Fudena and the Conservation Breeding Specialist Group. The activity spent three days collecting and evaluating data and running simulations of population trajectories under different assumptions and variables to evaluate several conservation options. A draft report is in preparation. The most valuable part of the exercise was the participation of all the interested groups, including observers from Colombia, to communicate about conservation concerns. The Vortex modeling process was seen to have little direct applicability due to the many assumptions placed in the models, but the simulation process did allow a sensitivity analysis of the effects of various proposed actions and gave some surprising insights into the importance of early age class mortality. Guidelines for the captive breeding and restocking programs will be modified as a result.

The application of this process to other priority species for the CSG to stimulate communication and problem analysis was discussed. The two crocodylian PHVA's conducted to date (Venezuela and Indian Gharial) have been praised by the participants as a valuable exercise. A general need was articulated by the Group for the Steering Committee to focus its attention on priority species and a recommendation to structure future Steering Committee meetings to accomplish this was made.

Sudan stockpile. Don Ashley asked for information concerning the disposition of the stockpile of *C. niloticus* skins inventoried by Dietrich Jelden in 1993. The skins were allegedly exported to Egypt for local use but no additional information was available and the matter was referred to the CITES Secretariat.

Worldwide marketing information. Don Ashley introduced the latest International Alligator Crocodile Trade Study (1992-1993) report, prepared under contact by WCMC. Total international trade in classic crocodylian skins reached 358,803 skins in 1993 with alligator (218,477) and Nile

crocodile (95,358) dominating international commerce. Production, and therefore supplies, are predicted to continue to increase to about 500,000 skins by 1997. Trade in caiman skins is also reported at 648,847 skins in 1993, mostly from Colombia and Venezuela. The foreword to the report concludes, "The challenge in the next century will be to actually market what research, management and regulation has produced through sustainable use."

Don then drew attention to an anti wildlife use and purchase campaign by WWF (UK) demonstrated in a display at Heathrow Airport. Similar displays are known from other airports, e.g. Hong Kong. Members of the Steering Committee considered this display to be grossly inaccurate and deceptive, and actively prejudicial to sustainable use programs. Obdulio Menghi informed us that CITES had run workshops with elements of the Swiss fashion industry who expressed surprise that CITES encouraged use of sustainable produced crocodilian products and that they were completely legal. The need for additional information to the public and the industry was discussed in depth (again!). Some discussion focused on the degree to which illegal trade in crocodile skins remains. It was agreed that while statements about "large volumes" of illegal trade were inaccurate, that some illegal trade, particularly in caiman skins remained, as evidenced by recent seizures in Paraguay and Bolivia. While these seizures were seen to be a demonstration of the new vitality of enforcement in the region, it seems prudent that the CSG be cautious and accurate in any claims made about the substantial reduction of illegal trade as it is progressively displaced by legal, sustainable, production. The Group agreed to draft letters to WWF UK, WWF International and through George Rabb to the IUCN Council on the issue. Text of this letter is given below * * *.

Paraguay River boat survey. A request was received from CSG member Tony Hakansson asking advice on the value of a series of proposed caiman surveys conducted from a commercial riverboat as it passed from Corumba (Brazil) to Buenos Aires. The Steering Committee recommended that the goals of any such program be more clearly defined and that any activity should be coordinated with Management Authorities of the countries concerned.

Colombian Newsletter. Sample copies of the new newsletter Zoocria were presented. Zoocria is produced by the Ministry of Environment with a focus on captive breeding issues.

Mexican Regional Meeting. Beatrix Figueroa, President of the Society for the Study and Conservation of Crocodilians in Mexico (SECOCOM), asked the Steering Committee to consider an invitation to hold a Regional Meeting of the CSG in Mexico in 1997. SECOCOM could offer a coordinated group of government, private and academic interests to host and organize the meeting. Holding a Regional Meeting would be of great value to encouraging the developing system for crocodilian management in Mexico. Alvaro Velasco stated that holding a CSG meeting in Caracas in 1984 was of great value in stimulating crocodilian conservation in Venezuela and he graciously withdrew an invitation he was going to make for a meeting in Venezuela, in favor of a meeting to support the new program in Mexico. The Steering Committee instructed the Executive Officer to undertake discussions with SECOCOM to develop a formal proposal for consideration by the Chairman.

Steering Committee. A general scrutiny of the current Steering Committee suggested several areas where changes could be recommended. It was generally agreed that turnover in the Steering Committee was a normal and healthy process to keep the Group effective. Vice Chairmen of Trade Monitoring (G. Hemley) and Latin America (J. Villaba- Macias) had been inactive due to other commitments and new leadership in these areas was recommended. The Latin American region was recognized as being very large and diverse and subdivision into "South America" and "Central

America and the Caribbean" might be useful, if active Vice Chairman can be identified. Expansion of the Science group might be useful if that group were to take an expanded responsibility in organizing the scientific program for the next working meeting. General discussion followed on suitable candidates and list of recommendations will be prepared and forwarded for the Chairman's consideration.

Indonesia. Mr. Takehara and Hank Jenkins presented a summary of recent events and reports in Indonesia. Development of a national management plan for crocodiles has been slow, in part due to the absence of key PHPA personnel. Forces affecting crocodile management in Indonesia were thought to include the current very low price of skins in the domestic market creating pressure to reopen international trade. Reports that PHPA was proposing to unilaterally re-open crocodile skin trade could not be clearly confirmed, but concerns on this had received extensive discussion with representatives of PHPA, LIPI and Indonesian Crocodile Farmers Association at the ACSUG meeting in Hong Kong in April. The fax sent by Professor Messel to Indonesia, clarifying the CSG position and urging PHPA to proceed with a CSG review, was presented. PHPA may be concerned that their current activities do not meet CSG and CITES expectations. A draft letter to the CITES Secretariat was presented and discussed, that would request that the current Appendix listing of Indonesian crocodile populations be examined by the Animals Committee, Standing Committee and if necessary, by the Conference of the Parties. The Steering Committee concluded that action on this letter was premature and that the CSG next response should await a response from Indonesia. Following the Steering Committee meeting, information was received on a request from Indonesia to the CITES Secretariat, indicating PHPA's desire to accelerate the process leading to review and approval of an export quota. The Secretariat was asked to confirm again CSG's desire to assist this process expeditiously and Hank Jenkins was asked to convey this message to Indonesia during his proposed visit in the near future.

Ecuador. Dr. Angel Paucar, representative of the Management Authority of Ecuador, briefly summarized progress in the *Melanosuchus niger* ranching project. The project has been slow to develop due to logistic and practical difficulties expected with any new project. At present about 30 juvenile black caiman were being maintained at the pilot ranch and further collection of 300 hatchlings was planned for this month. Strategies for specimen collection were being modified to meet conditions experienced in the field and the use of local collectors and attempts to begin egg collection were underway. Production was anticipated to reach 1,500 by 1999 and Ecuador would consult with CSG to develop an export quota. The Management Authority had been restructured following recent elections, but authority for the project remained within INEFAN. A Scientific Authority combining personnel from INEFAN, the Fisheries Department and the Universities was established and two technical staff in INEFAN assigned to developing the national management plan and coordinating monitoring activities. A working group funded from GEF sources was proposed to develop a detailed management plan with the assistance of experts and CSG was invited to participate.

The Steering Committee commented on the great importance of this program as the first for the species. Ecuador was encouraged to continue the careful development of this program, and also to participate in the Amazon Cooperative Treaty workshop on black caiman (see above). A letter of support for the program, noting its international implications for Ecuador, was requested from the CITES Secretariat, to be sent to the Ecuador Ministry of External Affairs.

Thailand. A report was received from Mr. Uthen Youngprapakorn detailing recent seizures of *Crocodylus noveaguineae* illegally imported into Thailand on fishing boats. The Thai Fisheries

Authority had acted to seize a number of illegal specimens and also found crocodiles discarded at sea when fishing vessels were intercepted. The origins of these animals is unknown but may be either Irian Jaya or PNG. After discussions and clarification the meeting recommended that letters be sent to the Thai authorities congratulating them on their vigorous enforcement measures and requesting to be kept informed of these events. It was also recommended that the Management Authorities of Indonesia and PNG be alerted via the CITES Secretariat about this illegal trade for their action.

Thailand Crocodile Survey. Additional information on remnant individual wild crocodiles in Thailand was received from Mr. Youngprapakorn. A Joint WWF/Thailand Forest Department project had found signs of a least one crocodile in Pan Sida National park in Eastern Thailand and \$10,000 US had been assigned to survey and verify this sighting.

There being no further business the meeting closed at 6.30 p.m.—J. P. Ross, Executive Officer, CSG.

Following the meeting, drafts of the action items were prepared and some of these are presented here for the information of the membership.

Guidelines for Consideration in Review of Crocodylian Management Programs. Draft prepared by John Thorbjarnarson, June 1996 for future consideration.

A. Project Design and Administration

- Is there an adequate legal framework for the implementation of a management plan?
- Is the country fulfilling its obligations under CITES, particularly with respect to tagging skins and annual reporting?
- Do adequate control mechanisms exist and are they adequately implemented?
- Is there any evidence of illegal trade and if so, to what extent?
- Are there any co-management issues with neighboring countries and how are they dealt with?
- Are any animal husbandry elements of the program unduly wasteful and are animal welfare issues in harvesting taken into account.

B. Sustainability and Monitoring

- Is the management plan adequate to ensure a high probability that the harvesting will be sustainable?
- Is there a functioning program to monitor wild populations?
- Is the monitoring program adequate to detect trends in meaningful population indices and what indices are used?
- Are the results of monitoring efforts used to assess the effects of the management program on wild population? and if so what are the population trends?

C. Program Benefits

- Does the management program provide a positive economic return and are these funds re-invested in the program?
- Does the management program provide benefits to rural communities and if so how and to what extent?
- Does the program provide other economic, educational or political benefits for the conservation of wild crocodilian populations? If so, what are they and how do they operate?

Draft Resolution on Captive Breeding— developed by a working group of the Steering Committee for future consideration.

Aware that CITES Conference Resolution 8.3 establishes that trade in some species of wildlife can generate conservation benefits;

Recalling that many species of crocodilians were placed on Appendix I of CITES, which limited any commercial activity to closed cycle captive breeding;

Recognizing that commercial captive breeding can and has generated conservation benefits for some crocodilians in some circumstances;

Acknowledging that the Crocodile Specialist Group has encouraged captive breeding for conservation programs;

Accepting that wild harvest programs carried out on a sustainable basis link the benefits derived from commercial use directly to the wild populations and their habitats, which is not the case with commercial captive breeding;

Recalling IUCN Resolution 18.24 which acknowledges the conservation benefits from sustainable wild harvest programs;

Concerned that the conservation benefits derived from sustainable wild harvest programs can be undermined by excessive production from closed cycle captive breeding programs, with little or no conservation benefits, as described in CITES Conf. Res. 8.22;

The Crocodile Specialist Group;

will continue to encourage conservation programs based on the sustainable use of wild crocodile populations,

will not encourage the pursuit of commercially oriented closed-cycle captive breeding programs where they are likely to undermine conservation efforts relying on the sustainable use of wild populations, and where conservation benefits may result, and

will assist countries with programs based on closed cycle captive breeding to extend their management activities to include the sustainable utilization of wild populations.

Text of letter to WWF: 29 May 1996

J. Martin K. Laing, Chairman
 World Wildlife Fund UK, Panda House
 Weyside Park, Godalming, Surrey

GU7 1XR, UK

Dear Sir Martin:

At the Steering Committee meeting of the Crocodile Specialist Group, 11 May 1996 we received a report of an WWF (UK) airport display at Heathrow Airport which discourages the purchase of various animal products, claiming that such purchase is detrimental to their conservation and survival. In this display a crocodilian (a caiman) and a crocodilian skin handbag are included among examples of wildlife products that the public should not buy. As Crocodile Specialist Group of SSC/ IUCN-The World Conservation Union we must protest in the strongest possible terms that this display is inaccurate and misleading to the public and is actively prejudicial and detrimental to the conservation of caimans and other crocodilians. We can only suppose that you have included the crocodilian material in your display by error, or perhaps you are unaware of the true situation regarding crocodilian conservation and sustainable use. As a fellow IUCN member, and in our capacity as the expert advisors to IUCN on crocodilian conservation, please allow me to explain the true situation, and then we expect you will agree that your display needs immediate modification.

The goals of WWF(UK) and CSG are identical with regard to crocodilians. Our mandate is the conservation of all species of crocodilian and through our volunteer member network we are actively engaged in crocodilian conservation in about 54 countries. Crocodilian conservation has proceeded with moderate success for the last 25 years or so. At present only seven of the 23 species are listed as Endangered (IUCN Red List 1994) and another 5 species are listed as vulnerable. It is noteworthy that no species of caiman (the crocodilian indicated in your display) is listed, indeed both the common caiman (*Caiman crocodilus*) and the yacare (*Caiman yacare*) are considered among the most numerous large vertebrates in South America with populations numbering in the hundreds of thousands, distributed over millions of square kilometers. Our members have conducted population studies during the last five years in Nicaragua, Paraguay, Ecuador, Brazil, Bolivia, Argentina, Peru, Guyana, Colombia and Venezuela which confirm the abundant and widespread distribution of caimans. To suggest these are endangered species is clearly incorrect and inaccurate.

Crocodilian conservation has been successful in many countries because of the careful application of well regulated systems of sustainable use. In part due to the demonstrated conservation benefits of these programs (for example in Zimbabwe, Papua New Guinea, Venezuela, Australia, USA), IUCN adopted resolution 18.24 acknowledging the conservation benefits of sustainable harvest programs. Currently world trade in 'classic' crocodilian skins is around 360,000 skins/year and another 650,000 lower quality caiman skins (1993 data, World Conservation Monitoring Center) which are worth approximately \$80 million US to the producers and perhaps ten times that in retail markets. A significant proportion of the production value is used in the countries of production to support both management of the species being sustainably used, and for the conservation of other non-utilized crocodilians. Typical amounts are 11% (USA) - 17% (Zimbabwe) of production revenue returned by way of taxes and license fees to management and conservation. Sustainable use is therefore contributing directly to the conservation of crocodilians. The indirect benefits of this system also serve to enhance crocodilian survival and conservation. The international trade in crocodilian skins and products is now overwhelmingly derived from legally produced material from sustainable use programs. The examples of illegal production and trade have diminished to a very small proportion and continue to decline as legal, sustainable production supplants illegal due to routine market forces (ease of processing, regularity of supply, quality, and often lower cost!).

The combination of national legislation and enforcement developed in support of economically valuable sustainable use programs, and an international system of trade control through CITES, which requires special tags for all skins in trade, in addition to CITES permits, has served to severely curtail unregulated, unsustainable harvest and trade. At the local and national level, economic incentives returned directly to rural people serve as an incentive for them to conserve crocodilians and their habitats. It therefore irrefutable that crocodilian conservation has benefited immensely from sustainable use of crocodilian products worldwide.

The continued operation of this global system remains dependent upon the economic incentives generated by sustainable use, and is therefore ultimately dependent on the consuming public. The crocodile skin industry worldwide has made a significant effort to embrace the principles of sustainable use and demonstrate to their consumers that, overwhelmingly, they behave legally and ethically with regard to conservation of the wild crocodilian resource on which their industry relies. You can therefore clearly see, I hope, that your appeal to the public not to buy crocodilian products is both deceptive and an active detriment to their conservation. A correct position, and one we urge you to join us in explaining to the consuming public, is that the conservation of crocodilians is strongly supported by their purchase of crocodilian products and that their most valuable responsibility is to ensure that the products they buy are indeed from sustainable programs that benefit conservation. This is quite easy to do. There are a variety of brochures, labels and point of sale information provided by retailers and manufacturers, abundant information regarding our CSG activities (see for instance our web site at <http://www.flmnh.ufl.edu/natsci/herpetology/crocs.htm>), correct information from National CITES Management Authorities and the whole interlinked system of trade control and CITES permits that reassure the public that a handbag on sale at Harrods is undoubtedly legal and sustainably produced.

I suggest that WWF (UK) have regrettably got the situation backwards with regard to their unfortunate airport display and that if your objective is, like ours, conservation of crocodilians to ensure their future survival, then an immediate modification of your airport display is needed. I enclose a copy of our most recent revision of our Action Plan for Crocodile Conservation which abundantly documents the material I have summarized above. We would be very pleased to work with you through our membership to assist you design materials promoting crocodilian conservation in a way that is both accurate and effective. Perhaps we could discuss an airport display jointly sponsored by CSG and WWF (UK) explaining the conservation benefits of sustainable use? I look forward to your response.

Yours sincerely,
James Perran Ross
Executive Officer CSG

cc: WWF (International)
G. Rabb chairman SSC

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