

CROCODILE SPECIALIST GROUP

NEWSLETTER

VOLUME 14 NUMBER 2, APRIL 1995 - JUNE 1995 --- WWW EDITION

IUCN--The World Conservation Union
Species Survival Commission



Cover Photo: Young *Caiman latirostris* hatched at Buenos Aires Zoo, Argentina. Nadia Boscarol photo.

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The CSG NEWSLETTER is produced in both printed and www editions by the Crocodile Specialist Group of the Species Survival Commission, IUCN - World Conservation Union. The NEWSLETTER provides information about crocodylians, their conservation, status, and management, and on the activities of the CSG. The hardcopy edition of the NEWSLETTER is distributed to CSG members and, upon request, to other interested individuals and organizations. We hope you find this www edition of use. All subscribers and users are asked to contribute news and other materials---see Editorial Policy below. As a professional courtesy, the sources of the news and information are identified throughout the NEWSLETTER. If you use any of the information provided in the NEWSLETTER, please continue that courtesy and cite the source. Subscribers who receive the printed edition of the NEWSLETTER are requested to make a voluntary contribution (suggested \$40.00 US per year) to defray expenses of publication and mailing. Comments concerning the NEWSLETTER or this www page should be addressed to the CSG Editorial Office: Dr. J.P. Ross, Executive Officer, Florida Museum of Natural History, Gainesville, FL 32611-7800, USA.

Prof. Harry Messel, Chairman
IUCN Crocodile Specialist Group
Executive Chancellor
Bond University
Australia

PATRONS

The following Patrons of the CSG have made major contributions to support the current activities of the CSG. In recognition of the substantial and long term support of our supporters, we have erected the following categories of Patron:

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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.
- Sharon R.F. & F.W. King, Gainesville, FL, USA.
- Philippe Roggwiler, Tanneries des Cuirs d'Indochine et de Madagascar, Paris, France.
- Reptilartenschutz, Offenbach am Main, Germany.
- Singapore Reptile Skin Trade Association, Singapore.
- Peter Scott IUCN/SSC Action Plan Fund & the Sultanate of Oman.
- Maitree Tempsiriphong, Sriracha Farm, Chonburi, Thailand.

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- Sergio Trachter, Buenos Aires, Argentina.
- World Wildlife Fund / USA, Washington, DC, USA.
- Conservation Commission of the Northern Territory, Palmerston, Australia.
- Walter Herd, Offenbach (Main), Germany.
- A. Handoko, Salim Group, Jakarta, Indonesia.
- Crocodile Farmers Association of Zimbabwe, Harare, Zimbabwe.
- Dr. I. Lehr Brisbin, Savannah River Ecology Laboratory, Aiken, SC, USA.

CONTRIBUTORS (\$500 - \$1000/yr)

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- Paul H. Slade, Nell and Hermon Slade Trust, Mona Vale, Australia.
- Kurt Preiss, Reptilia Inc., Miami, FL, USA.
- Crocodile Management Unit, Department of Environment and Conservation, Boroko, Papua New Guinea.
- Shlomi Ranot, Clal Crocodile Farms Intl. Ltd., Tel Aviv, Israel.
- Clabrook Farm Inc., Christmas, FL, USA.
- Vic Onions, Edward River Crocodile Farm, Cairns, Australia.
- Keith Cook & Alecia Darbonne, Australian Crocodile Traders, Cairns, Australia.
- Crocodile Management Association of Thailand, Bangkok, Thailand.
- Rachmat Wiradinata, PT. Ekanindya Karsa, Jakarta, Indonesia.
- Wayne Sagrera, Vermilion Gator Farms, Abbeville, LA, USA.
- Mauri U.S.A. Inc., New York, NY, USA.
- Terry Cullen, Cullen Vivarium, Milwaukee, WI, USA.
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- Antonio Quero Alba, Eurosuchus SA, Malaga, Spain.
- S. Pulio, Alligator Adventures at Barefoot Landing, Myrtle Beach, SC, USA.
- Don Wieringa, Freemantle Crocodile Park Pty. Ltd. Fremantle, Western Australia.
- Wyndham Crocodile Farm, Wyndham, Western Australia.
- Z. Casey, Pelts and Skins Export Ltd., Kenner, LA, USA.
- George Saputra, C.V. Alona Jaya, Indonesia.
- Robert and Ellen Young, Thonotosassa, FL, USA.
- Jonathan Politano, Miami Beach, FL, USA.
- Alian Ruswan, Medan, Sumatra, Indonesia.

EDITORIAL

CSG FUNDRAISING DRIVE. Last year (1994) the CSG ran a deficit in its operating expenses. Revenues for general operations amounted to \$59,065.96 and expenses totalled \$62,715.29. The resulting deficit was made up from our small reserve fund but it is self evident that the CSG cannot function indefinitely on deficit financing. We are also severely constrained by periodic cash flow difficulties from our hand to mouth financing. Our 1994 income was derived primarily from the donations for general operations totalling \$54,170.46 made by 18 Patrons. Considerable additional funds were made available by other donors for Special Projects such as printing and distributing the Proceedings of the Pattaya Meeting and financing a revision of the Action Plan. However, these funds do not contribute directly to our operational expenses, but are used almost entirely to fund the specific projects for which they were donated.

In order to ensure that we receive sufficient revenues to meet our basic operating expenses we are embarking on a program to broaden our support base and increase the number of Patrons who support general operations. We do not anticipate that individual Patrons will significantly increase the amount of the donations they currently make, but if we could double the number of such donors we would be able to significantly improve services and financial stability. To achieve this special letters have been sent to all current and past Patrons requesting that they renew their support for CSG. These materials, sent to 40 donors, include material drawing attention to the significant accomplishments of the CSG in conservation of crocodilians and promoting sustainable use as a conservation tool. Another 46 letters have been sent to long time members of CSG and commercial

operators (Farmers, Tanners etc.) who have expressed interest and support for CSG, inviting them to become Patrons. These letters also request assistance in identifying additional new donors. If every current CSG supporter would identify and recruit just one additional donor, our fund raising goals could be easily met. Additionally we propose to mount an aggressive program to double the number of Newsletter recipients who make a donation to support Newsletter costs. For the last three years less than 120 of the more than 700 Newsletter recipients made a donation and the funds raised (around 4,000/year) were less than half of the cost of Newsletter production and distribution. Doubling the number of Newsletter donors would make the Newsletter self supporting and allow its continued distribution without charge to the many recipients who truly cannot afford a donation.

Goals for the drive are to increase the number of major Patrons to 30 and double the pool of smaller contributors and Newsletter subscribers. We will also restructure our recognition of donors at different levels and we propose the following titles to recognize the increasing generosity of our supporters:

Contributor donations between \$500 and \$1000 in the current year. **Supporter** donations of \$1,000 to \$3,000 in any one year. **Friend** donations from \$3,000 up to \$25,000. **Big Bull Crocs** donations exceeding \$25,000 accumulated over any period. We are also approaching all the Associations and industry groups to solicit their support for CSG.

We do not anticipate that we will greatly increase our basic operating costs beyond normal inflation. Instead, the increased income that a broader funding base could provide will enable us to level out the present wild fluctuations in our fund balance and broaden our activities. We are now providing vastly improved services to all CSG members through the Newsletter, publications, and our new on-line computer access (see article page 20 below). We are also increasingly involved in active participation in crocodile management programs such as the recent reviews in PNG and Thailand and the ongoing Tomistoma survey. It would be immensely valuable if we could fund these activities directly, instead of relying on the good services of our members and the contributions of other organizations. For many years we have been aware of the need to provide support for our various Vice Chairmen as they conduct CSG business at their own expense, and to support participation of students and others at our meetings, but funds have been lacking. A broader funding base will facilitate these and other improvements in CSG function. By maintaining operating costs and receiving donations exceeding expenses each year we will accumulate a reserve that we can apply to more conservation action. Please don't wait to receive your personal invitation to become a CSG Patron. A donation of the value of just a couple of crocodile skins from each of you would meet our fund raising goal. -- *Eds.*

GUEST EDITORIAL

[The Guest Editorial was thought to be of sufficient regional importance that it should appear in its original Spanish. An English translation follows. -- *Eds.*]

USO Y ABUSO DEL CAIMAN NEGRO. DIFICULTADES QUE AFRONTA PARA SU RECUPERACIÓN. Aunque ninguna de las ponencias del exitoso " II Congreso Internacional sobre Manejo de Fauna Silvestre en la Amazonia" (Iquitos, Peru 7-12 Mayo 1995) se refirió

específicamente a algún aspecto relacionado con el manejo del caimán negro, muchas fueron las lecciones aprendidas con relación a lo que está ocurriendo con esta especie. La situación es en muchos casos una extraordinaria paradoja entre el valor otorgado en el pasado al caimán negro por su piel - situación que lo llevó a un exterminio que lo colocó a las puertas de la extinción debido a la forma irracional en que se llevó a cabo su persecución - y la situación actual. El presente refleja una ausencia total de valoración de la especie por parte de las comunidades que comparten su hábitat con el caimán negro, indígenas y no indígenas. Dado el poco aprecio que existe por su carne, y ante la imposibilidad legal y práctica de comercializar su cuero (ver más adelante), aparecen una serie de "usos" que reflejan la urgente necesidad de devolverle a esta especie su valor económico y así poder proteger su relativamente lenta recuperación poblacional como requisito para dar inicio a programas de aprovechamiento sustentables, sobretodo en el aspecto de hacer partícipes a las comunidades locales en la distribución equitativa de los beneficios económicos derivados de su explotación.

Los mensajes desde Iquitos indican, por ejemplo en Bolivia al norte del Dpto. de Santa Cruz, la caza llamada deportiva encuentra blanco en esta especie con el fin de llevar como trofeo de caza sus patas, o la carne de la cola para ser utilizada como carnada de pesca en un río que otrora le dio el nombre de Río Negro de Caimanes dada la abundancia de *Melanosuchus* en sus aguas (com. pers. Pamela Rebolledo). Leticia, puerto colombiano sobre el río Amazonas, sigue siendo lugar de acopio de carne de caimán negro que es vendida a los habitantes del interior del país como "pescado yacare", el más barato de los mercados marginales. Los últimos datos igualmente indican que se está generando un mercado igualmente ilegal de pieles dirigido desde Leticia (J. Marcio Ayres com. pers.). La situación más alarmante, se presenta a continuación en el informe que al respecto escribe el biólogo José Álvarez Alonso, quien vive hace 18 años con las comunidades del río Pucacuro (afuente del río Tigre, Perú) y donde se realiza una práctica que está generando una enorme presión sobre el caimán negro ante la necesidad de estas comunidades indígenas de dinero para poder adquirir mercancías en los mercados de caseríos y ciudades (artículo siguiente, página 14). El uso de *Melanosuchus* como carne podrida, se refiere también a algunas regiones del río Yavari, cerca a la frontera Perú- Brasil. Otros usos detectados han sido la colecta, práctica accidental, de huevos, uso medicinal de la grasa, la colección de cráneos y dientes para la venta de artesanías.

El mensaje es claro: si los diferentes países de la cuenca amazónica no inician pronto un programa de conservación dirigida a la efectiva recuperación de la especie para que sus números viabilicen programas de explotación racional, los habitantes locales encontrarán un uso, cualquiera sea, para así aprovechar un recurso fácil de adquirir, y que está para ellos por encima de cualquier argumento ecológico o estético sobre la necesidad de su conservación dadas sus necesidades inmediatas. La última reunión de las Partes de CITES aprobó la propuesta Ecuatoriana de iniciar un programa de rancheo; esperemos que su operación sirva de ejemplo y motivación a otros países, y le otorgue a las poblaciones silvestres de caimán negro y el medio en que se encuentra, el valor suficiente para que las comunidades locales no tengan que recurrir a ese otro tipo de uso que solo deteriora, que solo extermina y sigue empobreciendo. A pesar de que buena parte de la solución está en la coordinación entre las autoridades de los países amazónicos en un accionar conjunto para salvar esta especie y mejorar las condiciones apremiantes de las comunidades amazónicas, el papel de los especialistas está en dar las pautas, biológicas y sociales, para que los programas de explotación de una de las especies más promisorias de toda la Amazonia eviten que último en usos posibles: como carne podrida, acaben de una vez por todas con esta especie. -- Bernardo Ortiz-von Halle, *UICN Sur America, Casilla 17-17-626, Quito, Ecuador.*

USE AND ABUSE OF BLACK CAIMAN: DIFFICULTIES FACING ITS RECOVERY.

Although none of the reports of the recent successful 2nd International Congress on Wildlife Management in Amazonia (Iquitos, Peru, 7-12 May 1995) referred exclusively to black caiman, nevertheless, we learned a great deal about what is currently occurring with this species. The situation is an extraordinary paradox between the former value given to black caiman for its skin (which led to the brink of extinction due to irrational persecution) and the present situation. The present situation reflects the total absence of any value of the species to the communities who share the habitat of the black caiman. Despite the low demand for the meat, and the present impossibility of legal and practical commercial use of skins (although more on this below), communities of both indigenous people and recent settlers have developed a series of 'uses' for black caiman which impact the species throughout Amazonia. These ongoing uses reflect the urgent necessity to create some economic value from black caiman in order to protect the relatively slow recovery of the species on which sustainable uses must be based. Above all, it shows the need to ensure the participation of local communities and the need for equitable distribution of the economic benefits derived from the exploitation of black caiman.

Among examples learned at the Iquitos meeting is the situation in northern Bolivia, Department of Santa Cruz, where Black caiman are hunted for sport, solely for the feet as trophies and for the tail meat to use as fish bait. This is reported from a river which used to be called River of the black caiman due to the abundance of *Melanosuchus* which used to be found there (P. Rebolledo pers. comm.). Leticia, the Colombian port on the Amazon, is a storage and distribution site for black caiman meat which is sold to the inhabitants of the interior as "pescado yacare" which is the cheapest meat available in the poor markets. The latest information indicates that an equally illegal market for the skins of black caiman is developing in Leticia (J. Mario Ayres pers. comm.). The most alarming report comes from biologist Jose Alvarez Alonso, who has lived for 18 years among the Indian communities of the Rio Pucacuro (a tributary of the river Tigre in Peru) describing the local use of rotten black caiman meat as bait to trap tortoises! (see report page 14) This practice, which is putting heavy pressure on the black caiman population, is driven by the need of indigenous communities for cash to acquire commodities in city markets. A similar use of rotten caiman meat is also reported from the region of the Rio Yavari near the border of Brazil and Peru. Other known uses include the collection, on a casual basis, of eggs for food, the collection of skulls and teeth for sale to artisans, and the medicinal use of fat.

The message is clear. If the countries of the Amazonian region do not quickly begin conservation programs directed at the effective recuperation of the species by numerous viable programs of rational exploitation, then the local inhabitants will find their own uses, whatever they can, in order to harvest this easily acquired resource. The local people will place their immediate needs above all ecological, aesthetic or conservation arguments. The last meeting of the Parties to CITES approved the proposal of Ecuador to begin a ranching program for black caiman. We hope that their operation serves as an example and a motivation to other countries. Such use grants to the wild populations of black caiman, and to the habitat they are found in, a sufficient value for the local communities that they will not have to resort to other deleterious uses, which can lead only to extermination of the resource and eventual impoverishment of the communities. A good part of the solution will be in the coordination between authorities of the Amazonian countries in joint action to save the species and simultaneously improve the living conditions of Amazonian communities. The input of specialists will set down the biological and social guidelines for the exploitation of the species. The black caiman is one of the most promising species for sustainable use in all of the Amazon. Rational use will avoid the worst possible use, as rotten meat, which will end for all time, this species.

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STEERING COMMITTEE MEETING

CROCODILE SPECIALIST GROUP, Regional discussion, Santa Fe, Argentina, 19 May 1995.

Present: F. W. King, A. Larriera, A. Velasco, J. Thorbjarnarson, S. Trachter, O. Menghi, H. Zambrano (delegate for A. Villa), J. P. Ross. CSG Members: L. Verdade, A. M. Trelancia, B. Shwedick, A. Imhof, T. Waller, P. Micucci. Observers: V. Lichtschein (CITES, Argentina), M. Queiroz, M. Morales, C. Morales, C. Pina, T. Hakansson, D. Arias, N. Feludero, V. Rodriguez.

The Fifth Regional Meeting on *Caiman latirostris* and Regional meeting of the CSG brought several CSG Steering Committee members together and the CSG Chairman approved the opportunity to hold a discussion on regional issues. The meeting convened at 4.30 pm 19 May under the chairmanship of the Regional Deputy Vice Chairman, A. Larriera.

NEXT WORKING MEETING OF THE CSG. The dates for the next meeting are proposed for 13 -17 May 1996. Alejandro reported on progress to date identifying sponsors and initiating government and NGO assistance. The Fundacion Habitat (an Argentine NGO) has joined Alejandro's organization (INTA/MAGIC/MUPCN) as a host organization and preliminary identification of suitable facilities undertaken. A proposal is in preparation for presentation to the Argentine Government for official approval and assistance for the meeting. Obdulio Menghi noted the great importance of the meeting regionally and proposed that information be made available for distribution through the new CITES Magazine, and directly from the CITES Secretariat to Management Authorities in Latin America. In response to a question about the availability of financial assistance to participants it was noted that while the host organizations have offered to provide accommodations to a selected group of participants, it was not thought appropriate that representatives of Management Authorities should be subsidized by CSG. The long standing policy of CSG not to provide financial assistance for participant travel was noted. It was agreed that Alejandro would coordinate with the Executive officer to develop detailed plans for the meeting and this was done. A call for preliminary registrations and papers will go out with the current Newsletter (July 1995).

TRANSFER OF EXOTIC SPECIES OF CROCODILIAN. The Executive Officer summarized events concerning three recent situations regarding transfers of exotic species. These were enquiries from Thai sources attempting to obtain *A. mississippiensis* and *C. crocodilus* to start captive breeding, a request to transfer *C. niloticus* from South Africa to China, and a request from a Hong Kong trader for *C. porosus* for sale to China. In each case the CSG had intervened through the action of the Chairman, members and the Executive Officer to advise proponents of the CSG policy that we would not recommend transfer of exotic species into the range of other crocodilians for commercial purposes. Discussion followed on the complexity of this issue and the carefully worded nature of the CSG policy, key elements of which are underlined above. While the CSG has a firm opinion that transfer of exotics is not desirable we have neither the obligation or the capacity to police all crocodile transactions. After discussion the regional group agreed that CSG should encourage Regional Vice Chairman to monitor and respond to these issues, pointing out that fundamental responsibility for exotic transfers lay with the commercial proponents and government regulators of trade. The basic policy of CSG was recognized and confirmed. Alvaro Velasco requested that a short letter be sent to the head of the Venezuelan Management Authority clarifying the CSG position and the Exec. Officer undertook to do so.

U.S. REGULATIONS ON IMPORTATION OF YACARE. The Executive officer provided a summary of the current developments in this protracted affair. The US Management Authority has prepared draft regulations and resolved some internal conflicts regarding them. These draft regulations are expected to be released for public comment, but no firm timetable for this event is known. Upon release for public comment CSG will be informed, and will in turn inform all interested members. Comments may be submitted by both US and non-US sources and will be the opportunity to shape the outcome. Some optimism was received from the response by the US to the submission by range states, made at the CITES meeting. However, realistically, it seems probable that US regulations will continue to be restrictive. The current political climate in the US government opposing excessive regulation may assist the process. Obdulio Menghi and Sergio Trachter indicated that their independent information confirmed this analysis. The only issue currently available for action was the timely release of the draft regulations for public comment and the regional group recommended that CSG continue to make polite enquiries about when this might occur. Should the regulations be unduly delayed then individual range states should intervene at a diplomatic level.

On a positive note, it was reported that CSG has established cordial relations with the US authority and that in response to an invitation to attend the present meeting, Dr. Susan Lieberman had asked that the outcome be communicated back to her. The Executive Officer undertook to prepare a letter.

RESURGENCE OF ILLEGAL TRADE IN BLACK CAIMAN. John Thorbjarnarson summarized recent information indicating that the local trade in black caiman in Amazonia, formerly restricted to trade of dried and salted meat, is expanding to include skins. We have known for some time that there is an extensive trade in meat of black caiman in Amazonia, where it is sold as fish. Meat has been traded from sources in Brazil, primarily up the Amazon river to Leticia in Colombia, as well as along the Amazon to Belem (Brazil) and Iquitos (Peru). Recent reports from researchers in the region suggest that the trade now occurs year round and may involve as much as several hundred tons of meat a year. Until recently skins were discarded, but there are now reports that buyers in Colombia are requesting that skins also be collected. Studies by Ronis da Silveira in Brazil suggest that the impact of this harvest may be somewhat mitigated as it is concentrated on subadult males found in the more open habitat, while females are restricted to very inaccessible areas. Nevertheless, the resurgence of illegal trade in black caiman at the moment when some populations may be recovering and sustainable use programs are being developed, is of grave concern. Additional reports of use of black caimans by indigenous people in Ecuador and Peru have been received.

After some discussion the regional group agreed that a very strong statement and action by the CSG, regional members and regional governments was required. It was noted that control of centralized warehouses and shipping points was far easier than controlling widely scattered subsistence hunters. The group recommended that a coordinated program to alert appropriate authorities about this issue should be undertaken as follows:

- Publicity about the situation in the CSG Newsletter.
- A letter from CSG to the Management Authority of each Amazonian Country (Ecuador, Peru, Brazil, Colombia and Venezuela) requesting their vigilance and action.
- A parallel advisement through the CITES Secretariat to members of the CITES Standing Committee and Animals Committee and the regional representative (CSG member Mirna Quero).
- Additional advice to consumer countries (Japan, Singapore, Italy, France, Germany and Taiwan) alerting them to the possibility of illegal sources of black caiman.

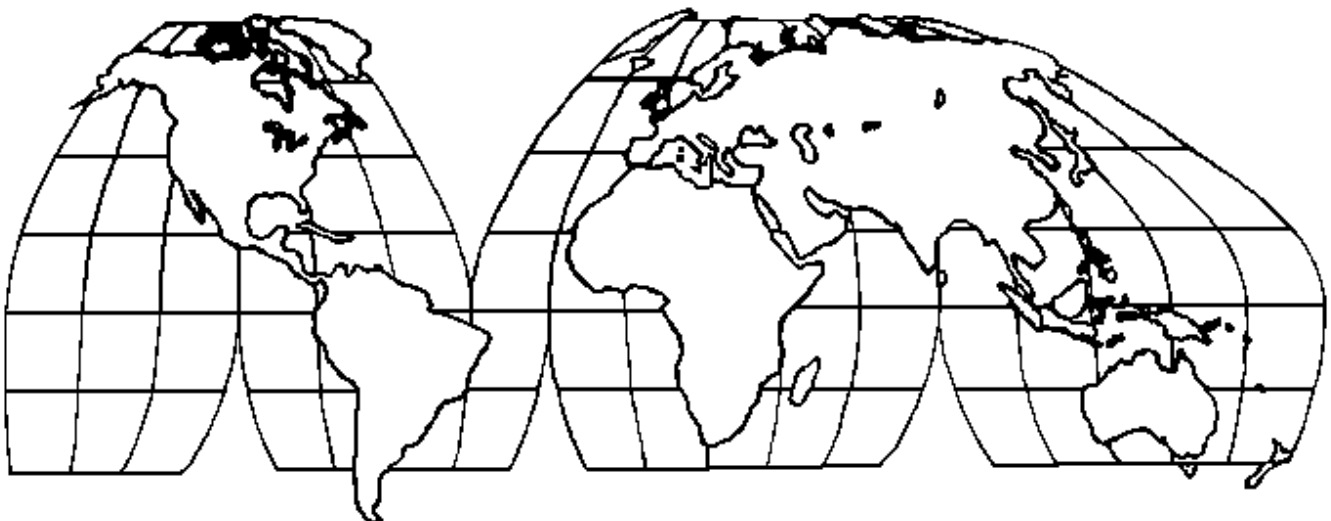
The Executive Officer and Obdulio Menghi agreed to coordinate the production of the necessary letters. It was finally noted that the meeting of the Treaty for Amazonian Cooperation will be held later this year in Leticia, Colombia, which would provide a further avenue for investigating this issue.

APPLICATION OF HONDURAS TO REGISTER A CAPTIVE BREEDING FACILITY FOR *CROCODYLUS ACUTUS*. A proposal to list Cocodrilos Clal Continental "Finca la Sierra" of San Pedro Sula, Honduras, was received by the CITES Secretariat in late 1994. In accordance with Resolution Conf. 8.15 Annex 3, the Secretariat has notified the Parties of this request and sent the proposal for expert review to CSG and WCMC. In response the Executive Officer replied to CITES in a letter of 25 March 1995 reporting the deliberations of the CSG as reported in the minutes and Newsletter. The proposal under consideration is essentially the same as that submitted informally for CSG review in March 1994. The absence of any detailed description of regulatory procedures by the Honduras Management Authority was noted and a series of concrete recommendations made to make up this deficiency were presented to CITES and copied to the Honduras Management Authority. Additional reviews have been solicited by IUCN Trade program from other CSG members and submitted to the Secretariat. Obdulio Menghi informed the regional meeting that two countries, USA and Venezuela, have advised the Secretariat of objections to this proposal. They requested additional information and drew attention to several points requiring attention from the Management Authority of Honduras. Noting the proposed meeting the CITES Animals Committee in Guatemala in September 1995 and the associated CITES training seminar in Honduras, the regional meeting suggested that this might be an opportunity for CITES and the CSG to examine first hand what mechanisms are in place and proposed to establish effective crocodylian management in Honduras. The executive officer was asked to communicate with the Honduras Management Authority informing them of these discussions and offering CSG expert assistance.

PROGRESS OF CROCODYLIAN MANAGEMENT IN ECUADOR. It was recalled that at the 9th meeting of the Conference of the Parties, the proposal of Ecuador to transfer *M. niger* to Appendix II for ranching was approved subject to two conditions; 1) Ecuador establish an export quota of zero until a management system was in place. 2) That the CSG would review the management system and recommend to Ecuador and to the Secretariat what further changes in the export quota should be approved. Obdulio Menghi noted that the official version of the CITES minutes may not adequately reflect the binding nature of these conditions on Ecuador. The Executive Officer reported that immediately following the CITES meeting a letter noting these conditions and advising the Secretariat of this situation was sent to CITES. The absence of the representatives from the Ecuadorian Management Authority at the regional meeting was noted and regret expressed that this fine opportunity for information exchange had been lost. (Following the regional meeting a report was received indicating that a schedule for development of the ranch has been approved but no information is forthcoming on the nature of proposed regulatory controls.) To follow up, the Executive Officer was asked to draft a letter to Ecuador, copied to CITES specifying our understanding of the situation and requesting information on their progress.

There being no further business, the meeting closed at 6.20 pm after noting that this may be the shortest and most efficient CSG meeting on record. The evident benefits of delegating regional issues to regional meetings, while keeping the whole CSG informed, was noted.

AREA REPORTS



WESTERN ASIA

India:

PRELIMINARY SURVEY OF *CROCODYLUS PALUSTRIS* IN THE KABINI RIVER. The Kabini river, a tributary of the Cauvery river, originates in Kerala State and flows through the Nagarhole National Park in Karnataka State, south India. The Park forms part of the Nilgiri Biosphere Reserve and is situated at the foothills of the Brahmagiri mountain range with an area of 643 km² at elevations of 700 - 850 m covered with dense tropical rain forest. In 1974 an irrigation dam was constructed forming a large lake that separates Nagarhole from Bandipur National Park. The area is one of the best managed and protected areas in India with one of the densest populations of tiger in India. Karnataka State is the only state with *C. palustris* in India that has not been surveyed.

A preliminary survey of crocodiles in the area was conducted during March - May this year when the water level is lowest, the dam opened and water drains downstream to the Cauvery river. Surveys were undertaken by boat over two days in April between 1600 and 1800 hours. Spotlight surveys could not be carried out due to lack of necessary permits. Eighteen crocodiles were counted on the first day and eleven on the second day. Animals ranged from 1.5 to 3.5 m and were observed basking on the river banks and islands formed in the lake. The crocodiles were observed on small grassy islands basking among herds of wild elephants, which kept a safe distance from the reptiles. During additional river bank surveys by jeep more crocodiles were counted giving a total of 23 individuals sighted, one of 1 m, 18 between 1.5 and 2.5 m and four in the 3-4 m size class. Several tunnels used by muggers, and high river banks suitable for nesting were observed. A 5 km stretch of river between Kabini lodge (a tourist resort) and the Kerala border had poor habitat and some illegal fishing and no crocodiles were seen in this section. A more detailed survey could not be carried out as these preliminary observations were made in conjunction with filming a wildlife documentary. A comprehensive survey is proposed to include the Kabini river, the larger Cauvery river and other mugger habitat in Karnataka State as several good stable populations are reported in the region. I thank the Karnataka Forest Dept. and Mr. Devaraj, Forest Ranger for their interest and help and Romain Andrews for typing the manuscript. -- Harry Andrews, *Madras Crocodile Bank, Post Bag 4, Mamallapuram, TN 603 104, India.*

Nepal:

UPDATE FROM NEPAL. CSG members will be pleased to hear that Dr. Tirtha Maskey has returned to his position as the Director General of Nepal's Department of National Parks and Wildlife Conservation. This should assist ongoing mugger and gharial conservation efforts there. The local IUCN Office has now been officially established and can now act on conservation issues and allocate its resources and sponsor projects under its own mandate. The report on Crocodile Conservation in Nepal, presented and published in the Proceedings of the Pattaya Meeting is now also published by IUCN Nepal and a limited number of copies are available from Dr. Bishnu Bhandari, IUCN Nepal, P.O. Box 3923, Kathmandu, Nepal. This summer the IUCN Wetlands Programme will continue its crocodile work with counts on the Narayani and associated floodplain wetlands. We will also update the database on hatching success, growth and release of mugger from the government headstart and breeding facility under the auspices of Dr. Maskey and Mr. Yadav. -- Preston McEachern, *UMC Fish and Wildlife, 112 Stephens Hall, Colombia, MO 65211, USA.*

KARNALI / NARAYANI BIODIVERSITY CONSERVATION PROJECT. Brian Smith was accompanied by SSC Specialist Group experts and representatives of scientific institutions from India and Nepal in a four day float-down the Karnali River from Kachali in Nepal to the barrage near Amabardia in India. This was a preliminary activity of the multidisciplinary project coordinated by Mr. Smith involving participation by SSC Specialist Groups on cetaceans (river dolphins), otters, fresh water turtles and crocodiles (gharial and mugger) and both Indian and Nepali researchers. CSG is represented in the project by Harry Andrews and Preston McEachern and although neither was able to participate in the floatdown their ongoing research is the crocodylian component of the project. During the float down 16 adult gharial were seen in both Nepal and India as well as a diversity of river dolphins and turtles and numerous tracks of other wildlife that use the river. The overall goal of the project is to investigate the status, ecology and life history of aquatic wildlife as a basis for the development of an effective conservation action plan and to integrate sustainable economic development of the river basin resources with aquatic wildlife conservation efforts. The floatdown provided a valuable preliminary overview of wildlife resources and human impacts in the system. Some points emerging from the floatdown were the complex dynamics of the braided stream environment that concentrates biodiversity (particularly dolphins and gharial) in localized, vulnerable patches, and the necessity for both designation of biodiversity sanctuaries and conservation zones, and the support and involvement of local people. The strong potential for ecotourism and the sensitivity of the system to catastrophic alterations provide the background for biodiversity conservation and sustainable development efforts. The project is currently supported by interim funding from IUCN/SSC and the Ocean Park Conservation Foundation and major funding is being sought to implement this bi-national and multidisciplinary project. -- *from correspondence and draft proposals, Brian D. Smith, P.O. Box 283, Arcata, CA 95524, USA.*

EASTERN ASIA & OCEANIA

China:

CROCODYLE GALL BLADDER EXPECTORANT PILL. The medicine has been carefully prepared extracting the gallbladders of the crocodile and the three noted snakes together with active principles of certain valuable herbs grown in China, through up-to-date scientific processes, made into condensed form. Commonly tested and used in big hospitals in China by noted physicians. Clinical finding reveals its high effectiveness in clearing sputum, stopping coughing, because of its anti-inflammatory power, very good in result.

Ingredients: Crocodile Gall Bladder juice 15%, Three snakes gall juice 15%, Almond extract 5%, Fritillaria Sungbie Hsiao 10%, Pinellia 5%, Aster tataricus L.F. 7%, Old orangepeel 8%, Peipa leaf 8%, Glycerin 7%, Aquilaria sinesens 8%, Polygala tenuilun 7%.

Indications: Good for severe coughing, sputum and tenacious sputum, sore throat, laryngitis and chronic and acute bronchitis. Produced by

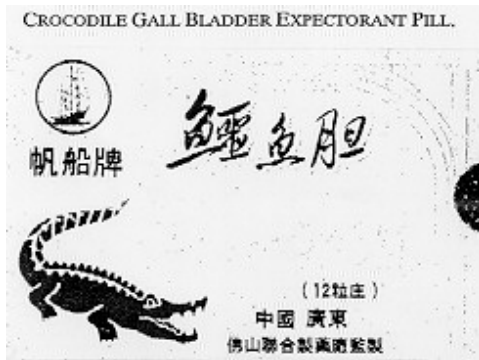


Photo: Crocodile gall bladder expectorant pill label.

Papua New Guinea:

NEST MONITORING SURVEY RESULTS. At the February meeting of the Asian Conservation and Sustainable Use Group (ACSUG), representatives of the Papua New Guinea industry proposed that an independent observer oversee the 1995 *Crocodylus porosus* nesting survey. Between 9 and 17 March 1995, Charlie Manolis of Wildlife Management International Pty. Ltd., participated with the PNG Department of Environment and Conservation (DEC) in the annual nest survey on the middle Sepik River and examined past nest survey data.

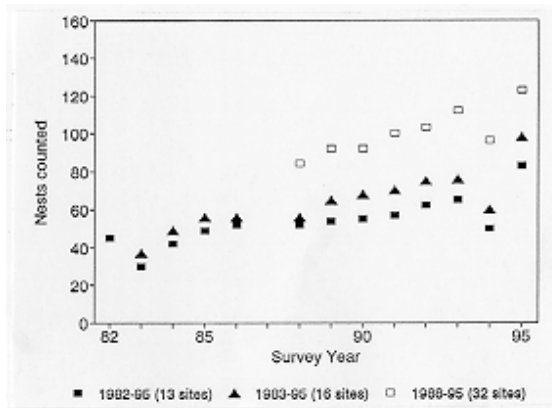


Figure: Trends in nest counts of *C. porosus* on the Sepik river Papua New Guinea. Redrawn from Manolis 1995.

The surveys were conducted from a Bell-206 helicopter between 12 and 15 March, systematically checking survey sites using methodologies and locations that have been used since the initiation of the project in 1982. The areas surveyed in 1995 include the prime nesting sites in the middle Sepik river and represent nesting trends in the region as whole. It is estimated that the East Sepik Province, containing the Sepik River, supplies some 60% of the wild skins and live crocodiles taken in PNG. The Western and Gulf Provinces together provide around 20% and all the other Provinces combined provide the remaining 20%. The middle Sepik river is thus of particular importance as a monitoring zone.

Nest count data were examined from data supplied by the National Crocodile Management Unit, a number of unpublished survey reports to DEC and reports published in CSG PROCEEDINGS from 1986, 1990 and 1994, as well as raw data from the present survey. Various discrepancies were noted between different reports, mainly from earlier surveys. Some sites have been split up in recent years and the names of some sites have changed. In some cases errors detected after reports were completed were adjusted in later reports. The data used in this analysis were considered to be the best available, and while some errors may remain, they are small and would not affect the conclusions in any significant way.

Nest counts were compiled for 64 sites, including information from several sites that had been variously combined or separated in different years. Of the 64 sites, only 13 have been surveyed annually since 1982, 16 sites were surveyed every year from 1983 - 1995, while 32 sites were surveyed every year from 1988 to 1995. The raw nest count data indicate an initial increase in nesting followed by a period (1985-1988) when nest counts remained stable, then from 1988 onwards a steep increase in the number of nests. An exception is the nest count for 1994 indicating low nesting at many sites, which is thought to be associated with an extremely dry nesting season. Nest counts returned to normal levels the following year. Overall, the raw data indicate consistent increases in the number of nests in the survey area of between 2% and 6% annually. The sixteen sites surveyed since 1983 contain the majority of the nests counted and could be considered to be representative of primary nesting habitat. The larger sample of 32 sites surveyed since 1988 indicate the percentage increase applicable to the nesting population as a whole. Previous reports of variable or decreasing indices of nesting density appear to be due to the use of a "habitat-weighted index" applied in the early years of the program and continued to the present. Because of changes in the survey sites, and variable classification of habitats within sites, this index may be misleading.

Additional indications of the present status of the crocodile populations may be inferred from available data on egg and skin harvest and skin exports. Analysis of this data by region is recommended.

Recommendations for maintaining and improving the survey system and results were offered including: training of personnel, standardization of data collection forms, careful mapping of habitats within localities, standardization of site names, recording of habitat alteration (e.g. by fire), assessment of environmental conditions for nesting, determining a standard set of survey sites and systematically collating available data. Overall the survey methodology used to search sites and locate nests is considered sound. The raw data indicate nesting is increasing, rather than stable or decreasing, regardless of which subset of the data is analyzed. Improved treatment of the survey results should create a solid foundation for monitoring the population. -- *Extracted from: Monitoring Crocodylus porosus Nests in Papua New Guinea: A Review with Recommendations.* C. Manolis, *Wildlife Management International Pty. Ltd. P.O. Box 530, Karama NT 0812, Australia.*

RECENT CROCODILE ATTACKS IN PNG. Two attacks by crocodiles on people have been reported in the press in recent months. Competitors in the Alotau Annual Fishing Competition called off the competition early after a puk puk (crocodile) snapped at the arm of a competitor when he was dive fishing for bait. The croc made off with a torch the fisherman was using. The fisherman was rushed to hospital where he was treated and spent the night before he was discharged next day.

In another incident in West New Britain a local village lad was killed and police are hunting the crocodile, which is alleged to be 10 m long and as wide as a 44 gallon oil drum. Fabian Magale, 13, was swimming with his family when he was seized and carried off by the crocodile. He was the 13th victim of a large crocodile in the district. Police will stay at Barema river bank until they kill the crocodile. -- *Submitted by Greg Mitchell, Bush Development Pty. Ltd., P.O. Box 1134, Madang, Papua New Guinea, from material in the POST COURIER March and May 1995.*

Philippines:

CROCODILE CONSERVATION WEEK. Many Filipinos deride crocodiles by comparing them to corrupt politicians, greedy businessmen or selfish athletes, but the City government of Puerto Princesa City, through the initiative of the Crocodile Farming Institute, took the unprecedented step of paying a tribute to these much maligned reptiles. March 6-11 was declared crocodile week in Puerto Princesa. Sammy Magbanua, CFI's Information Officer explained that the city was requested to declare an annual Crocodile Conservation Week as part of our efforts to change the prevailing negative impression many Filipinos have to crocodiles. While crocodiles are portrayed as greedy, selfish vermin, in fact they play a vital role in the ecosystem and have great potential to contribute substantially to the country's economy because of their valuable hide and meat. "It is actually an insult to crocodiles to compare them with our unscrupulous countrymen," added Magbanua.

CFI Project Director Dr. Gerardo V. Ortega lauded the government's support of crocodile conservation. This is the first time that a local government unit has set aside a week to pay tribute to crocodiles and is indicative of the administrations sincere concern for the protection of fast vanishing wildlife. During Crocodile Conservation Week elementary and high school students participated in a painting contest, essay writing contest and a quiz show. So the people of Puerto Princesa have taken the initial steps in recognizing the ecological and economic importance of these magnificent reptiles, the only survivors of the Dinosaur age. Once feared and ridiculed, Puerto Princesans are now giving the respect and attention these crocodiles rightfully deserve. -- *Press release, CFI, P.O. Box 101 Irawan, Puerto Princesa City 5300, Palawan, Philippines.*

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CENTRAL & SOUTH AMERICA

Argentina:

REGIONAL MEETING OF THE CROCODILE SPECIALIST GROUP. Between 18 and 20 May numerous crocodile specialists converged on Santa Fe, Argentina, for a Regional Meeting, convened around the 5th Workshop on *Caiman latirostris*. The meeting was hosted by Alejandro Larriera on behalf of Proyecto Yacare (Convenio INTA/Magic y MUPCN) and Fundación Habitat y Desarrollo of Santa Fe. The meeting opened with presentations from Victor Trucco Subsecretary of Natural Resources and Victoria Lichtschein Director of Fauna and Flora and head of Argentina's CITES Management Authority. Keynote presentations were made by Obdulio Menghi of the CITES Secretariat on functioning of CITES; Perran Ross, CSG, on sustainable use and conservation of crocodylians; and John Thorbjarnarson and Alvaro Velasco presenting models of crocodile conservation from Venezuela's experience. Practical presentations were made by Anacleto Arruda on caiman ranching in Brazil's Pantanal; Alba Imhof on progress of the Santa Fe *Caiman latirostris* project; Wayne King on caiman surveys and conservation in Paraguay; Tim Moulton on growth studies of wild caiman in estuarine environments in Brazil, and Bruce Shwedick and Luciano Verdade on several aspects of captive breeding of *Caiman latirostris*. Vigorous discussion and amenable social activities characterized the meeting. A motor launch trip on the Parana River and a day trip to Proyecto Yacare's field site near San Xavier allowed participants to experience local wetlands, and even see some wild *C. latirostris* despite the unseasonably cool weather. The meeting was extremely ably organized by personnel of Proyecto Yacare coordinated by Alba Imhof and Cristina von Fink, with enthusiastic support from Carlos Piña, Anna, Sandra and the other members of the Proyecto Yacare team.



Photo: Opening of the Regional Meeting of the CSG and 5th *Caiman latirostris* Workshop. Left to Right: F.W. King, V. Trucco, P. Ross, O. Menghi, V. Lichtschein, J. Alvarez & A. Larriera.

The meeting provided an opportunity for a regional discussion by members of the CSG Steering Committee present (report above, page 2) and for initial examination of facilities for the 13th CSG Working Meeting to be held in Santa Fe 13-17 May 1996. In addition to inspecting hotels and meeting facilities, an advance CSG team comprised of Perran Ross, John (Juan Caimán) Thorbjarnarson, Tony Hakkanson and Alvaro Velasco have established that Santa Fe is the beer capital of Argentina with four local breweries and a large selection of local and national brews. In addition, plentiful supplies of Argentine wine and the friendliness of the local inhabitants ensure that the fundamental requirements for a successful CSG Working Meeting will be met. -- J. P. Ross, *CSG Executive Officer*.

Brazil:

RESURGENCE OF ILLEGAL TRADE IN SKINS OF BLACK CAIMAN

MELANOSUCHUS NIGER. At the Regional Meeting of the Crocodile Specialist Group held in Argentina 19 May 1995 CSG received most disturbing information concerning a reported increase in the illegal trade of skins of black caiman (*Melanosuchus niger*) in the Amazonian region (see Guest Editorial and Steering Committee discussions above). Our information, received from biologists working in the region, is that demand for black caiman skins has recently increased dramatically. Such demand can only be to support illegal trade and we feel this disturbing development requires the most energetic attention and action from all the CITES Management Authorities in the region.

We have been informed for some time of a trade in the dried and salted meat of *M. niger* from sources in Brazil to Leticia (Colombia), where it is sold as "fish" (Pirarucu or *Arapaima* sp.) when demand for white meat is high. We are now informed that trade has expanded to include advanced distribution networks of hunters and traders moving the meat to Belem and Iquitos as well as Leticia on a year round basis and possibly involving several tons of dried meat a year. The most disturbing recent development has been reports from the region that buyers in Colombia have now requested that skins of *M. niger* also be traded.

This apparent interest in illegal trade in *M. niger* skins comes at a most unfortunate time. The species was decimated by unregulated exploitation during 50's and 60's and reduced to isolated fragments of its former abundance and range. Since the imposition of both national protection and international controls under CITES in the mid 70's the species appears to have made modest recovery in those areas where habitats remained and illegal hunting was controlled. The recovery of the species is allowing the cautious development of programs for sustainable use by ranching programs that would provide incentives for continued recovery. These developments are most advanced in Ecuador where the 9th Conference of the Parties transferred *M. niger* to Appendix II (Ranching) with a zero export quota while the Management Authority establishes its management plan. A re-emergence of illegal trade places these developments in jeopardy. The slow recovery of the species will be compromised by unregulated hunting and the illegal trade will undermine the developing control mechanisms necessary for sustainable use.

For these reasons CSG has urged the Secretariat of CITES and the Management Authorities of the Amazonian countries to take the most energetic measures to bring this illegal trade under control. We urge all the concerned authorities to immediately investigate the trade in *M. niger* meat and skins and to increase their vigilance for the possibility of illegal shipments of this species leaving the region. Because the demand for these skins is outside the region, it would be most effective to

attempt control at key locations where skins are likely to be accumulated and shipped overseas by air freight or container, such as Leticia, Iquitos and Manaus. Authorities should also be particularly alert for attempts to launder *M. niger* skins as shipments of captive raised caimans of other species. We have also contacted Management Authorities in the main consumer countries for caiman skins alerting them to the possibility of illegal imports. We further urge all Management Authorities to coordinate information and intelligence on this matter to allow the most effective enforcement action.

We believe that a concerted and coordinated enforcement effort would discourage this illegal trade before it acquires momentum and becomes widespread. A strong signal must be sent to illegal operators that their activities will not be tolerated. The continued recovery of *M. niger*, and its future conservation, are dependent upon establishing regional controls on trade and sustainable use programs. The species has great potential for economic benefits, and is slowly returning to abundance. It would be a great loss if unregulated trade reversed these advances.

The CITES Secretariat has been asked to use its resources to advise the appropriate CITES Management Authorities of this important matter. The Crocodile Specialist Group will be pleased to assist CITES and national authorities in every way to bring this situation under control. --
Adapted text of a letter drafted at the Regional Meeting of the CSG and forwarded to CITES Secretariat and CITES Management Authorities in Brazil, Colombia, Venezuela, Ecuador, France, Germany, Italy, Singapore, Japan and Thailand. J. P. Ross, Executive Officer, CSG.

Ecuador:

REPORT ON ADVANCES IN BLACK CAIMAN RANCH MANAGEMENT. As a member of the Convention on International Trade in Endangered Species of Wild Flora and Fauna, Ecuador presented a proposal to change its population of Black Caiman from Appendix I to Appendix II (Ranch management) at the 9th Conference of the Parties. This proposal was approved with the assistance of the CSG. Upon approval of the proposal the National Directorate of Natural Areas and Wildlife (INEFAN) has authorized the licensing for experimental management and ranch development to Mr. Pablo Evans.

Following the schedule established for the program, the following activities have been established during the first and second quarters of this year (1995).

First quarter. Construction of ponds (50 m²) and a drainage canal for the ponds, acquisition of necessary pumps and other equipment, training of farm personnel and INEFAN personnel in collection and marking of hatchlings, partial collection of hatchlings and preliminary contacts with local communities who will continue hatchling collection. In the second quarter a fish pond for raising tilapia of 2,475 m² and additional hatchling ponds of 50 m² are underway as well as equipment additions. Relations with the local communities will be strengthened and additional collection of both eggs and hatchlings will be undertaken. The recommendation of INEFAN is that local communities participate actively in the collection of eggs and hatchlings and their initial care, as well general habitat protection of the species. Communities should be remunerated both in money and in improved social compensation for these services. INEFAN also recommends the implementation of annual monitoring in order to assess the population and the effects of harvest to guarantee the success of the project.

In addition INEFAN has requested technical advice from CSG concerning the size range in which young black caiman should be collected for the ranch. After consultation with several CSG members, CSG recommended that hatchling collection be restricted primarily to animals under 40 cm length, which are likely to be young hatchlings of the present season. Another sample of hatchlings up to 45 cm length could be marked for growth trails both in the ranch and in the wild. The importance of undertaking experimental verification of growth of hatchlings and the better understood dynamics of egg collection for ranches were emphasized. Additional recommendations for the prompt initiation of development of a regulatory structure for ranches and ranch products was offered. CSG and INEFAN continue to work together to develop the Ecuadorean management plan and an invitation to discuss the proposed regulations in depth at the Animals Committee meeting and CITES Training Seminar in Central America in September was made. -- *Translated from INFORME DE AVANCE DEL PROYECTO MANEJO DEL CAIMAN NEGRO MEDIANTE EL SISTEMA DE RANCHING EN LA AMAZONIA ECUATORIANA, Mayo 1995, A. Paucar, INEFAN, Quito, Ecuador, and correspondence.*

Peru:

UNA DESCONOCIDA (Y TRISTE) FORMA DE EXTERMINIO DEL CAIMAN NEGRO.

Las poblaciones del caimán negro (*Melanosuchus niger*) estaban comenzando a recuperarse ligeramente en la Amazonía Peruana después del exterminio casi total a que fueron sometidas durante la época de la exportación masiva de pieles (años 60 -70). Sin embargo, los nativos y mestizos de las riberas de los ríos amazónicos han encontrado un nuevo uso 'no tradicional' al hoy sin valor lagarto negro, como es conocido localmente. Su piel ya no tiene valor comercial, y su carne no es apreciada por el hombre, pero sí por la tortuga terrestre o 'motelo' (*Geochelone denticulata*), que acude a comerla cuando está en descomposición. La carne del motelo es muy apreciada y alcanza altos precios en los mercados locales.

La técnica de caza consiste normalmente en cavar un hoyo en el suelo del bosque de 30-40 cm de diametro en la boca y 60-70 cm. en el fondo, y de 80 cm a 1 m de profundidad. Encima del hueco el cazador coloca colgado el caimán, entero si es pequeño, o un pedazo si es grande, y espera unos días. Los motelos son atraídos por el olor de la carne en descomposición y caen en el hueco. Si el lugar escudido es bueno (el nativo sabe qué lugares son buenos para el motelo; pantanos de Mauritia, árboles caídos etc.) encontrará 2, 3 y a veces más ejemplares en cada trampa, según suerte. Con un caimán de 1.5 m. ceban hasta 3-4 trampas, con uno de 0.6 m solo una. Un cazador típico instala a veces 10 a 15 trampas, que trabajan para él mientras busca otros animales en la selva.

En áreas donde no hay caimanes usan como cebo animales o pescado cuya carne no es apreciada, como oso hormiguero, perezoso, a veces tapir e incluso animales muy amenazada de extinción como lobo de río (*Pteronura brasiliensis*) y huapo rojo (*Cacajao calvus*). Entre los pescados suelen colocar anguilas eléctricas o rayas. Sin embargo, los caimanes en general, y el negro en particular, son las presas favoritas de los cazadores de motelo en los lugares donde abundan. El caimán negro es el más preferido por varias razones: su carne no es apreciada como comida, al contrario de lo que ocurre con la de los otros dos caimanes grandes peruanos, *Caiman crocodilus* y *Paleosuchus trigonatus*, y tarda bastante en pudrirse (hasta 7 días), con lo que las probabilidades de capturar tortugas aumentan; su dura piel evita que sea comida por los buitres; su captura es relativamente fácil y barata (un hapón, una linterna (\$2.00 US) y un par de pilas (\$1.00 US)) bastan para que un cazador en una noche capture un buen número de ejemplares e instale una o dos docenas de trampas para motelo, que le pueden reportar, según lugares y suerte, varias docenas de

tortugas. Los precios de las tortugas varían según tamaño y lugar. En lugares lejanos de la ciudad, como el río Tigre, una hembra de 30-40 cm. puede alcanzar de \$3 a \$5 US, lo que es buen ingreso para un día de trabajo para un nativo. En la ciudad de Iquitos su precio alcanza los \$10 - \$12 para una hembra del mismo tamaño (los machos valen siempre algo menos).

A veces los nativos utilizan perros entrenados para capturar motelos, pero esto no es frecuente y sólo se da en las cercanías de los centros poblados. Cuando los pescadores y cazadores van a lugares alejados no llevan perros, como ocurre con los que ingresan a la Reserva Nacional Pacaya Samiria, uno de los últimos reductos del caimán negro en la Amazonía Peruana. También los cazadores capturan motelos ocasionalmente durante su búsqueda de otros animales, pero según un cálculo realizado para el río Tigre, entre el 50% y el 80% de los motelos capturados en algunas áreas lo ha sido con trampas, en las que con toda seguridad se ha empleado en buen número caimán negro como cebo. No tiene información precisa de otras áreas, sobre si es utilizado de forma habitual el caimán negro como cebo, aunque sí se sabe que la práctica de poner cebo al motelo está muy extendida por toda la Amazonia Peruana.

También es bastante común que los pescadores extirminen los caimanes en los lagos donde pescan, bien sea porque los consideran un peligro cuando son grandes, o porque les causan un perjuicio grave cuando rompen sus redes.

Un plan de recuperación de las poblaciones de esta especie en la Amazonía Peruana debería tener en cuenta esta práctica y tratar de impedir la comercialización a gran escala de los motelos en las ciudades. La ley sólo permite su captura para autoconsumo, y está prohibida su comercialización. Solamente en Iquitos se venden diariamente ciento de motelos, que podemos advenir han costado la vida a varias decenas, duante menos, de caimanes. Bloquear la demanda de tortugas terrestres o motelos en las ciudades sería la medida más barata y eficiente a corto plazo para apoyar la recuperación de las poblaciones de caimán negro. -- José Alvarez Alonso, *Río Tigre, Amazonía Peruana, Peru.*

A PREVIOUSLY UNKNOWN (AND SAD) FORM OF EXPLOITATION OF BLACK CAIMAN. Populations of the black caiman have begun to recover slightly in the Peruvian amazon since the almost total extermination during the period of massive exploitation for skins in the 60's and 70's. However, the natives and mestizos living along the rivers of the Amazon have discovered a new nontraditional use for the currently valueless caiman. The skins are no longer of value and the meat is not relished for human use. However, the decomposing caiman meat is greatly enjoyed by the land tortoise (*Geochelone denticulata*), known locally as 'motelo'. The meat of motelo is very popular and commands a high price in local markets.

The hunting technique for the tortoises consists of excavating a hole in forest soil of 30-40 cm diameter at the mouth and enlarging to 60-70 cm at the bottom, and about 80 cm to 1 m deep. Above the hole the hunter hangs a bait of caiman, complete if it is a small caiman, or a piece if it is large. After some days the tortoises are attracted by the smell of the rotting meat, and fall into the hole. If the trapping location is good, they catch 2, 3 or sometimes more specimens in each trap. A caiman of 1.5 m is enough to bait 3 or 4 traps while a small caiman of 0.6 m is used for just one. A hunter typically places 10 or 15 traps which work while he is hunting other animals in the surrounding forest.

In areas where there are no caiman, other animals whose meat is not favoured are used for bait,

such as anteaters, sloths, sometimes tapirs and also highly endangered animals such as the giant river otter and the 'huapo rojo' (*Cacajao calvus*, a very rare cebid monkey). However, caimans in general, and black caiman in particular, are the favorite bait for tortoises. The black caiman is preferred because its meat is not relished for human consumption, unlike the other common crocodylians of the region (*Caiman crocodilus* and *Paleosuchus trigonatus*). The meat rots slowly, lasting for up to 7 days, which increases the chance of catching tortoises, and the hard skin is resistant to vultures. Capturing black caiman is also easy and cheap. All a hunter needs is a harpoon, a flashlight and a couple of batteries, to catch enough caiman to bait one or two dozen traps, and catch several dozen tortoises. The value of the tortoises varies depending on the size and the location. In places far from the cities, like Rio Tigre, a female of 30 - 40 cm can be worth \$3 - \$5, which is equivalent of good day's salary for the locals. In the city of Iquitos the price of such a female is \$10 - \$12 US (males are usually worth a little less).

Sometimes the natives use trained dogs to catch tortoises, but this is only common near population centers. When the fishermen and hunters go to distant locations they do not take dogs, as when they penetrate the Pacaya Samiria National Reserve, which is one of the last refuges of black caiman in Amazonian Peru. Hunters also capture tortoises while hunting for other animals, but calculations in Rio Tigre indicate that 50% - 80% of the tortoises are caught in traps and one can be confident that a large number of black caiman are used to bait the traps. We do not have precise information from other areas on whether it is usual to use black caiman as bait, but we do know that the practice of setting baited traps for tortoises is widespread in all of Amazonian Peru.

It is also quite common for fishermen to exterminate black caiman in the lakes where they fish, in part because they fear that they are dangerous when they become large, and also because of the great inconvenience caused when the caimans tear up the fishermen's nets.

A recovery plan for black caiman in the Peruvian Amazon must take into account the large scale commercial trade in tortoises and try to impede this practice. The law only permits capture for personal consumption and prohibits commercial sale. However, in just Iquitos hundreds of tortoises are sold every day and we can deduce that this costs the lives of many dozens of caimans. Blocking the demand for tortoises in the cities would be the cheapest and most efficient short term measure to assist the recovery of the black caiman population. -- *free translation of the preceding article.*

NORTH AMERICA

Canada:

CANADIAN CROCODILE COURTING. Karel Fortyn, curator of the Seaway Mall Serpentarium in Welland, Ontario, Canada, reports that the museum's two Orinoco crocodiles have been mating and he is hoping there will soon be signs that the female is pregnant. Fortyn first brought the crocodiles to Canada as hatchlings from South America in 1987 when they were 20 cm long. Now the male is about 3.5 m long and the female about 3 m. If successful, this will be the first reproduction in captivity by this endangered species outside its native Venezuela and Colombia. Fortyn and his staff and volunteers will monitor the crocodiles 24 hours a day as the expected time of nesting approaches. If the eggs are laid in the water and can be put into an incubator within half an hour he estimates they have a 50% chance of hatching. -- *Adapted from THE TRIBUNE, Welland, Ontario, Wednesday 19 April 1995, submitted by Scott Allen, 77*

Baronwood Ct., Ontario, Canada.

Mexico:

CROCODYLUS ACUTUS ATTACK ON MEXICO'S WEST COAST. Nile and saltwater crocodiles are well known as man eaters and the American alligator is also documented with several attacks on a regular basis. Several other species, including the American crocodile, are also known for occasional attacks on humans. One case occurred two years ago near the outskirts of Puerto Vallarta, Jalisco, on Mexico's west coast, in an area characterized by small ponds, (one and half acres each), estuaries, rivers and temporary wetlands, mixed with farmland. In this place an indeterminate number of American crocodiles coexist at close quarters with people living in poor rural colonies. In the last half of August, 1993, an eight year old boy was seized by a crocodile approximately three meters long along a small river 1.5 m wide and 0.5 m deep located 20 m from the boy's house. The victim's uncle told us that the crocodile was trying to leave the area, dragging the boy with his head and left arm between its jaws, when a group of young men approached and hit the animal with stones, branches, even pulled it by the tail and making the croc release the boy, who fortunately escaped the episode with more fear than damage. Apparently the animal lacked its longest teeth, making no serious wounds. It is believed that the aggressor croc was once a captive which escaped from the boy's house about three months before the attack. This may help to explain the lack of fear for humans and its proximity to the house.

Several months after the attack we visited the zone and photographed a large wild individual that seemed to be about four meters long, using birds near him for a size comparison. This confirms the presence of large American crocodiles still living in the area. -- Carlos J. Navarro & Luis E. Navarro, *Ap. postal #484, Guayamas, Sonora C.P. 85400, Mexico. E-mail: cnavarro@campus.gym.itesm.mx*

United States:

AMERICAN ALLIGATOR COUNCIL. The American Alligator Council met in Rockefeller Refuge, Grand Chenier, Louisiana, on 22 April 1995. Alligator farmers, trappers and land managers from Louisiana and Florida as well as representatives of State Wildlife Management Agencies in both states were present. A plan to raise dues by a check off system was discussed and the President, Tommy Hines, asked to further research the possibility. A discussion of export of live alligators was held. The meeting was informed on recent actions taken by the CSG in this regard. The meeting agreed to pursue this issue with the US Fish and Wildlife Service as the responsible CITES Management Authority in this case. A proposal for a detailed investigation of the economic structure and impacts of the alligator industry was presented and discussed. Don Ashley summarized current activities promoting American alligator and Dennis David provided details of Florida requirements for the packaging and sale of alligator meat and how Louisiana producers might meet these requirements. General discussion on how the American Alligator Council could best further the interests of the alligator industry as a whole were held. Building membership and stabilizing financial support and day to day business operations were recognized as necessities. Following the business meeting an amazing pile of Louisiana crawfish and a prodigious barbecue were provided by the generous hospitality of the Louisiana Fur and Alligator Council. -- T. Hines, *1314 SW 186th St. Newberry, FL 32669 USA.*

ALBINO ALLIGATORS. In early March, Tom Crutchfield's Reptile Enterprises Inc. in Bushnell, Florida and Alligator Adventures at Barefoot Landing of Myrtle Beach SC, USA, acquired seven albino American alligators. These are the only true albino American alligators known. The animals came from a wild collected clutch from Louisiana and originally comprised 4 males and 3 females. The alligators are being held in outdoor enclosures and sun themselves like normal pigmented crocodilians. An additional male and three females from the same clutch with normal coloration are presumed to be heterozygous for albinism and are also being kept at Barefoot Landing. -- Randal Berry, *P.O. Box 1145, Bushnell, FL 33153, USA.*



Photo: Tom Crutchfield with one of the albino alligators. R. Berry photo

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ZOOS



CAPTIVE BREEDING OF PHILIPPINE CROCODILES. Gladys Porter Zoo in Brownsville, Texas, USA, currently holds 3.1.21 Philippine crocodiles, *Crocodylus mindorensis*. These represent 2 adult wild caught males, one subadult male and one adult female captive hatched at Silliman University, Philippines, and 21 juveniles hatched at Gladys Porter Zoo in 1991, 1992, 1993 and 1994. The hatchlings are the progeny of the only known breeding pair outside the Philippines. In June 1994, a tentative plan for the first stage of a cooperative effort to develop a North American conservation program for the Philippine crocodile was approved by the American Zoo and Aquarium Association (ASA), Crocodile Advisory Group (CAG). The draft plan has now been approved by Dr. Angel Alcala, Secretary of the Environment and Natural Resources, Philippines. In October 1994, 4 juveniles were shipped to Gator Jungle at Plant City, FL; 4 to Silver Springs FL; and 4 to Black Hills Reptile Institute. An application to export 4 animals back to Silliman as part of the 1988 agreement with Dr. Alcala has been submitted and repatriation of the crocodiles is expected by summer.

Eli Alcala, the biologist in charge of the crocodile breeding program at Silliman crocodile farm states that young *mindorensis* cannot be accurately sexed by conventional means [i.e by inspection/palpation of the genitalia - Eds.] until they reach a meter in length. The farm has been breeding *mindorensis* since the early 1980's and Eli claims they still have difficulty producing female offspring. The diagnostic laboratory at Texas A & M University has advised us that none of the full term, dead-in-the-egg babies we have sent them appears to be female. We have varied the incubation temperature, following Jeff Lang's suggestion, in order to accomplish just that.

As an experiment, the 1994 clutch was left in situ, and a temperature probe was placed in the nest chamber. Initial readings were at 34.4 C°. A shade shelter was immediately constructed over the nest, and subsequently daily temperatures ranged from 30.8 to 33.7. Of the 17 eggs laid only four hatched. Two went full term and died. It is likely that some of the remaining 11 were infertile and many others died early in incubation due to extremely high nest temperatures. Once again the two full term animals were determined to be males by the Texas Veterinary Medical Diagnosis Lab. At Gladys Porter, the search for how to make a female Philippine croc goes on, as does the search for temporary homes to carry out the rearing aspect of this conservation project. -- *From reports to the ASA Crocodile Advisory Group, Collette Hairston Adams, Gladys Porter Zoo, 500 Ringgold Street, Brownsville, TX 78520, USA.*

CROCODILE ADVISORY GROUP, ASA. The Crocodile Advisory Group (CAG) of the American Zoo and Aquarium Association (ASA) met in Silver Springs, Florida, USA on 9 -11 April 1995. Under the guidance of Coordinators Peter Brazaitis, Andrew Odum and Bill

McMahan, a full agenda of discussions on captive breeding of crocodiles in American institutions was held. Reports on the current status of breeding programs, studbooks and Species Survival Plans (SSP's) were heard on Chinese alligator (John Behler), Cuban crocodile (Bill McMahan), Siamese crocodile and Indian gharial (P. Brazaitis), and false gharial (Bill Ziegler). More detailed discussions followed on the management plan for *Tomistoma* and a proposed management plan and SSP for the Cuban crocodile.

Bill Ziegler reported in detail on his success at breeding *Tomistoma* and the rather special requirements these difficult crocodiles seem to have. In Bill's experience *Tomistoma* does not reach sexual maturity until rather large size (10-12 feet for males and 8 -10 feet for females) and mating success was achieved when the male was considerably larger than the female. As the majority of the captive stock in the US is relatively young and small, and there is a severe shortage of large males, this constitutes a serious impediment to breeding success. *Tomistoma* also appear to do best if placed in isolated circumstances, not on public view, and Bill has found that the placement of heavy vegetation in the enclosure, and a mat of floating vegetation on the water, increases mating activity and breeding success. These observations are in general accord with speculations about *Tomistoma* in the wild, where it is suspected to be a rather solitary crocodylian with a preference for heavily vegetated habitats. Discussion on how to increase US holdings of large males and the most advantageous distribution of current stock were productive. Information on the ongoing CSG survey of *Tomistoma* in Indonesia by Grahame Webb and colleagues was related and the possibilities this might open for cooperative exchange with Indonesia discussed.

Bill McMahan and Perran Ross summarized current and proposed activity on the Cuban crocodile, both the results of the recent field survey and the plans for cooperative interactions with the Cuban breeding facility.

After a productive day the group repaired in canoes down the Silver Spring run where informal discussions continued. An evening barbecue and reptile show and further day of business meetings rounded out the meeting. Thanks are due to Jesse Durham, Supervisor of Reptiles and the fine staff of Silver Springs for their hospitable assistance. -- J. P. Ross, *Executive Officer CSG*.

FALSE GHARIAL BREEDING AT AALBORG ZOO. Aalborg Zoo in Denmark has for the moment a pair of *Tomistoma schlegelii* that arrived in the zoo in June 1972. These animals, estimated to be 24 years old, are most probably wild born. The pair are housed in our Tropical house in a small enclosure of 39 m² with a water area and areas of sand and peat. Heating pads are embedded in concrete areas. The gharials are fed fish and rats with extra vitamin A, D₃, and E injected in the food.

We have now for some years bred *Tomistoma* and the method is very simple. In October - November we shut the heating places off and the animals become inactive and stop eating. The heating places are turned on again in January and the gharials come into breeding condition in the spring. The eggs are laid in July and are hatched in a heating cupboard.

Table 1. Egg laying in Captive *Tomistoma* at Aalborg Zoo

Laid	Hatched	Incubation Temp.
------	---------	------------------

4 Jul 90	20 Oct 90	32°C
15 Jul 91	did not hatch	32°C
30 Jul 92	25/27 Sep. 92	32°C
27 Jul 93	7 Oct 93	31°C
16 Jul 94	19 Oct 94	30°C

Two or three eggs are laid on top of moistened vermiculite in a plastic box measuring 20 x 20 x 15 cm. The correct humidity is attained when 1 liter of vermiculite weighs 200 g. The eggs are not turned but are aired once a day. The temperature was varied between 30 - 32°C in an attempt to produce both males and females.

Table 2. Reproductive output of *Tomistoma* at Aarlborg Zoo.

Year	laid/incubated	hatch/Survived 6 mos
1981	- / -	- / 1
1985	25 / -	3 / 2
1990	- / 10	1 / 1
1991	15 / -	0 / 0
1992	- / 6	3 / 1
1993	16 / 12	3 / 3
1994	15 / 12	3 / 3

Most, if not all, of the eggs that did not hatch were not fertilized. We have speculated on the reasons for this. Is the semen of bad quality? Is there a disease problem, are the animals infected with a parasite, or is the cause behavioral? All these questions are open for closer research. -- Jens Lilleor, Asbjorn Ejlersen & Lars Jacobsen, *Aalborg Zoo, Molleparkvej 63, 9000 Aalborg, Denmark.*

CORRECTIONS

QUESTIONS ABOUT STOMACH STONES. Newsletter Vol 13(4):23-24. In the article, the opinion that the Yale X-ray motion pictures of gastrolith activity in a caiman might be inconclusive or even misleading was erroneously attributed to the 'popular paleontological literature'. Author Franklin Ross has written to correct that this opinion is his own and that he suggests that the radio-opaque marker substance used may have irritated the stomach lining and be responsible for the observed gastric activity. He goes on to discuss a number of published reports of this interesting experiment. Darby and Ojakangas, 1980, *Journal of Paleontology*, 54 #3, provide the most detailed account. Franklin informs us of an unpublished attempt to reproduce the caiman digestion observations at Harvard and a report for the Newsletter is forthcoming. Readers wanting detailed elaboration of the point should contact Frank directly. -- *From correspondence* Franklin Ross, *Boekelstraat 14, 2131 WT Hoofddorp, The Netherlands.* [The editors apologize that in shortening Franklin's original report, the sense on this point was distorted. We will be more careful in future. -- *Eds.*]

PUBLICATIONS



NEW PUBLICATION ANNOUNCEMENT

LA CONSERVACIÓN Y EL MANEJO DE CAIMANES DE AMÉRICA LATINA. Vol. 1. 1995.
A. Larriera and L. M. Verdade (Eds.) Fundacion Banco Bica, Santo Tomé, Santa Fe,
Argentina:232 pages. ISBN 950-9632-21-X.

Fourteen original papers on the theory and practice of sustainable use of crocodilians for their conservation in Latin America with an introduction by the Chairman of the Crocodile Specialist Group of SSC/IUCN, Professor H. Messel. Papers are presented in Spanish (10) and Portuguese (4), with summaries in English. The first in a continuing series of practical resource material on this topic for Latin America. The volume is a definitive introduction to sustainable use strategies for crocodilian conservation, presenting broad models for sustainable use and detailed descriptions and analyses of ongoing and developing programs.

Contents:

- Introducción. La conservación y el manejo de caimanes de América Latina. H. Messel, F. W. King & J.P. Ross.
- A conservação de crocodilianos na América Latina. W.E. Magnusson.
- La importancia del uso sustentado para la conservación de los cocodrilianos. J.P. Ross.
- Dinámica poblacional de crocodilianos: elaboración e uso de modelos. C.L. Abercrombie & L.M. Verdade.
- Biología reproductiva do jacaré de papo amarelo (*Caiman latirostris*) em São Paulo, Brasil. L.M. Verdade.
- Los yacares en Argentina: hacia un aprovechamiento sustentable. P.A. Micucci & T. Waller.
- *Caiman latirostris* y *Caiman yacare* en la Reserva Ecológica El Bagual (Formosa, Argentina). A.A. Yanosky & C. Mercolli.
- Perspectivas de la conservación de caimanes en Bolivia. L.F. Pacheco & F.W. King.
- Estado de conservación de los Crocodylia en el Perú. P.G. Vasquez & C. Pickens.
- Estado poblacional y conservación del caimán del Orinoco en Venezuela. J. Thorbjarnarson & A. Arteaga.
- Algunas patologías na criação de jacares no Brasil. E.R. Matushima.
- Ranching de *Caiman crocodilus yacare* no Pantanal de Matto Grosso do Sul, Brasil. E.J. Marques & E.L. Montiero.

- Programa de manejo de la baba (*Caiman crocodilus*) de Venezuela. A. Velasco, R. De Sola & M. Quero.
- Areas de nidificación y momento óptimo de cosecha de huevos de *Caiman latirostris* en Santa Fe, Argentina. A. Larriera.

Price: Argentina and bordering countries- \$26.00 US, other countries- \$30.00 (includes shipping).
 Make checks or money orders payable to: A. Larriera, *Fundacion Habitat, San Lorenzo 1582 3000 Santa Fe, Argentina.*

CSG ON-LINE

This is a new section of the Newsletter to report the rapid developments in computer network resources for crocodilians.

E-MAIL NETWORK. If you are connected to E-mail, please send us a short E-mail with your address. We will prepare a list of CSG members on E-mail and circulate it in a future Newsletter. For convenience in identifying network addresses in Newsletter text we will usually set them off in a '**bold**' font to differentiate them from surrounding text. When they appear as part of an author's address, we will follow our usual convention of setting them in italics. If you are new to this, remember that the addresses have to be letter perfect to work and often look like they are misspelled - don't correct them. -- *Eds.* E-mail: *kaiman@flmnh.ufl.edu*

CSG URL PAGES. We have utilized facilities available to us here at the Florida Museum of Natural History to append a CSG URL to the FLMNH Homepage. We can be accessed at **http://www.flmnh.ufl.edu/docs/departments/crocs.htm**. We currently list a short description of CSG and a couple of issues of the Newsletter. The only constraint to putting on more Newsletters is the time necessary to format them for the network. We intend to add Newsletters as they are published and distributed. We also intend to put the text of our REVISED ACTION PLAN FOR CROCODILES and various other "active working documents" on the URL to make them available for comment by web users. One project that will immediately benefit from this treatment is a request received from IUCN for us to reclassify all the crocodilian species using the newly published IUCN Red List Categories (1994). Some of the discussion of these evaluations can occur through the network. At the recent IUCN Species Survival Commission Steering Committee meeting in Chicago there was much discussion about linking Specialist Groups through the network and it is likely that IUCN and SSC will be developing server networks to make it easier to find each other and useful information in the future.

Some of you are certainly already lamenting that, "I am not on the network - I don't even have a computer! Will I be left out of CSG?". Absolutely not, like you, one of your editors finds all this a bit intimidating and scary, I am therefore committed to both utilizing this remarkable new communications technology to make all our jobs easier, and at the same time maintaining full communications by fax, phone, mail, carrier pigeon, and if necessary, loud shouts and whistles. The printed edition of the Newsletter will remain a primary mechanism of communication and the

official record of Steering Committee meetings and other pronouncements, although these may be also disseminated via the web. I look forward to hearing from you all frequently by every mechanism available. -- Perran Ross, *Executive Officer CSG, Florida Museum of Natural History, Gainesville, FL 32611, USA.*

CROCODILIAN BIBLIOGRAPHY. Mason Meers announced the posting of a new World Wide Web (WWW) `page' that he hopes will function as an ongoing repository of information on crocodilian biology. He has assembled a bibliography of all things crocodilian, currently totalling around 2,000 references. The list is arranged alphabetically by author and is split into three parts to accommodate the size of the file. The list can be searched using key words that are likely to be in the literature citation (author, journal title, taxon). Mason invites web users to review the bibliography and comment back to him, providing full instructions on how to do so in the list. The Crocodilian Bibliography can be accessed at <http://www.welch.jhu.edu/homepages/mmeers/html/croc.bib.cover.html>. -- Mason Meers, *Johns Hopkins University Dept. Cell Biology & Anatomy, 725 N. Wolfe St. Baltimore, MD 21205, USA. E-Mail: mmeers@welchlink.welch.jhu.edu*

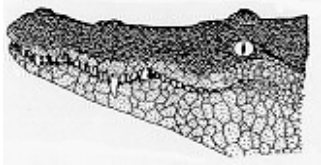
ALLIGATOR LISTING. See <http://gnv.ifas.ufl.edu/www/agator/htm/aligator.htm> for a simple guide to alligator facts and biology assembled from standard references. -- Institute of Food and Agricultural Sciences, *University of Florida, Gainesville, FL 32611, USA.*

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REQUESTS

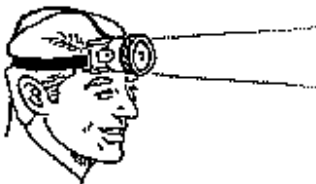


CROCODILIAN EMBRYONIC MATERIAL. Martin Kundrat of P. J. Safarik University, Slovak Republic, is very interested in the structure and development of the chondocranium of Archosaurs, especially their basicranium. At present he has very little crocodilian material, one specimen of *Caiman crocodilus fuscus* (subjuvenile) and one specimen of *Paleosuchus trigonatus* (juvenile). He has requested some embryo materials from Dr. Parntep Ratanakorn of Crocodile Management Association of Thailand, but he would very much like to obtain specimens of embryo material from other crocodilian genera, particularly *Gavialis*, *Melanosuchus*, *Osteolaemus*, *Tomistoma*, *Caiman*, *Alligator*, *Crocodylus* as well as additional *Caiman* and *Paleosuchus*. Researchers who can assist with exchange or gift material can contact him via E-mail at mkundrat@kosice.upjs.sk or write -- Martin Kundrat, Dept. Anthropology and Zoology, Faculty of Natural Sciences, P.J. Safarik University, Moyzesova 11, 041 67 Kosice, Slovak Republic.



Graphic image: C. Navarro, Ap. Postal 484, Guayamas, Sonora, C.P. 85400, Mexico.

PERSONALS



Maria Tereza Queiroz Melo (Known as 'Tereca'), Rua Moacie Santana 40/42, Porto Alegre, RS 91.530-170 Brazil, did a masters degree with Bill Magnusson and is now studying *Caiman latirostris* in Rio Grande del Sul and Sao Paulo in southern Brazil. She is currently conducting studies in river, lagoon and marsh habitats, monitoring populations with mark and recapture studies, and looking at habitat use. She recently attended the CSG meeting in Argentina and is looking forward to further contact with CSG members.

Santiago R. Ron, P.O. Box 17-03-1419, Quito, Ecuador, recently completed his Licenciatura thesis entitled 'Estudio poblacional del caiman negro, *Melanosuchus negro* y del caiman blanco *Caiman crocodilus* en las lagunas de la Amazonia Ecuatoriana', in Spanish with English summary (ii +113 pp, 37 figures, 4 tables and 6 appendices). The thesis covers topics of sex ratios, population composition by size, abundance, environmental influences on spotlight counts, wariness and species ratios and interspecific spatial relations.

Grahame Webb, Charlie Manolis, Brett Otley, Mark Bezuijen and other associates of Wildlife Management International draw attention to their new postal address at P.O. Box 530, Karama, NT 0812, Australia. Their phone and fax numbers remain unchanged.

Juan Villalba-Macias, Vice Chairman for South America and the Caribbean, and his wife **Dany Soler de Villalba-Macias** proudly announce the birth of their first son, Juan Domingo, on 5 July 1995. Felicitaciones Juan, Dany y Juanito.

MEETING ANNOUNCEMENT

THE 13TH WORKING MEETING OF THE CROCODILE SPECIALIST GROUP WILL BE HELD IN SANTA FE, ARGENTINA, 13 - 17 MAY 1996.

All enquiries for the meeting should be addressed to the organizers at:

Fundación Habitat y Desarrollo
San Lorenzo 1582
3000 Santa Fe, Argentina

FAX: 54 4 259 6154
E-Mail: yacare@unl.edu.ar

A preliminary registration form and request for information was enclosed with the printed hardcopy edition of the Newsletter. Please return the form to the organizers in order that they can plan facilities. Full information on travel, accommodations, events and other information will be sent directly to all preliminary registrants.

An outline of the scientific program and call for papers will appear in the next Newsletter.

SPECIAL SECTION

REVISED IUCN RED LIST CATEGORIES FOR CROCODILIANS. IUCN has recently revised the criteria for species conservation status. The ratings in both the IUCN Red Data Book and Lists were sometimes vague and arbitrary and so new criteria have been developed which are objective (i.e. measurable and quantitative), universal (i.e. apply to all or most taxa) and flexible. The revised criteria are based upon an understanding of population dynamics and how these affect the probability of a species becoming extinct in a given period of time (Mace & Lande 1991, Mace et al. 1993). Species that remain numerous and widespread, and have no specially limiting features of life history, are considered less likely to become extinct in immediate (1-10 years) or ecological (10 -100 years) time. Species which show a sharp reduction in numbers or distribution or which have specially limiting life histories (e.g. extremely long periods to reach maturity, special habitat requirements) are more likely to become extinct.

Quantitative guidelines to assess these parameters are given. IUCN RED LIST CATEGORIES 1994 provides a valuable and improved method for evaluating species status. A preliminary attempt to apply the new criteria to crocodilians is attached as a table, with text of the criteria reproduced. IUCN has asked us to provide an updated status evaluation by August 1995. CSG members are invited to carefully consider the criteria and send their opinions on the best listings to the CSG Executive Officer in Gainesville, who will compile our first response. It is also proposed to hold a workshop to further refine these evaluations at the 13th Working meeting in Santa Fe. The criteria appear a little complex, but are arranged in a logical hierarchy of fairly simple statements. The best available quantitative data are preferred, but best estimates and gut feelings ('inferences') are perfectly acceptable. Note that to attain a given status, a species only needs to qualify for one of the criteria (A, B, C, D, or E). Species distribution is addressed either as extent of occurrence, which is the same as distribution (e.g. a line enclosing all the known records of a species) or area of occupancy, which for crocodilians would be the actual area of wetlands or swamps occupied. A full explanation of the criteria, with definitions is available from SSC.

CRITICALLY ENDANGERED (CR)

A taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future, as defined by any one of the following criteria (A-E).

A. Population reduction in the form of either of the following:

1. An observed, estimated, inferred or suspected reduction of at least 80% over the last 10 years or three generations, whichever is the longer, based on (and specifying) any of the following:

- a) direct observation
- b) an index of abundance appropriate for the taxon
- c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
- d) actual or potential levels of exploitation
- e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.

2) A reduction of at least 80%, projected or suspected to be met within the next ten years or three generations, whichever is the longer, based on specifying any of b), c), d) or e) above.

B. Extent of occurrence estimated to be less than 100 km² or area of occupancy estimated to be less than 10 km², and estimates indicating any two of the following:

1. Severely fragmented or known to exist at only a single location.
2. Continuing decline, observed, inferred or projected in any of the following:

- a) extent of occurrence
- b) area of occupancy
- c) area, extent or quality of habitat
- d) number of locations or subpopulations
- e) number of mature individuals.

3. Extreme fluctuations in any of the following:

- a) extent of occurrence
- b) area of occupancy
- c) number of locations or subpopulations
- d) number of mature individuals

C. Population estimated to number less than 250 mature individuals and either:

1. An estimated continuing decline of at least 25% within 3 years or one generation, whichever is longer or
2. A continuing decline, observed, projected or inferred in numbers of mature individuals and population structure in the form of either:
 - a) severely fragmented (i.e. no subpopulation estimated to contain more than 50 mature individuals)
 - b) all individuals in a single population.

D. Population estimated to number less than 50 mature individuals.

E. Quantitative analysis showing the probability of extinction in the wild is at least 50% within 10 years or 3 generations, whichever is longer.

ENDANGERED (EN)

A taxon is Endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future, as defined by any one of the following criteria (A-E).

A. Population reduction in the form of either of the following:

1. An observed, estimated, inferred or suspected reduction of at least 50% over the last 10 years or three generations, whichever is the longer, based on (and specifying) any of the following:

- a) direct observation
- b) an index of abundance appropriate for the taxon
- c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
- d) actual or potential levels of exploitation
- e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors, or parasites.

2) A reduction of at least 50%, projected or suspected to be met within the next ten years or three generations, whichever is the longer, based on specifying any of b), c), d) or e) above.

B. Extent of occurrence estimated to be less than 5,000 km² or area of occupancy estimated to be less than 500 km² and estimates indicating any two of the following:

1. Severely fragmented or known to exist at only a single location.
2. Continuing decline, observed, inferred or projected in any of the following:

- a) extent of occurrence
- b) area of occupancy
- c) area, extent or quality of habitat
- d) number of locations or subpopulations
- e) number of mature individuals.

3. Extreme fluctuations in any of the following:

- a) extent of occurrence
- b) area of occupancy
- c) number of locations or subpopulations
- d) number of mature individuals

C. Population estimated to number less than 2,500 mature individuals and either:

- 1. An estimated continuing decline of at least 20% within 5 years or 2 generations, whichever is longer or
- 2. A continuing decline, observed, projected or inferred in numbers of mature individuals and population structure in the form of either:
 - a) severely fragmented (i.e. no subpopulation estimated to contain more than 250 mature individuals).
 - b) all individuals in a single population.

D. Population estimated to number less than 250 mature individuals.

E. Quantitative analysis showing the probability of extinction in the wild is at least 20% within 20 years or 5 generations, whichever is longer.

VULNERABLE (VU)

A taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future, as defined by any one of the following criteria (A-E).

A. Population reduction in the form of either of the following:

1. An observed, estimated, inferred or suspected reduction of at least 20% over the last 10 years or three generations, whichever is the longer, based on (and specifying) any of the following:

- a) direct observation
- b) an index of abundance appropriate for the taxon
- c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
- d) actual or potential levels of exploitation
- e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors, or parasites.

2) A reduction of at least 20%, projected or suspected to be met within the next ten years or three generations, whichever is the longer, based on specifying any of b), c), d) or e) above.

B. Extent of occurrence estimated to be less than 20,000 km² or area of occupancy estimated to be less than 2,000 km² and estimates indicating any two of the following:

- 1. Severely fragmented or known to exist at only a single location.
- 2. Continuing decline, observed, inferred or projected in any of the following:

- a) extent of occurrence
- b) area of occupancy
- c) area, extent or quality of habitat
- d) number of locations or subpopulations
- e) number of mature individuals.

3. Extreme fluctuations in any of the following:

- a) extent of occurrence
- b) area of occupancy
- c) number of locations or subpopulations
- d) number of mature individuals

C. Population estimated to number less than 10,000 mature individuals and either:

- 1. An estimated continuing decline of at least 10% within 10 years or 3 generations, whichever is longer, or
- 2. A continuing decline, observed, projected or inferred in numbers of mature individuals and population structure in the form of either:

- a) severely fragmented (i.e. no subpopulation estimated to contain more than 1,000 mature individuals).
- b) all individuals in a single population.

D. Population very small or restricted in the form of either of the following:

- 1. Population estimated to number fewer than 1,000 mature individuals.

2. Population is characterised by an acute restriction in its area of occupancy (typically less than 100 km²) or in the number of locations (typically fewer than 5).

E. Quantitative analysis showing the probability of extinction in the wild is at least 50% within 10 years or 3 generations, whichever is longer.

Species not qualifying for CR, EN or VU may be Data Deficient [DD] or Low Risk[LR].

REVISED CROCODYLIAN THREATENED SPECIES, Draft July 1995.

SPECIES	CATEGORY	CRITERIA
<i>T. schlegelii</i>	DD	Insufficient data to establish status. Possibly CR or EN based on criteria A or C.
<i>C. cataphractus</i>	DD	Insufficient data to establish status.
<i>C. moreletii</i>	DD	Insufficient data to establish status. Possibly VU based on criterion C.
<i>C. mindorensis</i>	CR	A. decline >80% in 3 generations, area of occupancy. C. population <250 indiv, & severely fragmented.
<i>C. siamensis</i>	CR	A. decline >80% in 3 generations, area of occupancy.
<i>A. sinensis</i>	CR	A. decline >80% in 3 generations, area of occupancy. B. area of occupancy >10 km ² , fragmented. C. population <250 and severely fragmented.
<i>C. intermedius</i>	CR	A. decline >80% in 3 generations, area of occupancy. C. population <250 and fragmented.
<i>C. rhombifer</i>	EN	B. area of occupancy < 500 km ² , 1 location, projected declining habitat (hybridization).
<i>G. gangeticus</i>	EN	C. population <2,500 and severely fragmented.
<i>M. niger</i>	EN	A. decline >50% in 3 generations, exploitation. current recovery evident trending toward VU.
<i>C. acutus</i>	VU	A. decline >20% in 3 generations, extent of occurrence
<i>C. palustris</i>	VU	A. decline >20% in 3 generations, extent of occurrence. C. population <10,000 and fragmented.
<i>O. tetraspis</i>	VU	A. decline >20% in 3 generations, exploitation inferred reduction extent of occurrence.
<i>A. mississippiensis</i>	LOW RISK	100,000s/widespread.
<i>C. niloticus</i>	LOW RISK	100,000s and widespread.
<i>C. novaeguineae</i>	LOW RISK	10,000 + and widespread.
<i>C. porosus</i> endangered).	LOW RISK	50,000 + and widespread (locally rare/
<i>C. johnsoni</i>	LOW RISK	10,000+ widespread.
<i>Caiman crocodilus</i>	LOW RISK	millions, widespread (locally depleted).
<i>C. c. yacare</i>	LOW RISK	millions, widespread (locally depleted).
<i>Caiman latirostris</i>	LOW RISK	10,000+ widespread.

P. trigonatus LOW RISK numerous widespread.

P. palpebrosus LOW RISK numerous widespread.

The Criteria are applied to the whole species throughout its range. Some species may be locally depleted or have more threatened status in a local area. Population is inferred population of wild mature adults, generation time (average age of breeding adults) for crocodylians estimated as 20-30 years thus 3 generations is within this century.

EDITORIAL POLICY - The newsletter must contain interesting and timely information. All news on crocodylian 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.

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CSG OFFICERS AND STEERING COMMITTEE MEMBERS

**Chairman: Professor Grahame Webb, P.O. Box 530, Sanderson, NT
0813, Australia.**

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

Deputy Chairmen: Dr. Dietrich Jelden, Bundesamt für Naturschutz, Konstantin Str. 110, D-53179 Bonn, Federal Republic of Germany, Tel: (49) 228 849 1453, <JeldenD@bfn.de>. Alejandro Larriera, Pje. Pvdo. 4455, Centeno 950, Santa Fe, Argentina, Tel: (543) 42 4531539, Fax: (543) 42 558955, <yacare@arnet.com.ar>.

Executive Officer: Tom Dacey, P.O. Box 98, Clifton Beach, QLD 4871, Australia, Tel/ Fax: (61) 7 40553060, Cell: (61) 419704073, <csg@wmi.com.au>.

Treasurer: Dr. Perran Ross, Department of Wildlife Ecology and Conservation, P.O. Box 110430, University of Florida, Gainesville, FL 32611, USA, Tel: (1) 352 392 7137, <rossp@wec.ufl.edu>.

Regional Chairman, Africa: Dr. Richard Fergusson, 8 Maiden Dr., Highlands, Harare, Zimbabwe, Tel/Fax: (263) 47 76203, Cell: (263) 91 285103, <zeahtco@zol.co.zw>. **Regional Vice Chairmen:** Madagascar, Olivier Behra <OlivierBehra@MATE.mg>; West Africa, Ekkehard Waitkuwait <Wwaitkuwait@aol.com>.

Regional Chairmen, East and Southeast Asia: Dr. Jenny Daltry, FFI Cambodia Programme, P.O. Box 1380, Phnom Penh, Cambodia BKK 1, Tel: (855) 23 294934, Fax: (855) 23 211142, <jenny.daltry@fauna-flora.org>; Jiang Hongxing, State Forestry Administration of China, <hxjiang@forestry.ac.cn>. **Regional Vice Chairmen:** Dr. Choo Hoo Giam <giamch@pacific.net.sg>; Nao Thouk <naothuok@mobitel.com.kh>; Uthen Youngprapakorn <thutcroc@ksc15.th.com>; Yosapong Temsiripong <yosapong@srirachamoda.com>; Toshinori Tsubouchi <ttubouti@fd5.so-net.ne.jp>; Hellen Kurniati <hkurniati@yahoo.com>; Julie Thomson <julie@traffic.netnam.vn>.

Regional Chairman, West Asia: B.C. Choudhury, P.O. Box 18 Chandrabani, Dehra Dun, Uttaranchal, India, <bcc@wii.gov.in>. **Regional Vice Chairmen:** Harry Andrews