

CROCODILE SPECIALIST GROUP

NEWSLETTER

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Species Survival Commission



Cover Photo: Black Caiman, *Melanosuchus niger*, hatchlings observed at Imuya Lake, Ecuadorian Amazon. P. Vallejo (INEFAN) photo.

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- Robert and Ellen Young, Thonotosassa, FL, U.S.A.
- Terry Cullen, Cullen Vivarium, Milwaukee, WI, U.S.A.

EDITORIAL

COMMERCIAL TRANSFER OF EXOTIC SPECIES. Recent attempts to acquire live hatchling American alligators and caiman to establish commercial operations in other countries have caused considerable agitation, and extensive action, by CSG members in recent months. Citing the CSG policy opposing translocation of exotic crocodilians into the range of other species for commercial purposes, the CSG was able to successfully intervene and convince commercial operators in both exporting and importing countries to suspend these activities. A similar problem has recently arisen with a request to export Nile crocodiles from South Africa to China for commercial captive breeding. Again, in response to a request for advice from the CITES Secretariat, CSG has recommended against such transfers on purely conservation grounds. The complexity of transfer of exotics problem was aired at great length at CSG meetings in Gainesville and Perth in 1990 (see Steering Committee minutes Newsletters, Vol 9, Nos 2 & 4. The resulting policy statement reflects the CSG's primary interest in conservation of crocodilians above commercial or theoretical considerations. The validity of differentiating pet trade, zoo trade and commercial skin trade; the competing interests of business and conservation; and issues of national sovereignty and the free market continue to be incompletely resolved, but secondary, in our view, to the concerns of conservation. The issues can be succinctly put as follows:

1) The high probability (in some opinions the virtual certainty) of accidental release in the importing country poses severe problems of ecological disruption that may affect native species. The effects of numerous introductions of exotic species throughout the world convince us that a very broad range of problems are possible. These include direct ecological competition, predation, introduction of diseases and habitat disruption.

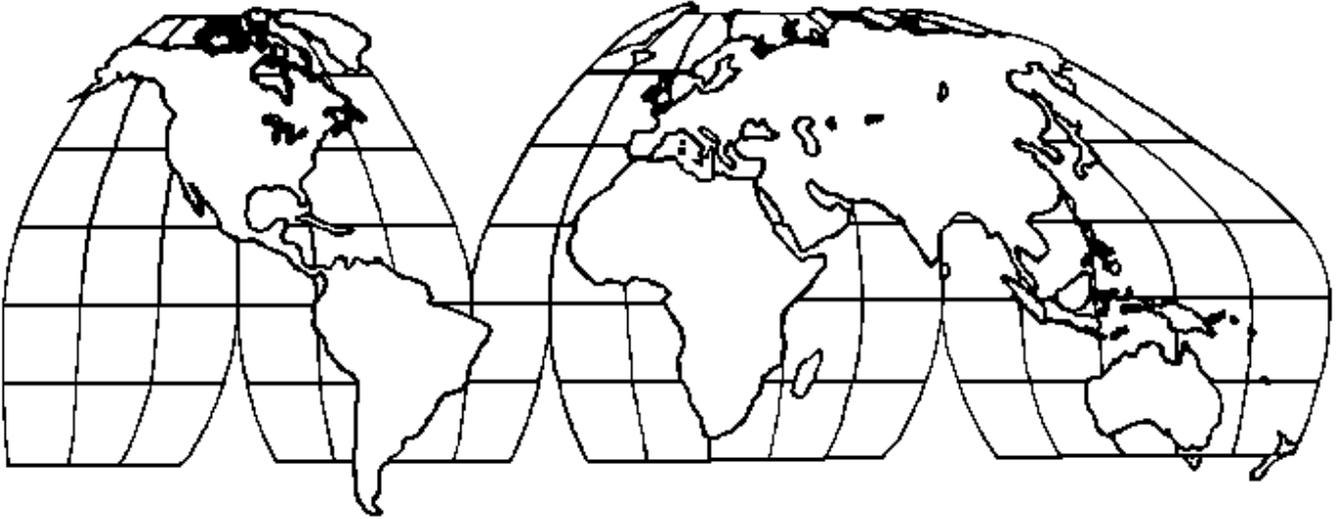
2) The second class of problems are more subtle and arise from the linkage between sustainable use and conservation of crocodilians in both exporting and importing countries. From the perspective of exporters, establishing a captive breeding program in another country, in direct competition with your local program can only erode the economic benefits and incentives for crocodile conservation that your present sustainable use program has developed. From the importers perspective, establishing a commercial captive breeding program for exotic crocodiles is likely to erode the economic benefits and incentives of programs for the conservation of local crocodilians. In neither case does any conservation benefit result.

For these conservation reasons the present policy of CSG is to recommend that exotic species of crocodilian should not be introduced into the range of other species for commercial purposes. -- J. P. Ross, *Executive Officer CSG. Florida Museum of Natural History, Gainesville, FL 32611, USA.*

GUEST EDITORIAL

CROCODILE CONSERVATION IN AFRICA. The representatives of the Madagascar Management Authority who attended the CITES COP in Fort Lauderdale last November would like to thank the CSG Steering Committee for its support. Once again they made it clear to me that they wish to collaborate in order to develop a proper crocodile management program in Madagascar. You will appreciate the difficulty of their task if you read with care the articles in this Newsletter from Madagascar and Kenya and Tanzania in which the serious problem of attacks on people are described. Judging from these reports of increased attacks, crocodiles appear to be making a recovery in Madagascar. Didn't we do a bloody good job of conservation? As deputy vice chairman for Africa I am happy. We all have fascinating examples of how interesting crocodiles are. But let me tell you that it is sometimes tough to explain to villagers how crocodiles, as part of biodiversity, are important for their children's future. Particularly when some children's futures have been abruptly cancelled by crocodiles. I truly hope that Tanzania does not make a mess of the experimental hunting quota that the CITES parties approved in November. In certain circumstances such control measures may be the best option. Nuisance crocodile programs such as those in US and Australia are able to function by concentrating on particular nuisance animals. A similar program is envisaged for Zimbabwe, but I don't believe we can keep the principle of only removing individual dangerous animals in all countries. If we want to do more for conservation in Africa we have to concentrate more on specific areas suitable for crocodiles. Even when we lack proper data, we cannot expect people to accept a hypothetical nuisance crocodile program that would come and catch just one or two big crocs when there is the smell of real human blood around. There are some very good people in management authorities in Africa, but also some bad ones and some crocs [sic. Unclear whether the author refers to 'crook s' or 'crocs'.-- Eds.] This is what makes it difficult. However we will have to find a way to help crocodile management programs in countries where the data on the crocodile population will never be extensive. Even if crocodile populations are not abundant, potentially dangerous crocs near human dwellings have to be killed (although Jon Hutton and I remember well how many extra croc skins had to be tagged in 1989 due to overkilling during the CITES hunting quota system). These comments are reflections prompted by the program in Madagascar which has had some success, but unfortunately might now be faltering due to the difficulty of generating political support on the national level. Solving such complex problems is made more difficult by the bad publicity crocodiles bring upon themselves. Finding flexible and workable solutions is the challenge we must meet in Africa. -- O. Behra, *Deputy Vice Chairman for Africa, BIODEV, Lot VX 18 Andrefandrova, Antananarivo, Madagascar.*

AREA REPORTS



AFRICA

Ghana:

CROCODILE INTRODUCTIONS AT KAKUM NATIONAL PARK. Conrad Weobong, P.O. Box 427, Cape Coast, Ghana writes:

I am a graduate of the University of Science and Technology, Kumasi, Ghana, where I took a Bachelors degree in Natural Resource Management, specializing in Range and Wildlife Management. My schedule now is to assist the Senior Game Warden at Kakum National Park in various aspects, including the monitoring of four crocodiles which have been introduced to the Park. Kakum National Park is situated in the moist deciduous tropical rainforest 30 km north of Cape Coast in the central region of Ghana. In a bid to protect the rich flora and fauna resources of the forest the park is established. I am particularly interested in current crocodile monitoring, research methods and procedures. I would therefore appreciate if you can send me information in this regard.

[A package of information has been sent to Mr. Weobong, but interested CSG members might wish to communicate directly to assist him. -- Eds.]

Kenya:

TERROR CROCODILE KILLED BY WARDENS. Kenya Wildlife Service Wardens killed a nine foot crocodile which had been terrorizing residents of Bakuyu village in Garissa district on the Tana River. It took eleven bullets to subdue the reptile. Reports say that four people drowned and two were killed by crocodiles last year. Since the Malkadaka bridge was washed away two years ago, pedestrians had to wade across the crocodile infested river to reach their destinations. It was not confirmed in the report whether this particular crocodile was thought to have attacked anyone. --from Daily Nation (Kenya), 28 February 1995. submitted by P. S. Soorae, P.O. Box 44919, Nairobi, Kenya.

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Madagascar:

SAURIANS RAVAGE MADAGASCAR VILLAGES. If the "dahalo" (highway bandits) are not attacking the villages of Besalampy, then the crocodiles, which are particularly active and very voracious, are assaulting the population and devastating livestock and crops. The crocodiles are present everywhere near small pools of water, in the swamps and in the rice fields. It is difficult to imagine their proliferation since last June in the vicinity of the Manimbozo and Maratony rivers. Eleven deaths occurred in recent days, including two people who completely disappeared. Such are the ravages caused by these saurians, while paradoxically, the Water and Forests Service and the World Wildlife Fund forbid the hunting of these crocodilians because they are endemic and their quality of threatened species. -- *from ROI Madagascar (Magazine), December 1994, 9. submitted by O. Behra, Deputy Vice Chairman for Africa, BIODÉV, Lot VX 18 Andrefandrova, Antananarivo, Madagascar.*

Somalia:

NILE CROCODILE IN SOMALIA. A raging civil war and inter-ethnic clan warfare has resulted in a breakdown of law and order in the Horn of Africa and poaching gangs from Somalia have decimated wildlife in Somalia and North Eastern Kenya for meat and trophies. A relief worker from Somalia mentioned a case where a man (approximately 25 years old) was attacked and mauled by a Nile crocodile along the lower Juba river last August. Nile crocodiles are claimed to be still numerous along the Juba river despite the civil strife. -- P. S. Soorae, *P.O. Box 44919, Nairobi, Kenya.*

South Africa:

GEOGRAPHICAL RACES OF DWARF CROCODILE? In 1989 the National Zoological Gardens in Pretoria, South Africa, obtained two pairs of the African Dwarf crocodile, *Osteolaemus tetraspis* from the Ivory Coast. Since then two of the original specimens and several of their progeny have died and 4 of these animals were presented for postmortem examination. All the examined animals had a single duodenal loop. Conversely, all 23 dwarf crocodiles examined by Huchzermeyer and Agnagna in Brazzaville, Congo, in 1993 had a double duodenal loop similar to the one found in *C. niloticus*, only somewhat shorter.



Photo: Viscera of *Osteolaemus tetraspis* from Congo showing the double duodenal loop (arrow). F. Huchzermeyer photo.

Presently the taxonomy of crocodylians is based largely on their scales. The morphology of the duodenal loop might be an additional tool for the classification of populations of this particular species. Throughout west Africa the dwarf crocodile is exploited for its meat. It should therefore be relatively easy to obtain specimens at markets in different countries in the region to examine them for this particular trait. -- F. W. Huchzermeyer & M-L. Penrith, *Onderstepoort Veterinary Institute, Onderstepoort, 0110* & M. Penrith, *National Zoological Gardens, P.O. Box 754, Pretoria 0001, South Africa.*

Tanzania:

SURVEY OF TANZANIAN CROCODILES AND HUMAN CONFLICTS. A team led by Dr. A. Fazil with Shlomi Ranot, Ofer Kubi and 5 staff members of Clal Crocodile Farms Int. Ltd. (CCF) conducted surveys and interviews in rural Tanzania from 10 December 1994 to 14 February 1995. Aims of the mission were to clarify information on human mortality from crocodile attacks and the effect of crocodile populations in rural areas. Working with 4 x 4 trucks and a boat, and camping along selected rivers and lakes for up to two weeks, the team interviewed local villagers, chiefs, and administrators by day and conducted spotlight surveys by night. Approximately 1,000 km of rivers, swamps and lake shores were covered including the Lower Rufiji between Mpanga and Utete, Kilombero and Kibasira swamps between Mlimba and Ifakara, the southeastern shore of Lake Rukwa, Ruvu river from Ruvu to the sea, and sections of the Wami and Pangani rivers. Further surveys of the Ruvuma river and Lake Nyasa are planned following the rainy season.

Preliminary data analysis confirms information from previous surveys. Crocodile densities of around 3/km and more were recorded in protected areas in the Rufiji, Lake Rukwa and lower Pangani. A preponderance of very large individuals up to 20 feet (6m) were noted.

The interviews with local people indicated that previous quantification of the problems of human

mortality from crocodiles are underestimates and the scope of this problem in rural areas is quite shocking. For example the village of Mpanga on the upper Kilombero river with about 65 families lost 8 people (5 of them children) last year and an additional three people were taken in the last two months! Similar high levels were recorded from other villages and as far as we know, no other country in the world suffers similar crocodile fatalities. Detailed analysis of the data is in preparation. The causes of this appalling mortality arise in part from the widely dispersed but dense rural population along rivers and lakes. The government has disarmed local people and maintains extensive anti wildlife poaching units in each region so that the people fear the crocodiles and also fear to break the law and kill them.

CCF has reached a comprehensive agreement with the Tanzanian Wildlife Management Authority to establish a proper Management Program for crocodiles in the country. Following this survey, recommendations have been made by CCF to the Tanzanian authorities which include improving the ranching program in the country. Opening farming to overseas investors and the creation of a National Farmers Association will assist in the transfer of know-how to develop the industry. Egg and hatchling collection centers organized and monitored by the regional wildlife offices, and with income from egg collection returned to local communities are proposed. The existing National Parks and Game Reserves are proposed as crocodile sanctuaries with only limited and carefully supervised egg collection based on continued monitoring. To control crocodiles outside the Parks, hunting conducted by local communities and regulated by regional wildlife wardens is proposed, but restricted to crocodiles over 8 feet length. Skins resulting from the proposed harvest will be tagged and recorded at local wildlife stations before being transferred to licensed dealers.

[The wild harvest quota of 1,000 skins in 1995 and 1996 approved by CITES in November was established to address the need for crocodile control in rural areas. Extension of the quota will be contingent upon verification of the regulated nature of the harvest and data supporting the need for additional culling.-- Eds.] -- *extracted from a report by Shlomi Ranot, Clal Crocodile Farms International Inc., P.O.B 33388, Tel Aviv 61333, Israel.*

ASIA

Bangladesh:

HOLY CROCODILES. Crocodiles (*C. palustris*) at Peer Khan Jahan Ali Pond, Bagerhat, Bangladesh are considered holy and blessings are believed to be granted by placing cash offerings on the croc's tail. Two docile crocodiles, a 2.7 m male (photographed below in January 1993) and 2.1 m female, are kept at a pond in the 48 ha. Mazar Sharif complex and a caretaker oversees the site. These are some of the last surviving crocodiles in Bangladesh. -- Jack Cox Jr., *2919 Colony Road, Charlotte, NC 28211, USA.*



Photo: 2.7 m *C. palustris* at Mazar Sharif, Bangladesh, receiving offerings. J. Cox photo.

India:

THE CROCODILE IS GOD IN GOA. There are worse fates than reincarnation as a marsh crocodile in south Goa's Cumbarjua Canal. The crocodiles are largely confined to a short mangrove studded stretch of the canal where they are venerated by the people of Durbhat Wadi village. Every year on the day of the new moon in January the ceremony of Mange Thapnee is performed. On that day, which coincides with the commencement of threshing of harvest paddy, the villages 500 inhabitants assemble to perform puja [worship - Eds.]. The villagers are canny enough to know that their veneration may not be reciprocated, and so they avoid direct contact with the object of their devotions by constructing a crocodile from silt. Shells are placed as eyes and scales and sticks for teeth then the crocodile is adorned with flowers and vermillion. A live chick is presented as a sacrifice and placed in a depression scooped from the crocodiles back.

The origin of the ceremony is uncertain. The crocodile has been regarded as the protector of the village and there is also a story of farmer in his fields praying to an approaching crocodile to keep away. Zoologist Manoj Borkar, who has conducted the first studies on the Goan marsh crocodile, attributes its divinity to pagan animism. The crocodile is the guardian spirit of the village. When the village paddy fields were flooded with adjacent sea water the villagers thought to pacify the sea by worshipping the crocodiles which were more numerous at that time.

Borkar's three year study has found that there are only 16 adult crocodiles remaining in the canal, a

sad decline from the days of the Portuguese occupation when they were such a nuisance that people were invited to hunt them and they were considered an important line of defence for the city of Goa. History and religion may not be sufficient to save the crocodiles. The agrarian economy is challenged as younger workers seek white collar jobs in the city and crocodile worship seems anachronistic to the younger generation. Additional threats are the demand for exotic meat and skins at the city market and the pollution by industrial effluents and fish processing plants which are destroying the animals habitat. Borkar suggests that the wastes could be channelled to the crocodiles which would be pollution fighting scavengers, but no one bothers and the pressures on the crocodiles are increasing. Only in a small pocket of Goa are the crocodiles elevated above petty considerations. Here, if nowhere else, the crocodile is God. -- L. Rattanani. India Today Magazine, 15 January 1995, page 23.

SALTWATER CROCODILES IN NORTH ANDAMAN ISLAND. The Andaman Islands of India's east coast, were surveyed in 1975 and 1976 by Rom Whitaker who estimated the population at 15 breeding females and 100-200 crocodiles. Later studies by Choudhury and Bustard in 1979 reported 30 nests and 39 crocodiles. No crocodiles have been released under re-stocking programs as it was thought that this population would recover and stabilize following the ban on hunting in 1972.

During November and December 1993 a survey of North Andaman Island and the northern part of Middle Andaman was conducted using a 22 foot dugout canoe. Creeks and bay surveys were carried out during low tide during the day and spotlight counts made at night using a 6 volt flashlight. Indirect evidence such as tracks, old nests and interview information from local inhabitants was also recorded. Crocodile nesting habitats were surveyed on foot and assessment made of habitat disturbance such as logging, siltation, land use, fishing and boat traffic. A total of 110 main creeks were surveyed and 220 hours of daytime observations and 176 hours of night surveys were completed. Descriptive accounts of 35 localities are given.

A total of 45 *C. porosus* were observed during the two month survey and indirect evidence suggested another 80 individuals. The majority of the crocodiles seen were adults. Most major creeks supported one or two adult crocodiles. Sighting of crocodiles by locals, and human-crocodile conflicts both in disturbed and undisturbed areas was more prevalent during the breeding season (May -July). This was possibly due to the movement of breeding females to nesting habitats in the limited areas freshwater marsh which are now adjacent to human habitats. Viable nesting habitat, flat wetlands with freshwater just behind the mangrove fringe, is continually being taken up for settlement and intensive agriculture. Nesting habitat and streamside timber has been destroyed and heavy siltation of the freshwater streams and mangrove creeks resulted. The only remaining nesting habitat is the tidal cane fringe close to settlements and paddy fields, which is the least preferred nesting habitat. Mechanized boat traffic and intensive fishing also result in disturbance and mortality. Small crocodiles are caught in nets and females nesting close to settlements are killed for their fat, gall bladder and eggs which are considered to have high medicinal value. Both humans and their livestock are occasionally taken by crocodiles and the crocodile is usually killed. Such incidents are rarely reported.

The present survey gave no indication of large scale crocodile hunting, but loss of nesting habitat, collection of eggs and killing of females are having detrimental effects on the population. The remoteness of the area and lack of staff and resources makes monitoring, management and

protection difficult. Recommendations are made to mitigate the negative impacts on the breeding habitat by establishing buffer zones and planting trees. An intensive environmental education program and feasibility studies for crocodile ranching and farming as an incentive for conservation are also proposed. -- summarized from H. Andrews and R. Whitaker. 1994. *Status of the Saltwater Crocodile (Crocodylus porosus Schneider 1801) in North Andaman Island*. Hamadryad Vol 19:79-92.

Nepal:

HOPE FOR THE MUGGER. Crocodile ranching may offer the best hope of preserving the mugger crocodile. IUCN is setting up such a program in Nepal. Once the wild populations in the country's southern zone have been stabilized by releasing captive bred muggers, local people will be allowed to collect eggs or hatchlings and sell them back the breeding facility. When these crocs grow large enough to survive in the wild, they will be released. Other crocodiles bred and reared at the facility will be sold to private ranchers in the area. This scheme offers a winning strategy for all: ongoing reintroductions benefit the mugger; fishermen earn money by selling eggs to the breeding facility; hatchlings sold to ranchers generate income for the facility to pay for crocodile studies and local education programs; and ranchers make money by rearing hatchlings and selling the leather. This approach also discourages poaching, since all the hatchlings are processed through the facility, and private ranchers will be granted skin permits only for the number of animals they are known to have. Generally, skins from wild crocodiles are low quality compared to those supplied by ranchers. This further discourages poachers since only quality skins can find a market. If checks reveal that a rancher has animals without ID numbers, unlogged mortalities, or excess skins, a heavy punishment could result.

It would be nice to believe that the mugger could be preserved simply by leaving them alone. But the mugger's situation offers a rare opportunity to forge a new relationship. Rather than people exploiting the species to its end, a cycle of sustainable use can benefit humans, mugger populations and their habitat, as well as a plethora of economically valueless but biologically significant species dependent on wetlands. -- extracted from *Animals in Peril*, M. J. Walters, Animals, Vol. 128, No. 1, Publication of the Massachusetts Society for the Prevention of Cruelty to Animals, Boston, MA, 02130, USA. Used with permission.

Thailand:

CROC'S SECRET UNCOVERED. London: British and Japanese scientists reported that they have found the quirk of nature that lets crocodiles lurk underwater for hours and said that this could one day be bred into humans. Alligators, crocodiles and related reptiles have a unique haemoglobin, the molecule in the red blood cells that carries oxygen, which lets them stay underwater without breathing for long periods of time. The mechanism is different from that used by whales, porpoises and other marine animals. -- from a Reuters report, Bangkok Post, 19 January 1995. Submitted by Tan Hiok Jeng c/o Langkawi Crocodile Farm, P.O. Box 50,07000 Langkawi, Kedah Darulaman, Malaysia.

EUROPE

Russia:

RUSSIA'S OLDEST CROCODILE DIES. Kolya, a crocodile whose life began in the era of the czars, has died of old age in Yekaterinberg. He survived two world wars, a revolution, a civil war, and the recent fragmentation of the USSR, to become Russia's oldest known crocodile. Officials say the 9 foot 10 inch crocodile, the largest in Russia, was probably in Yekaterinberg when the Bolsheviks executed Russia's last czar, Nicholas II, and his family, there in 1918.

Zoo curator Natalya Bobkovskaya said Kolya showed up in Yekaterinberg between 1913 and 1915 when he was part of an animal show that toured the region. He was already full grown at that time, which made him 110-115 years old when he died, she said. -- *from The Commercial Appeal, Newbern, Tennessee, 23 January 1995. Submitted by Stefan Gorzula, 614 West Main St., Newbern, TN 38059, USA.*

CENTRAL & SOUTH AMERICA

Brazil:

BLACK CAIMANS OF MARAJO: The following account of caiman in the Amazon delta is of historic interest. The author, Hugh Cott, went on to author the first definitive account of biology and management of the Nile crocodile.

"Marajo Island is situated in the mouth of the Amazon river and is about twice the size of the state of Massachusetts, USA. The island is almost equally divided into two regions: the southwest covered in dense tropical forest and northeastern half consisting of a vast open grazing ground where thousands of cattle are raised. The objects of my expedition were to study the natural history of the island and make a collection of zoological specimens for the British Museum. Marajo's interior is seldom visited by travellers and little is written about it.

I spent much of my time studying the habits of the caymans. Almost every lake is swarming with them and their abundance is particularly noticeable in December when they are driven into confined quarters by the partial drying of the lakes they inhabit. The cowboys never lose an opportunity of hunting and killing these monsters because of the damage they do to the calves. The boys enter the water and drive the cayman together at one end and then lasso them. When one is caught they cut the base of the tail with a knife. It is then safer to approach the animal which is despatched with a second blow to neck or a stab in the eye, to the hoarse cries of the cowboys. In spite of these onslaughts the crocodilians do very well and seem as plentiful as ever. We came across many of the large nests, heaped up in the swampy vegetation at the side of the lakes. The eggs are found from September to January and as many as 70 may be taken in a single nest.

The jacare assu or black caiman is the largest species; monsters up to 20 feet have been recorded. The spectacled caiman, or jacare tinga, on the other hand seldom exceeds about six feet in length. In spite of their size and ferocious aspect the black caiman will not readily attack a man in the water, except in self defense. No doubt they would be more offensive were they not so well supplied with food; but fish, which form their chief article of diet, abound in the pools, and are so easily obtained that the creatures usually are too lazy to attack any large animal." -- *from Wonder Island of the Amazon Delta, by Hugh Cott. National Geographic vol LXXIV (5), November 1938.*

Bolivia:

BLACK CAIMAN BREEDING IN NORMANDIA LAGOON. During a recent field trip to the Beni region of Bolivia, Luis (Lucho) Pacheco visited the site where a group of Black caiman were released with great publicity in 1990. To his surprise, as he reports, "Guess what, I found a hatchling black caiman. Yes! finally they are breeding." He could find only one hatchling but suspects that others were nearby. There were originally 25 (19 females) in the released group and many of them are thought to have emigrated from Normandia Lagoon. Probably there are about 8 - 10 of the original group still resident. In any event this is the first breeding event recorded for these released caimans. -- L. Pacheco, *Casilla 9641, La Paz, Bolivia.*

Colombia:

CROCODYLUS ACUTUS IN BAHIA PORTETE. The present population of *Crocodylus acutus* in the region of Bahia Portete, on the La Guajira peninsula, was evaluated between November 1992 and January 1993. In total 8.8 km of beach and mangroves were inspected on foot and 25 hours of nocturnal surveys were completed by boat over a transect of 22 km which was surveyed six times.

Between 1979 and 1981 this population was subject to extensive commercial hunting. Each night two or three crocodiles were killed and the skins sold in Maracaibo, Venezuela, at 200 bolivars per meter. By 1982 the commercial hunting ceased due to the low number of remaining crocodiles. As a result the present population structure is similar to that described by Webb and Cott for heavily exploited populations of *C. porosus* and *C. niloticus*, with juveniles and smaller sizes predominating.

Night surveys revealed between 2 and 11 (mean 7) individuals in the 22 km transect with only two individuals over 6 feet total length. Counts of tracks and slides indicated similar numbers and range of sizes in the area. Extrapolation of the survey data suggests a population of around 140 individuals with the great majority in size classes of 1 - 6 feet total length. The adults occupy the network of channels and lagoons within the mangroves while the smaller size classes seem displaced to the margins of the mangroves and more open areas where they are sometimes caught in fishermens nets.

The problem of conservation is in fact a problem of education and of developing alternatives for meeting subsistence needs of the communities who are exerting a disproportionate pressure on natural ecosystems. Currently there is little enthusiasm among local people for hunting crocodiles or eating their eggs. However, a conservation strategy needs to give the live crocodile an economic value greater than a dead crocodile.

Recommendations to develop a conservation program in this area are given including continued monitoring of the crocodile population, protection of vital nesting areas, the development of appropriate ranching activities and the involvement of local inhabitants in these activities. -- *translated and summarized from a Spanish report, Estimacion de la Poblacion de Caimanes (Crocodylus acutus Cuvier 1807) de Bahia Portete, Guajira, 1992. Gerardo Abadia Klinge, P.O. Box 025573, Colegio Albania, La Mina Cerrejon, Casillero 776, Miami, FL 33102-5573, USA.*

Costa Rica:

CAIMAN IN CAÑO NEGRO. This year between March and April we intend to continue monitoring the caiman population in Caño Negro. Surveys in 1993 revealed a very dense population as we expected, but relatively few individuals over 5 feet. Total population in the Wildlife Refuge (9,969 Ha) was estimated to be around 3,604 individuals all sizes included. Transects in the Rio Frio, which cuts across the refuge and drains into Lago Nigaragua, average between 65 and 81 animals per km. The sex ratio for all size categories was not significantly different from 1:1. Animals estimated per nest was between 60.16 and 77.75, average 66.06 [This is presumed to be estimated number of caiman divided by number of nests found. -- Eds]. Data were collected on nesting habitat, vegetation, distance to the nearest water and eggs. Specimens and skulls recovered from carcasses left by hunters were measured. Population trend was determined with data from Allsteadt and our results. We concluded that it was not possible to recommend a sustainable harvest because of the small amount of caiman over 5 feet.

Workshops with caiman hunters revealed what we suspected about the real range of caiman hunters in Caño Negro, The hunters (past and present) cover areas in and outside the refuge and two or three buyers living in the refuge buy skins coming from anywhere. This situation, plus the fact that people generally tend to exaggerate figures when there are no data available, made some people think that huge numbers of caimans skins 5 feet or more could be harvested from Caño Negro.

Legal aspects were also evaluated, because our law only allows the commercial utilization of wildlife produced in nurseries, farms or ranches. Also the law only provides for the removal or capture of animals from a wildlife refuge if it is to provide stock for a farm or ranch. Demands for 500 - 700 breeders for farming and ranching operations existed at the time. These animals were to be captured in different sites in the country and we knew that the highest populations were in the north part of the country. So, to provide an income for hunters, coordinate and control the activities of farmers and also to obtain data about the caiman population, we developed a strategy to increase the value of each caiman 4 to 5 times the prices paid on the illegal market. With this possibility in mind, the hunters, with the logistical support of the wildlife refuge administrators, guarded the area between December 1993 and April 1994. Ironically, misinformation led some people to believe that we intended to slay 500 or 1,000 animals from the refuge.

Approximately 80 live animals between 4 and 5 feet (only a few equal to 5 feet or over) were captured in the refuge by hunters and transferred to a farm, which currently has about 300 caiman. Notwithstanding the illegal hunting that occurs, local public opinion is against the removal of caiman for farms when these are located in other areas. Caimans are a strong tourist attraction and so people in this business have a strong interest in having as many caiman as possible at the sites they visit. I agree with them but they should help us protect the species during the dry season. -- Earl Junier Wade, *Departamento Evaluacion de Recursos, Ministerio de Recursos Naturales, Energia y Minas, San Jose, Costa Rica.*

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Cuba:

NATIONAL CROCODILE MANAGEMENT PLAN. The National Program for Conservation and Rational use of Crocodiles is sponsored by the National Enterprise for the Protection of Fauna and Flora (ENPFF) in coordination with the Ministry of Industrial Fisheries (MIP). Since 1984, when the project was begun, this program has developed the following lines of work.

1. Creation of a national network of ranches and farms located near wetlands with significant populations of crocodiles. At present those facilities which are administered by ENPFF have not begun commercial operations. The primary objective at the present time is to develop a mechanism for the interaction of the captive populations with wild populations and their habitat, and to develop the technical capacity for captive raising to form a solid base for conservation and sustainable use in the future.

2. Conservation in situ. Areas sustaining important populations of wild crocodiles are being incorporated into a National System of Protected Areas e.g. Rio Maximo Faunal Refuge (Camaguey province), Monte Cabaniguan F.R. (Las Tunas province) and the Cauto Delta F. R. (Granma province).

3. Research. This line of work has developed in two fundamental directions. The first is population studies of *Crocodylus acutus* and the introduced *Caiman crocodilus*, including natural reproduction and diets. The second involves zootechnical and veterinary studies for the management of crocodiles in captivity.

4. Extension and public education. This aspect of our work is about to begin and will develop a positive attitude to crocodiles and their conservation among the public using mass media directed at the rural population who have direct contact with crocodiles.

The national network of crocodile farms administered by ENPFF consists of six operating facilities and one new one under construction. Total captive stock at present is on the order of 1,100 *C. rhombifer* at the Cayo Potrero farm on Isla de Juventud and around 3,250 *C. acutus* distributed among five farms at Gran Sabalmar, Minas, Jobabo, Birama and Manzanillo. The bulk of these animals are juveniles. The principal function of the farms at Minas, Jobobo and Birama is to serve as a base of operations for the population studies and management applied to conservation being undertaken in the protected areas adjacent to each. We are also developing a good stock of captive adult breeders. At the Manzanillo farm we have also conducted experiments on feeding that have been very satisfactory.



Photo: Cuban crocodiles, *C. rhombifer*, at Cayo Potrero farm, Isla de Juventud, Cuba. P. Ross photo.

In the research plan of the National Crocodile Program, a priority is a population assessment at the national scale of *C. acutus*. In this respect we have covered an area of about 600 km² in the Faunal Refuges of Monte Cabaniguan and Delta de Cauto using nocturnal spotlight counts. In these same areas we have been conducting annual nest counts of *C. acutus* since 1990. This study includes detailed study at five sites of eggs laid, hatchlings emerging and the causes of egg failure. These studies are presently in the final phase of statistical analysis and preparation for publication.

In 1983 and 1984 we undertook a similar population assessment of *Caiman crocodilus* on the Isla de Juventud. This count was undertaken in association with our plans to re-introduce *C. rhombifer* into the Lanier swamp from our captive raising facility at Cayo Potrero. The project will have the additional practical result of providing a base for commercial exploitation of the caiman. Our work plan for 1995 includes beginning a population assessment of *C. acutus* in Pinar del Rio province and also complementing our surveys in the eastern provinces with some mark and recapture studies. For the moment economic limitations are causing difficulties with publishing the results of this work. We very much appreciated the recommendations offered in the CITES inspection of 1991 and by the survey conducted with MIP in Zapata swamp which have been of great use to us. We hope that this report will assist the CSG in the updating of the Crocodile Action Plan and we very much hope to maintain communications with the CSG and hope that you can communicate this information to other CSG members. -- Lic. Roberto Rodriguez Soberon, *Empresa Nacional para Proteccion de la Flora y Fauna, Ministerio de Agricultura, Ave. 7 ma, Esq. 42, Miramar Playa, C. Habana, Cuba.*

Venezuela:

CROCODILIAN REPORT. Gustavo Hernandez has been hired by the Wildlife Conservation Society and FUDENA to conduct surveys of crocodiles, including follow-ups of the released Orinoco crocodiles, which now number 1,060. Crocodiles have been released into three areas, the Caño Guaritico National Wildlife Refuge, the Cinaruco-Capanaparo National Park and the Aguaro-Guaritico National Wildlife Refuge. Gustavo will be working in these areas, in collaboration with PROFAUNA and INPARQUES, as well as visiting areas where the presence of crocodile populations is suspected. Gustavo will be based at the Puerto Miranda crocodile rearing center operated by Manuel Dennis and Pedro Azuaje of Almaca. The Puerto Miranda breeding facility is expanding, building four new breeding enclosures to house pairs of crocodiles in an attempt to reduce the chronic problem of high rates of egg inviability. A new incubator is also being built. Their caiman ranching program continues to be one of the most successful in Venezuela. Carlos Chavez is now working for PROFAUNA and is based in San Fernando, where, apart from his duties with the caiman management program, he will help with the crocodile surveys in Cano Guaritico.

The Masaguaral captive breeding center continues to successfully produce crocodiles. In 1994, for the first time, the entire female breeding stock was mature and nested (9 nests). The center is directed by Tomas Blohm and Eugenio Ramos, with the able assistance of Humberto Rivero. Gustavo Hernandez and John Thornbjarnarson will continue to provide technical assistance. -- John Thornbjarnarson, *Wildlife Conservation Society, 185th Street & Southern Blvd., Bronx, NY 10460-1099, USA.*

NORTH AMERICA

Mexico:

A NEW HABITAT FOR *CROCODYLUS ACUTUS*. In April 1994 we started a field study about a wild population of American crocodile, *Crocodylus acutus*, at Canon del Sumidero National Park in the

southern state of Chiapas in Mexico. The National Park surrounds the Grijalva river, one of the biggest in the country, and contains 25 km of river within the park terminating at the Ing. Manual Moreno dam.

In past years we were notified about crocodiles living at Sabinal river just near the union of this tributary with the Grijalva. In Chiapas "Sabinal" means place of the cypress trees (*Taxodium mexicanum*). As the state capital of Tuxtla Gutierrez has grown, the Sabinal river has become the main drainage of sewer water from the city. Therefore we did not believe that the crocodiles could be living in all the trash and pollution.

We surveyed the Grijalva by boat and entered the Sabinal where we had to cross 50 meters of polluted water with plastic bags and bottles, methane bubbles and a very unpleasant smell! There we saw four well developed crocodiles which were easy to detect as we could see the trail in the soapy water made when they swam. The animals appeared to be a breeding group with a male near 4 m and smaller animals of 3 m (2) and 2 m (1). A friend from the zoo has seen hatchlings at this location for the past seven years and the shore has adequate sandy areas for nesting. However, no nests have been located so far. In subsequent inspections we have seen the same four animals and in inspections by night we counted eight.

Due to the very short distance between the main river and the crocodiles location in the Sabinal we suppose that the crocodiles only enter the Sabinal during the day to be safe from boats of tourists and fishermen. Another reason they prefer the polluted waters is that very big catfish occur there so the crocs can eat big fish and be safe from disturbance because nobody wants to go into the cloaca of the city. It will be interesting to examine the water conditions in the Sabinal and collect blood samples from the crocodiles who inhabit it.

The beauty of the Sabinal river is now only a soft remembrance of the older people of Tuxtla Gutierrez where they swam, fished and obtained water only 40 years ago. Recent attempts to rescue the river from pollution are unsuccessful and many of the Sabino (cypress) trees, the national tree of Mexico, are dying. We hope that the presence of the crocodiles will be an additional reason to protect the main river of Tuxtla Gutierrez. -- Luis Sigler, *Inst. Historia Natural, A.P. 6, Tuxtla Gutierrez, Chiapas, 29000 Mexico*.

United States:

EXPORTS OF LIVE AMERICAN ALLIGATORS. In late 1994, concerns were raised by several CSG members about exports of live alligators. To examine this topic, I obtained the following information from US Fish & Wildlife Service and State records indicating recorded shipments of live alligators exported from the USA. The records include both bulk shipments of numbers of relatively cheap alligators, which are presumably hatchlings and juveniles destined for the pet trade, as well as shipments of a smaller number of animals (1-4) in \$2,000 - \$6,000 price range that appear to be larger alligators sold to zoos and exhibits. The data for 1994 were incomplete, but overall 27 shipments to 22 importers are recorded and a total volume of 1,840 live alligators were exported in the three year period.

Live Alligator exports 1992-1994.

	1992	1993	1994 *
Shipments	10	9	8
Exporters	6	7	6
Total live alligators	655	256	929
Largest shipment	300	50	619
Smallest shipment	1	10	1
Total value	\$70,799	\$52,184	\$81,670

* data current to September 1994.

Prices for small alligators for the pet trade were quite variable ranging from \$10.00 ea to around \$200 ea with a median value of about \$65.00. These prices presumably are affected by size of the alligators, size of the shipment and market demand and are also declared value for export rather than actual invoice value, which may vary.

Importing countries, in order of number shipments received, were Japan (7), Netherlands (6), Spain (5), Canada and Sweden (2 ea) and Italy, Korea, UK, France and Turkey one shipment each. Export of live alligators appears to be a small but lucrative activity and there is no evidence to date of large scale exports to farms or ranches. -- J. P. Ross, *Executive Officer CSG, Florida Museum of Natural History, Gainesville, FL 32611, USA.*

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PUBLICATIONS



RECENT PUBLICATIONS ON CROCODILIANS. Once again we are grateful to Mr. Terry Sexson, of the US National Biological Survey, Information Transfer Center and Editor of Wildlife Review, for extracting the crocodile literature indexed by Wildlife Review for 1994, and making it available to the CSG. To assist Wildlife Review, and to partially repay Mr. Sexson for this valuable service, the Newsletter editors regularly forward information on crocodilian publications, particularly those from the less accessible or more obscure sources, that come to our attention. CSG members assist this process by advising the Newsletter, and forwarding copies of their publications to us. These copies are maintained at the herpetology library of the Florida Museum of Natural History.

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NEWSLETTER INDEX. Ever had that nagging feeling that, "I know I saw something in the CSG Newsletter about that... but which one?" Your editors suffer from this feeling constantly in trying to cross reference current reports, provide information to enquiries and update the Action Plan. A pile of file copies of the Newsletter sits on my desk and several times a week I thumb through the whole pile looking for some forgotten article or other. No more! We were delighted to hear from Franklin Ross that he is preparing a comprehensive index of Newsletter backissues, cross referenced by country and species. Franklin is assembling his index on a ENDNOTE Plus for Macintosh but the finished product will be exportable to other formats and we will also provide a hard copy in subsequent Newsletters. Thank you Franklin. -- Eds.

TRADE



CROCODILIAN SKIN PRODUCTION 1992-1993.

Legend: F = FAO estimate, * = statistics derived from FAO sources, E = WCMC estimate, - = no data available.

Species by country	1992	1993
<i>Caiman crocodilus</i>		
Bolivia	2,723	F 3,000
Brazil	233	F 300
Colombia	201,482	457,645
Guyana	3,459	F 3,500
Nicaragua	18,072	9,963
Paraguay (1)	-	-
Venezuela	75,229	50,995
<i>Alligator mississippiensis</i>		
USA	191,449	201,431
<i>Crocodylus johnsoni</i>		
Australia	2,142	4,178
<i>Crocodylus niloticus</i>		
Botswana	1,321	7,413
Ethiopia	593	
Israel	F 900	1,055
Kenya	* 2,883	* 2,904
Madagascar	1,344	1,759
Malawi	199	2,036
Mozambique	2,727	3,159
Somalia	F 500	F 400
South Africa	10,722	12,500
Sudan	7,903	0
Tanzania	459	148
Zambia	E 700	E 700
Uganda	E 2,500	4,019
Zimbabwe	36,476	43,515
<i>Crocodylus novaeguineae</i>		
Indonesia	1,463	2,452
Papua New Guinea	13,358	F 14,000
Singapore	F 500	F 500
<i>Crocodylus porosus</i>		
Australia	4,405	7,063
Indonesia	1,352	803
Malaysia	* 1,717	* 2,090
Papua New Guinea	5,083	F 5,000
Singapore	962	286
Thailand	* 484	F 400

These estimates of crocodilian skin production were compiled by the World Conservation Monitoring Center (WCMC) derived from skin harvest figures, CITES gross export data and from FAO sources. Trade figures, as reported by the producing countries, where they were available, have been used in preference to reported imports.

As for previous production reports, these figures represent whole skins or equivalents and include the possibility that skins produced in one year were exported in another. This update supersedes the production figures quoted in *The Directory of Crocodilian Farming Operations*, 2nd Edition 1992, R. Luxmoore, Ed., Table 3, and the 1992 revised estimate of crocodilian skin production in Newsletter 13 (3), July-September 1994.-- Lorraine Collins, *World Conservation Monitoring Centre, 219 Huntingdon Rd., Cambridge CB3 0DL, UK*. [Note (1): Information provided to CSG by the CITES Scientific Authority of Paraguay is that zero legal production or export occurred in 1992 or 1993. A stockpile of approximately 23,000 skins seized from illegal operators was inventoried, tagged and legally put on the market in 1994-1995, proceeds will be used for caiman management. -- *Eds.*]

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MEETINGS

CSG REGIONAL MEETING FOR LATIN AMERICA AND 5TH *CAIMAN LATIROSTRIS* WORKSHOP. A Regional meeting to discuss management and conservation of caiman species will be held in conjunction with the Caiman latirostris Workshop, 18 - 20 May 1995, at Santa Fe, Argentina, hosted by Alejandro Larriera, Alba Imhof and Cristina von Fink and colleagues of Proyecto Yacare. For information on attendance contact -- A. Larriera, *BV. Pellegrini 3100, (3000) Santa Fe, Argentina, Fax 54 42 62352/552769 or E-Mail yacare@unl.edu.ar*

AMERICAN ALLIGATOR COUNCIL. The American Alligator Council Steering Committee will be held 22 April 1995 at the Rockefeller Refuge, Grand Chenier, LA. Agenda items include live alligator exports, Florida alligator meat regulations, US and overseas promotions and a report of Council activities. All interested persons may attend, for information contact -- Tommy Hines, *1314 SW 186th St., Newberry, FL 32669, USA.*

4th SYMPOSIUM ON AFRICAN HERPETOLOGY. The Herpetological Association of Africa will hold its 4th Symposium on 22 - 27 October 1995 at St. Lucia Estuary. The theme will be Biodiversity and Conservation of African Herpetofauna. The venue is the Crocodile Center at St. Lucia. The area has the most herpetofaunal biodiversity in South Africa. Long term conservation projects on the Nile crocodile and Loggerhead and Leatherback sea turtles are in progress nearby. The area has been threatened by dune mining proposals which could have severe affects on the local herpetofauna. For further details, please contact -- Dr. Ortwin Bourquin, *Natal Parks Board, P.O. Box 662, Pietermaritzburg, 3200, South Africa, or E-Mail Raw@zoology.unp.ac.za*

CORRECTIONS

PATTAYA PROCEEDINGS. The following minor errors were noted in the Proceedings of the 12th Working Meeting of the Crocodile Specialist Group, Pattaya, Thailand. Could you please announce them in the next CSG Newsletter.

Two participants were inadvertently left off the list provided to the compiler: Vol 1. Page viii: Mr. Kriengkrai Chaimongkoltrakul, Samphan Crocodile Farm, 117 Moo 6, Petchkasem Road, Samphan, Nakorn Pathom, Thailand; and Page x. Mr. Thaweeksak Phanomwattanakul, Million Years Stone Park and Pattaya Crocodile Farm, 22/1 Moo 1, Nongplalai, Banglamung, Cholburi 20150, Thailand.

In Vol. 2. table of contents, the asterisk should be deleted after the listing of J. Siruntawinetti, & P. Ratanakorn as the paper was presented in the session. -- P. Ratanakorn, Crocodile Management

Association of Thailand, Dept. of Zoology, Faculty of Science, Kasetsart University, Bangkok, Bangkok 10900, Thailand. [The managing editor apologizes for these errors and takes this opportunity to thank the above participants for their assistance and contributions at the meeting. -- Eds.]

SCIENCE

WHICH DWARF CAIMAN IS MARINE? Peter Pritchard reports the first marine record for a *Paleosuchus* at Almond Beach, 8°23.969'N, 59°45.286'W, North-West District of Guyana (Herp. Review 26 (1):43. March 1995).

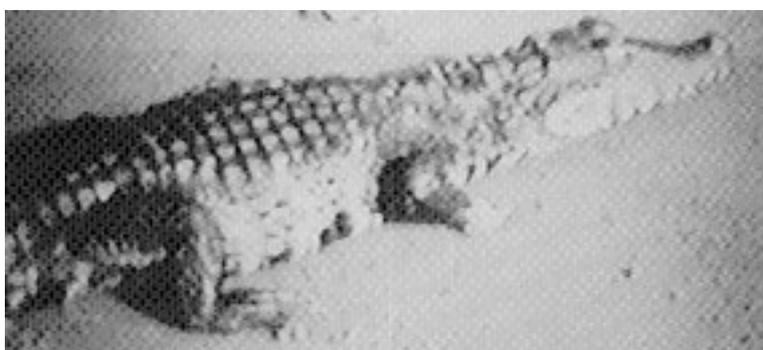


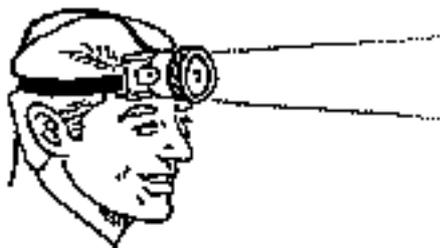
Photo: *Paleosuchus* sp. which emerged from the sea in northwest Guyana. P. Pritchard photo.

The record is based upon a videotape and photographs of a Dwarf caiman of 109 cm length that emerged from the sea and rested on the beach on 7 July 1993. Pritchard ascribed the specimen to *Paleosuchus trigonatus* based upon examination of photographs of the head by all of us. Re-examination of additional photographs of the specimen raise some doubt as to the specific identity of this animal. Some ambiguity is caused both because the available photographs are kodachrome slides taken of the video images and are somewhat grainy (figure), and from the specimen itself.

The specimen appears to have a heavily armoured neck with two rows of post-occipital scales, most like *P. palpebrosus*. The head is narrower than in many *P. palpebrosus*, but the percentages of the head length in front of and behind the eye are approximately equal, unlike *P. trigonatus* which has distinctly more of its head in front of the eye than behind. The dark colored earflap, regarded as diagnostic for *P. trigonatus* by Brazaitis, is not evident. The scutation of the tail is visible, but not very clear, in other photographs and appears to have more than two dorsal scales over the hind leg and more than 2 of the double caudals meeting at the midline, as in *P. palpebrosus*. However the double caudal scales appear intermediate between an upright (*P. palpebrosus*) and lateral (*P. trigonatus*) condition. The lateral tail scalation is also intermediate, with the small scales behind the leg appearing to interrupt 3 or 4 of the lateral caudal rows rather than 2 in *P. palpebrosus* and 5-8 in *P. trigonatus*. Magnusson (1992, Catalogue of American Amphibians and Reptiles 553.1, Soc. for the Study of Amphibians and Reptiles) refers to Medem's observation that some *Paleosuchus* have characters, particularly of the head, that are intermediate between the two species, and these may be hybrids. Pritchard's marine specimen may be one such *Paleosuchus* of intermediate characters. Both species are widely distributed in rivers of Venezuela and Guyana and so either may be expected to occasionally be swept downstream and out to sea, as

would a hybrid if these occur naturally from time to time. -- J. P. Ross, David Auth & F. Wayne King, *Florida Museum of Natural History, Gainesville, FL 32611 USA* & P. Pritchard, *Florida Audubon Society, 460 Hwy. 436, Casselberry Fl 32707 USA*.

PERSONALS



Gerardo Abadia, P.O. Box 025573, Colegio Albania, La Mina Cerrejon, Casillero 776, Miami, FL 33102-5773, USA, has developed hands on experience in crocodile research with both field work and in captive situations. his report on *C. acutus* is summarized on page 9. He is interested in moving to Australia or the USA to carry out post graduate studies or a position as a member of a crocodile research staff or in the crocodile farming industry.

Richard Kaija Baguma, Makerere University, Postgraduate Hall, DAG, P.O. Box 7062, Kampala, Uganda, writes that, I am a researcher on crocodiles in Murchison Falls National Park, engaged in monitoring survival and development of juvenile crocodiles reintroduced into the wild at 1.5 m size after being hatched and raised in captivity. This is meant to restock the Park with more crocodiles. I would be grateful to receive any references to assist this work.

Biol. Paulino Ponce Campos, Rio Juchipila, #1784 Col Las Aguilas, Guadalajara, Jalisco, Mexico, has been working in Nayarit, Jalisco and Colima States, Mexico and has been invited to assist with the development of a crocodile farm in Jalisco State. He is concerned that the emphasis of crocodilian farming in Mexico is entirely commercial and the conservation aspects are not being considered. The interaction with crocodiles and fisheries conflicts needs some input from experienced conservationists. He hopes to develop a research and conservation group for crocodiles on Mexico's Pacific coast.

Fritz Huchzermeyer, Onderstepoort Veterinary Institute, Private Bag X5, Onderstepoort 0110, Republic of South Africa, [E-mail fritz@moon.ovi.ac.za] reports that Marcellin Agnagna from the Congo came for a visit to South Africa for discussions on their continuing cooperation on studies

of crocodylians. Unfortunately Marcellin suffered a relapse of malaria while with Fritz and was out of action for a few days of his visit. We trust Marcellin has recovered and returned home safely.

Melvin Bolton, P.O. Box 879, Yeppoon, Qld 4703, Australia, writes wanting to purchase a copy of the 12th Proceedings as he has been asked to produce a little textbook on conservation and wildlife utilization in a Conservation Biology Series. He intends to devote a chapter to crocodylians and will be referring to current ranching and farming practice in the context of conservation.

Carlos Arias, Lima, Peru, reports that he has worked several times in the field and presented papers to the second and third Latin American Congress of Herpetology. He is particularly interested in crocodylians and collected two *Paleosuchus trigonatus* near Iquitos, Peru, where he reports that they are hard to find. Caimans are sold as pets in Peru but most die in the hands of beginners. There are no plans to raise caimans in captivity and little knowledge of crocodile farming in Peru. Conservation and re-introduction of *Melanosuchus niger* is his current priority and he hopes to attend the 5th Working Meeting and Latin American Regional Meeting in Argentina in May.

EDITORIAL POLICY

The CSG 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 CSG 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.

STOP PRESS

MESSEL AWARDED ANZAAS MEDAL. As this Newsletter goes to press we have received word that Professor Harry Messel, Chairman of CSG and Executive Chancellor of Bond University, has been awarded the Australian and New Zealand Association for the Advancement of Science (ANZAAS) Medal for 1995. The medal, awarded annually for outstanding contributions to the field of science, will be presented at an award ceremony at the opening of the ANZAAS Annual Congress 24 September 1995.

[STEERING COMMITTEE MEMBERS]----[TOP OF THIS PAGE]----[TABLE OF CONTENTS]

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Thank you.

Thank you for visiting the Crocodile Specialist Group WWW pages. We invite you back again. New Newsletters will appear quarterly, and other publications will appear from time to time. Most prominent among these will be the 'Status Survey and Action Plan for Crocodiles' covering every species.

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CROCODILES]