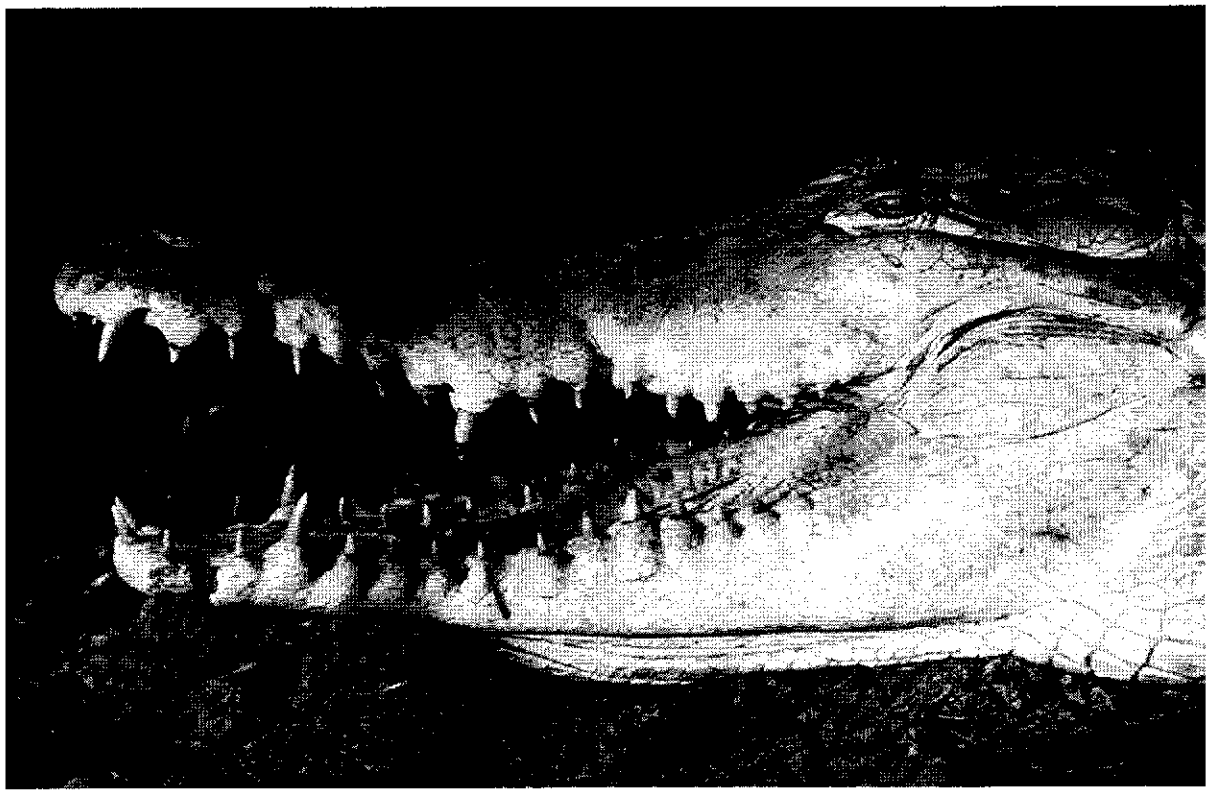
CROCODILE SPECIALIST GROUP

NEWSLETTER

VOLUME 17 No. 1 ■ January 1998 - March 1998



IUCN - World Conservation Union ■ Species Survival Commission

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VOLUME 17 Number 1
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IUCN--The World Conservation Union
Species Survival Commission

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COVER PHOTO: Orinoco crocodile, *Crocodylus intermedius*, adult male used in the breeding program at Puerto Miranda Crocodile Farm, Venezuela. E.O. Boede photo.

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

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EDITORIAL

WIN A FEW, LOSE A FEW. We mostly seem to be facing an uphill battle in our attempts to explain crocodilian conservation, and particularly to explain the demonstrated value of sustainable use programs. It is therefore pleasing to occasionally find an unsolicited endorsement that gets the message right. It is equally, or perhaps more disappointing, to learn of criticism that appears unfounded from within our own ranks. The last couple of months have seen both.

'VOGUE' is one of the premier English language fashion magazines. If you see it on a model in Vogue, you can bet the rich and famous will be wearing it shortly. Given the current market slump for crocodilian skins, we were therefore very pleased to see in the January issue of Vogue, a large central spread on this Springs fashion accessories which featured reptile leather, and particularly crocodilian leather as the 'In' thing to wear. The article was also accompanied by a very sensible and accurate statement about the legality of these materials. Our hope is that expanding retail demand and legal trade channels will serve to stabilize the industry and support the whole chain of connections that maintains conservation of crocodilians and their habitats. We were also informed that the usual cast of hopelessly misguided animal welfare groups were trying to whip up a letter writing campaign to the editors of Vogue protesting the article. CSG has written to the editors supporting their stand and confirming the conservation value of their promotion.

On the other side of the coin, the March issue of Scientific American magazine contains an article titled 'The Caiman Trade' authored by Peter Brazaitis, Myrna Watanabe and George Amato. Peter and Myrna are long time CSG members. The kindest statement I can make about this article is that I find it deeply flawed both factually and conceptually. The authors appear completely unaware of the huge amount of surveying and research on caimans which has been conducted in Latin America over the last 10 years. The excellent recent work of CSG members like Zilca Campos and Guilherme Mourao, Alejandro Larriera, Alvaro Velaso, Jose Ayarzaguena, John Thorbjarnarson, Ronis Da Silveira, Pablo Evans, Tommy Hines, Sandra Barahona, Miguel Rodriguez, Tomas Waller, Paul Ouboter, Peter Crawshaw, Norm Scott and Bob Godshalk has given us a reasonably accurate picture of caiman biology and status, much of which is published in peer reviewed journals. The article ignores this and presents a pessimistic picture of imminent extinction of caimans caused by the trade in skins which is totally at variance from all the information in the published literature and from many CSG members in the region. The article is particularly damaging because Scientific American is a widely respected magazine that specializes in explaining new and complex scientific issues to the lay public. The assumption that the public will draw from the article is that the information contained is both current and accurate, when it is neither. The CSG Steering

Committee is preparing a series of responses to the editors of Scientific American to refute the article.

This article presents a dilemma to the CSG. What do we do about disagreement on matters of principle and conservation philosophy within the Group? There have been disagreements between CSG members in the past, as our present Chairman can confirm. He himself was involved in a long running argument over the interpretation of croc data in Northern Australia. Such dispute is healthy and fully within the spirit of the scientific method. In that case, good sense and science prevailed. We have so far succeeded in maintaining a consensus among a very broad and diverse membership which is far from unanimous on almost any issue (except perhaps our shared commitment to crocodilian conservation). Clearly we have failed to adequately inform the authors of the article, and no doubt some other members as well, about what we are doing and why. It is disturbing that some members feel the need to so vehemently object to what we are promoting, but not confident enough to discuss it with us. We need the stimulation of open debate and the stabilizing effects of contrary opinion, but we also need to ensure that the level of scholarship and the accuracy of information provided in public venues is maintained. It is incumbent on all of us to present honest and correct facts, and to be properly informed on current information.

We have perhaps been remiss in 'preaching to the choir', holding comfortable discussions among those who agree, and failing to adequately present our information and philosophy to the world at large. Our second edition of the CSG Action Plan, going to press in Switzerland as I write, should help, but there is need for us to get our message out into the public arena where it can stand on its merits. There have been a number of recent studies and reviews evaluating crocodilian use programs in Papua New Guinea (Fernandez and Luxmoore 1996), Louisiana (Joanen et al. 1997), Zimbabwe (Loveridge 1996) and Venezuela (Thorbjarnarson and Velasco 1998) which unanimously conclude that the conservation benefits are demonstrable. Every CSG member needs to get this message out at every opportunity. The name of this game is communication and the only way to lose is to be silent. My letters to the editors regarding the two articles follow. Perran Ross, *Editor and Executive Officer, CSG.*

References

Fernandez C. & R. Luxmoore. 1996. The Crocodile Industry in Papua New Guinea. Pp. 233-275 *In:* Swanson T., C. Fernandez Ugalde & R. Luxmoore, Survey of Wildlife Management Regimes for Sustainable Utilization, Darwin Initiative Project, Cambridge UK.

Joanen, T., L. McNease, R. Elsey & M. Staton. 1997. The commercial consumptive use of the American alligator (*Alligator mississippiensis*) in Louisiana, its effects on conservation. *In.* Freese, C. 1997. (*Ed.*) Harvesting wild species: Implications for biodiversity. The Johns Hopkins University Press, Baltimore, USA.

Loveridge, J. P. 1996. A review of crocodile management in Zimbabwe, mimeo report. Dept Biological Sciences, University of Zimbabwe, Harare, Zimbawe:172 Pp.

Thorbjarnarson J., & A. Velasco 1998, Venezuela's Caiman Harvest Program: an historical perspective and analysis of its conservation benefits. Wildlife Conservation Society, Working Paper No. 11. New York (also in press in shortened version for Conservation Biology)

Ms. Anna Wintour 13 April, 1998
The Editor, VOGUE
350 Madison Avenue
New York, NY 10017-3799

Dear Ms. Wintour:

Well done! The February Fashion Accessories article highlighting reptile skins is a much needed breath of honesty and integrity with positive consequences that probably go far beyond your original intention.

The Crocodile Specialist Group of IUCN is a worldwide network of experts on crocodilian conservation and we actively promote the use of crocodilian skins as a method for their conservation. This may seem counter-intuitive, but the bottom line is it works. In a nutshell, people don't much like crocodiles as they tend to eat their livestock, pets and children, so an additional incentive is needed to ensure the conservation of crocodiles and their habitats. We have combined detailed biological studies on crocodilian life history with practical management actions in the developing countries where crocodiles occur to develop systems of well regulated use of crocodiles (and alligators) at levels which ensure that the populations can survive. The economic benefits derived from the crocodilian skin trade serve as the necessary incentive to put up with crocodiles and conserve their wetland habitats, where many other creatures also survive and benefit. To keep everyone honest we have very successfully used the Convention on International Trade in Endangered Species

(CITES) to impose a world wide system of permits that ensures that skins ending up as accessories come from legal sources.

This whole structure depends upon the economic benefits from crocodilian use being returned, in part, to support research, regulation, habitat protection and conservation-- no economic benefits, no conservation programs! So your article will actively assist conservation of crocodilians. Thank you.

Anyone who tells you different docsn't understand crocodilian conservation or else has another agenda. I enclose some additional information on our program with the mailed copy of this letter.

Yours sincerely,
James Perran Ross, Executive Officer, CSG

Mr. John Rennie 13 April, 1998
Editor in Chief, Scientific American
415 Madison Avenue
New York, NY 10017-1111

Dear Mr. Rennie:

We were very surprised, and quite disappointed to see the recent article 'The Caiman Trade' in the March issue of Scientific American. It appears as if your editorial team has been severely misled to publish information as if it were correct and current when, regrettably, it is not. We understand that Scientific American endeavors to summarize scientific topics and explain them to the layperson and that your very substantial credibility and reputation is built upon the integrity and correctness of the material you publish. While you are dependent upon the authors of articles for both the accuracy of the contents and for any opinions expressed, we would have expected that your research and editorial staff would usually take the trouble to verify the information presented. In the case of 'The Caiman Trade' article, I am sorry to inform you that it is filled with factual errors and presents a situation as we might have viewed it from the position of our ignorance 10 or 15 years ago. It is a gross distortion of the present situation.

The authors are apparently unaware of, or have chosen to ignore, a very large body of published scientific information on the present distribution and status of crocodilians in South America which completely refutes the point they try to make. In fact, none of the species they refer to are in danger of extinction; trade, illegal or otherwise, is not a current cause of their decline or a threat; and sustainable use programs have been widely instituted in the region because of their demonstrated effectiveness in promoting conservation. Please don't take my word for it but review the materials attached which support these statements.

The Crocodile Specialist Group considers that Scientific American has done a great disservice to the effective conservation of crocodilians in Latin America by lending its credibility to the very unusual opinion of the article's authors. We suggest that to recover your own reputation for accuracy and integrity you might wish to give some space in a future issue to rebut some of the misconceptions and inaccuracies in the article. Unfortunately this will only go part way to undo the damage which the article has done, but to assist you we offer the following materials:

1. We have prepared a 'letter to the editors' suitable for publication and drawing attention to the most egregious errors of the article. We request that you publish this letter in the next available issue, which conversation with your staff indicates to be June or July.

2. We are preparing a fuller refutation of the article in the format of a review which would also ask you to publish. We should advise you that we will be submitting this review to other reputable journals in the field for their consideration also.

3. Finally, as a guide to your editorial and research staff we attach a list of errors and misconceptions in the article along with a partial listing of recent published results in which the true situation is described. We hope that this will assist them to realize the magnitude of the distortion and inaccuracy involved.

It is ironic that as I draft this letter to you, I have also on my desk an article to review for a mainstream scientific journal in which the authors describe three years of detailed aerial surveys of the Pantanal in Brazil and a statistically rigorous analysis indicating that the number of Yacare caiman in this small part of the species total range numbers in excess of 3.9 million non-hatchling individuals! What a great pity that neither the authors of your article or your research staff took the trouble to advise themselves of the real situation.

We write with the intention of assisting you to correct the errors of your article and provide a balanced and accurate view of caiman

conservation. I hope that you give this situation your serious attention.

Yours sincerely,
James Perran Ross, Executive Officer CSG

Views and Opinions

[The following story is submitted by Indian crocodile biologist Dhruvajyoti Basu, who assures us it is true. The oral history of crocodile studies is an important part of our crocodile conservation culture, and we all enjoy a good croc yarn! While we continue to encourage thoughtful and learned submissions to this section, we thought the following story was sufficiently entertaining to merit publication. *Eds.*]

BASU AND THE BANDIT QUEEN. Bandits (Dacoits) are still a feature of the badlands surrounding the Chambal river, site of India's largest population of gharial, and the most famous of these is Phoolan Devi, a woman who became a famous bandit leader and for many years a force to be reckoned with in the region. She is now an elected member of India's parliament. In 1980, a few years after we began restocking the Chambal river with captive-raised gharial, I set out to monitor the dispersal of released gharial. We embarked with a crew of five in a row boat, down the Yamuna river which joins the Chambal at the lower limit of the gharial sanctuary. On the second day of our trip we were advised by a heavily armed police patrol that a civil works employee had been murdered by bandits a few days before, and they advised us to leave. As team leader I decided to abandon the survey at the next river crossing downstream where we could get onto the road.

Less than an hour later we spotted a second group on the river bank and scrutiny through our binoculars revealed a group armed to teeth with a variety of firearms from muzzle loaders to machine guns, with bright red bandannas in their hair. One of my assistants identified these as 'the gang of eighty', a consortium of three bandit groups who had teamed up to oppose a joint operation by the police forces of several states to eliminate them. Our boat had entered a swift flowing stretch of the river and we could not turn and flee but our hopes that they would allow us to just float by were unfounded. "Hey! you @**!#@#***!'s, bring that boat here before we blow your brains out." We quickly turned into the bank and I discarded my pullover and glasses to merge as another of the disheveled crew and waited with bated breath to see the outcome.

I felt safer in jumping out first as our boat touched ground and taking charge in case an untactful comment from my crew provoked an ugly response. After a few questions about our identity and business (I had to explain to the bandits how tail tracks can be used to estimate gharial lengths) the bandits asked if we had any binoculars. I thought it wisest to come clean before this surly lot, who wouldn't be bothered if their stock of ammunition was short by one bullet and I meekly handed over my 8 x 40 field glasses.

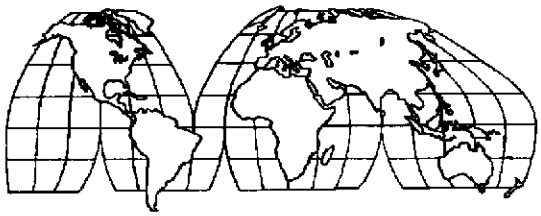
The three gang leaders all tried them out and the atmosphere eased rapidly. Bearded Mustaquim, later shot by the police, offered me his foot long brass binoculars and asked me to guess their price. "These are antique ," I said. "As working field glasses I wouldn't pay more than 200 rupees." "Damn that son-of-a-gun who duped me into paying several thousand! Wait till I get my hands on that turd," he yelled, then asked, "So how much are yours worth?" I said I really didn't know as they were donated to the project, but perhaps a thousand rupees. "So don't just stand there, pay the man." barked Mustaquim, and various gang members started pulling notes from their pockets which were stuffed into my hands. I said incredulously, "I don't want this money, but I will get into terrible trouble with the department if I loose the binoculars," hoping to get them back. "Oh, keep the money," shrugged the bandit, "but give him a chit as well."

A thick sheaf of chits held together by a rubber band was produced and one peeled off and handed to me. "Give this to the police and you won't be blamed," Mustaquim said. The chit was to be used in the manner of a business card or receipt to authenticate that I really had been robbed by bandits and the note on the chit said 'Glory to the Goddess Durga, Glory to the Goddess Mother Chambal, we are members of the Phoolan Devi Gang,' and overleaf the chit had a rubber seal impression proclaiming 'Bandit leader Phoolan Devi.' It was then I realized that one of scruffy bandit leaders was a woman in men's clothing and was the famous bandit queen herself. One of the bandits, guessing my Bengal State origin from my accent piped up, "Hey Phoolan, the Bengali is a good catch, lets take him with us for ransom." But

perhaps my straightforward talk and grinning relief had touched a chord in Phoolan's heart. "Naw, let them go," she said.

We quickly took leave and cast off only to have the bandits call after us that we had left one of our crew on shore, still engaged in some silly gossip with a gang member. We rowed back to get him as the bandits left. As we finally rowed away to midstream a gang member cheerily waved at us and called, "Next time you come, bring us some more binoculars, Okay!" -- Dhruvajyoti Basu, *1/737 Vikas Nagar, Lucknow 226 022, India.*

AREA REPORTS



Africa

Unusual artisanal crocodile handbag made from a whole hornback skin of *Osteoleamus tetraspis*, Douala, Cameroon. F. Huchzermeyer photo.

Cameroon

LOCAL CROCODILE PRODUCTS. Last year, I became trapped in the north of the Congo Republic when civil war broke out in Brazzaville. After completion of my work, an investigation of wildlife mortality for Wildlife Conservation International, I was taken on a small plane to Douala, Cameroon. While there and arranging my return to South Africa, I came across some very unusual handbags for sale at a tourist market and at the airport. Each one is made from a whole *Osteoleamus tetraspis*, head, legs and all (see photo). This is the first time I have seen items made from *O. tetraspis* leather. In Congo these crocodiles are commonly cooked and eaten with their skin. -- Fritz Huchzermeyer, *P.O. Box 12499. Onderstepoort, 0110, South Africa.*

Ethiopia

REPORT FROM ETHIOPIA. For various reasons the Arba Minch Crocodile Ranch at Arba Minch, Ethiopia, had suspended its slaughter program for several years. As a result the facility accumulated some 7,000 animals of 2-6 years age causing severe overcrowding. Operational funds were severely cut leading to inadequate feeding and almost no maintenance of infrastructure. Late in 1995 Alistair Graham, working on a EU-funded park rehabilitation project in the area, was asked to try to resolve the farm's problems. Jon Hutton was asked if the CSG could help and Kevin van Jaarsveldt agreed to slaughter and market 2000 of the oldest animals and propose a solution to the high incidence of 'red-spot' infection. The slaughtered animals realized a net profit of around $90,000, which, while only a third of their potential value, was a good return considering the extent of disease and injuries. Kevin provided a treatment regime and other useful advice. The EU project agreed to include the rehabilitation of the farm in its program and work

commenced in late 1996. The farm staff responded enthusiastically and efficiently. The run-down infrastructure was patched up, treatment of another 2000 animals began, and a new cycle started with an intake of 3000 wild-harvested hatchlings in March 1997. The treated animals were ready for slaughter in July 1997. At this point the rehabilitation initiative collapsed. Government insisted that the animals be sold on the hoof and simply refused to slaughter first and sell later. As expected no buyers showed any interest in counting eggs before they hatch and the farm has deteriorated to its former state. Proposals have been made to operate the facility under a management contract but to date no action has been taken. The farm has great potential with large numbers of wild hatchling stock easily available, very cheap fish and red meat food and low labor costs. Even conservative projections show that it could easily fund all protected area operating costs in the country's Southern Region, and, in fact, combined with other wildlife revenues would result in large surpluses that could be applied to community development programs. Efforts continue to break the bureaucratic impasse. -- J. Hutton, *Africa Resources Trust, Harare, Zimbabwe.*

MORE PROBLEMS, THE CROCODILE RANCH IS SINKING! In 1984, when the Arba Minch farm was first established on the southwestern shore of Lake Abaya it was located half a kilometer from the lake. Prior to this, the area where the farm is located had twice become part of the lake (in 1967 and 1977). In the elapsed two decades, the Lake had conspicuously shrunk and the ranch and two other establishments were developed. When selecting the site the authorities were delighted to find three important requirements nearby, water, fish and a power supply, and ignored the likely negative consequences of the site.

It has taken just two good rainy seasons in 1996 and 1997 for the lake to creep back up and literally submerge the ranch. Nearly all ranch activities have been disrupted. Maintaining proper hygiene has become virtually impossible. As the drainage systems are non-functional, water from the hatchling facilities and growing pens has to be emptied either manually or with a pump, which is slow and laborious. As a result the water remains unchanged for days until the offensive smell reaches a climax. Since the growing pens are not solid construction, drainage and basking are made difficult and there is hardly any dry space available. It is also necessary to carry a stick while moving around the ranch to fend of attack by crocodiles from the lake. After thirteen years of existence the ranch has become a failure. The authorities are turning a blind eye as they watch the ranch, which they think is just the cause of their problems, sink out of sight. -- submitted by a staff person. *Arba Minch Crocodile Ranch, P.O. Box 42, Arba Minch, Ethiopia.*

Madagascar

PRELIMINARY RESULTS OF THE CITES SURVEY. This project was conceived prior to the 10th meeting of the Conference of the Parties to CITES to which Madagascar submitted a proposal for the maintenance of its population of the Nile crocodile in Appendix II of CITES within the framework of Resolution Conf. 3.15 on Ranching (now Resolution Conf. 10.18). The proposal was approved with a provision for an annual export quota of wild-taken nuisance crocodiles.

The aim of the project was to gather adequate data to be used in improving the management (plan for) of the Nile crocodile population of Madagascar, and included three objectives:

1. Aerial survey of major rivers known to have crocodiles. This survey to be carried out in a manner that allows comparison of the results of surveys conducted in 1988.

2. Survey of problem or nuisance crocodiles. Basically, to conduct a country-wide ground survey of villages in which crocodiles are a problem, concentrating first on those for which the authorities have received reports.

3. Crocodile nest surveys in the Besalampy area for which similar data covering the period 1990 to 1996 already exist. This will allow the data set to be continued and be used in future to monitor the performance of the management programme specified in the proposal submitted by Madagascar and adopted by the 10th meeting of the Conference of the Parties.

Madagascar is the world's fourth largest island and has an area of nearly 600,000 km^2. A mountain range that runs from north to south, and which is closer to the east coast of the island, roughly divides the watershed into rivers that run mainly east or west. Madagascar enjoys tropical climate in the north, which grades to a Mediterranean-type climate in the south. The

rainfall varies from 300 mm per annum in the south to an excess of 2,000 mm per annum over large parts of the east coast and the northern parts of the island (several areas receive annual rainfall in excess of 3,000 mm).

Most rivers important to crocodiles are found in the west. The flora and fauna of the island are unique and there is an astonishing degree of endemism. However, the island is beset with environmental problems and large tracts of forest (both rain forest and dry deciduous forest) have been cleared. This deforestation, coupled with the high rainfall, leads to massive erosion problems and siltation of the rivers and lakes.

The survey was carried out in late July and nearly 1200 kilometres of river were surveyed from the air. Important rivers covered by the survey included Sofia, Bemarivo, Mahajamba, Betsiboka, Mahavavy, Sambao, Manambolo, Soahania, Tsiribihina and Mangoky. A total of 241 crocodiles were seen but the densities varied greatly, ranging from 0.0 - 1.75 crocodiles/km. Evidence and accounts of continued illegal harvest and export of wild crocodiles in Madagascar were received. Given the low numbers of crocodiles seen on these surveys, there seems to be little point in establishing an expensive aerial survey monitoring programme. Instead, effort should be made to improve the data collection from the annual collection of crocodile eggs and hatchlings carried out by the farms.

Two of the rivers surveyed contain a high number of crocodiles and it is important that steps are taken to protect these populations. Possible options might include adding them to the ranching programme or providing them with stronger legal protection (or both). As a first step, funds should be found to obtain more scientific data from the ground about these populations - a night count at the very least. -- I. Games, Ramandimbison & C. Lippai, *c/o Biological Science Dept. University of Zimbabwe, Box UA 296, Harare, Zimbabwe.*

Zambia

ZAMBIA TO KILL MAN-EATING CROCODILES. Zambian Tourism Minister Amusa Mwanamwambwa said here Tuesday that there are about 76,440 crocodiles in Zambia's seven rivers. He told parliament that there are 15,000 in Luangwa, 13,200 in Kafue, 16,800 in Zambezi, 12,480 in Luapula, 9,600 in Chambeshi, 2,160 in Lusupa and 7,200 in Kabompo.

Only one census had been conducted since 1965, he said, adding that it will cost the government 50 million Kwacha (about $33,000 U.S.) to carry out a census on the crocodile population in the major rivers of the country. The minister urged crocodile farmers to take advantage of the population of the reptiles and harvest some of them from over-populated rivers.

He also directed the country's parks and wildlife services to take immediate action to eliminate man-eating crocodiles, Zambia's Sunday Mail reported. The tourism minister issued the directive in Zambia's western border city, Zambezi Saturday following reports from many parts of the country that crocodiles are threatening people's lives. He emphasized that human life is more important than that of any wild animal that threatens or kills human beings.

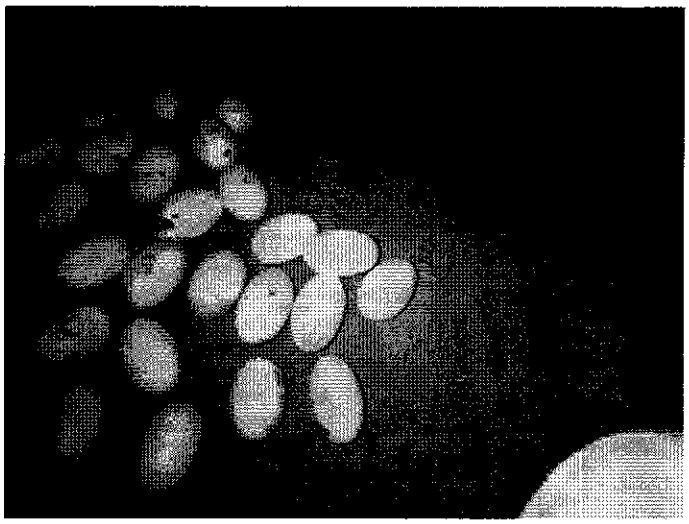
Mwanamwambwa appealed to the affected people to report any vicious crocodiles in their areas to the relevant authorities so that the reptiles could be killed. The tourism ministry, said the minister, has approached local hunters to harvest some crocodiles especially in localities of conflicts between human beings and the reptiles. In Zambezi, there have been reports from villagers that their lives are in danger from vicious crocodiles where even some lives have been lost through crocodiles in the country's largest river the Zambezi and other rivers. -- Submitted by Scott Frazier, *Wetlands International, P.O. Box 7002, Wageningen, 6700 CA, The Netherlands. from Xinhua 22-FEB-98,03-MAR-98*

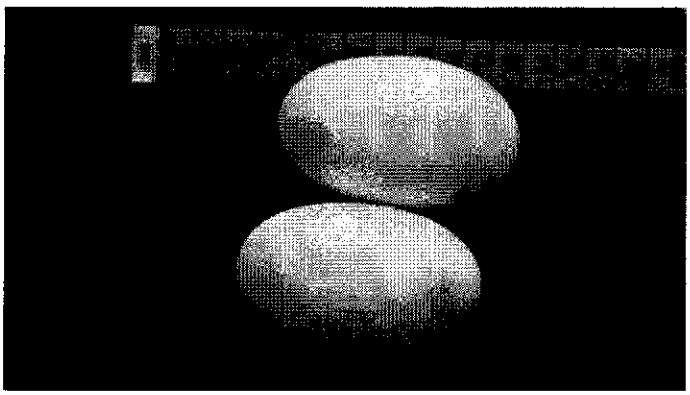
WEST ASIA

Iran.

NESTS OF THE MUGGER IN IRAN. Mr. Asgher Mobaraki of the Bureau of the Natural Environment, is now working on mugger in Iran. In June 1997, he traveled to the Bahukalat Protected Region in southeastern Iran, the location of the western most range of *Crocodylus palustris*. Although the area was flooded, he was able to locate some muggers and found two nests which contained 24 and 26 eggs. The nests were typical hole nests dug in the sandy bank of the nearby river pools. The eggs showed a well developed banding pattern and were approximately 8 cm length (long axis). All of the eggs in both nests

hatched in late July. At present Mr. Mobaraki continues to cooperate in a project on mugger biology and habitat management. -- A. Mobaraki, *Bureau of the Natural Environment, Dept. of Environment, P.O. Box 5181/15875, Tehran, Iran.*





Nest (above) and eggs (below) of *C. palustris*, Iran. A. Mobaraki photo

Cambodia

BOOMING CROCODILE MARKET HELPS CAMBODIANS TIP SCALES. The deal's a slippery one, no doubt about it, but the profits are impressive: up to 1,350 percent. There's one catch: The business could eat you up, notes Nao Thuok, a government official who promotes raising crocodiles as a sideline for Cambodian farmers. Raising crocs can be very dangerous, until you learn to recognize the touchy situations, such as when the reptiles are protecting young or are really hungry, notes the official known as 'The Crocodile Man.'

After the liberation of Cambodia from the Khmer Rouge's reign of terror in the 1970s, stories were rife that the radical Marxists fed live people to the animals at Cambodia's largest crocodile farm. The farm is thriving today. And in the surrounding countryside, where decades of war wrought ruin and poverty, more people are enjoying a better life by raising the animals for their skins and meat -- sour crocodile soup and croc curry are favorites. Nao Thuok, deputy director of the Fisheries Department, says more than 400 farms have sprung up across Cambodia, about half of them in this northwestern province of Siem Reap. Unlike the Siem Reap state-owned farm with its 450 crocs, most are small-scale, with 10 to 20 animals in back yards, sparking jokes about drunks hopping over a wall and landing among a pack of jaws. Although wild crocodiles are considered endangered, the prospects for growth in the croc farming business look good. Nao Thuok, who has been breeding crocodiles for 18 years, says Cambodia will probably sign the Convention on the International Trade in Endangered Species this year. The pact allows the regulated export of commercially raised crocodile skins, and he estimates foreign sales could bring in $20 million. European and Japanese buyers have already approached the Siem Reap state farm looking for a steady supply of skins, from which handbags, belts, shoes and other items are fashioned. Even now, skins produced by some private operators are being smuggled to neighboring Thailand and Vietnam. State-owned farms only supply hatchlings and expertise to the smaller entrepreneurs, Nao Thuok says. After surviving the brutal Khmer Rouge regime, Nao Thuok observed how locals raised crocodiles, spent time on a farm in Cuba and wrote a thesis on the potential of crocodile farming in rural Cambodia. Cambodia also has the advantage of a wild crocodile population, from which breeding stock can be taken to ensure genetic vitality. Like all species of Cambodia's once prolific wildlife, crocodiles have been depleted, but they still can be found in 14 of the country's 19 provinces. Nao Thuok estimates 10,000 freshwater crocodiles remain in the wild, while the saltwater variety is all but extinct. He urges individual farmers and the 45-member Crocodile Farming Development

Association to reintroduce crocodiles into the wild, perhaps 2 percent to 3 percent of captive stock each year. In addition to his position at the Fisheries Department and as director of the Siem Reap crocodile farm, Nao Thuok also keeps about 300 crocs in his own back yard. Family and relatives do most of the work on the home farm. He says his love for crocodiles goes beyond mere economics. He spends time each day just admiring the formidable beasts at his home and in the well-kept pens of the state farm. -- *from Austin American-Statesman 04-27- by Denis D. Gray Associated Press. Submitted by John Thorbjarnarson.*

LATIN AMERICA

Bolivia

EXPERIMENTAL DESIGN COURSE. Our two colleagues Bill Magnusson and Guillerme Mourao were here in Bolivia last February to give a short but intensive course on experimental design. The course was directed to graduate biologists and professors, and we hope that some croc biologists have benefited from it too. Our croc friends did not charge for their service and people were happy with the course. -- Lucho Pacheco, *Instituto de Ecologia, Cota Cota C. 27 Campus Universitario, La Paz, Bolivia. E-mail: insteco@ie.rds.org.bo*

Venezuela

IMPORTANTE POBLACION DE CAIMAN DE LA COSTA EN ZONA DE MANGLAR AL NORTE DE VENEZUELA. En los ultimos 10 anos se han realizado investigaciones en areas protegidas de la zona norte marino-costera de Venezuela, debido a que las mismas aseguran la integridad del habitat y garantizan la perpetuidad de las poblaciones del Caiman de la Costa o Cocodrilo Americano (*Crocodylus acutus* Cuvier, 1807) en su habitat natural. Entre las areas estudiadas estan el Parque Nacional Morrocoy y Refugio de Fauna Silvestre Cuare (Estado Falcon), PN. Henry Pittier (Edo. Aragua) y RFS Los Olivitos y PN Cienaga de Juan Manuel (Edo. Zulia). Recientemente hemos continuado las investigaciones iniciadas en el PN Laguna de Tacarigua, Edo. Miranda, por Seijas y Chavez en 1991, cuyos resultados nos han llevado a concluir que es una de las poblaciones mas importantes en zona de manglar en la costa norte del pais.

Estos estudios se realizan con la participacion y apoyo de FUDENA, INPARQUES, Club Miami y WCS. Se estimaron indices de abundancia poblacional (IAP) en base a estudios diurnos y nocturnos por diversos sectores establecidos en este Parque, se realizo un seguimiento de la nidificacion y los efectos de la depredacion humana y natural, y seguimiento de la mortalidad de animales adultos y juveniles y sus causas. Entre los resultados se tiene valores de IAP promedios de 2 ind/km, con minimo de 0.75 ind/km en sectores con uso permitido (Cano Hondo, Canaveral, Carambola y Laguna Grande) y maximo de 6 ind/km en sectores de uso restringido (Puerto Escondido, Canos Pirital, San Ignacio y San Nicolas). Para 1997 se observo un repunte en la nidificacion, con una ampliacion en el area de puesta de nidos. En una playa de 70 m^2 del Sector Puerto Escondido se pusieron 17 nidos (ca 4 m^2/nido, pero con distribucion contagiosa de ca 1 m^2/nido). El porcentaje de eclosion de nidos estuvo cerca del 30 %, con alta incidencia de depredacion de nidos por depredadores naturales como *Procyon cancrivorus* y *Tupinambis* sp. (50 %) y por humanos (20 %). Finalmente en el area se verifico una relativa alta mortalidad de caimanes adultos, la cual ha venido siendo controlada por INPARQUES, por el presunto poder magico de los dientes de caimanes y por su carne, y de juveniles migrantes por hipersalidad. Los valores de abundancia son relativamente altos si se comparan con los obtenidos en el PN Morrocoy y RFS Cuare, con valores maximos de 0,71 y 0,92 ind/km respectivamente (Arteaga 1994, in Newsletter 13 (4): 17-18). El habitat de manglar de ambas localidades guarda caracteristicas afines a Laguna de Tacarigua; sin embargo, la existencia de playas de nidificacion y de canos que aportan agua dulce, seguramente influye en la estabilidad y abundancia poblacional de esta especie en esta importante area protegida. -- Alfredo Arteaga *(FUDENA) e-mail: <93-78060@usb.ve> or <Fudena@reacciun.ve>*, David Alvares *(Coordinacion INPARQUES PN Laguana de Tacarigua)*, Alan Smulder *(Club Miami)* y John Thorbjarnarson *(Wildlife Conservation Society).*

Free translation of the article above. AN IMPORTANT POPULATION OF AMERICAN CROCODILE IN THE MANGROVE ZONE OF NORTHERN VENEZUELA. In the last 10 years, we have

undertaken studies in the protected areas in Venezuela's northern marine and coastal zone. These studies are necessary to ensure the integrity of the habitat and to guarantee the perpetuation of the *Crocodylus acutus* populations in their natural habitat.

right to left. Alfredo Arteaga , John Thorbjarnarson and Park Guard A. Carache examine hatchling *C. acutus* in Laguna de Tacarigua N.P. Venezuela. Ximena Thorbjarnarson photo.

Among the areas we have studied are the Morrocoy National park and Cuare Wildlife Refuge (Falcon State), the Henry Pittier National Park (Aragua State) and the Los Olivitios Wildlife refuge and the Cienaga de Juan Manual National Park (Zulia State). Recently, we continued research initiated in Laguna de Tacarigua National Park (Miranda State) begun by Seijas and Chaves in 1991 and have been able to conclude that this is one of the most important *C. acutus* populations in the region.

The studies at Laguna de Tacarigua were undertaken with the participation and support of FUDENA, a Venezuelan NGO, INPARQUES the National Parks agency, Club Miami and the Wildlife Conservation Society. We have generated indices of population abundance based on both daytime and nighttime surveys in different sections of the Park. We have been following the nesting and the effects of both natural and human predation and following mortality of adults and juveniles and its causes. Among the results we have obtained an average index of abundance of 2 individuals/km with a lower value of 0.75 ind./km in sectors where human use is permitted and a maximum of 6 ind./km in areas where use is restricted. For 1997, we observed a turnaround in the trend of nesting with an increase in the nesting area. In one beach of $70m^2$, seventeen nests were deposited (an average of $4m^2$/ nest- but distributed contiguously with approximately $1m^2$/nest) The percentage of eggs hatching was around 30% with a high incidence of 50% predation on hatchlings by natural predators such as *Procyon cancrivorus* (raccoon) and *Tupinambis* (lizard) and 20% by people. We also recorded a relatively high mortality of adult crocodiles by people, which is now being controlled by INPARQUES. People hunt the crocodiles for their teeth which are used for traditional magic and also for their meat. We also report mortality of juveniles due to hypersalinity in these coastal water bodies.

The abundance index of crocodiles is relatively high compared to other areas in northern Venezuela, such as Morrocoy and Cuare, where the values are 0.71 and 0.92 ind./km respectively. The mangrove habitats of all these areas are similar to Laguna de Tacarigua. However, the presence of nesting beaches and creeks which provide fresh water certainly influence the stability and abundance of this species in this important protected area. -- Alfredo Arteaga *(FUDENA) e-mail: <93-78060@usb.ve or <Fudena@recciun.ve>*, David Alvares, *Coordinacion INPARQUES, Parque Nacional Laguna de Tacarigua*, Alan Smulder, *Club Miami* & John Thorbjarnarson, *Wildlife Conservation Society, Bronx, NY USA.*

CENTRAL AMERICA AND THE CARIBBEAN

Cuba

OBSERVATIONS ON NESTING BEHAVIOR *OF CROCODYLUS ACUTUS.* The Monte Cabaniguan Wildlife Refuge is the most important wetland system of eastern Cuba, comprising 9,000 ha of mangrove swamp, estuarine creeks and lagoons and coastal marshes draining into the Gulf of Guananayabo, Las Tunas Province. Though mangrove (*Rhizophora & Avicennia*) forest is the dominant vegetation, sawgrass (*Cladium*) swamp

and hardwood forests mixed with palm (*Copernicia*) groves occur in the peripheral areas. The refuge supports an outstanding biodiversity, including one of the largest populations of American crocodile in the species' range. Each year in the nesting season, more than 200 *C. acutus* breeding females travel down the estuarine rivers and creeks that connect the inland lagoons to the sea and assemble at 10 known nesting areas near the shoreline, all located within an 8km radius. This exceptional aggregation confers a special significance on this area and crocodile population.

Our study methods include daily visits by foot and rowboat to the nesting areas; feeding areas and potential nesting habitat; nest marking; direct observation of crocodiles; indirect evidence such as tracks, dens and basking sites and behavioral observations. Field notes were collected from 1992 to 1997, during which period 850 nests were monitored in the area. Here we report results obtained at a site called Jobabito (20°40'22"N, 77°17'22" W), which is an almost rectangular area of raised sand about 168 m x 54 m located at the mouth of the Jobabito River. The site is bordered by the river estuary and sea on the seaward side and by a shallow hypersaline lagoon on the landward side. The dominant vegetation is *Rhizophora mangle* on the riverbanks and *Avicennia germinans* in the peripheral inland parts and around the lagoon. The area is elevated 1-1.5 m above the surrounding mangroves and the substrate is a deep, coarse, well drained calcareous sand originating from seashells. This site has an average of 83 nest/year (maximum 97 in 1992) with a mean density of 104 nests/ha.

Each year, the first females arrive during the first week of February and we assume, based on their size, that these include both breeding females and subadult individuals. The first signs of nesting are small burrows 5-15 cm deep, described as 'test holes' by Thorbjarnarson in 1988. These are dug in patches of sand along the riverbank and the seaward beach, close to the main nesting area but not on it. This digging activity gradually moves onto the main nesting area, which up until then is entirely covered by grass. The first holes on the main nesting area appear between 20 February and 5 March with the more advanced dates associated with years with a higher incidence of late cold fronts. For some days, only test holes are dug on the nesting surface, then a process of ground preparation is undertaken prior to nest construction. Each female digs deeply into the substrate decompressing and mixing soil from different levels. This results in an almost round flat area of 1-2 m diameter of loose and uniformly moist soil mixed with grass. This work is usually done at night and often, as a result of the high nest density, several such spots overlap producing large scrubbed surfaces. Once the nest site has been conditioned in this way, any of the following events can follow:

a) The nest is dug and eggs laid all in the same night. This can occur within 3-4 days of conditioning the site.

b) Within 1-4 days, a 'false' or secondary nest (as described by Ogden in 1978) is dug with the shape and dimensions of a true nest, but no oviposition occurs. As a rule, we observed that if oviposition does not occur on the same night when the nest cavity is dug, it does not occur at all.

c) The site is abandoned without further digging.

d) Another female usurps the site.

No proper mound nests have been observed in any of the nesting areas in this region. The situation is almost as described by Ogden in 1978 "all new nests are hole nests ... and they develop mounds of increased size with consecutive years of use." In our case, there is an additional effect due to the close proximity of nests in the area. As an example, one such mound located in the center of the Jobabito nesting area contained 12 clutches in 1996. This mound had a diameter of 6m and an elevation of 60 cm above the surrounding ground level.

We have observed two different temporal patterns of oviposition: In years of intense cold front activity during February (1992, 1993 and 1996), sporadic nesting started in the first week of March with one or two nests per night, and then about 21 March a sudden increase of nesting to more than 15 ovipositions/night. This intensity of nest construction and egg laying continues for a few days and then gradually decreases. In years with low cold front activity (1994, 1995 and 1997), nest construction and oviposition starts abruptly in the last week of February or the first week of March and subsequently decreases gradually. The night when intense nesting begins is clearly conspicuous because next morning a large area of the nesting beach is torn up and free of grass and completely covered with tracks and signs of digging. The period of oviposition usually lasts about 25 days. During this period many breeding females were observed near the nesting area, patrolling the adjacent estuary or the sea up to 200 m from shore. It is also common to see

them basking at the edge of the nesting beach early in the morning.

The incubation of individual nests ranges between 85 and 90 days. In March, females frequently visit the nests. Many tracks converge on the nesting area from the sea, the estuary and neighboring lagoon. Evident signs of females lying on or beside nests can be found every morning and the nest surface appears scratched or compacted. We have also noticed distinct wet areas on the nest surface, presumably due to cloacal fluid (the substrate has a distinctive smell) or to the wet bodies of the females lying on them. Test digging continues during this period. In 1997, we marked 36 nests and nine were separate enough to be individually recognized. In these, test holes were dug around each with the opening facing the nest and the extracted sand deposited on the nest. We speculate that nest attendance and digging may be mechanisms to regulate nest temperature or moisture.

During the second month of incubation, evidence of females visits to the nesting area decreases. As the date of hatching approaches, the tracks, test holes and disturbance of the substrate increases again.

Hatching coincides with the onset of the rainy season. During the study period the hatching season ranged from 36 to 38 days. Though females visit nests almost nightly during nesting, incubation and hatching and remain nearby, we have never witnessed a display of nest defense by a female. They are never on the nesting area during our visits. We have never directly observed hatching (despite attempts to do so), but the signs of digging indicate nest opening by females is common. However, a proportion of nests hatch unassisted. From 1992 to 1996, 98 of 396 nests (24.8%) did not show evidence of parental assistance. The highest frequencies of maternal desertion are linked to years when nesting is very late and years when the nesting areas are flooded by heavy rains, waves or high tides.

We have observed the following patterns of behavior of females escorting and conducting offspring to secure places:

a) Females escorting offspring while swimming upstream along the estuaries in the early morning hours.

b) Groups of hatchlings remaining in the lagoon adjacent to the nesting area for two or three days prior to their trip upstream. Only those females which have dens (burrows) in the lagoon remain with their offspring during the day and in such cases the hatchlings can be observed near the den opening.

c) Females watching over offspring in the estuary during the day. The hatchlings shelter beneath the mangrove roots near the banks. Frequently, on becoming aware of our presence, the females swim away from the group of hatchlings and display in the water, emerging and hissing loudly. We have also observed hatchlings hiding in dens which are dug into the banks of the estuary.

d) Groups of hatchlings escorted or not by a female, staying on the ground covered by a thin layer of water 10 to 30 m from the estuary in the black mangrove forest.

e) Some of the nesting areas near Jobobito are located more than 100 m away from the mouth of the nearest estuary or creek. We have monitored groups of hatchlings escorted by a female as they move along the shoreline from the nesting site to the estuary. During the day the female usually leaves the hatchlings sheltered among the roots of isolated patches of mangroves and returns at night to lead them onward to another group of mangroves. We have recorded such trips of one two and three 'steps' lasting up to 4 days. Monitoring of tagged juveniles has confirmed that at least a portion of them remain for up to 3 years in the estuaries closest to the areas where they hatched. -- Manuel Alonso Tabet & Roberto Rodriguez Soberón, *Programa Nacional de Cocodrilos, Union Nacional para la Conservacion de la Flora y la Fauna, Calle 42#514, Esq. 7ma Ave. Miramar, Ciudad Habana, Cuba.*

TRADE

CROCODILIAN SKIN PRODUCTION ESTIMATES 1995-1996. The following estimates of crocodilian skin production have been derived from CITES gross export data. These figures represent whole skins or equivalents and include the possibility that skins were produced prior to the reported year of export. Trade figures (exports) reported by the producing countries, have usually been used where they were available. Where export figures are not reported or the number of skins reported by the

producing countries are much lower than the sum of reported imports, figures reported by importing countries were used to estimate production. The source of the skins are given as captive-bred (C), ranched (R) or wild (W), as they were reported on CITES documents and reports. In some cases it appears that Parties continue to mislabel the source of skins on CITES documents. The estimates do not include skins produced and used in the country of production. These figures should be considered as tentative pending confirmation from additional CITES reports.

Symbols and abbreviations:
N = Source not reported.
* = Range State CITES Annual report not available, information derived from CITES Party import records.
- = Range State CITES Annual Report not available and no records from importers.
I = Import figures used instead of the exporting country's figures as the difference in the reported trade is large (range states export figures are low compared to the import records).
IM = Import figure used as Range State reported no exports.
? = Figures at variance with known situation, see notes.

Crocodilian Skin Production Estimates 1995-1996

	1995		1996	
Caiman crocodilus				
Bolivia	IM 490 kg	W	-	-
Brazil	369	C	-	-
Colombia	828,533	C	665,522	C
Guyana	IM 1,556		2,650	W
	2% W, 81% R?, 17% C			
Honduras	IM 2,000	N	IM 6,000	W
Nicaragua	4,238	W	10,795	W
Panama	IM 2,005	,W	* 214 sq. m	W
Paraguay	19,793	W	*1,080	W
		(see note)		
Venezuela	55,195		29,996	
	93% W		93% W, 7% C	
Total Caiman	913,689		716,043	

	1995		1996	
Alligator mississippiensis				
USA	181,707		209,283	
	approx. 20% W, 75% R, 5% C			
Israel	-	-	-	-
Crocodylus johnsoni				
Australia	3,132		-	-
	28% W, 10% C, 62% R			
Crocodylus moreletii				
Mexico	IM 2		20	C
Crocodylus niloticus				
Botswana	I 699	C	I 347	C
Ethiopia	2,005	R	-	-
Guinea	100	N		
confiscated by Spain*				
Israel	348	C	* 944	C
Kenya	2,250		* 600	C
	71% C, 24% W, 5% R			
Madagascar	2,411		4,589	
	88% R, 9% W, 13% C		80% R, 20% C	
Malawi	950	R	636	N
Mozambique	3,021	R	523	R
Namibia	515	C	210	C
South Africa	14,805	C	-	-
Tanzania	915	N	1,085	N
(See Notes)				
Uganda	0	*	-	-
Zambia	11,644	(See note)	*2,441	
			99% R, 1% W	
Zimbabwe	39,590	N ?	38,295	N ?
Crocodylus novaeguineae				
Indonesia	0	-	0	-
Papua	IM 19,556		-	-
New Guinea	66% W, 33% C, 1% R?			
Crocodylus porosus				
Australia	7,251		-	-
	13% W, 68% R, 19% C			
Indonesia	0		0	
Malaysia	IM 398	C	120	C
Papua	IM 12,908		-	-
New Guinea	31.6% W, 0.4% R?, 68% C			
Singapore	1,004	C	411	C
Thailand	419	C	130	*C
Crocodylus rhombifer				
Cuba	99	C	40	C
Crocodylus siamensis				
Thailand	4,372	C	-	-
Total Classic	310,101		incomplete data	

Notes on the figures provided for certain populations

Caiman crocodilus. Paraguay: Information provided to the IUCN/SSC Crocodile Specialist Group by the CITES Scientific Authority of Paraguay is that zero 'legal' production or export occurred in 1992 or 1993. A stockpile of around 23,000 skins was seized from illegal operators. They were tagged and inventoried and placed on the market for 1994 and 1995. In 1994 and 1995, Paraguay reported exporting 5,466, and 19,793

skins respectively, a total of 25,259 skins, meaning that the stockpile has now been exported.

Alligator mississippiensis. Data provided Florida Game and Freshwater Fish Commission (approx. 12-15% of US production) and Louisiana Department of Wildlife and Fisheries (approx. 85-88% of US production). A small additional number of skins are produced in other State programs.

Crocodylus novaeguineae and *C. porosus.* Indonesia: moratorium on trade 1994 to 1997. Therefore, no skin exports in 1995 and 1996. Papua New Guinea, bulk of production is thought to be from wild and ranched sources.

C. niloticus. South Africa: No report has arrived from the Transvaal region. Tanzania: From import records, it appears that approximately 50% of the skins are wild, 25% captive-bred, and 25% ranched. Zambia: From importer and re-exporter records it appears that approximately 91% are ranched and the rest wild. Zimbabwe: Numbers of rearing stock cropped (usually 2 or 3 years old) provided by the Crocodile Farmers Association of Zimbabwe (CFAZ) 1995 and 1996 Crocodile Ranching Annual Reports to the CITES Secretariat. Source of Zimbabwe production not reported but thought to be approximately 50% R, 50% C. -- Lorraine Collins, *World Conservation Monitoring Center, Cambridge, UK (new address CITES Secretariat, P.O. Box 456, CH-1219, Le Chatelaine, Geneva, Switzerland.) with additional information and analysis by the Editors.*

PUBLICATIONS

WERMUTH AND MERTENS REPRINTED. The widely used and quoted monograph on the systematics of the Crocodylia and Chelonia, SCHILDKROTEN, KROKODILE, BRUCKENECHSEN by Heinz Wermuth and Robert Mertens (1961) has been reprinted by Gustav Fischer of Stuttgart, Germany in 1996. The original 1961 edition is considered a foundation text, although the reprinted version continues the confusion of the figures of skulls of *C. cataphractus* and *Tomistoma schlegelii* (see pages 360 and 376, which are the same figure of *T. schelegelii*). The original volume also has a figure of the skull of *C. cataphractus* mislabeled as *C. intermedius* (pg. 361). Inquiries to the printer about the availability of the volume indicate that only a handful remain of 1,000 printed. -- Jon Davidson, *207 Haddington Ave. Toronto, Ontario M5M 2P7, Canada.*

NEW PUBLICATIONS. Tim Scott at Texas A & M University, USA, drew our attention to a reference overlooked in the recent Publications list:

Scott, T. P. 1995. Disease Surveillance in the American Alligator (*Alligator mississippiensis*) *In*: Proceedings of the Exotic Wildlife Production Conference. Texas A & M University, College Station Texas.

He also notes two recent publications:

Scott, T. P. & B. G. Foster. 1997. *Salmonella* spp. in free ranging and farmed alligators (*Alligator mississippiensis*) from Texas and Louisiana. Aquaculture 156:179-181.

Scott, T. P., S. Simcik & T. Craig. 1997. Endohelminths of American alligators (*Alligator mississippiensis*) from Southeast Texas. J. Helminthological Society of Washington 64(2):258-262.

Reptilia, the European Herp Magazine, will Soon appear in its English version. Reptilia will therefore be the first and only herp magazine that appears in three different languages. In the English reptilia you will find issues such as reptile and amphibian husbandry, legislation, conservation, veterinary, herps & culture, events & news, book reviews, etc. -- Reptilia, *The European Herp Magazine, Muntaner 88, 5.1., 08011 Barcelona, Spain*

CSG ON-LINE

NEW SITES. Have you seen the alligator industry page that the Dept. Agriculture and Consumer Services has put on the web at: <http://www.fl-ag.com/alligatr/>. CONABIO's web site <http://www.conabio.gob.mx/cites/citeshome.pl>

announces an electronic version of a Guide for Identification Birds and Mammals that are most traded in Mexico and are under the protection of CITES. This guide, which is in a dynamic database format, contains information on identification, distribution, maps and high quality images.

MEETINGS

14TH WORKING MEETING OF THE CROCODILE SPECIALIST GROUP, 14 -17 July 1998, Singapore International Convention and Exhibit Center, Singapore. The meeting hosts, Singapore Reptile Skin Trade Association, have been very busy and an attractive meeting logo has been designed.

At last count over 100 people had asked for registration materials and these have all been sent a full registration package. Registrations returned to the organizers after 31 March 1998 should be accompanied by the registration fee of $150 US. All inquiries about registration should be directed to the organizers:

Attention Ms. Wedad Sunny
Foreword Communications
26A Purvis Street
Singapore 188603
Fax 65 338 5917 or 65 339 4708
e-mail wedad@foreword.com.sg

The Program continues to develop as various invited speakers confirm their ability to attend. A finalized program will be available to participants upon arrival. The venue is booked and will provide very comfortable facilities for presentations, meetings and also for social interactions among participants. The Steering Committee of the Crocodile Specialist Group will meet on 13 July, prior to the main meeting.

To date, 15 applications to present posters have been received and there remains room for a few more, so its not too late to advise the Executive officer of your desire to present a poster. Poster presentations will also be invited to submit an expanded abstract for inclusion in the meeting Proceedings. Inquiries regarding the program, presentations and posters should be directed to:

Dr. Perran Ross, Executive Officer CSG
Florida Museum of Natural History
Gainesville FL 32611 USA
fax 1 352 392 9367
e-mail prosscsg@flmnh.ufl.edu

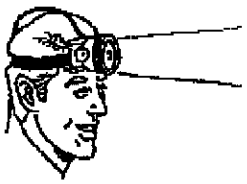
Registration will be possible at the meeting, but to allow the planning of seating, facilities, social events etc. all participants are urged to register in advance. Your registration payment will cover the costs of facilities and services provided to you at the meeting, as well as a copy of the Meeting Proceedings. This is the last Newsletter for us to advise you directly about the meeting.

INDIAN MEETING POSTPONED. Due to unavoidable circumstances beyond the conveners control, the Regional Meeting for the Western Asian Region, previously announced for 2-4 July 1998, has been postponed. They hope to reconvene the meeting later this year and an announcement will be made in the Newsletter. -- Romaine Andrews, Madras Crocodile Bank, Post Bag 4, Mammalapuram, TN, India.

REQUESTS

EMBRYO SAMPLES. In 1999, Mr. Martin Kundrat will begin an extensive study of the prenatal and early postnatal anatomy of the Crocodylia, working under Dr. Anthony Russel, Department of Biological Sciences, University of Calgary, Canada. Mr. Kundrat is seeking embryological material to support these studies, particularly from *Alligator sinensis*, *Gavialis gangeticus* and *Tomistoma schlegelii*. Mr. Kundrat will approaching specific donors for this material and providing detailed collection procedures to provide embryos and hatchlings of specific age and fixed in different preservatives. Individuals and institutions with access to embryological specimens and interested in cooperative specimen exchange should contact. -- M. Kundrat, *Laborecka 1845/1 SK-006601 Humenne, Slovakia. E-mail <mkundrat@hotmail.com>*

PERSONALS



Grahame Webb and Giovana Cortez were married in early April in Darwin, Australia. We all wish them every happiness in their life together.

Bruce Shwedick, c/o Crocodile Conservation Services, P.O. Box 3176, Plant City, FL 33564, USA, e-mail <shwedick@aol.comm>, will continue as Curator of Reptiles at Florida Cypress Gardens in Winter Haven, Florida. He is currently trying to contact Dr. W. E. Waitkuwait in Cote d'Ivoire and is requesting help from CSG members. If you have a current address, phone number or GPS coordinates for Ekke, please inform Bruce [and the Newsletter editors also please, we seem to have lost Ekke as well -- *Eds.*]

ANOTHER LOST MEMBER. In the confusion of civil war in Congo last year we received information that CSG member Marcellin Agnagna had moved from Brazzaville where he was formerly stationed, but we have no current address for him and mailing services to Congo are temporarily suspended. We sincerely hope Marcellin is alive and well and we would appreciate any news of his whereabouts.

CROC JOKE. Two men decided to settle a dispute with a dog fight.

One of them found the biggest meanest Doberman female and bred it with a huge Siberian wolf. He selected the biggest and strongest puppy. He used steroids and trainers and after five years came up with the biggest meanest dog the world had ever seen. Its cage needed steel bars that were five inches thick and nobody could get near it.

On the day of the dog fight, the other guy showed up with a strange animal. It was a nine foot long Dachshund. Everyone felt sorry him because they knew there was no way that this sausage dog could possibly last ten seconds with the other dog. When the cages were opened big dog leaped out of it's cage and charged the dachshund. But, when it got close enough the dachshund opened it's mouth and ate it in one bite.

The first guy shook his head in disbelief. "How this could have happened. I worked for five years to breed the meanest Doberman with a wolf." "That's nothing", the other guy replied. "I had a plastic surgeon working for five years to make an alligator look like a Dachshund!"

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