

NEWSLETTER

Volume 2, Number 2 July, 1983

**International Union for the Conservation
of Nature and Natural Resources**

F. Wayne King, Chairman

**Survival Service Commission
Crocodile Specialist Group**

Editors: Peter Brazaitis
Myrna E. Watanabe

EDITORS' COMMENTS

Spring and summer of 1983 bring much news of crocodilians. We have reports on farming, research, and population trends. There is no doubt that crocodilian leather has been temporarily out of vogue in the U.S. The current economic upturn, along with changes in laws, harbinger a new luxury reptile leather -- sea turtle. Prices for raw alligator skins in Louisiana were \$13 per foot while Florida skins, which usually bring less than Louisiana hides brought about \$8 per foot.

We have an enormous amount of information to convey to you in the few pages we can stuff into an envelope. This is due to the great response of the CSG members, consultants, correspondents, and other interested parties. Nearly 50 percent of you have contacted us. We would like those of you who have already responded to keep us current on information regarding your work, the populations you are familiar with, etc. Even just a few words to say that you have received and approve or disapprove of the newsletter would be appreciated. Those of you who have not yet responded, please do respond. As the tearsheets were so successful, we will include a tearsheet for your convenience with each issue.

In this issue we are introducing a column by Mike Davenport of the National Zoological Park, Smithsonian Institution, Washington, D.C., on crocodilian reproduction in U.S. zoos. This will be a regular feature in future issues. Beginning with the next issue, we plan to institute a column with questions that we have been asked by various respondents which would best be answered by individuals with hands-on experience with similar problems.

There were no suggestions for a new logo, and only two replies related to it. One respondent asked what a logo is. As logo is a term commonly used in the U.S., we ignored the possibility that non-American respondents would be unfamiliar with it. We apologize. A logo is an identifying symbol or trademark. Our current trademark is adopted from an old book and, in truth, was used in the past to fill up space. We need something our own and something original.

Many of you wrote letters that require personal replies. If you do not receive a reply along with this issue of the newsletter, please wait. A reply will be forthcoming.

Editors' Comments - cont'd.

The huge response has caused this issue to be late. We will try to send future issues out on time but may have to publish only three issues this year.

AREA REPORTS

AFRICA

The major news from Africa continues to be the petitions from Zambia, Zimbabwe, Botswana, the Congo Republic, and Mozambique to transfer Crocodylus niloticus in their countries from Appendix I to Appendix II of CITES, and the Malagasy Republic's petition to remove their population from the CITES list. The decisions at the 1983 CITES meeting in Botswana accepted Zimbabwe's petition for the Nile crocodile, but sent the requests from Mozambique, Malagasy, and South Africa to a technical committee for drafting of a proposal to implement and fund population surveys in these regions.

Tony Pooley is distributing a beautifully illustrated and informative slick foldout: "The Tony Pooley Guide to the Nile Crocodile and Other African Crocodiles." Included is a section entitled, "How to avoid being eaten by a crocodile." [Tony is unquestionably the world authority on the topic, especially the latter section.-Ed.]

Jon Hutton of the National Museum, Bulawayo, Zimbabwe is in the process of writing several papers on the Ngezi population of C. niloticus, based on his years of field work in the area. Based on a population model, he has concluded "that the Ngezi population is on the edge of its climatic range and is controlled by environmental factors." He has seen depressed growth rates due to low ambient temperatures. These lower growth rates result in increased age at first reproduction and increase in the amount of time that juveniles remain small and vulnerable to predation.

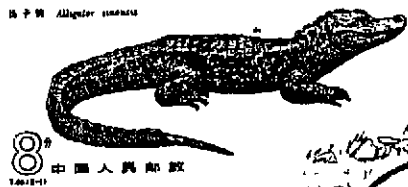
J. P. Loveridge reported that an American, Dr. Chris Kofron, is about to join him, David Blake, and Hutton and will be working on reproductive biology.

ASIA

China:

Huang Chu-chien reported that nine Chinese alligators were hatched at the Ningpo Zoo in Zhejiang Province. Artificial crocodile skin purses are all the rage in Beijing and Shanghai. Mr. Huang and Prof. Shih Ying-hsien are studying the genetics of Alligator sinensis. The Chinese alligator commemorative stamp was released in May. (See illustration on p.3.) [We suggest the drawing of the Chinese alligator mother and her hatching young as a possible logo in the absence of any other suggestions.- Eds.]

扬子鳄 *Alligator sinensis*

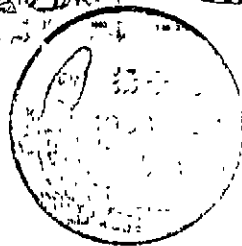


8分 中国人民邮政

扬子鳄 *Alligator sinensis*



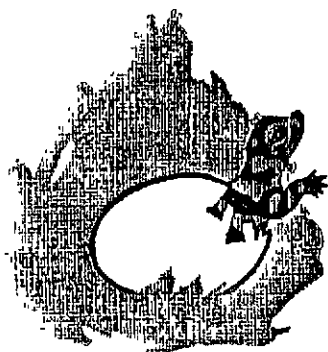
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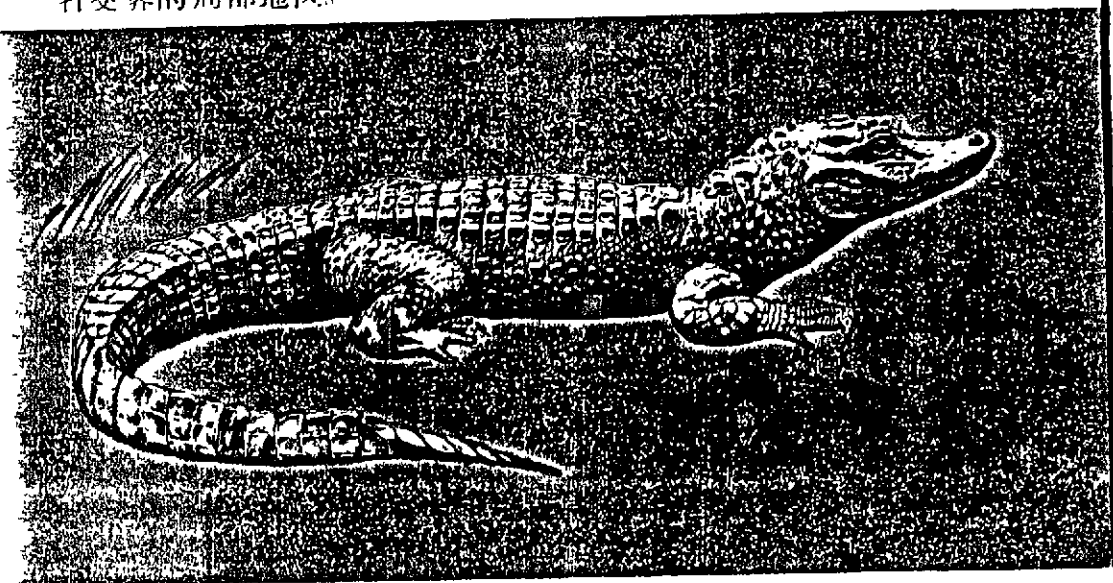
杭州
一九五八年八月

扬子鳄

扬子鳄是我国特产，古老而现存的国家第一类保护的珍稀爬行动物，仅生活在江苏、浙江和安徽三省交界的局部地区。

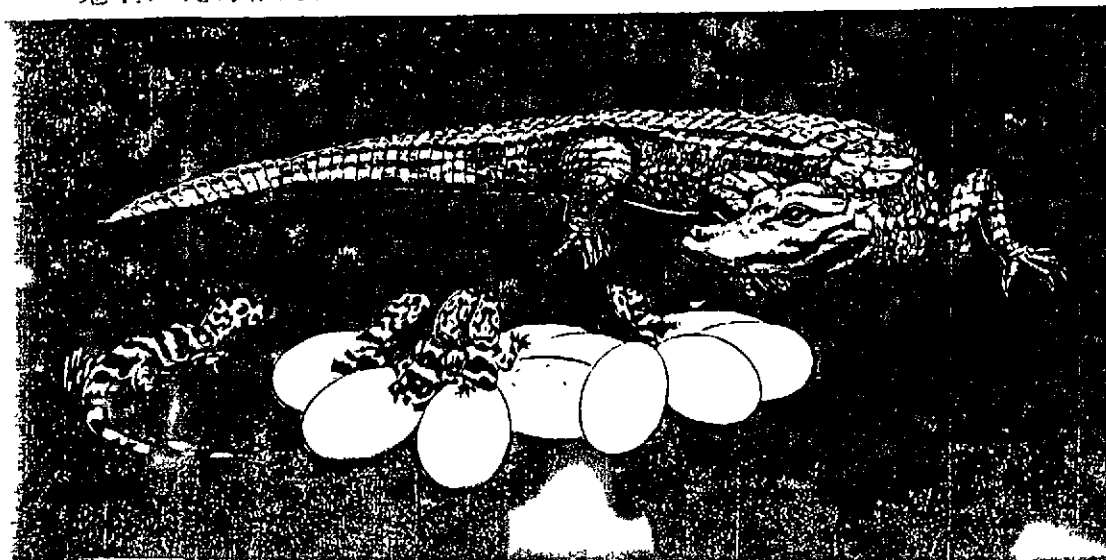


首日封 F. D. C.



扬子鳄

扬子鳄是古老而现存的中国特产珍稀爬行动物，分佈在长江中下游一带，六月交配，七月产卵于陆地上，九月稚鳄出壳后独立生活。



China - cont'd.

Chen Bihui wrote that the Xiadu Alligator Farm in Anhui Province has been renamed the Chinese Alligator Breeding Center, and is being funded by the Ministry of Forestry. The farm, according to Mr. Chen, is expanding and building new naturalistic breeding pens.

A paper on the Chinese alligator by Myrna Watanabe will appear in the October issue of Oryx.

India:

There will be a seminar for Indian crocodile workers some time this year. Contact Rom Whitaker, Madras Snake Park, Madras 600022 for information.

Dr. Sudhakar Kar who recently returned from several months of work with Harry Messel and Martin Hollands, respectively, sent a short report of his work at the Bhitarkanika Wildlife Sanctuary, Orissa, on Crocodylus porosus. The following is excerpted from his report:

" ... Collection of wild-laid eggs for artificial incubation is carried out to minimize the drastic loss of eggs, and subsequently newly-born young ones from predators. This is the basic aim of the conservation program in order to ensure a safe future for the saltwater crocodiles at least inside the Bhitarkanika Wildlife Sanctuary by utilizing the 'grow and release' method.

"Up till now 200 saltwater crocodiles of 1.5 m (approx.) length have been released in different phases into the wild to build up the most depleted populations in the nature/Bhitarkanika Wildlife Sanctuary. A few more will be released soon into nature. Regular monitoring of those released crocodiles have been taken up to know their dispersal, movement and survival rate. At present, 600 crocodiles of various age groups, including a sub-adult white crocodile, have been reared in the rearing pools at the Research Unit..."

According to Dr. Lala A. K. Singh, breeding of two species -- the gharial, and mugger crocodile -- is proceeding at Nandankanan Biological Park, Orissa, and plans are being made to breed saltwater crocodiles kept there. Three clutches of gharial eggs were expected this year. Muggers had bred at Nandankanan and at Tikerpada Gharial Research and Conservation Unit. Drs. Singh and B. C. Choudhury visited Lanjamadugu to collect Crocodylus palustris eggs for their research on temperature-dependent sex differentiation in Indian crocodilian species. The Central Crocodile Breeding and Management Training Institute at Hyderabad trains people, mainly in-service Forestry Officers, in crocodile and sanctuary management. The fourth 9-month course was completed last August. To date, 42 individuals have completed the course.

Rom Whitaker was planning to spend two months this past spring surveying the main rivers in Sabah with John Payne of World Wildlife Fund and the Sabah Forest Department. Rom is hoping to breed his female

India - cont'd.

Alligator mississippiensis at the Madras Snake Park.

Malaysia:

Ken Scriven is surveying Crocodylus porosus and Tomistoma schlegelii populations in Sabah with the assistance of Rom Whitaker and funding from WWF Malaysia. In future, they hope the project will also cover Sarawak and the Malaysian Peninsula. In Sarawak, crocodiles are not protected and hunts for "killer" crocodiles continue.

Perkhidmatan Pendidikan Zoo in Ampang, Selangor, Malaysia has been breeding Osteolaemus tetraspis. They hope to breed C. porosus and T. schlegelii. The zoo also has A. mississippiensis and Paleosuchus sp.

Nepal:

Turtha Markey, a graduate student from Michigan State University, is studying gharials in Nepal.

Pakistan:

Dr. Khan Muhammad Khan of the Sind Wildlife Management Board reported that the Government of Pakistan has approved a five year project to protect, rear, and release into their natural habitat both Crocodylus palustris and Gavialis gangeticus.

Thailand:

According to a paper sent by Mr. Charoon Youngprapakorn of the Samutprakan Crocodile Farm, the farm houses approximately 24,500 crocodiles of 8 species. Included in this figure are more than 4,000 C. porosus x C. siamensis hybrids."

AUSTRALIA

Rob Jenkins of the Australian National Parks and Wildlife Service has been looking into the possibility of restocking C. porosus in the South Alligator River, as both his work and Harry Messel's work indicate that there is minimal recruitment of animals into the population as a result of flooding and habitat loss. In 1981-82 they collected eggs, incubated them until the flood season was over, and replaced them into nests. The females opened the nests at the time of hatching and creching of hatchlings occurred. Thus, this technique holds great promise for this area and other areas where short-term effects of flooding destroy incubating eggs.

Laurie Taplin of University of Sydney is continuing his work on salinity effects on C. porosus, by extending his work from the histology,

AUSTRALIA - cont'd.

physiology, and evolution of lingual glands to the behavior and ecology of the species with respect to habitat salinity.

The Government of Australia has withdrawn its proposal to CITES for removal of the saltwater crocodile from Appendix I to Appendix II.

CARIBBEAN

Cuba:

Dr. Luis Varona sent us the following report on the status of Crocodylus rhombifer and Crocodylus acutus in Cuba:

"Twenty years ago when the populations of Cuban crocodiles, Crocodylus rhombifer and C. acutus were transferred to the 'corrals' in Laguna del Tesoro, Zapata Swamp, only immature specimens of the former were left in the fresh waters. It is good news to learn that after all those years, the young ones left behind grew up unmolested by man and that a fair-sized population of C. rhombifer now exists in the wildest areas of Zapata Swamp.

"Both native species of crocodiles are fully protected by law and there is no hunting nor commercial utilization of hides (at least internally; I can't assure the same externally). The 'corrals' are maintained and in the ones in Laguna del Tesoro both species are still mixed and hybridize. Hybrids or 'mixturados' are abundant in the enclosures of Zapata. In the 'corrals' established not long ago in Tasajera (SE Habana Province) there are only C. rhombifer.

"One of the biggest populations (if not the biggest) of C. acutus in the wild remains in Birama Swamp, at the mouth of the Caño River in one of the Oriental provinces. Recently, it was published that 200 C. acutus from that population were killed for scientific studies!

"On the Isle of Pines (now named Isla de la Juventad), a population of C. rhombifer was recently rediscovered by the author. It was previously thought that the species was extinct on that island. The young Cuban crocodiles there are threatened, however, by the introduced Caiman crocodilus fuscus. I have examined stomach contents of adult C. crocodilus and found young of C. rhombifer. Of course, C. crocodilus cannot compete with adult C. rhombifer, but it is a serious menace to the newborn there.

"I have in press two papers on Cuban crocodiles. One concerns the present status, ecology, ethology, and zoogeography of C. acutus in the Cuban territory. The other one deals with the fossil crocodilians of Cuba."

CARIBBEAN - cont'd.

Haiti:

John Thorbjarnarson of University of Florida, Gainesville is studying Crocodylus acutus in Haiti.

CENTRAL AMERICA

Milton G. Camacho is studying Crocodylus acutus and Caiman c. fuscus in Nicaragua, funded by the Junta de Gobierno de Reconstrucción Nacional IRENA. He reported that an approximately 320 kg, 4 m long crocodile was recently captured in Managua Lake and was placed in the Cmte. Edgard Lang Sacasa Zoo.

NORTH AMERICA

Despite the scarcity of funding, many research projects on the American alligator have been proceeding. Individuals most active in research are located at the University of Florida, Gainesville, Florida State Freshwater Fish and Game Commission, Everglades Park National Wildlife Refuge, and Rockefeller Wildlife Refuge in Louisiana. R. Howard Hunt of the Atlanta Zoological Park is continuing his research on migration and parental behavior of alligators in Georgia. I. Lehr Brisbin of the Savannah River Ecology Laboratory is reediting the annotated cross-referenced bibliography of the American alligator, originally published in 1979.

High water levels resulting from excessive rainfall and southern Florida's water management practices led to 1982 being the third year out of the past five in which there were high egg mortality rates for the American alligator in the Everglades. At this time, the only effect severe spring rains in the U.S. have had on the alligator is a delay in all mating behaviors, as noted by Ted Joanen at Rockefeller Wildlife Refuge.

We have heard rumors to the effect that the National Alligator Association is now defunct. The organization was founded a number of years ago to promote the market in alligator hides and meat, lobby for favorable changes in applicable regulations, and promote unification of farmers, hunters, and industry. We have heard that hard feelings and rancor developed in recent years between the members and leadership. Prices for hides dropped, dues from foreign tanners remained uncollected, and funds were depleted. The influx of cheaper caiman hides into the U.S. market and the poor international economy were blamed in part for the falling prices for raw skins. The use of funds for non-productive efforts was also cited. Any insights into these rumors would be appreciated by the editors for inclusion in a future issue of the CSG Newsletter.

NORTH AMERICA - cont'd.

On a lighter note, your editors were featured in the January, 1983, issue of *Environs*, the publication of the New York City Department of Environmental Protection. We pulled an abandoned two-foot long pet alligator out of a local reservoir as a favor to New York City. It was nothing much to us, but the media went wild. This is more proof that Americans are very strange people.

OCEANIA AND THE PACIFIC

Papua New Guinea

After some doubt about the security of his position, Martin Hollands now expects to remain in PNG running the crocodile monitoring project at least through May 1984. Money has come from Provincial Governments to fund the entire program as described at the Victoria Falls CSG Meeting last year. The government of PNG is not, however, supporting farming, and therefore Miro Laufa, who was working with the farming program, should have left PNG by now.

Philippines

Andy Ross is a consultant to the Silliman University crocodile breeding project and is busy writing papers. He is back in the U.S. working at the Smithsonian Institution.

SOUTH AMERICA

Brazil

George Rebêlo will provide us with a synopsis of a paper he presented in January at the Brazilian Congress of Zoology on a census of confiscated caiman skins stored by IBDF, for our next issue. Anyone wishing this information sooner should contact him directly. His recent paper outlining the results of a census of crocodilians (Caiman crocodilus crocodilus) in a lake linked to the Rio Trombetas, was published in *Revta bras. Zool.*, S. Paulo 1(1): 91-94.

Peter Crawshaw reports, "Poaching is still heavy here." He does, however, hope that the situation will improve as more people are becoming interested in conservation.

Howard Quigley of the New York Zoological Society submitted the following report on work on Caiman crocodilus vacare in the Pantanal for himself and Peter Crawshaw:

"The most startling observation in the region right now is the level of caiman poaching. Although the hunting of caiman and the sale of their hide has been illegal for years, it appears to have become a very common and profitable endeavor throughout the Pantanal. Reports are that the hunter can get from \$4 to \$8 per hide. In areas where caiman are still unwary and plentiful, it is not unlikely that two poachers can kill over 100 caiman in

Brazil - cont'd.

a night. Some of these people have probably been professional hunters for some time, but the temptation for others to begin is also great when one considers that the average monthly wage is probably in the neighborhood of \$100. Most hides appear to be heading to tanneries in Bolivia but a large portion are probably going to Paraguay.

"Law enforcement has been ineffectual. Although some apprehensions have been made, word has it that many of the hunters are back at it in a few weeks and that even confiscated hides are still making their ways to markets.

"The effect on the caiman populations is quite obvious in some areas. Where people say they used to see caiman packed on shorelines basking they now see none or maybe only a very wary one or two as they run for water on approach. It is unlikely that caimans will be eliminated from the Pantanal for two reasons: 1) pockets of dense groups still exist in some more protected areas and 2) the poaching is likely to drop off as soon as numbers drop off to a level at which hunting is not worth it. Still, the slaughter is atrocious and the long term effects on the species and subspecies can only be speculated on at this point. Many other species are probably also suffering losses as incidental prey of the hunters, including the giant otter and the jaguar.

"The Instituto Brasileira de Desenvolvimento Florestal has initiated, along with their law enforcement program, a research project aimed at investigating the potential of offering caiman production as an economically viable option to cattle ranching. Still, the caiman's greatest hope may lie in public awareness and pressure. To this end, a newly founded conservation organization in Brazil has declared this the year of the Pantanal and has produced a 1983 calendar featuring 12 photographs depicting various aspects of caiman biology. For more information write to: Oikos, Caixa Postal 51.570, 01499 São Paulo, Brasil."

Bill Magnusson announced that he has information on nest excavation, creche formation, maternal defense of young, and dispersal of young of Paleosuchus trigonatus. He has requested funding for a survey of the population of Melanosuchus niger in Amazônia. He and George Rebêlo are trying to locate funding sources for a project on the population of Caiman latirostris in Brazil. Bill's most recent papers are:

Rebêlo, George H. and William E. Magnusson. 1983. An analysis of the effect of hunting on Caiman crocodilus and Melanosuchus niger based on the sizes of confiscated skins. Biol. Conservation 26.

Magnusson, William E. 1983. Size estimates of crocodylians. J. Herpetology 17: 86-88.

SOUTH AMERICA - cont'd.

Colombia:

Fred Medem conveyed information to us about most of South America. Many of these points will be covered in Volume 2 of Los Crocodylia de Sur America, which he expects will be published some time this year. He was planning to carry out a field study on the Rio Yari, which has not as yet been studied, but "permanent" guerilla warfare in the region has prevented him from doing this work. His captive Crocodylus intermedius showed mating behavior but produced no eggs. His Caiman and Paleosuchus also did not breed. Fred suspects that this may be due to a diet heavy in fish and cattle entrails, which is all they can afford. Fred wrote that according to newspaper reports, Inderera confiscated 50,000 hides of "babilla" (Caiman c. fuscus?) early this year. Fred wrote that the cocaine trade has stimulated the trade in illegal crocodilian hides.

Peru:

Pedro Vásquez Ruesta reported that a bibliography of Peruvian crocodilians is undergoing final preparation. The Department of Forestry Management has begun a systematic computerized information bank on the geographic distribution of Peru's economically important species, which includes information on crocodilians. Peru's government is in the final months of a registration of rivers in the north of the country. These rivers are subject to flooding. They thus have an effect on the populations of C. acutus, whose world distribution is limited by these rivers.

Ana María Trelancia has been working, at her own expense, on C. acutus populations in the mangroves and dry forest in the northwestern portion of the country. She is looking at geographical distribution, ecology, and status of the species. Fred Medem suggests that people send her information. Her address is: Leonidas Yerovi 225, Lima 27, Peru.

Venezuela:

Stefan Gorzula is studying marked populations of Caiman crocodilus near El Manteco and doing population counts of crocodilians in Bolívar State. He plans to continue his studies on circulating inhibitor in C. crocodilus blood. Gorzula sent us the following recent reference:

Arocha-Piñango, C.L., S.J. Gorzula, and A. Ojeda. 1982. The blood clotting mechanism of spectacled caiman Caiman crocodilus. Molecular Physiol. 2: 161-170.

Fred Medem reported that the Venezuelan government recently allowed "experimental hunting" of C. crocodilus. The reasons given for allowing the hunt appeared to be dubious.

John Thorbjarnarson of University of Florida, Gainesville, hopes to begin a study of the population of C. intermedius recently discovered by Richard Franz (see Vol. 2 No. 1). Fred Medem is of the opinion that this population is made up of refugees that moved into the area during the period of heavy hide hunting. He pointed out that the Caura, the area in

Venezuela - cont'd.

which the population was found, is not a likely natural habitat as it has waterfalls and rapids. He is concerned that a proposed dam may damage the area and the crocodilian population and hopes that the animals will be studied prior to such damage. Tomás Blohm is working on the Venezuelan government to convince them to declare the section of the Caura River that encompasses the crocodilian population as a National Park or Wildlife Preserve.

The following report was sent by Andrés Eloy Seijas:

"Since 1980 we have been establishing the places where there are still individuals of C. acutus. Six of the localities visited have had this species present. Of a total of 83 animals seen, only 11 were adults. The rest were hatchlings, juveniles, and sub-adults.

"Sixty-four crocodiles, most of them hatchlings, have been captured, marked, and released. Ten have been recaptured and we now have data on growth, in some cases, for almost two and a half years.

"Most of the eastern region of Venezuela has not been surveyed. We hope to do that this year.

"With respect to C. crocodilus, in 1982 I managed the work of evaluation of the populations on 16 ranches in the states of Apure and Portuguesa, an area of 233,769 ha. The minimum number of caimans estimated for this area was 55,072 individuals over one year of age. The average number of individuals per hectare was 0.2356, very similar to the average obtained by other authors in savannas like those we visited.

"This year, probably in March, the Ministry of the Environment of Venezuela is going to permit the exploitation, experimentally, of this resource."

Tomás Blohm protested the hunting season to the Ministry of the Environment, but, as of February, had received no reply. He was, however, pleased to report that Venezuela's new Minister of the Environment, José Joaquín Cabrera Malo, is a "well known conservationist." Tomás' 20 year old C. crocodilus crocodilus died earlier in the year from a kidney tumor. Her ovaries were full of eggs and he regrets the loss of a reproductive season from her. He also lost a female C. intermedius after she swallowed a sharp stick that injured her liver.

U.S. MARKET NEWS by Peter Brazaitis

The U.S. market in crocodilian hides and products remains poor, with little consumer interest. Although products have not been featured in retail department stores, a few advertising promotions have appeared in some newspapers. The products most often seen are those made of snake and

lizard skin, and alarmingly increasing numbers of Caiman-flank shipments and some products. These include caiman flank shoes, belts, handbags, and watchbands. Caiman flank imports make up the bulk of the crocodylian imports coming through the Port of New York. Although crocodylian imports, particularly in terms of species diversity, do not seem to be anywhere near 1980-81 levels, the increase at this time may reflect the anticipated sales of the coming Christmas season. However, it may also reflect the European Common Market's efforts to force European countries that have taken exception to CITES listings of crocodylian species to comply. If so, then warehouse stocks of large numbers of caiman flanks of questionable origin may be disposed of before compliance is mandated. Most of the caiman flanks are those of Caiman c. yacaré, usually invoiced as C. c. crocodilus. These hides are routed out of South America through Colombia or Panama, and usually originate from illegal sources in Paraguay or legal sources in Bolivia. The U.S. Fish and Wildlife Service does not allow entry of caiman shipments from Paraguay or Bolivia. Recently, numbers of C. c. yacaré flanks, measuring 1 m to 1.5 m, have been shipped to the U.S. from Japan. C. c. crocodilus is invoiced, and Colombia the origin. Tannage is European. One such shipment numbered over 1,100 finished pieces and was valued at nearly U.S. \$32,000.

Products made from crocodile occasionally continue to include the hides of C. acutus, C. moreletii, and C. niloticus. These are often exported from Italy as C. novaeguineae or C. porosus from PNG.

Louisiana and Florida farmers and hunters are concerned about the low prices paid for raw skins of American alligator in 1982. Prices ranged from \$7.00 to \$13.00 per foot, down from the \$20.00 or more paid in past years. The trend is not expected to change significantly this year. Imports of cheaper caiman flanks and products, sold at competitive prices are said to be partly to blame, along with decreased sales. Japanese buyers have begun to compete with European buyers for hides.

The Editors would like to receive information on current prices being paid for raw skins elsewhere in the world. If this information is received, a compiled list for comparison will be published in future newsletters.

Karlheinz Fuchs reports that large numbers of hatchling caimans are being imported from Colombia and Panama into Taiwan. The animals are said to be raised for food. He indicates that there are more than 65,000 animals on such farms. Sources in Costa Rica report queries from Taiwan regarding the availability of hatchling caiman in large numbers. (See p. 13 for further information.)

ZOOS

The Frankfurt Zoological Garden reported that its male Gavialis gangeticus, on breeding loan to the Gharial Breeding Centre in Nandankanan Biological Park, Orissa, India, has fathered three clutches of young. In 1980 it mated with a female who produced 25 eggs, of which 24 hatched. Fifteen hatchlings survived. In 1982, it mated with two females who produced a total of 55 eggs. Twenty-five hatched and 18 young survived. The Frankfurt Zoo is also working with the Royal Chitawan National Park, Nepal on breeding the gharial.

Information on Taiwan Crocodile Farm Received from Karlheinz Fuchs

Crocodile farming and ranching in TAIWAN

1. Taiwan Crocodile Ltd., Nr. 225 Shin Chung Rd., MATOU/TAIWAN

<u>Size of the farm:</u>	7500 m ²
<u>Natural lakes(ponds):</u>	2, each 60x60m
<u>Concrete ponds :</u>	4, each 10x10m
<u>Greenhouses:</u>	2, each 20x10m with 12 concrete ponds 2.5x2.5m, total 24 ponds 2.5x2.5m, with gasheating
<u>Life stock:-</u>	a. <i>Crocodylus porosus</i> 30, 1 year old b. <i>Tomistoma schlegelii</i> 15, 1 year old c. <i>Caiman c. crocodilus</i> 5200 4800, 3 month old, 0.30m long 80, 1.5 years old, 1.2m long 320, 7 years old 2.4m long. About 300 C.c.c. are born in the farm
<u>Eggs:</u>	2700 per year
<u>Hatchlings:</u>	only 13 - 15% of the layed eggs
<u>Food:</u>	Chicken, freshwater fishes
<u>Killing rate:</u>	240 C.c.c. per year, 2 years old, 1.5m long, weight approx. 15kg
<u>Price for the meat:</u>	26.7 US-Dollars per kg including bones

2. Other crocodile farms in TAIWAN

30 with a total life stock of 60000 *Caiman c crocodilus*



ZOOS - cont'd.

R. Howard Hunt of the Atlanta Zoo reported receipt of a letter from Satoshi Kimura of the Atagawa Tropical and Alligator Garden, Shizuoka, Japan. Mr. Kimura reported successful artificial incubation of C. c. yacaré, C. latirostris, C. siamensis, C. porosus, C. niloticus, and Gavialis gangeticus. Mr. Kimura noted that no organism maintained in his collection has ever been sold from it and that surplus organisms are donated to "public educational institutes in Japan." His reason for contacting Mr. Hunt was to request C. moreletii for his collection. The Atagawa Institute publishes a bulletin and a sample contained a 1977 paper on "Artificial incubation of gavials (sic) eggs."

Tunku Mohammed Nazim Yaacob of Zoo Negara, Selangor, Malaysia reported that Osteolaemus is the zoo's best breeder. He hopes to breed C. porosus and Tomistoma schlegelii.

The California Alligator Farm, Buena Park, California, USA, is presently considering expansion and establishment of a large crocodilian breeding facility at an as yet undecided location. Ken Earnest, the Curator, is hoping to breed endangered species that are underrepresented in zoo collections, and also maintain the farm as a holding facility for surplus animals. Mr. Earnest's hope is that the animals could, eventually, be released into the wild. C. palustris was recently hatched at the farm.

Bill Zeigler of Metro Zoo in Miami, Florida, USA reported that the C. cataphractus born at the zoo hatched from 91 to 101 days of incubation. He found that the hatchlings had difficulty pipping the eggs. He has not been using decaying vegetation as incubation material. Ron Magill of Metro Zoo has authored two papers on their captive breeding. One of these will appear in International Zoo Yearbook.

The following is information reported by Mike Davenport of the National Zoological Park:

1982 Crocodilian Hatchings in U.S. Zoos Michael Davenport

The following is a list of 1982 crocodilian hatchings in U.S., AAZPA affiliated zoological institutions; if additional hatchings become known, they will be reported in later issues. The numbers represent total number of hatchlings, including those that did not survive.

Alligator mississippiensis

- 13 - Alexandria Zoological Park
Alexandria, LA
- 29 - California Alligator Farm
Buena Park, CA

Crocodylus cataphractus

- 4 - Metrozoo-Miami (1 later died)
Miami, FL

Crocodylus moreletii

- 23 - Atlanta Zoological Park
Atlanta, GA

OS - cont'd.

Crocodylus niloticus

- 3 - Busch Gardens
Tampa, FL

Crocodylus siamensis

- 14 (from 2 clutches) - Metrozoo-Miami
Miami, FL
- 10 - New York Zoological Park
Bronx, NY
- 17 - Sedgewick County Zoological Park
Wichita, KS

Osteolaemus tetraspis

- 12 - Ft. Worth Zoological Park
Ft. Worth, TX
- 8 - Jacksonville Zoological Park
Jacksonville, FL

This information was gathered using notices of births and hatchings in the 1982 AAZPA newsletters and canvassing zoos by telephone.

NEW BOOKS

Coulson, Roland A. and Thomas Hernandez. 1983. Alligator Metabolism: Studies on Chemical Reactions In Vivo. Pergamon Press Ltd., Oxford. 182 pp. [Also published as Comp. Biochem. Physiol. 74B (1).]

This volume contains almost everything you have ever wanted to know about alligator metabolism and much that you may have thought was above and beyond what you should know. The volume supercedes the authors' authoritative Biochemistry of the Alligator, a Study of Metabolism in Slow Motion published in 1964.

Chapter headings are as follows: "Metabolic rate," "Anaerobic glycolysis," "Digestion-growth-protein synthesis," "Carbohydrate metabolism," "Amino acid metabolism," "Respiration and acid-base balance," and "Kidney." There is even a chapter on natural history covering historic information, behavior and ecology (especially information from the extensive work of Ted Joanen and Larry McNease), and some of Herbert Dessauer's and Lou Densmore's current work on the biochemical genetics of alligators and its relationship to a new view of crocodylian phylogeny.

NEW BOOKS - cont'd.

Each chapter was written to stand on its own and each is clearly introduced and explained. The chapters are written for the nonbiochemist, bringing the reader step by step through the complex and potentially confusing biochemical mechanisms. Arguments supporting conclusions are lucid and logical, and comparisons to mammals are made frequently.

As off-putting as the title may be, this well-written and readable volume is essential to anyone working with crocodilians.

Singh, L.A.K. and B.C. Choudhury, eds. 1982. Indian crocodiles - conservation and research. Proceedings of the First Indian Crocodile Researcher's Symposium, Katarniyaghat, Uttar Pradesh, India, 21-25 January 1979. Forum of Crocodile Researchers, India. 46 + pp.

This is a collection of abstracts of papers that were given in 1979 on gharials, muggers, and saltwater crocodiles -- species native to India. The volume also contains recommendations for future work to be done on these species and appendix that lists crocodile sanctuaries and breeding stations in India. A list of conference participants and their addresses is included. The volume may be obtained by writing: B. C. Choudhury, Nehru Zoological Park, Hyderabad - 500 264, India. (Price had not been determined.)

National Research Council. 1983. Crocodiles as a Resource for the Tropics. National Academy Press, Washington, D.C. 59 pp.

This booklet is a report based on a 1981 visit by a group of scientists, including the current CSG Chairman, to Papua New Guinea to observe firsthand the crocodile farming program. As a discussion of crocodile farming in PNG, the report is a valuable addition to the literature.

The problem with this report lies in the manner in which it was written. Rather than the scientific panel members writing the publishable report themselves, National Academy of Sciences wrote the report based on information supplied by the panel members. The preliminary report was then sent to the people in PNG and to crocodilian experts outside of PNG for review. Almost all of the reviewers are CSG members or correspondents. The text was revised and again sent out for review. Somewhere in this process, errors of omission and commission crept in. For example, the list of crocodilians covered by CITES (p.24) omits Caiman crocodilus yacaré. The text states that of the alligator farms in the U.S., "All earn a portion of their money from tourist admissions." This information omits the State of Louisiana supported Rockefeller Wildlife Refuge which, although not a commercial venture, farms alligators and is not open to the public for tours of farming facilities.

The list of research contacts in the back of the pamphlet includes many of us, but also includes individuals whom we know to have little or nothing to do with crocodilians or whose "expertise" would be suspect.

NEW BOOKS - cont'd.

The volume may be obtained free of charge by writing: Office of International Affairs (JH-217D), National Research Council, 2101 Constitution Avenue, Washington, D.C. 20418, USA.

REQUESTS

Dr. R.H.V. Bell, Senior Research Officer, Dept. of National Parks and Wildlife, Kasungu National Park, P.O. Box 43, Kasungu, Malawi, is handicapped by a lack of funds and personnel, but is nonetheless working to survey the crocodile populations of Malawi and develop a management program. He requests assistance from the CSG. Malawi is revising the legislation relating to crocodiles and wishes to obtain data on the legal status of crocodiles in different countries, indicating what authority is required to kill crocodiles for commercial or protective purposes and other restrictions. (All of us are acutely aware of the immense problems Dr. Bell faces, and how important the work he is trying to accomplish is. The international control of the traffic in endangered species begins with sound management programs for the species in the country of origin. We urge all members with the expertise Dr. Bell is in need of to assist in any way they can. - Eds.)

Chen Bihui of Anhui Teacher's University, Wuhu, Anhui Province, People's Republic of China requires information on the effects of incubation temperature and parental diet on developmental abnormalities of young crocodilians.

Sr. Adolfo C. Cabral, INTA E.E.A. El Colorado, 3603-El Colorado, Casilla de Correo No. 5, Formosa, Argentina, would like to communicate with other researchers involved with caiman. His project is to preserve areas where caiman are endangered and to initiate commercialization for the benefit of aboriginal communities wherever possible. He requests references, reprints, and other information concerning the reproduction, biology, food habits, management, etc. of caiman.

Dr. Laurie E. Taplin, Zoology A08, University of Sydney, N.S.W., 2006, Australia, continues his survey on crocodilian salt glands and requests crocodilian tongues for his study. Contact Dr. Taplin directly for appropriate method of preservation, packaging, shipment, and necessary documentation to meet international and local import and export regulations.

Peter Brazaitis (editor) requests good close-up photographs of caiman with data from as many regions of Central and South America as possible. These should include the sides of the body or flanks between the front and rear limbs. Photos will be used for comparative purposes in a study now underway. If necessary, 35 mm black and white film (ASA 400) will be provided and may be returned undeveloped.

PERSONALS

Correction -- The CSG Newsletter editors humbly apologize to NIKHIL Whitaker, Rom and Zai's first son, now four years old, for overlooking him. We should have reported the birth of their second son, SAMIR, on 7 October 1982. Samir measured 61 cm in length. (Eds. presume the figure to be "total length" rather than "snout-vent.") Congratulations again!

Congratulations also to Tómas Blohm, a grandfather for the second time. His new grandson, born 2 February, 1983, weighed 3,640 g. Tómas promises s/v data, etc. in the near future.

Tómas also reports the pregnancy (for the third time) of their chimpanzee. She produced a son in 1980, and a daughter in 1982! Our heartfelt congratulations to both parents!

We are pleased to hear that Fred Medem reports he is well. He continues to suffer from a physiological disequilibrium of the lacrimal fluid resulting in a chronic conjunctivitis. He's dieting, still indulges himself in a "stimulating smoke" now and again while reading, and gives his vital statistics as 180 cm and 89-91 kg. He says he is never bored, has had an interesting life, prefers to stay at home, detests parties, and feels fortunate in having a wife who does not talk much. He doesn't care much about going on the "final field trip" because he has nearly everything he always wanted out of life.

Fred would like to see either China, Australia, or Venezuela as the site of the next CSG meeting.

