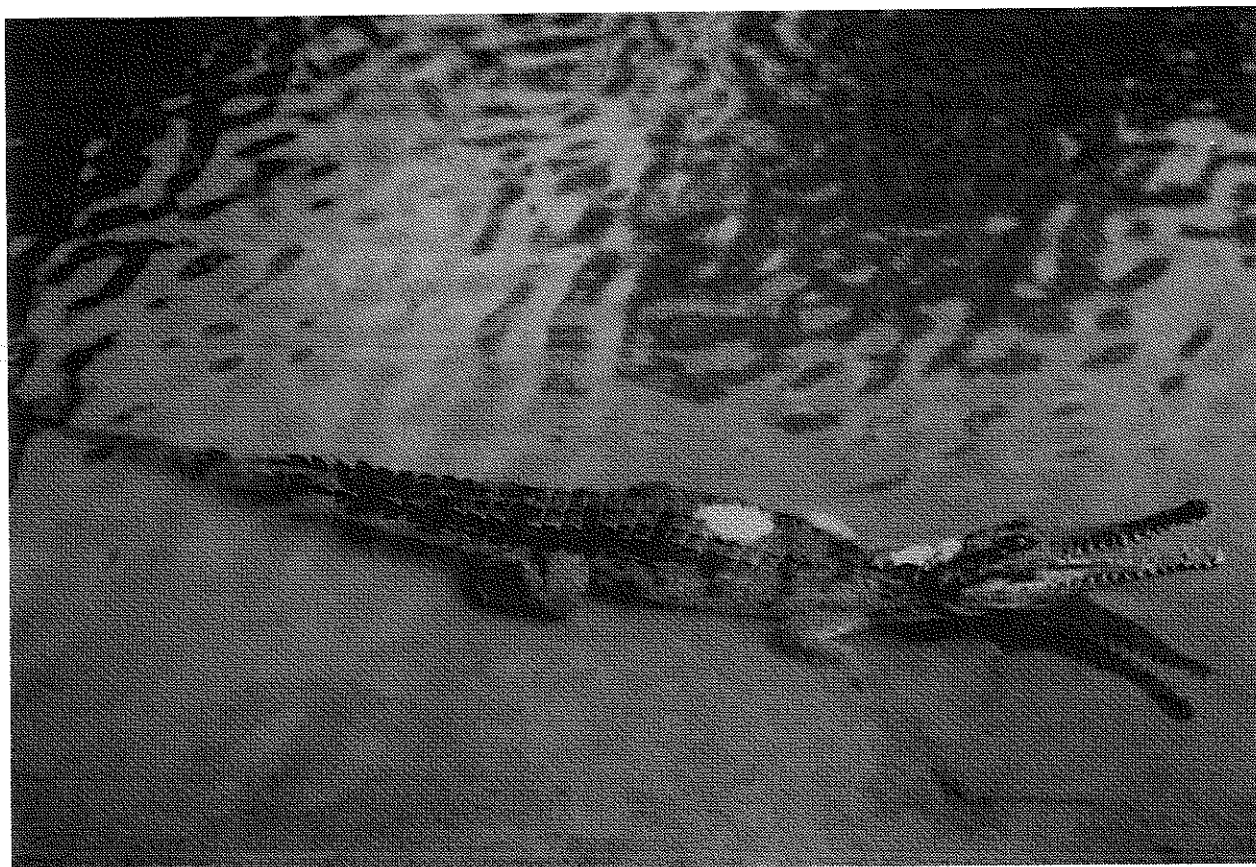


CROCODILE SPECIALIST GROUP

NEWSLETTER

VOLUME 11 No. 2 ■ APRIL 1992 - JUNE 1992



IUCN World Conservation Union ■ Species Survival Commission

CROCODILE SPECIALIST GROUP

NEWSLETTER

VOLUME 11 Number 2
APRIL 1992 - JUNE 1992

IUCN--The World Conservation Union
Species Survival Commission

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COVER PHOTO: *Crocodylus johnsoni*,
Queensland, Australia. Paint marks identify
radio tagged individuals monitored by Frank
Seebacher for a study of thermal relations.
A. Dennis photo.

PATRONS

The following Patrons of the CSG have contributed more than U.S. \$500.00 during the past 12 months. The funds donated have been deposited with University of Florida Foundation, Inc., and are used to support the CSG program:

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Philippe Roggwiller, Tanneries des Cuirs d'Indochine et de Madagascar, Paris, France.

Crocodile Farmers Association of Zimbabwe, Harare, Zimbabwe.

American Alligator Farmers Association, Plant City, Florida, U.S.A.

Ken Ogiso, Stock Kojima, Tokyo, Japan.

Mr. John G. Mahler, Dallas, Texas, U.S.A.

Asociacion Colombiana de Zoocriaderos, Bogota, Colombia.

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Crocodile Farmers Association of Indonesia, Jayapura, Indonesia.

Paul H. Slade, Nell and Hermon Slade Trust, Mona Vale, Australia.

F. Wayne King, Gainesville, Florida, U.S.A.

Kurt Preiss, Reptilia Inc., Miami, Florida, U.S.A.

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Wayne Sagera, Vermilion Gator Farms,
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Ltda., Bogotá, Colombia.
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Don Morgan, Keystone Heights, Florida U.S.A.

**11TH WORKING MEETING IN
VICTORIA FALLS,
ZIMBABWE.
3-7 August**

LAST MINUTE MESSAGE. By the time you receive this newsletter final preparations for the meeting will be complete and delegates will have begun to make their way to Victoria Falls from all over the world. The latest draft of the program is given on page 12 and a final and complete program will be distributed to participants upon registration. Speakers are reminded that the final, camera ready, copy of their papers should be handed in when they register at Vic Falls. The Steering Committee will meet 1 and 2 August, check at the convention hotel (The Elephant Hills) for location.

Registered participants whose arrival plans change or who are forced to cancel their participation, **please inform the meeting organizers** so that hotel reservations and other services can be adjusted. Such changes can be costly and in fairness to CFAZ please let them know of changes so they can avoid penalty charges from hotels they have booked and held for you. Speakers who are unable to attend please inform the Gainesville office so that the program can be adjusted.

The arrangements for the meeting, an exciting set of presentations, and a hospitable

social calendar have been admirably assembled by the CFAZ organizing committee. We look forward to an outstanding meeting.

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EDITORIAL

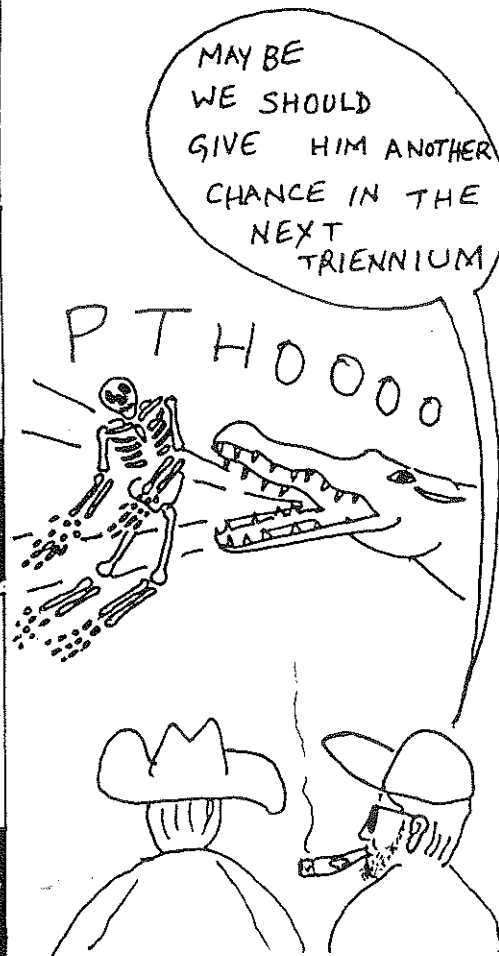
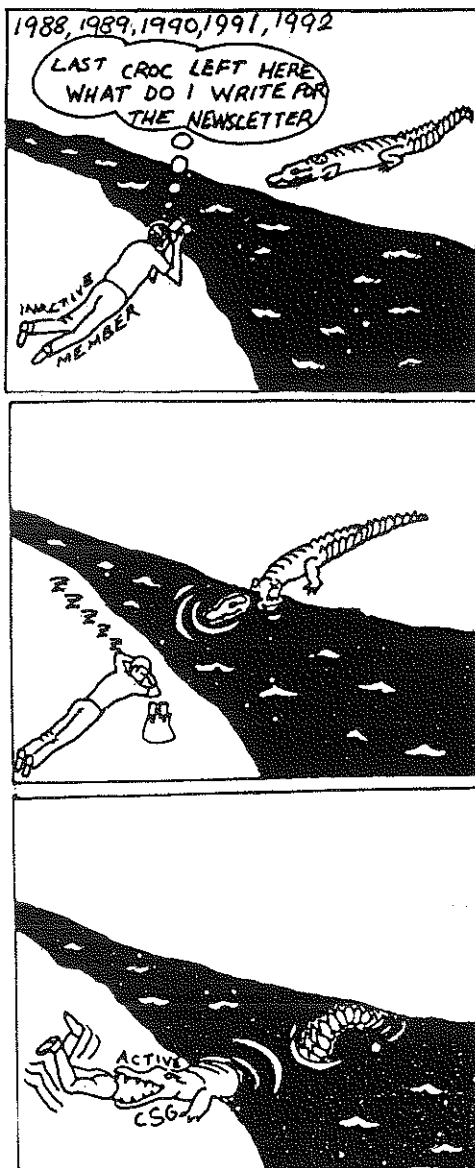
WILDLIFE TRADE BAN ON ITALY. On 26 June 1992 the Secretariat of CITES announced that the Standing Committee had decided to recommend to all member States of the Convention not to accept CITES permits and certificates issued by Italy and not to issue CITES documents for specimens consigned to Italy. This action follows years of poor compliance with CITES by Italy and months of international pressure and negotiations to effect improvements. The Standing Committee cited lack of implementing regulations (despite recent passage of a new law to implement the convention), absence of proper inspections, and negligence when issuing permits. Italy has become a key location for the illegal trade in wildlife.

This ban will have a direct effect on trade in crocodilian skins. Italy is a major buyer of skins and an important manufacturer of products that are re-exported. The ban comes at an unfortunate time when worldwide sales are weak and prices depressed. The temporary removal of a major buyer from the market will slow recovery and place further strain on the incentives for conservation and sustainable use of crocodilians. Nevertheless, the CSG fully supports this ban. Trade in crocodilians can only be justified for conservation when it is sustainable and legal. In our resolutions passed at Santa Marta and Kyoto the CSG recognized the serious problems emanating from Italy and the need for drastic action to resolve them. It had been hoped by all parties that the Italian authorities could be persuaded to quickly come into compliance with CITES but they have failed to accomplish this.

The solution to this problem is the prompt implementation by Italy of effective regulation of wildlife trade and full compliance with the Convention. -- *Eds.*

THE INACTIVE CSG MEMBER'S NIGHTMARE

BY D. BASU

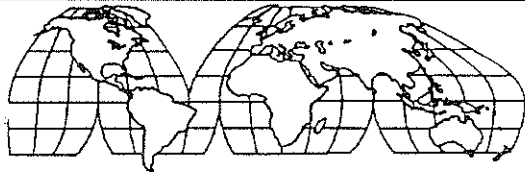


-- Submitted by D. Basu, Crocodile Rehabilitation Center, Kukrail Manoranja, P.O. Gazipur, Lucknow, Uttar Pradesh, India.

NEWSLETTER SUBSCRIPTIONS TO DATE. Responses have been received from 85 readers. Fiftyone have made donations totaling \$4,000 and 34 have requested continuation of their subscription without donation. Many subscribers also submitted materials (like Mr. Basu above). We would like to receive the form or other response from all of you, to keep our mailing

records up to date, to receive your news, and of course to receive any support you care to offer to the NEWSLETTER. We are particularly eager to receive more photographs. Our stock of submitted pics is almost used up. Black and white glossies are best, in any size. Line drawings, cartoons, or just words are all great. We look forward to hearing from you.

AREA REPORTS



AFRICA

Ethiopia:

The proposal submitted to CITES regarding the export of hatchlings was not motivated by poor success at raising large crocodiles for skin as stated in the CSG NEWSLETTER 10(4): 9, but as a means of getting foreign exchange additional to that from the annual hide sale. Although the growth conditions of crocodiles in the Ethiopian ranch seems unsatisfactory because of congestion and financial constraints, the outcome is not so bad as to cause us to give up raising large crocodiles for skin.

There has been no skin sale since the end of 1990 from Arba Minch Crocodile Ranch. Out of 10,000 crocodiles of different age groups, 4,000 are ready for skinning, having BWs of 30-40 cm. However, because of low market price and no demand, the ranch would not be able to harvest these crocodiles on the right time. The annual crocodile nest search, egg protection from predators and hatching activities that were supposed to be conducted early this year have been interrupted because of lack of space in the ranch. -- Tadesse Hailu, *Ethiopian Wildlife Conservation Organization*, P.O. Box 386, Addis Ababa, Ethiopia.

[The editors are grateful for this clarification, but point out that in this instance, and in many others, the NEWSLETTER report referred to is the Minutes of the Steering Committee Meeting. The editors feel obligated to present an accurate account of what is discussed by the Steering Committee, including any mis-statements that Committee members may make. We encourage readers to submit corrections and clarifications to ensure that issues are properly and accurately reported.-- Eds.]

ASIA

Singapore:

CROCODILE PARK FOR SALE: The Jurong Crocodile Park, one of Singapore's popular tourist attractions, is up for sale by tender with its 2,500 crocodiles. The minimum price tag is Singapore \$ 17 million (US \$10 million). The 19,166 sq. meter crocodile theme park is being offered as a going concern on behalf of its Malaysian owner, Mr. Chee Chong Leng. The Park is located on Jalan Ahmad Ibrahim next to another famous tourist attraction, the Jurong Bird Park. The crocodile park, which has a 30 year lease from 1986, is registered with CITES as a crocodile breeding farm. -- BUSINESS TIMES MALAYSIA, 11 March 1992, submitted by Mr. Ken Scriven, *WWF Malaysia, Locked Bag No. 911, Jalan Sultan P.O. 46990 Petaling Jaya, Malaysia.*

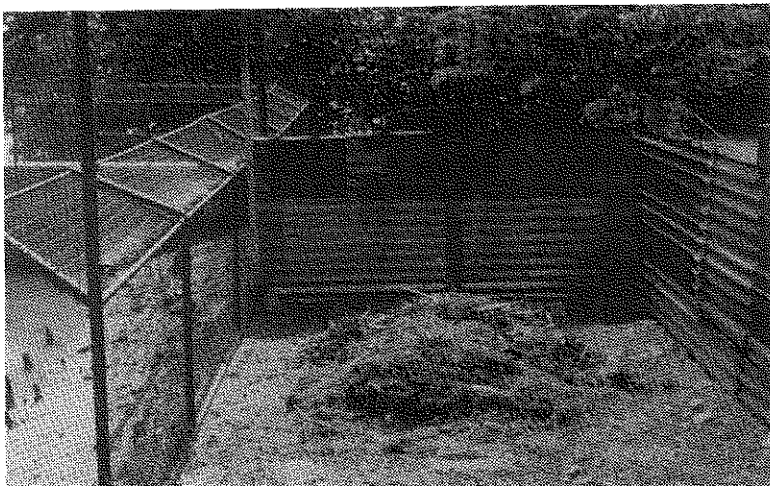
AUSTRALIA/OCEANIA

Palau:

CHANGES PROPOSED FOR PALAU CROCODILE FARM. In their survey and review of the status of *C. porosus* on Palau in 1991, King and Messel proposed that the existing crocodile farm had the potential to be a nucleus for the propagation of crocodiles in Palau and a valuable conservation and educational facility. Their survey showed a severe reduction of crocodiles in Palau, in part



Joshua Eberdong examines a *Crocodylus porosus* nest at his farm on Palau. J. Eberdong photo.



Enclosure fencing, breeding pool (left), and crocodile nest at J. Eberdong's Palau crocodile farm. J. Eberdong photo.

due to a deliberate policy of extermination by the former US Administration. A series of recommendations for the conservation of the crocodiles in Palau were submitted to the government. Progress in implementing these recommendations has been impeded by reluctance of the US Fish and Wildlife Service to provide the necessary permits to allow the farm to continue operations.

In a recent exchange of letters between The Nature Conservancy, US Fish and Wildlife Service and the Office of the President of the Republic of Palau, proposals have been developed to transfer the farm to government control and realize its conservation potential. At the same time the very great contribution to crocodile conservation, and material expenditures incurred by the farm's owner, Mr. Joshua Eberdong and his family, are being recognized. The President of the Republic of Palau, the honorable Ngiratkel Etpison is supporting the plan and said on May 19th " ... my administration fully supports all of the recommendations, including those that pertain to the crocodile farm, in the report (of Profs Messel and King)". Negotiations continue between the parties coordinated by Mr. Chuck Cook of The Nature Conservancy, Pacific Program, and it is to be hoped that a fair solution is reached that ensures the conservation of crocodiles in Palau and a realization of the valuable potential of the farm. -- *from materials submitted by Mr. Joshua Eberdong, Koror, Republic of Palau.*

NORTH AMERICA

United States:

ALLIGATORS INCREASE IN OKLAHOMA. A joint project of the Tulsa Zoo, The Nature Conservancy and the US Fish and Wildlife Service will attempt to invigorate the alligator population in southeastern Oklahoma by releasing ten gators hatched at Tulsa Zoo into the Little River National Wildlife Refuge near Broken Bow. Gordon Henley surveyed alligators in McCurtain Co., Oklahoma in

the 1970's and did not find any natural populations although some escaped alligators were known to inhabit deep water ponds in a golf course in the 1960's. Mr. Henley also surveyed southwest Arkansas, adjacent to Oklahoma, and found alligators in several locations including a farm pond in Wilton (Little River Co.) and Grassy Lake and Beards Lake (Hempstead Co.). Grassy Lake, a privately owned cypress lake, contained the largest number of alligators although a new impoundment nearby, Millwood Lake, had very few or none at that time. The situation is likely to have changed since these surveys and it is highly likely that the small natural population now reported in Oklahoma was derived from nearby Arkansas. The planned release will augment this population of alligators at the periphery of their natural range. -- Gordon B. Henley, *Ellen Trout Zoo, 402 Zoo Circle, Lufkin, TX 75901, USA.*

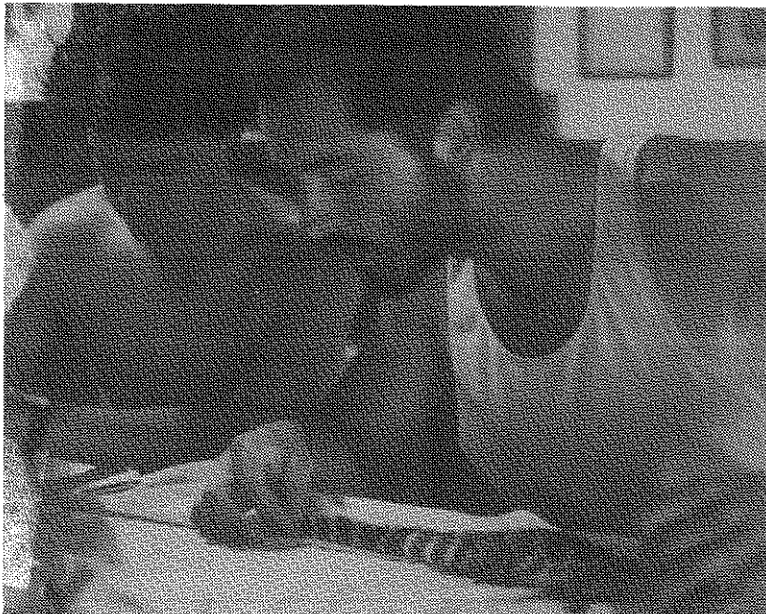
SOUTH AMERICA

Argentina:

EXCHANGE PROGRAM AT EL BAGUAL. The El Bagual Ecological Reserve initiated an exchange program this year to bring advanced graduate students or recent graduates to work for two months in all projects active at the reserve. The program was offered to Universidade Nacional del Nordeste (Corrientes) and the first student, David E. Iriart, has completed the course.

At El Bagual the 33 survivors of our first clutch of broad snouted caimans are now one year old. In 12 months they increased 20.47 cm total length and 288.06 g body mass. The highest food consumption was in mid-January at 15.05 g/day/hatchling and the highest food conversion rate was achieved at two months age with a value of 48.7%. The maximum growth rate was seen during the first month of age with a value of 0.134cm/ day. Colleagues having other data on *Caiman latirostris* are here called for comparisons. By late November three new nests had been located on the reserve, one of *C. latirostris*, one of yacare, and another that was unfortunately destroyed by a fire. The two

knowledge, the highest reported for caiman. We evaluated the population by night counts and capture and estimate a minimum of 77 individuals or 10-13 per hectare, a very dense population. We captured one female and two males but do not think represents the real sex ratio. The age/size class distribution suggests that breeding is discontinuous and not successful every year. We located one nest that had about 2-3 weeks to hatch, which is later than usual for this species. Colleagues with other information on caiman at such high altitudes, please get in touch. -- Alberto Yanosky, *El Bagual Ecological Reserve, Salta 994, 3600-Formosa, Argentina.*



David Iriart and Carlos Adamich measure *C. latirostris*. A. Yanovsky photo.

surviving nests will be brought to the lab for captive hatching. -- Alberto A. Yanosky & Claudia Mercolli, *El Bagual Ecological Reserve, Salta 994, 3600-Formosa, Argentina.*

HIGH ALTITUDE CAIMAN. During April 1992 Alberto Yanosky was invited by the owner of an "estancia" in the Salta province of NW Argentina who became familiar with his work from the material in the CSG NEWSLETTER. At this estancia, 800 m above sea level, there is a population of *Caiman latirostris* that have been occupying artificial ponds for at least 100 years, according to local informants. These caiman are living at an altitude with low temperatures and adverse weather conditions that is to my

CAIMAN PROJECT IN SANTA FE, ARGENTINA. The Santa Fe caiman project consists of an experimental breeding farm and a monitoring and restocking program. The breeding station belongs to Ministerio de Agricultura, Ganaderia, Industria y Comercio of Santa Fe Province and has been operating since 1984. It operates as a fully experimental facility and is not promoting commercial activities. Successful captive reproduction of *Caiman latirostris* has resulted in 18 nests, 6 of them in 1991 when 219 eggs were collected and incubated artificially to produce 108 hatchlings.

Research on growth under various conditions has been conducted, including variations in temperature and density and it has been possible to raise animals to 1 meter length in one year. The caiman raised will be released in the Province.

The Ministry and the Instituto Nacional de Tecnologia Agropecuaria is evaluating the possibilities for "ranching" eggs collected from the wild for commercial exploitation in association with conservation activities. To support this project caiman populations in the province have been identified and are monitored using a relative density index. Eggs are harvested and incubated in controlled conditions and the resulting hatchlings released at 8 months age back to the localities they were collected.

Population monitoring is continuing and if these reintroductions are shown to be successful and the populations remain stable, then a percentage of the hatchlings will be diverted for commercial use. In 1991, 10 nests were harvested from the wild with 372 eggs which produced 223 hatchlings. Of these 205 were successfully raised for eight months and released. An egg harvest of 1,000 to 2,000 eggs is planned for this year and if the results are satisfactory, commercial production is anticipated in 2 or 3 years. -- Alejandro Larriera, Chief, Dept. Ecol. Animal y Zoología Aplicada, Bv. Pellegrini 3100, 3000-Santa Fe, Argentina.

Colombia:

FIRST REGIONAL MEETING OF THE CSG IN SANTA MARTA. From 11 to 15 November 1991, 230 participants gathered at Santa Marta for the first regional meeting of the CSG hosted by Asociacion Zocriaderos de Colombia (AZOOCOL) and the Colombian development organization PROEXPO. The meeting focussed on presentations of results from the Latin American region and on special issues affecting this region. A total of 50 papers were presented and 39 have been submitted for publication in the PROCEEDINGS of the meeting which is being prepared by CSG. A special volume of translations of important papers in crocodilian biology and husbandry, CRIANZA DE COCODRILOS, prepared by CSG was released at the meeting. Participants included over 160 Colombians involved in crocodilian ranching, farming, management and trade and over 70 participants from 23 other countries including Brazil, Argentina, Ecuador, Venezuela, Panama, Bolivia, Honduras, Costa Rica, Italy, France, Indonesia and the USA. -- Eds.

NEWS FROM ESTACION ROBERTO FRANCO. The Estacion de Biología Tropical 'Roberto Franco' (associated with the Faculty of Sciences of the Universidad Nacional) is maintaining two male and seven female *Paleosuchus palpebrosus* in an enclosure of 90 square meters with 15 square m of water. All of these animals are over 20 years of age. The youngest, three females and one male, were born in 1970. The oldest one, a male, was collected in 1967 and had a total length of 129 cm. For the last three years, four of the females have produced eggs each year between

August and September. The average hatch rate has been 50%, and 65% of the hatchlings have survived. Currently the growth of these animals is being evaluated under different conditions of temperature and diet. -- Myrian Lugo R. Directora, Estacion de Biología Tropical Roberto Franco, Universidad Nacional, Carrera 33, # 33-76, Villavicencio Meta, Colombia

CROCODILIAN WORKSHOP. A workshop on crocodilian conservation, management and farming was conducted in Bogota 20-22 May and Cartagena 25-27 May, by Grahame Webb and Charlie Manolis, sponsored by INDERENA, Tropical Fauna Ltda., and organized by Dr. Mario Orjuela Castro who had spent 6 months with Dr. Webb in Australia learning about crocodilian management. Around 140 participants, mostly from Colombia, but also from Ecuador and Paraguay heard formal presentations and participated in open discussion forums on many aspects of caiman farming, management and conservation. In preparation for the Workshop the draft document "AN INTRODUCTION TO THE FARMING OF CROCODILIANS" by J. Hutton and G. Webb was translated into Spanish. Special constraints and issues for the Colombian crocodilian farming industry were discussed and an analysis of the Colombian situation based on this experience is being prepared for the NEWSLETTER. -- G. Webb, P.O. Box 38151, Winnellie, N.T. 0821, Australia.

Venezuela:

ORINOCO CROCODILE PROGRESS. This year record numbers of Orinoco crocodile nests have been found along the Capanaparo (20) and produced at Masaguaral (10). However, there is still a problem with the high percentage of infertile (non-viable) eggs. We plan on exchanging one female for another male this year and we are varying the diet. In April a release of 160 one-year old crocodiles into the Capanaparo is planned. After releasing these and next year's group of possibly 200+, the captive rearing/restocking phase of the project will probably end and we will concentrate on protecting nests in situ and eliminating the capture and sale of hatchlings by Indians and other residents. Bethina Vargas of PROFAUNA has started conducting Orinoco crocodile surveys

in a number of areas in Venezuela. In June we will have a training course to teach park guards from the Capanaparo to conduct basic surveys and later this year the FUDENA crocodile specialist group should produce a recovery plan for the Orinoco crocodile.

In conjunction with the croc work we have been conducting studies of river turtles (*Podocnemis expansa* and *P. unifilis*) and hope to develop a conservation program on these turtles with PROFAUNA. The anaconda project is also going well. In early April 9 snakes were implanted with radio transmitters with 3 more to go and four of these have temperature sensitive transmitters to study thermoregulation. The principal study site, Hato El Cedral, is just loaded with anacondas. We have accumulated some interesting anaconda catching stories, including a rather remarkable encounter with africanized bees in a culvert. The biggest snake to date was 5.2 m and we would like to claim the \$50,000 reward offered by NYZS for a 30 foot long anaconda, but we are not holding our breath for this. -- John Thorbjarnarson, *Aptdo.* 39, Calabozo 2312-A, Guarico, Venezuela.

WEST ASIA

India:

RESEARCH AT JIWAJI UNIVERSITY. Research studies in different protected areas in the Gwalior region have been taken up since I joined the University in 1989. Under the wildlife research program a study of limnological characteristics of different aquatic habitats was carried out from October 1990 to July 1991. The habitats selected were Chambal river (National Chambal Sanctuary), Tighra reservoir (Great Indian Bustard Sanctuary), and Chandpata and Madhav lakes (Madhav National Park). The study has helped define the habitat conditions for gharial and mugger in the region and suggested suitable measures for successful rehabilitation of crocodiles in Madhya Pradesh State and other parts of the country. Monitoring of crocodile populations in the National Chambal Sanctuary continues. Wild gharial eggs have been collected by the Madhya Pradesh and Uttar Pradesh Forest Departments for rehabilitation programs and a captive rearing program for gharial and mugger is under way at the Crocodile and Freshwater Turtle Rehabilitation Center,

Madhya Pradesh. -- R. J. Rao, *School of Studies in Zoology, Jiwaji University, Vidya Khar, 474 011 MP, India.*

CROCODILE RESEARCH AND MANAGEMENT IN ORISSA. The release of young *Crocodylus porosus* (larger than 1.5 m) has been carried out on a very modest scale to avoid a conflict between man and crocodile. During 1991 only 50 *C. porosus* were released into the river systems of the Bhitarkanika Wildlife Sanctuary and the total releases to date total 1,122. During an annual census of in the Sanctuary in January 1992, about 500 crocodiles were counted including adult males and females, subadults, juveniles and hatchlings. Four white colored individuals, one adult male, one adult female and two subadults, have been noted in the Sanctuary. These individuals are well known to the local people who consider them a different species, which they call 'Sankhua' (meaning white color like a conch) to differentiate them from the normal *C. porosus*, which are known as 'Baula'. The average density of *C. porosus* in Bhitarkanika was 0.87 / km during the 1976/77 census prior to any restocking. This has shown a steady increase to 1.27/km (1984), 1.62/km (1985), 3.33/km (1988) and 3.84/km (1992). During the survey we observed that the crocodile population closely follows the distribution of good mangrove forest habitat and the greatest number of immature crocodiles were sighted in rivers and creeks with good mangrove cover. Due to the excellent conservation and management program the formerly depleted population in the Bhitarkanika Wildlife Sanctuary is being gradually built up.

To rehabilitate estuarine crocodiles in the Mohanadi delta, one of the former estuarine habitats of this species, attempts were made to collect more eggs for incubation at the hatchery project at Dangmal. During June 1991, 448 *C. porosus* eggs were collected from various forest blocks of the Bhitarkanika Sanctuary. These were collected from 12 clutches giving an average clutch size of 37.3 (range 6-64 eggs) with four clutches having less than 20 eggs. This clearly indicated that some of the crocodiles previously released into Bhitarkanika are now laying eggs, however, many of the eggs were infertile. After 70-80 days incubation, 210 hatchlings emerged so that the number of captive crocodiles at the research center is up to 641 (from hatchlings to the 16 years age). To reduce the feeding costs

most of these crocodiles are now being reared in seminatural pools with connections to creeks and rivers. Studies on the habitat conditions, fishing activities and availability of food fish resources have been initiated in the Mohanadi delta so that we can release a few crocodiles there before the onset of the monsoon. Four females laid eggs in captivity at the Dangmar Crocodile Research Center including our white individual (Sankhua). Unfortunately all the eggs were infertile. -- Sudhakar Kar, c/o Chief Wildlife Warden, Orissa, 315 Kharavel Nagar, Bhubaneswar-751001, Orissa, India.

HOME RANGE OF INTRODUCED MUGGERS. A study was conducted in Manjira Wildlife Sanctuary, Andhra Pradesh, India from May 1989 to May 1990 to gather information on the movements and home range of 9 muggers (*Crocodylus palustris*) introduced to the wild. Six subadults and three adults were marked with fluorescent paint on the head and dorsal part of the trunk (following the technique described by Pooley in 1962) and their home range and movements estimated from 44 surveys. Before marking the animals with paint we conducted an experimental study at Nehru Zoological Park, Hyderabad, where the duration of paint marks on the body of hatchlings and subadults in their zoo pool was estimated. The paint marks allowed easy identification of animals in the wild during surveys and the subadults were also marked by scute clipping for future identification. The subadults were released in the middle of May 1989 to habituate them to their new environment before the floods that occur in July.

We found that adults had a smaller range than subadults and that their winter and monsoon ranges were smaller than summer ranges. The largest home range was recorded in a subadult male and a subadult female immediately after their release during the first summer (4.01 sq. km.). We confirmed that adults are territorial. Floods affect the movement of subadults more than adults, as they range widely during the monsoon. Other factors affecting home range were cover and food availability. -- V. Vijaya Kumar, Research Associate, Dept. of Bioscience, Saurashtra University, Rajkot - 360 005, Gujarat, India and B.C. Choudhury, Scientist 'SD', Wildlife Institute of India, P.O. New Forest, Dehra Dun - 248 006, U.P., India.

Myanmar:

CROCODILE FARMING IN MYANMAR NAINGAN. Since its inception about 10 years ago in the country of Myanmar (Burma), crocodile farming is gradually progressing. The farm is situated at Thaketa, in Yangon (Rangoon), under the management of the Myanmar Fisheries Enterprises, of the Government of the Union of Myanmar. The farm maintains about 700 *C. porosus* of all sizes which are fed on marine fish. The farm currently has 149 hatchlings from captive breeding and another 104 hatchlings and yearlings from natural sources. The hatchlings are fed small prawns. In the 1991-92 season the farm had 19 nests with a hatch rate of approximately 25%. The eggs are incubated in a seminatural situation and temperature control is maintained by putting or removing straw as required. Separate breeding pools measuring 150 feet square are provided and we now remove fighters to reduce fighting and mortality among breeding stock in the pool. Last year there was more than 20% mortality but this year it is only 5.6%. Our farm is being maintained on a routine basis and it will take some time for us to begin research work.

In Myanmar the wild population of *C. porosus* is going extinct as the population is greatly declining in the natural habitat. We have not found any records of *C. palustris* or *Gavialis gangeticus*. There is some evidence that poaching occurs and the animals are killed for their skin which is illegally exported. The illegal price for a hatchling is more than 4,000 Kyats. (US \$650). -- B.K. Aung Moe, c/o Mr. G. Sharma, Sharma House, No. 17/21, 35th Street, Rangoon, Myanmar (Burma).

SCIENCE

RESEARCH RESULTS FROM CFI. The RP-Japan Crocodile Farming Institute (CFI) on Palawan, Philippines, has presented the following research results in their publication CFI News, Vol.3, No. 3, which are summarized here:

A *HAEMOGREGARINE SP.* INFECTION IN *C. POROSUS* AND *C. MINDORENSIS*. Routine blood examination of blood from 113 crocodiles revealed the presence of *Haemogregarine sp.* parasites in the erythrocytes of *C. porosus* (18 of 80 specimens) and *C. mindorensis* (1 of 33

specimens) at CFI. The 18 *porosus* were all specimens from Palawan that had been held in captivity less than one year suggesting a natural wild occurrence of this parasite. *C. porosus* originating from other localities, notably Mindanao, did not have the parasite. The Haemogregarine blood parasite is a common parasite of many reptiles and is rarely pathogenic. No effects on normal blood parameters were noted in the animals with the parasite. -- R. R. Villapa, M.L. M. Jamerlan & T. Tsubouchi.

TEMPERATURE OF A *C. MINDORENSIS* NEST. The temperature within the nest of a captive Philippine crocodile of 222 cm length was investigated by positioning electro thermometers within the nest. Temperatures were recorded for a period of 4 days commencing two weeks after the eggs were laid. Mean temperatures in the nest were between 29.39°C and 30.3°C depending on the position of the electrode within the nest, and the time of day. Temperatures were higher above the egg mass and during the day and lower beneath the eggs and at night. During the period of measurement the air temperature outside the nest varied from 23° to 33° C. Expansion of these studies to involve longer periods and more nests is recommended and the advisability of using artificial incubation to ensure stability of nest conditions discussed. -- P.A. Reginiel, U.F.A. Pontillas and Y. Kurata.

Detailed results and copies of these papers can be obtained from: -- *RP-Japan Crocodile Farming Institute, P.O. Box 101, Irawan, Puerto Princessa City 5300, Palawan, Philipinnes.*

SYSTEMIC FUNGAL INFECTION IN IMMUNE SUPPRESSED NILE CROCODILES. A systemic fungal infection has been recorded from several crocodiles subjected to prolonged periods of cold. This exposure appears to effectively suppress the immune systems of crocodiles allowing the pathogen to become established. Once the ambient temperature returns to normal the organisms have a firm hold on the host and its re-activated defence system is unable to control the infection. The fungus appears as a granular lesion in the lungs and liver and characteristic small white crater like lesions may be seen on the pleura and peritoneum. The granulomas in the lung are associated with severe inflammatory reaction. The course of the disease appears to be chronic with few outward signs in

mildly affected animals. Affected crocodiles may even grow fairly well until the lung and liver damage becomes severe enough to result in terminal disease. The incidence of infection may be fairly high but only a few crocodiles seem to develop the terminal lesions. All the cases seen to date have been diagnosed at postmortem examination and no attempts have been made to treat affected crocodiles. -- Dr. K.D.A. Huchzermeyer, *Lydenberg, South Africa, reprinted from Nile Crocodile Farmers Association Newsletter, 5 Nov. 1991: 20.*

EATING ALLIGATORS CURES BALDNESS. Eating alligator meat puts hair on your head, claims professor Pedro Romanelli, who discovered the bizarre baldness remedy while visiting remote jungle villages in the Amazon. The peasants of Para State in north central Brazil have claimed for years that eating alligator meat cures baldness. After travelling there to investigate the claim, professor Romanelli was amazed to find that male pattern baldness, which affects 30% of the males in other parts of the world, was virtually absent in this region. "Everyone had a full head of hair, even old men in their 70's and 80's", he said. Their unique jungle diet, which is high in alligator meat, is the cause. Romanelli, who is in the early stages of baldness, tried the local remedy with remarkable results. After just three days of dining on alligator meat for lunch and dinner, new hair began growing on his receding hairline and bald spot. He now eats alligator meat once a day and looks 10 years younger. The unique mineral content of the alligator meat is thought to offset the male hormones that cause baldness and the high zinc content encourages hair growth. -- Dr. P. Wycombe, *reprinted from the newspaper SUN, March 24 1992: 27.*

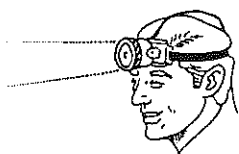
ZOOS



NEW GHARIAL IN UNITED STATES COLLECTIONS. In January of 1992 the New York Zoological Society imported four juvenile specimens of gharial (*Gavialis gangeticus*).

These are from Indian gharial eggs collected from the wild and hatched at the Atagawa Alligator Farm and Tropical Garden in 1985. These specimens have been placed with the San Antonio Zoological Garden, Texas (2) and at the Topeka Zoological Park, Kansas (2). This brings the total number of gharial in the United States to 24; 7 males, 13 females and the four new juveniles. In other changes, the gharial formerly held at the Ocala facility of St. Augustine Alligator farm, two females and pair on loan from NYZS, are now housed in St. Augustine. None of the gharial in U.S. zoos have bred yet but the largest individuals, held at Atlanta, New York and St. Augustine, may be approaching adult size. Mark Wise at St. Augustine continues to coordinate the Gharial North American Stud Book for the AAZPA Crocodilian Advisory Group. -- Mark A. Wise, *St. Augustine Alligator Farm, P.O. Box 9005, St. Augustine, FL 32085 USA.*

PERSONALS



Professor Harry Messel, Chairman of the CSG, was awarded the Degree of Doctor of Science

(*honoris causa*) by the University of Sydney at the 38th Annual Dinner of the Science Foundation for Physics on 15 May 1992. In presenting this high honor, the Vice Chancellor and Principal of Sydney University, Professor Don McNichol, cited Professor Messel's long list of accomplishments in the establishment of the Science Foundation for Physics which had raised more than A. \$120 million in support of research at the University, in research in solar energy and environmental physics, in science education, and last, but far from least, in crocodilian surveys and conservation. We add our congratulations to Professor Messel for this latest, well deserved, honor.

Frank Seebacher, 15 Clayton St. Hermit Park, Qld 4812, Australia, is presently engaged in a study on the behavioral thermoregulation of the Australian fresh water crocodile, which forms part of his dissertation for a Ph.D. thesis undertaken at the University of Queensland with

Professor Gordon Grigg. In this study body temperature and behavior are monitored concurrently in free ranging *C. johnsoni* in the wild. Animals are implanted with temperature sensitive radio transmitters and marked on their backs with spray paint (see cover photo). The results will identify crocodilian behavior important for thermoregulation and the effects of behavioral adjustments on core body temperature.

Dr. Juan Carlos Troiano, Hospital Escuela de Medicina Veterinaria, Facultad de Ciencias Veterinarias, Chorroarin 280 (1427), Buenos Aires, Argentina, is still involved with a private project breeding *Caiman latirostris* in Entre Rios Province and is working at the University of Buenos Aires on studies of hematological values of caiman species in Argentina. He presently has samples and values from 100 *C. latirostris* from several provinces and 50 samples of *C. yacare* specially from Corrientes province. He is particularly interested in receiving communications from people interested in these data or having similar hematological data on crocodilians.

Zilca Campos, EMBRAPA/CPAP Cxp. 109, 79300 Corumba-MS, Brazil, participated in a spotlight survey of *Caiman crocodilus* and *Melanosuchus niger* in the Archipelago Anavilhanas between 20 March and 25 April. The Anavilhanas is the worlds largest fresh water archipelago located in the Rio Negro 40 km upstream from Manaus. This project is part of Ronis de Silveira's master thesis which is supervised by Bill Magnusson and funded by WWF/Brazil, Fundacao Vitoria Amazonica and the World Congress of Herpetology. During the survey Zilca was excited to make her first sightings in nature of *Melanosuchus*, including hatchlings and up to 4 m individuals, and she also saw *Paleosuchus palpebrosus*. The study will contribute to the management plans for conservation of the ecological station.

Zilca is conducting studies on fourteen *Caiman yacare* with radiotelemetry in lakes and intermittent rivers of the Pantanal. The equipment was donated by WWF/USA. The transmitters were attached, with assistance from Ronis da Silveira, in January 1992. She hopes to attend the 11th CSG Meeting in Zimbabwe.

Dietrich Jelden, Vice chairman of the CSG for Europe, has moved his offices to Bonn and can now be contacted c/o Bundesamt für Ernährung und Forstwirtschaft, Artenschutz, Referat 28, Wissenschaftliche Behörde, Mallwitzstr. 1-3, 5300 Bonn 2, Germany. Fax 49 228 954 3470

Randal Berry, c/o Reptile Dept., Little Rock Zoological Gardens, 1 Joneboro Dr., Little Rock AR 72205, USA, wrote to tell us that he was married in April to Linda Roach, his co-worker at Little Rock Zoo. In the same letter he asks for information on the compatibility of Alligators and *Crocodylus siamensis* or other species of crocodile in the same enclosure. We are still trying to figure out if these are related pieces of information, but whatever the case, we wish Randal and Linda all the very best... and do hope they intend to occupy the same enclosure.

MEETINGS

11TH WORKING MEETING OF THE CROCODILE SPECIALIST GROUP, VICTORIA FALLS, ZIMBABWE; PRELIMINARY PROGRAM. The final detailed program will be distributed to participants on registration.

Monday August 3
Official Opening: CFAZ.

Session 1. CROCODILE BIOLOGY AND CONSERVATION IN AFRICA.

- J. Hutton, Keynote address: Conservation strategy for crocodilians in Africa
- I. Games. Feeding ecology of Nile crocodiles.
- J.P. Loveridge & J.M. Hutton. Trends in nest numbers and clutch sizes of *C. niloticus* at four localities on Lake Kariba.

Tuesday 4th

R.D. Taylor, D.K. Blake & J.P. Loveridge, Crocodile numbers on Lake Kariba, Zimbabwe

R. Fergusson. A radio telemetry and mark and recapture experiment to assess the survival of juvenile crocodiles released from farms into the wild in Zimbabwe.

G.C. Craig. A population model for the Nile crocodile with an analysis of harvesting strategies

I. Games. Status and distribution of crocodiles in Tanzania.

H. Mbonde. Crocodile management and farming in Tanzania.

Session 2 RANCHING AND MANAGEMENT IN AFRICA.

C.M. Foggin. Disease trends on crocodile farms in Zimbabwe.

J. Marais and G.A. Smith. Commercial crocodile production - a case study.

H. Kelly. Reproductive performance of Nile crocodiles in South Africa.

J. Lello. Establishment, crocodile farming methods, hatchling production and hide production at Crocworld, South Africa 1984-1992.

Session 3. ENDANGERED SPECIES STATUS

G.W. Webb and C. Manolis. Crocodile management in the Northern Territory; A paradigm for management and conservation.

E. Asanza. Population dynamics, ecology and Conservation of the Black Caiman in Ecuador.

T. Hines, K. Rice and P. Evans. Status and distribution of *Melanosuchus niger* in Ecuador.

R.H. Hunt & J. Tamarack. Cox's lagoon: Morelet's crocodile sanctuary?

R. B. Stuebing & S.A.M. Sah. Population characteristics of the Indo-Pacific crocodile (*C. porosus* Schneider) in the Klias River, Sabah.

A.E. Seijas. Status of Orinoco crocodile populations in some localities in the Venezuelan Llanos.

A. Larriera. A program of monitoring and recovering wild populations of caimans in Argentina.

S.K. Karr. Observation, research and management of the estuarine crocodile, *C. porosus*, in Bhitarkanika Wildlife sanctuary, Orissa, India.

H. Messel & W.F. King. Survey of *C. porosus* in Palau.

Wednesday 5th -- Workshops

Thursday 6th.

Session 4. SUSTAINABLE USE: MANAGEMENT AND TRADE.

M. A. Staton. (keynote) Crocodilian conservation and commerce: Common interests prevail in sustained management.

D. Jelden. Effects of new international controls

on the crocodilian skin trade - An update on new CITES regulations.

D. Haire. Standardized grading and worldwide tagging: implications for trade.

D. David. A Model management program for crocodilians.

A. Woodward, C.T. Moore, M.F. Delaney & T. Hines. Effects of sustained cropping on American alligator populations in Florida, USA.

L. Brisbin, T.M. Murphy & L. Brandt. Long term studies of a population of American Alligators inhabiting a reservoir impoundment: The effects of water level drawdown on movement, behaviour and wintering ecology.

M.M. Rahman. Utilization of crocodile resource for rural development programs in Bangladesh.

Session 5. SUSTAINABLE USE, RANCHING and HUSBANDRY

R. D. Haller & D.T. Haller. Laying performance of Nile crocodiles.

A. Larriera. The experimental breeding station of *Caiman latirostris* at Santa Fe, Argentina.

L.M. Verdade. The status of the captive population of broad-nosed Caiman in Brazil.

T.K. Shrestha. Ranching crocodiles in the Himalayan waters of Nepal.

B.A. Velasco & L. Ayarzagüena. Current situation of populations of *Caiman crocodilus* in Venezuela.

F.W. Huchzermeyer & M. Penrith. Crocodilian riddles: Obscure diseases of ranched Nile crocodiles.

M.H. Vac, L.M. Verdade, C.F. Meirelles, R.E. Larsen, F. Michelotti, M.C. Rangel, C.Z. Salem & A. Lavoretti. Ultrasound evaluation of the follicle development in adult female broad-nosed caiman.

S. Santos and M. Pinheiro. Composition and energy values of food items ingested by *Caiman crocodilus yacare* in Brazil.

S. Santos, M. Nogueira, M. Pinheiro, G. Mourao & Z. Campos. Condition factor of *Caiman crocodilus yacare* in different habitats in Brazil.

L.A.K. Singh. Indian Mugger (*C. palustris*) territorial resource partitioning and its implications in sanctuary management.

Friday 7th.

Session 6 BIOLOGY and ECOLOGY

M. Ferguson. (keynote) Embryological studies

and application to ranching.

M. Ferguson, R. Noble & R. McCartney. Lipid and fatty acid compositional differences between eggs of wild and captive bred alligators: An association with reduced hatchability.

A. Abercrombie & C. Hope. An evaluation of curves used to summarize crocodilian growth rates: The good, the bad and the ugly.

M. Coutinho, G. Mourao, Z. Campos, M. Pinheiro & C. Abercrombie. Growth rate of *Caiman crocodilus yacare* in Brazil.

T. Joanen & L. McNease. Time of nesting, clutch size and hatch rates for alligators in SW Louisiana.

R.M. Elsey, T. Joanen & N. Kinler. Feeding habits of juvenile alligators on Marsh Island Wildlife Refuge: A comparison of wild and farm released juveniles.

R.M. Elsey, T. Joanen, L. McNease & N. Kinler. Growth rates and body condition factors for alligators in coastal Louisiana wetlands: A comparison of wild and farm released juveniles.

P.E. Moler. Growth and survival of *Crocodylus acutus* in south Florida, USA.

K.G. Rice, H. Franklin Percival & A. Woodward. Alligator nest production estimation in Florida, USA.

H. Franklin Percival, G.R. Masson, K.G. Rice & A. Woodward. American alligator clutch viability from seven study areas in Florida.

J.P. Ross, D. Crews, W. Thibbels et al. Behavior and hormonal determination of gender in reptiles.

R.E. Larsen, L.M. Verdade, C.F. Meirelles & A. Lavoretti. Broad-nosed caiman semen collection, evaluation and maintenance in diluents.

L.M. Verdade. Agonistic social behaviour of broad-nosed caiman in captivity: Implications for reproductive management.

R.J. Rao. Conservation status of crocodiles in Madhya Pradesh, India.

POSTERS.

D.K. Blake. Video, St. Lucia Crocodile Center.

D.K. Blake Poster, St. Lucia Crocodile Center

V. de V. Clarke. The occurrence of *Haemogregarina* (hepatozoon) sp. in Nile crocodiles in Zimbabwe.

F.W. Huchzermeyer, A. Verster & J.F. Putterill. Parasites of captive and farmed crocodiles in

South Africa.

- J. Hutton. Benefits to the species of Nile crocodile ranching in Zimbabwe.
- J.V. Lello. Predicting belly width of Nile crocodiles from total length or total mass.
- A. Larriera & D. del Barco. Environmental variables and its influence on counts of *C. latirostris*.
- B. Morpurgo. Growth rates and food conversion efficiency in Nile crocodile hatchlings fed on pelletized food.
- B. Morpurgo. Age composition of captive female Nile crocodiles and the effect on participation of young females in reproductive activity.
- B. Morpurgo. Pond structure: The relation to hierarchy and reproductive activity in male captive Nile crocodiles.
- M.A. Staton, B.P. Vernon & B. Bon. The influence of dietary prawn on the production performance of young saltwater crocodiles.
- D.W. Wilken, M.A. Staton, B.P. Vernon & B. Bon. Artificial incubation of saltwater crocodile eggs.
- L.M. Verdade, A. Lavorenti, F. Michelotti, M.C. Rangel & L. Cullen. Captive breeding of broad-nosed caiman in Sao Paulo, Brazil.

SOUTH AFRICA TOUR. Nile Crocodile Farmers Association in South Africa have made arrangements for a tour of crocodile farms in South Africa following the Zimbabwe meeting. Enquiries can be made to Mrs. Glen Eriksen, P.O. Box 559, Oudtshoorn, 6620, South Africa. Fax: 274 43 224 167, Phone: 274 43 225 593 or to Howard Kelly, Fax: 273 931 74157 Phone: 273 931 6204.

PRELIMINARY ANNOUNCEMENT, SECOND REGIONAL CONFERENCE OF THE IUCN-CROCODILE SPECIALIST GROUP, DARWIN, AUSTRALIA, 1993. This meeting for the Eastern Asia, Oceania and Australasian region will be hosted by the Conservation Commission of the Northern Territory in Darwin, Australia. Tentative dates are 12-19 March 1993. To receive additional information and preliminary registration materials contact: Jan Peters, CSG Conference Coordinator, Conservation Commission of the Northern Territory, P.O. Box 496, Palmerston N.T. 0831, Australia. Phone 618 989 4449, Fax 618 932 3849.

PUBLICATIONS



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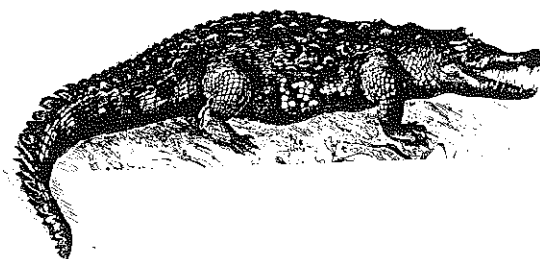
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