

# **CROCODILE SPECIALIST GROUP**

## **NEWSLETTER**

VOLUME 21 No. 3 ■ JULY 2002 – SEPTEMBER 2002



IUCN - World Conservation Union ■ Species Survival Commission

# CROCODILE SPECIALIST GROUP

---

# NEWSLETTER

---

VOLUME 21 Number 3  
JULY 2002 – SEPTEMBER 2002

IUCN–The World Conservation Union  
Species Survival Commission

---

Prof. Harry Messel, Chairman  
IUCN Crocodile Specialist Group  
School of Physics  
University of Sydney  
Australia

EDITORIAL OFFICE:  
Florida Museum of Natural History  
Gainesville, Florida 32611, USA  
Prof. F. Wayne King, Deputy Chairman  
Dr. James Perran Ross, Executive Officer  
John Thorbjarnarson  
Christine Housel, Publication Assistant

COVER PHOTO. Adult male mugger crocodile, *Crocodylus palustris*, at Rene Hedegger's Danish Croc Zoo (Krokodille Zoo, Eskilstrup, Denmark). C. Stevenson photo.

The CSG NEWSLETTER is produced and distributed by the Crocodile Specialist Group of the Species Survival Commission, IUCN – The World Conservation Union. CSG NEWSLETTER provides information on the conservation, status, news and current events concerning crocodylians, 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](mailto:prosscsg@flmnh.ufl.edu)

## PATRONS

We gratefully express our thanks to the following patrons who have donated to the CSG conservation program during 2002.

**Big Bull Crocs!** (\$25,000 or more annually or in aggregate donations)

Japan, JLIA – Japan Leather & Leather Goods Industries Association, CITES Promotion Committee & All Japan Reptile Skin and Leather Association, Tokyo, Japan.

Mainland Holdings Ltd., Lae, Papua New Guinea.

Heng Long Leather Co. Pte. Ltd., Singapore.

Reptilartenschutz, Offenbach am Main, Germany.

D. & J. Lewkowicz, France Croco et Cie-Inter Reptile, Paris, France.

Singapore Reptile Skin Trade Association, Singapore.

**Friends.** (\$3,000 - \$25,000)

Crocodile Farmers Association of Zimbabwe.

Xiangjiang Safari Park, Guangzhou, China.

Florida Alligator Marketing and Education Council, FL, USA.

Fur and Alligator Advisory Council of Louisiana, LA, USA.

S. & J. Puglia, Alligator Adventure at Barefoot Landing, Myrtle Beach, SC, USA.

National Geographic TV, Washington, DC, USA.

Enrico Chiesa, Italhide S.R.L., Milan, Italy.

**Supporters.** (\$1,000 - \$3,000/yr)

Shark Reef at Mandalay Bay Inc., Las Vegas, Nevada, USA.

Dr. I. Lehr Brisbin, Savannah River Ecology Laboratory, Aiken, SC, USA.

Wayne Sagrera, Vermilion Farms, LA, USA.

Warren Entsch, Janamba Croc Farm, Australia.

Phil Steel, Crystal River Alligator Farm, FL, USA.

Somkiat Wannawatanapong, Wabin Crocodile Farm and United Leather Product Co. Ltd., Thailand.

Newport Aquarium, Kentucky, USA.

Luis Martinez, Caicsa SA Colombian Reptiles, Medellin, Colombia.

**Contributors.** (\$500 - \$1000)

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

Terry Cullen, Cullen Vivarium, Milwaukee, WI, USA.

Mauri USA, Inc., New York, NY, USA.

Antonio Quero Alba, Eurosuchus SA, Malaga, Spain.

Ferrini Italia Inc., Dallas, TX, USA.

Mark Mendal, Pan American Leathers Inc., Salem, MA, USA.

Robert Young, Alligator Bob's, Thonotosassa, FL, USA.

Alian Ruswan, Medan, Indonesia.

George Saputra, Indonesia.

Crocodile Management Association of Thailand.

Crocodile Farmers Association of Cambodia.

Johan Jordaan, Zongwe Farming Enterprises, Zambia.

Rachmat Wiradinata, PT Ekanindya Karsa, Indonesia.

Rob Ferran, Micanopy FL, USA.

Sam Seashole, Monks Corner SC, USA.

Arno Zoppi, Interdica SA, Fribourg, Switzerland.

Colin Stevenson, Kinkumber, NSW, Australia.

## Editorial

NEWSLETTER NEWS. This issue is late due to the 16<sup>th</sup> Working Meeting. It will be followed very shortly by the final issue for the year (Vol 21 No.4) that will contain the reports of the 16<sup>th</sup> Meeting held in October. Production of this issue has been assisted by the addition of John

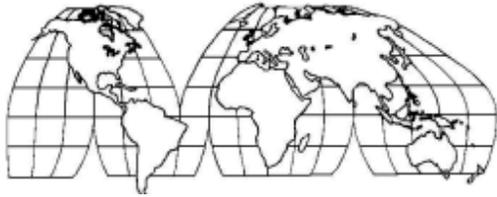
Thorbjarnarson to the editorial board and the work of Christine Housel in assembling the material. We hope that some new editorial inputs will enliven and refresh your Newsletter. As always, we rely on you to provide the materials for inclusion. Remember that to keep your subscription active, we need to hear from you at least once a year, either with a submission of news or by returning the annual subscription form. If the Newsletter doesn't arrive—you may have been purged from the list or your address is no longer current. To reactivate your Newsletter, just get in contact with the editors.

RED LISTING CROCODILES. IUCN released its revised Red List 2000 of Threatened Species in September 2000. The definitive list is now an on-line resource <http://www.iucn.org/themes/ssc/red-lists.htm> and was accompanied by the 'Red Book' a very handsome coffee table volume. However, the electronic version is now the definitive "List" and benefits greatly as a searchable data-base and from the ease with which it can be updated. IUCN has also changed the procedures by which Specialist Groups submit their Red List recommendations and made new provisions for challenging, appealing and modifying listings. Since the adoption of the new criteria for determining Red List categories in 1996, the process has been dynamic and responsive, with several analyses and reviews of procedure and an evolving series of modifications and special processes to meet special cases. The electronic list was updated in 2001 and will be updated again in 2003.

Discussion, and some controversy, remains about how well the IUCN Criteria can be applied to different kinds of organisms and different scales, both geographic and temporal, of species status change. The CSG and many members have been active in these discussions as they apply to listing crocodilians.

The deadline for submission of revised listings is April 2003 and this is an opportunity for CSG to again consider the status of some species and again examine the way that process of applying the criteria to crocodilians can work. New data is available for several crocodilian species (e.g., *Tomistoma*, *Melanosuchus*, *C. morletii*) and CSG has established several groupings of regional or taxonomic expertise such as the "Red (network in Spanish) acutus" to address listing revisions. — *Editors.*

## Regional Reports



### Africa

#### Nigeria

*CROCODYLUS CATAPHRACTUS* SKULLS IN CALABAR MARKETS. In a previous article (Luiselli et al., 2000, CSG Newsletter 19[1]:4-6) we reported that *Crocodylus cataphractus* is endangered in the forest zone of southern Nigeria. Here we report on two skulls of these crocodiles found in "ju-ju" markets at Calabar, the capital city of Cross River State. The skull of a large adult was found in the market on February 2001. The skull was in perfect condition, and the sellers claimed it came from Cameroon. It is a typical answer by sellers, who know that crocodiles are protected by law in the territory of the Federal Republic of Nigeria. We were not allowed to take measurements from this specimen. The skull of a subadult specimen, which was obviously recently killed and not yet properly prepared, was found in the same market on December 2001 but, once again, we were not allowed to take measurements. In this latter case, the seller claimed it was captured by fishermen "somewhere close to Calabar Sea," i.e., in Cross River State, southern Nigeria. These records not only suggest that relict specimens of *C. cataphractus* are still found in Cross River State (probably in coastal mangrove areas), but that illegal hunting (perhaps also for food and leather, and certainly for "ju-ju"—traditional medicine—reasons) is still present on these threatened crocodile populations. While we were not allowed to take a photograph of the first specimen observed, we deposited photos taken from the second specimen in our institutional collections. — Godfrey C. Akani, Dept. of Biological Sciences, Rivers State University of Science & Technology, PMB 5080, Port Harcourt, Nigeria

<gakanina2000@yahoo.com> & Luca Luiselli,  
FIZV, Ecology, via Olona 7, I-00198 Rome, Italy  
<lucamlu@tin.it>

### South Africa

IMPORTATION OF SALTWATER CROCODILES (*CROCODYLUS POROSUS*). [The CSG has long opposed the commercial breeding of exotic species of crocodylians. Concerning a recent application from South Africa for the importation of *C. porosus*, we received a copy of the following correspondence from the Chief Executive Officer of the KwaZulu-Natal Nature Conservation Service denying the permit request. — Eds.]

June 18, 2002

Dear Sir:

I refer to your application for the importation of saltwater crocodiles (*Crocodylus porosus*) for farming purposes.

The risk assessment produced by Mr. Blake provided information which raised some questions amongst staff and it was therefore decided to inquire from further afield regarding the implications of importing this species.

The concern expressed by staff was supported by the International Union for Conservation of Nature (IUCN) Crocodile Specialist Group (CSG) who are strongly opposed to the importation.

The concerns raised are as follows:

- The species in question is particularly dangerous and vigorous and could (although the recommendation is that it will) have a detrimental effect on the native ecosystems. Unfortunately it is only once signs of problems occur that we will be in a position to judge the harmfulness of the species and by then it could be too late to rectify the problem.

- The similarity in the habitat in which both the Nile crocodile and the saltwater crocodile live makes it very likely that this species could form free-living populations should any of the hatchlings escape (an occurrence which does happen on crocodile farms).

- The threat of spreading disease between crocodile farms and to wild populations is a very real one, and one which we cannot ignore if we

are to take the farming of Nile crocodiles seriously in this country.

- Because the price paid for the saltwater crocodile is higher than that of the Nile crocodile concern was expressed that Nile crocodile farming might suffer as a result, to the detriment of the indigenous crocodile farming industry, and its support to conservation of wild populations.

- For several reasons, the IUCN Crocodile Specialist Group recommends commercial production of crocodiles within their range states only and strongly opposes translocation to other regions.

In the light of the concerns outlined above, I regret that the decision has been taken to not allow the importation of this crocodile species.

Yours sincerely,  
Chief Executive Officer  
KwaZulu-Natal Nature Conservation Service

---

CROCODILE FARM UPDATES. Crocworld was sold to a group of Zimbabwe farmers, but the deal fell through when the price was upped by R1.5 million. This is the third sale that has fallen through for one reason or another.

Jan Khulaman's farm, "Izitaba," has been sold and Jan is acting in an advisory capacity to the new owners. Izitaba was the first crocodile farm in South Africa, having started in the late 1960s. Over the years he supplied most of the crocodile fraternity in South Africa with stock and know-how on crocodile farming.

As Jan is no longer a crocodile farmer, a new chairman has been elected to the Transvaal Crocodile Farmers Association in the person of Dr. Herbie Penzhorn. After his election it was proposed that the name of the Association be changed to the South African Farmers Association and it be opened to all S. African farmers. This will take place once a new constitution is drawn up.

Graham Stewart, who started the first crocodile farm in KwaZulu-Natal in the early 1980s (Stewart's Farm) died in February this year (2002) following a stroke. — D.K. Blake, PO Box 551, Scottburgh 4180, South Africa.



## Eastern Asia, Australia and Oceania

### Australia

QUEENSLAND CROCODILE RESEARCH EFFORTS. Longtime crocodile friend Charles Tanner, who died in December 1996 in Cooktown, Australia (his home for most of his 85 years) left a bequest that will support a research project to determine the movement of large estuarine crocodiles by tracking them from space by satellite transmitters. The research is a joint project with the University of Queensland Department of Zoology and Entomology. Queensland Parks and Wildlife Service (QPWS) Senior Conservation Officer for Wildlife Research, Dr. Mark Read, said the bequest was highly significant. "It was absolutely fundamental to the project," Mark said. "There is no chance we could have done this research without this money." The bequest will pay for the transmitters, which will be attached to the crocodiles.

Mr. Tanner spent his life studying and collecting reptiles, and he was the first to catch a live specimen of the highly venomous western taipan. Between the early 1960s and 1985, he "milked" snakes on his Cooktown snake farm for antivenin for the Commonwealth Serum Laboratories. His fascination with elapids (front-fanged snakes) resulted in a string of life threatening bites, including a serious bite by a taipan in 1979.

In a tribute to Mr. Tanner, Queensland Museum vertebrate curator Jeanette Covacevich said her friend was "obsessed" with reptiles and intrigued by taipans. Ms. Covacevich said he collected more than 1,000 frog and reptile specimens for the Museum of Victoria in Melbourne. Cooktown Ranger Barry Lyon said Mr. Tanner was interested in what happened when crocodiles were relocated.

"I think he was very keen to put money towards crocs," he said. The pilot phase of the research project is due to start mid-year. Initially two transmitters will be glued to the scales of adult estuarine crocodiles in the Endeavour River near Cooktown. Depending on the quality of data received from the pilot phase of the project, the main phase will take place in Weipa at a later date and will include up to 15 crocodiles.

Mark said the research data would strengthen the QPWS management strategy for the animals. "If we have information about the animals' movements it will allow us to put a predictive element into our management of the species," he said. — Tom Dacey, *Executive Officer, Wet Tropics Management Authority, PO Box 2050, Cairns, Queensland 4870, Australia.* <http://www.wettropics.gov.au>

## Cambodia

CAPTURE OF WILD SIAMESE CROCODILE. Historically widespread throughout southeast Asia, Siamese crocodiles (*Crocodylus siamensis*) have been extirpated from most areas by poachers and loss of habitat. It has been described as virtually extinct in the wild, with only a few individuals remaining in Thailand, Laos, and Cambodia. Pursuing reports by hunters on the presence of crocodiles in remote areas of the Cardamom Mountains in Cambodia, the first organized survey of the herpetofauna in southwestern Cambodia with a special emphasis on documenting the existence of *C. siamensis* took place in 2000 under the direction of Dr. Jenny Daltry. This expedition was a joint effort by Fauna & Flora International, Cambodia Department of Forestry and Wildlife, and the Cambodian Ministry of the Environment. The project was successful in locating a small population of crocodiles in a very remote area of the Cardamom Mountains. The Cardamom Mountains in Southwest Cambodia, is one of the most isolated and remote areas left on the planet.



Jenny Daltry, Danny Cheang, & Brady Barr with a wild *C. siamensis* in Cambodia. B. Barr photo.

Few roads penetrate the vast (10,000 km<sup>2</sup>) unfragmented forests of the region, with much of the area accessible only by foot. This isolation combined with the long history of civil unrest in Cambodia, have likely resulted in this population of crocodiles avoiding exploitation.

In March a follow-up expedition was undertaken with the objective of capturing a wild *C. siamensis* and acquisition of a DNA sample. This expedition consisted of Dr. Jenny Daltry (Fauna and Flora International), Danny Cheang (Department of Forestry and Wildlife Cambodia, and Brady Barr (National Geographic Television). Over the course of two weeks the team witnessed 5-8 crocodiles and was successful in capturing a small sub adult. This is the first documented wild caught *C. siamensis* by scientists in decades. Data was collected, photographs taken, and a tissue sample was removed before the animal was released unharmed. This exciting confirmation of Siamese crocodiles in the Cardamom Mountains, further affirms this area's extreme importance to the continued existence of *C. siamensis* in the wild. Conservation efforts are urgently need to protect what may be the last stronghold for the Siamese crocodile. — Dr. Brady Barr, *National Geographic Society, 1145 17<sup>th</sup> St. NW, Washington, DC 20036, USA.*

## Indonesia

*TOMISTOMA* ON JAVA. Since 1995, I have specialized in the herpetofauna of Indonesia (Greater Sundas and Wallacea) and have conducted extensive field research on the reticulated python (*Python reticulatus*), the Kalimantan short-tailed python (*Python breitensteini*), and the water monitor lizard (*Varanus salvator*) in West Kalimantan. The taxonomy, ecology and conservation of these three taxa will be portrayed in my thesis.

During a June-July 2002 trip to the Ujung-Kulon National Park, I was fortunate to observe a large adult specimen of *Tomistoma schlegelii* on the peninsula of the Ujung-Kulon National Park. As far as I have been informed, the distribution pattern of this species is confined to Sumatra, Borneo and some isolated sites in West Malaysia. Selected gray literature (e.g.,

the FAO Field Report "Proposed Ujung-Kulon National Park" of 1977) reports that *Tomistoma schlegelii* occurs on Panaitan Island, but not on the peninsula of the Ujung-Kulon National Park. Despite this fact, the occurrence of *Tomistoma* on Panaitan Island has not yet been confirmed. As far as I know, however, no long-term crocodile studies have been conducted in that region, including Panaitan Island.

My observation during this trip therefore may be seen as sensational, bearing in mind that, until today, this large crocodilian, which is listed under Appendix I (CITES), could survive in obscurity, escaping discovery by man. One reason explaining this may be the extraordinarily secretive behavior of *Tomistoma* (Hoogerwerf [1970] did not notice this species in his extensive work, "Ujung-Kulon, the land of the last Javan rhinoceros"). Another explanation could be, in part, that faunal inventory studies in the Ujung-Kulon National Park are focused on rhino monitoring, thereby neglecting the habitats required by *Tomistoma* (peat and freshwater swamp forests).

The occurrence of *Tomistoma schlegelii* in the Ujung-Kulon National Park additionally is supported by reports of locals such as former crocodile poachers, and the fact that the species is known as "(buaya) julong" in that region, which is opposite the estuarine crocodile named "buaya laut," or politely, "buaya panganten" (Bahasa Sunda). During my visit, local fishermen reported a capture, made with a fishing net, of a *T. schlegelii* specimen approximately 1.5 m in length. Also, a former crocodile poacher native to the area provided information on all sites in which he had seen *Tomistoma* since the 1970s. His most recent observation, in August 2002, was on Panaitan Island.

These data support the urgent need for a long-term field study on the population and conservation status of *T. schlegelii* in the Ujung-Kulon National Park. The experiences reported here demonstrate that other highly-endangered vertebrates (e.g., other Appendix I species such as the Javan rhinoceros, *Rhinoceros sondaicus*, leopard, *Panthera pardus*, and Javan gibbon, *Hylobates moloch*) are found in the Ujung-Kulon National Park, distinctly increasing the value and conservation status of the park. The large predator *Tomistoma* can be a flagship species of the remaining swamp habitats of the Ujung-Kulon National Park. Of great importance therefore is targeted field research, which should

include the identification of all wetland habitats populated by *Tomistoma* within the Ujung-Kulon National Park, as well as the ethnoecology of the species. These data will characterize Javan populations of *Tomistoma*, the second crocodilian species native to the island of Java.

Unfortunately, the human impact on various natural resources (e.g., freshwater fish for consumption, birds for pets, nipa palm leaves as roof material) is widespread. Therefore, I highly recommend that research begin as soon as possible. — Mark Auliya, *University Zoologisches Forschungsinstitut & Museum Alexander Koenig (ZFMK), Section of Herpetology, Adenauerallee 160, D-53113 Bonn, Germany.*

## Malaysia

THE RECOVERY OF SABAH'S CROCODILE POPULATION. Sabah is a state of Malaysia located in Northwestern Borneo, between 4° and 8° North Latitude. Crocodiles (*Crocodylus porosus*) were abundant in Sabah until the 1950s, and attacks on humans reasonably frequent. Aggressive hunting from the late 1950s through the early 1970s, however, resulted in a dramatic decrease in abundance of *C. porosus* throughout the state. A six-week assessment of crocodile abundance (Whitaker, 1984) produced a total of 56 animals from approximately 1,146 km of riverine habitat, or approximately 0.05 crocodiles/km. Not surprisingly, Whitaker reported *C. porosus* populations to be seriously depleted. In June 2002, a field survey by the Sabah Wildlife Department determined that *C. porosus* populations in Sabah (including those in several rivers surveyed in 1984) have recovered substantially over the past 10-15 years (Table 1). Estuarine crocodiles have achieved densities ranging from approximately 1.0–3.0 individuals per km of river, with an average minimum density of 1.1/km. The latter figure is based on a total count of 241 crocodiles per 223 km of riverbank, during a survey interval of approximately two weeks. In several rivers, a dramatic increase in abundance has occurred since the 1980s. The current total number of crocodiles present in Sabah is probably exceeds 15,000, compared to fewer than 2,500 estimated by Whitaker to exist two decades ago. Neither *Crocodylus siamensis* nor *Tomistoma schlegelii*

**Table 1. Estimated crocodile densities in Sabah (individuals detected / km).**

Survey	Km surveyed	Class*				No. crocodiles detected	Minimum density/km	Corrected density/km
		1	2	3	EO			
Whitaker, 1984	1146	13	9	3	31	56	0.05	0.21**
Stuebing, et al. 2002	222.8	178	29	3	31	241	1.1	2.27***

\* Hatchling = < 0.5m Total length; Class 1 = 0.5-1.0m; Class 2 = >1.0m – 2.5m; Class 3 = > 2.5m; EO = Eyes only.

\*\* Whitaker’s figure of 0.46/km obtained a somewhat rougher estimate based on Caughley (1977), which did not take into account differences in detectability related to size.

\*\*\* Approximate figure: adapted from Bayliss (1987): Class 1 conversion factor 1.44; Class 2 CF = 1.36; Class 3 CF = 2.17; EO CF = 6.54; Corrected density (x CF) = 505 crocodiles / 222.8 km.

has ever been found from Sabah. Interestingly, there have been recent sightings by villagers of *T. schlegelii* in an area of disturbed peat swamp (*Tomistoma*’s preferred habitat) in the Klias Peninsula, southwestern Sabah.

Based on observations by Messel & Vorliceck (1987) and Webb & Manolis (1991), not only the abundance, but also the structure of Sabah crocodile populations is probably changing progressively towards greater numbers of large animals. There should be two observable effects of such a change: an increase in the number of subadult “refugees” seen in smaller rivers (specifically, suboptimal habitats) and an increasing number of crocodile-human conflicts, since large (>4m long) animals seem to be responsible for all serious attacks thus far.

During the 1990s, crocodile sightings increased, followed by an increase in the seriousness of incidents involving them. Since mid-2000, more than half a dozen serious injuries or deaths have been reported from at least three Sabah rivers, in widely separated localities (Sg Paitan, Sg Kinabatangan, and Sg Kalumpang; see Figure 1). Victims are usually attacked in the early morning or late afternoon, and these villagers (including several school children) were either washing, bathing, swimming or fishing. Besides villagers, some foreign estate workers have been attacked and either killed or injured.

*Why the recovery?* The conspicuous recovery of Sabah crocodile populations seems correlated with a variety of factors operating over the past two decades, including:

- Legal protection of *Crocodylus porosus* in Sabah since 1982 (Amendments to the Sabah

Faunal Ordinance, 1967, and the Sabah Wildlife Conservation Enactment, 1997) and related conservation measures taken by the Sabah Government, such as the gazettement of the Kinabatangan Wildlife Sanctuary, a prime *C. porosus* habitat. Also, because of enforcement and education efforts by the Sabah Wildlife Department, most Sabahans now know that all crocodiles are protected by law. Illegal hunting has declined substantially.

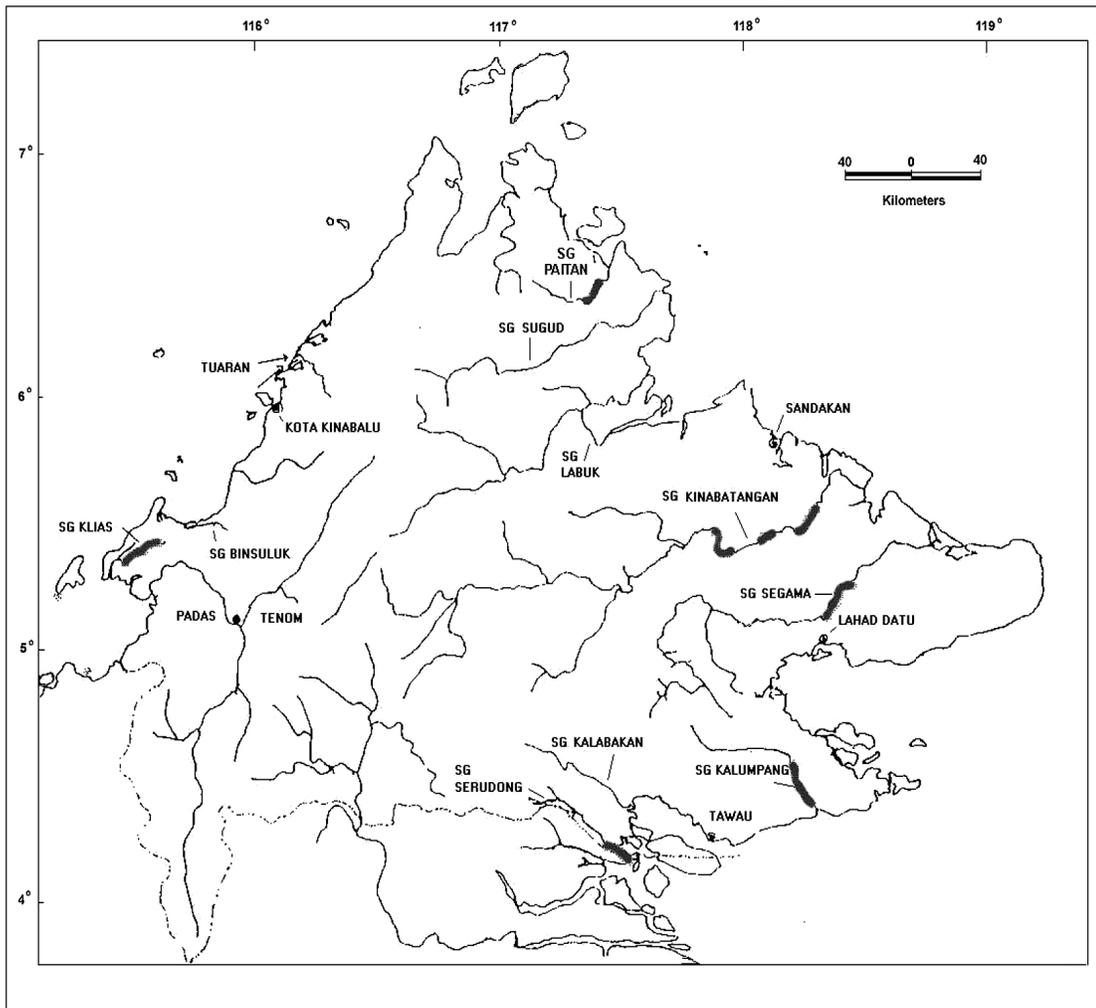
- The timber industry in Sabah has declined substantially, with a subsequent decrease in habitat disturbance and river traffic.

- Siltation from land clearing or development in upper portions of watersheds has led to the transformation of downstream sections of some rivers (shallower channels, an increase in shallow muddy banks, changes in fish fauna), which may have extended ecological situations favorable for colonization by *Crocodylus porosus*.

The development of oil palm estates in Sabah has stabilized. During the 1980s and early 1990s, oil palm development activities caused severe ecological disturbance along many rivers (large tracts of forest degraded by logging were felled and burned). River banks in these areas have generally recovered and are now characterized by a stable community of secondary growth, including grasses and herbs (appropriate for crocodile nest construction).

- Extensive areas of closed canopy swamp and riverine forest were opened by timber extraction, in some cases leading to the loss of these forests from large fires that occurred during droughts in 1983, 1986 and 1998. This enlarged areas of habitat suitable for crocodile nesting (grassy heath, or “padang” vegetation).

Figure 1. Map of Sabah and its major rivers. Portions surveyed are shaded.



- The El Niño-Southern Oscillation episode of 1997-98 may have greatly reduced a significant source of crocodile mortality, e.g., flooding of nests, for that year.

- The decline of Asian prices for crocodile skins in the early 1990s by more than 60% (2001) has resulted in the disappearance of traditional crocodile hunters from most of Sabah. An old man from the Segama area of eastern Sabah stated that “no one wants to buy crocodiles anymore.” Of additional interest, the younger generation of villagers is not taking up traditional activities (like hunting), but is instead moving to towns for better, stable incomes.

Although the principal factors involved in the recovery of Sabah’s crocodiles are difficult to identify with certainty, an inadvertent moratorium on hunting and the recovery of

crocodile habitats are probably the most important.

The Sabah Wildlife Department has drawn up a management plan involving elements of protection, control, and conservation through sustainable use, based on advice from the CSG. Funding is currently limited, and sustainable use programs in Asia are somewhat hampered by adverse conditions in the international market for crocodile products. However, the Wildlife Department will continue to work to ensure both the safety of the public as well as the survival of genetically viable populations of *C. porosus* (and *T. schlegelii*, if indeed it does exist in Sabah).

The authors appreciate the kind advice and assistance of the CSG, WMI (Australia), and many friends in Sabah. — Robert B. Stuebing, *Research Associate, Division of Amphibians &*

*Reptiles, Field Museum of Natural History, Chicago IL, USA; Mahedi Andau & Laurentius Ambu, Sabah Wildlife Department, Wisma MUIS, Kota Kinabalu, Sabah, Malaysia; & Soren Mark Jensen, Sabah Wildlife Department-Capacity Building Project (SWD-CAP), NORDECO/Danish Government Environmental Assistance Program (DANIDA).*

### **Literature Cited**

- Messel, H. & G. Vorlicek. 1987. A population model for *Crocodylus porosus* in the tidal waterways of Northern Australia: Management implications. Chap. 18 in: Webb, G. et al. (eds.), *Wildlife Management: Crocodiles and Alligators*. Surrey Beatty & Sons Pty. Ltd., in assoc. with the Conservation Commission of the Northern Territory, Chipping Norton, NSW, Australia. pp. 189-198.
- Webb, G. & C. Manolis. 1991. Monitoring saltwater crocodiles (*Crocodylus porosus*) in the Northern Territory of Australia). In: D.R. McCollough & R.H. Barrett (eds), *Wildlife 2001: Populations*. Elsevier Applied Science, London and New York.
- Whitaker, R.. 1984. Preliminary survey of crocodiles in Sabah, East Malaysia. IUCN/WWF Project No. 3127. World Wildlife Fund, Kuala Lumpur. 69pp.

## **Western Asia**

### **India**

MUGGER SURVEY IN THE VISHWAMITRI RIVER OF GUJARAT, INDIA. The Vishwamitri River, a seasonal river in Gujarat State, flows east to west between two large perennial rivers, the Mahi and Narmada. The Vishwamitri originates in the hills of Pavagadh, flows west through the city of Vadodara, joins with the Dhadhar and Khanpur Rivers (two small tributaries near the village of Kothawada), and empties into the Gulf of Khambhat, near Khanpur village. This river system includes two reservoirs that hold water for drinking and irrigation: the Sayaji Sarovar, constructed on the Vishwamitri River near Ajawa, and the Dev Dam on the Dhadhar Branch.

As it flows through Vadodara, the Vishwamitri River is subjected to the drainage of the city's sewage and effluents from nearby

industries. Despite its extreme pollution, however, the river supports a small population of mugger crocodiles (*Crocodylus palustris*). Occasionally, during the rainy season, a few crocodiles enter the human settlements through the drainage pipes and cause panic in the city.

During Wildlife Week (October 2001), a crocodile survey was conducted along the short section of the Vishwamitri River that flows through the city of Vadodara. This 25-km. river stretch was divided into five parts: (1) Sama to Fatehgunj; (2) Fatehgunj to Kala-ghoda; (3) Kala-ghoda to Munj-mahuda; (4) Munj-mahuda to Kalali; and (5) Kalali to Vadasar. The survey was conducted in the late evening hours, between 8:00 and 10:00 pm, with the help of a powerful torchlight. During the first four days, a crocodile count was done separately in each of the five segments. On October 8, the last day of Wildlife Week, the entire 25-km. river stretch was surveyed with the assistance of State Forest Department staff members and local wildlife enthusiasts, who divided into five groups and simultaneously surveyed the five segments. A total of 70 mugger crocodiles were counted on that day (Table 1). During the survey, five actively-used crocodile burrows were found on riverbanks between Fatehgunj and Munj-mahuda (segments 2 and 3). Records of six juveniles in the survey indicate that a few female crocodiles breed in some of the remote parts of the river.

These survey results indicate that the mugger crocodile population on this section of the Vishwamitri River is approximately 2.8 muggers/km. This demonstrates that the species not only survives in polluted water, but also adapts to highly congested human surroundings. The present crocodile population of the river might be part of the original population of the Sayaji Sarovar crocodiles, as indicated in an earlier report by Oza (1975): approximately fifty mugger crocodiles were observed in the early 1970s in the Sayaji Sarovar reservoir, but hunting and illegal fishing activities depleted the population until finally, within three years, they disappeared. The hunting and fishing pressure at that time may have caused some of the Sayaji Sarovar muggers to migrate to and settle the lower Vishwamitri River.

### **Literature Cited**

- Oza, G.M. 1975. Conservation of the crocodile in the Sayaji Sarovar Lake, Baroda, India. *Biol. Conservation* 7:235-236.

Table 1. Vishwamitri River Mugger Crocodile Survey Results, October 2001

Segment No.	Vishwamitri River segment name	Km. surveyed	Numbers of mugger crocodiles ( <i>C. palustris</i> ) counted in area				
			Juvenile	Sub-adult	Adult	Total	Crocs/km
1	Sama to Fatehgunj	6.5	0	2	0	2	0.3
2	Fatehgunj to Kala-ghoda	3.5	3	9	3	15	4.9
3	Kala-ghoda to Munj-mahuda	7.0	2	26	5	33	4.7
4	Munj-mahuda to Kalali	3.0	1	12	2	15	5.0
5	Kalali to Vadasar	5.0	0	3	2	5	1.0
<b>Total =</b>		25	6	52	12	70	<b>2.8</b>

We are grateful to Mr. R.N. Tripathi, Forest Conservator, and Mr. S.K. Mehta, Deputy Forest Conservator, both of the Vadodara Wildlife Division, for providing manpower and equipment for the survey. — Raju Vyas & Rohit Vyas, *Honorary Wildlife Wardens, Sayaji Baug Zoo, Vadodara, Gujarat 390018, India.*

GHARIAL (*GAVIALIS GANGETICUS*) IN THE INDRAVATI RIVER? Occurrence of the gharial (*Gavialis gangeticus*) in the Mahanadi River (state of Orissa, India) was often thought to be an exception. Then, data presented in Singh and Bustard (1982a, 1982b) and Singh (1992) suggested the occurrence of gharial in all major rivers of Orissa and in the Godavari River in Andhra Pradesh. However, there was no information from the Indravati River in the state of Madhya Pradesh.

When one of us (M.K. Ranjitsinh) was in the Indravati area in 1981, someone informed us that there had been a long-snouted crocodylian living in the river an estimated 16-20 years ago, probably during the late 1960s. This description, which differed from that of the short-snouted mugger (*Crocodylus palustris*), obviously referred to the gharial. In 2000, when other people in the same area were interviewed by Ranjitsinh, they had no idea of the occurrence of gharial in the Indravati River. The people questioned were young and probably had had no exposure to the previous generation's experiences. The presence of gharial in the Indravati River appeared to have vanished from the memory of the local people.

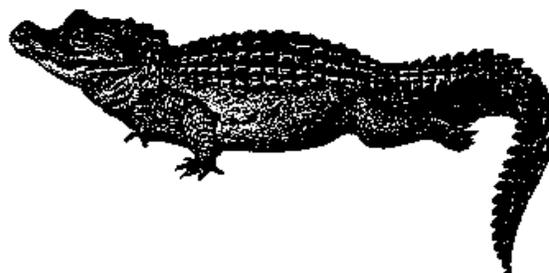
Nonetheless, the single piece of information about the gharial's occurrence in the Indravati in the late 1960s bridges the gap in the distribution

of the gharial, strengthening the view that *Gavialis gangeticus* had a continuous distribution from the Mahanadi River to Godavari in eastern India.

Any further information on the gharial's occurrence in the states of Orissa, Madhya Pradesh and Andhra Pradesh will be gratefully acknowledged. [Adapted from "J. of Bombay Nat. Hist. Soc. 99(2):230] — Submitted by M.K. Ranjitsinh, *Krishnasar, 5, Tiger Lane, off W6 Lane, Sainik Farms, New Delhi 110062, India* & L.A.K. Singh, *Similipal Tiger Reserve, Baripada, Orissa 757002, India.*

#### Literature Cited

- Singh, L.A.K. & Bustard, H.R. 1982a. Geographical distribution of the gharial *Gavialis gangeticus* (gmelin) in Orissa, India. *British Journal of Herpetology* 6(7):259-260.
- Singh, L.A.K. & Bustard, H.R. 1982b. The extinction of the gharial *Gavialis gangeticus* (gmelin) from the Brahmani and Baitarani rivers in Orissa. *J. Bombay Nat. Hist. Soc.* 79(2):424-426.



## Nepal

GHARIAL CONSERVATION IN NEPAL: CHITWAN POPULATION REINFORCEMENT MONITORING PROGRAM. Two species of the family Crocodylidae are found in Nepal, the marsh mugger, *Crocodylus palustris*, and the gharial, *Gavialis gangeticus*. Gharials have an extremely slender snout, and adult males develop a conspicuous narial excrescence commonly called *ghara*. It is listed as endangered and is on Appendix I of CITES. At present, individuals in Nepal are distributed in isolated remnant populations in the Karnali, Babai, Narayani and Sapta Kosi river systems. All of them are in or adjacent to protected areas. The population of gharial in the Sapta Kosi river is low. According to an estimate by IUCN, the number of wild gharial in Nepal is only estimated to be 80-120.

Since 1981, the Gharial Conservation Project at Kasara in Royal Chitwan National Park has released 432 captive-reared gharials into the wild. However, successful captive breeding has not yet been achieved and proper release protocol has yet to be determined. In order to obtain efficient management and conservation action for this endangered species, a solid knowledge of their biological and ecological requirements in the translocation context is needed. For those reasons, a new conservation project has been realized in collaboration with La Ferme aux Crocodiles from Pierrelatte (France), CEPA (Conservation des Espèces et des Populations Animales) and DNPWC (Department of National Parks and Wildlife Conservation) of His Majesty's government of Nepal. In March 2002, ten young captive-reared gharials were released on an island in the Royal Chitwan National Park and radiotracked. Several animals stayed around the release site, but others moved up and down the river. The distance between the first and the last crocodiles was approximately 25 km after only 15 days.

The monitoring of these young released gharials is now under the control of the rangers of the King Mahendra Trust for Nature

Conservation (KMTNC) and of the Tiger Mountain. The intensity of the last monsoon resulted in an interruption of the monitoring. We hope to reinitiate radiotracking and locate the ten individuals in September 2002. — A. Cadi, *UMR CNRS Ecologie des Hydrosystèmes fluviaux, Université Claude Bernard Lyon1, 69622 Villeurbanne Cedex, France* <cadi@univ-lyon1.fr>; S. Martin & L. Fougeirol, *La Ferme aux Crocodiles, Les Blachettes, 26700 Pierrelatte, France* <info@lafermeauxcrocodiles.com>; A. Barlow, *Tiger Tops Jungle Lodge, Royal Chitwan National Park, Tiger Mountain, Nepal*; & T. Maskey, *Ministry of Forest & Soil Conservation, Department of National Parks and Wildlife Conservation, GPO Box 860, Kathmandu, Nepal*.



Gharial (*Gavialis gangeticus*) female with hatchlings in Chambal River, India. R.K. Sharma photo.

## Sri Lanka

CROCODILE TRAINING PROGRAM AND RESEARCH ON THE BIOLOGICAL SIGNIFICANCE OF *CROCODYLUS PALUSTRIS* BURROWS IN SOUTHERN SRI LANKA. On 10 May 2002, a crocodile training program was held for the wildlife rangers of Bundala National Park in southern Sri Lanka. Conducted by CSG members Rom Whitaker, founder of Madras Crocodile Bank in Madras, India, and Brady Barr of the National Geographic Society, the program focused on

crocodile capture and relocation techniques, as well as general biology. In addition to the training program, an investigation into the biological significance of *C. palustris* burrows was initiated by Whitaker, Barr, and Anselm de Silva of the University of Peradeniya. This research was conducted in Bundala National Park, under the supervision of Department of Wildlife and Conservation officials. The specific objectives of the study were focused on burrow construction by *C. palustris*, selection of burrow sites, mapping of burrows and their biological significance, and the thermoregulatory role burrows play in the biology of the mugger crocodile. The National Geographic Society funded the training program and research investigation. — Dr. Brady Barr, *National Geographic Television*, 1145 17<sup>th</sup> St NW, Washington, DC 20036, USA.

## **Latin America & Caribbean**

### **Bahamas**

ALLIGATOR REMOVED FROM GREAT HARBOUR CAY, BAHAMAS. From 23–25<sup>th</sup> October 2002, crocodilian expert Mr. Joseph Wasilewski of South Florida led a mission to remove a feral American alligator from a golf course pond on Great Harbour Cay.

As background information, please note the following excerpt from communication between Sandra Buckner of the Bahamas National Trust and me. This communication took place last year as we were continuing efforts to arrange for the removal of the animal:

“This alligator was first spotted in the pond at the #9 fairway on the golf course in April 1995 (between the airport and Bullock’s Harbour, Great Harbour Cay, Berry Islands). It was then about three feet in length and not considered a threat, and the local residents wanted it to remain. S. Buckner and G. Larson verified the sighting. Sometime later the Ardastra Gardens Zoo curator went to catch it but was unsuccessful. James Perran Ross of the IUCN/SSC Crocodile Specialist Group offered to catch it, joining up with Jim Reid (Sirenia Project) who is studying manatees in the Berry Islands. In October 2000, however, a stationary

cold front changed that plan. In April he proposed doing it in mid-May but needed to know what should happen to the alligator. We let the time slip by and need to address this question again. This is an introduced animal.”

By then the residents had become more concerned. The animal was growing and occasional sightings generated reports that the animal was indeed approaching the size where it was a threat to small children. As a result, efforts were made to have the animal finally removed.

Contact was first made with the Ardastra Gardens Zoo, but curator Robyn Howard informed us that they were unable to hold the animal. Further checks with Garden of the Groves were similarly unsuccessful, so the decision was made to euthanize the animal.

On October 23<sup>rd</sup>, we arrived in Great Harbour Cay. Local Government Council member Mr. Kevin Wallace met us at the airport. We were taken on a tour of the golf course area to view the ponds where the animal had been sighted. The #9 hole pond was very overgrown on the edge by Brazilian pepper berry, making even edge access very difficult. Nonetheless, we were able to get into a few spots, and were able to briefly observe the animal.

We then proceeded to locate material to be used as bait. The only material that we were able to find was some ballyhoo. We used this to rig four tackle lines, which were placed two each in two ponds that looked suitable. The baits were checked at dusk, and after dark about every hour, until 2:00 am. They were checked again at approximately 6:30 am. On the clubhouse pond, one line had been snapped, but the other line indeed had hooked and held an alligator. Reporting that he was able to determine the shape and size of the animal in the murky water, Joe (*not* I) proceeded to jump onto the back of the animal, and with my assistance was able to secure the jaws with electrical tape. The animal was then lifted onto the back of the pickup truck and its legs bound with rope.

Because of the location of the capture just next to the Marina, it became immediately clear that this would not remain a quiet matter. One passerby spotted us removing the animal from the pond and within minutes, with the modern convenience of cell phones, the town was buzzing with the news. We soon had a crowd of onlookers and attempted to leave the area, seeking a reclusive place to come up with a plan of action.

Our attempts to leave under the guise that we needed to check the other ponds were unsuccessful as we were forced to detour through the town because of road resurfacing works. We then had no choice but to begin talking to the residents about the animal and its capture.

The discussions became interesting, as while the vast majority supported our decision to euthanize the animal, there were a few who wanted us to put it back. We had discussions with both the police (Sgt. Delancey) and Chief Councilwoman Mrs. Christine Saunders and they both agreed that the animal was to be disposed of. Sgt. Delancey agreed to euthanize the animal.

I reminded residents that this animal was introduced, and that if it remained it could become a very dangerous, large animal. I told them that to create a secure safe enclosure for the animal to remain was an expensive undertaking, with long-term implications. The local council indicated that they were not prepared to undertake the expense.

Another suggestion by a winter resident from the United States was to repatriate it to Florida. When asked if she was prepared to fund the repatriation exercise, she responded in the negative. Her alternate suggestion to place the animal on an uninhabited nearby cay was summarily dismissed.

There were also many residents who insisted that the animal that we had captured was smaller than the one that they had been seeing, suggesting that there must be two alligators. Others alleged that they had seen two animals together at one time on the pond.

Once the stream of onlookers stopped coming, we were able to sneak away to continue surveillance of the ponds to begin planning the activities of the second night. We decided that we would place baits out again to hopefully be able to assure residents that there were no more alligators present. We were able to locate some chicken to use as bait. Joe felt that this was even better bait than the ballyhoo. We placed three baits in the larger #9 pond, and one in the clubhouse pond.

At approximately 3:45 pm the animal was euthanized by the sergeant. The local council had requested that the skin be "cured" and mounted. There is a resident who is skilled in the art of preparing specimens of turtles and fish for mounted long term display. The council agreed to have this done, and bear the costs of

materials that would be required. I advised them that a determination would be made by the Department as to the final disposition of the animal.

The baits were checked periodically through the night and at 6:00 am. None of the baits that were placed that night had been taken or even touched. It is the opinion of the mission team (Wasilewski/Carey) that there was only one animal present. Nonetheless we have advised the local council and the police to periodically shine lights on the ponds at night to continue surveillance. — Eric Carey, *Dept. of Agriculture, Nassau, Bahamas.*

## Belize

BELIZE CROCODILE CRECHE PROJECT UPDATE. At present (August 2002) a total of 95 *Crocodylus acutus* are held in reserve at the Belize Crocodile Crèche. A total of 32 were collected in 1999, 19 in 2000, and 46 in 2001. Due to the late renewal of our permit for the year 2001, collection was not started until mid-August. However, our improving relationship with the fishermen of Sarteneja village allowed us to gain some useful information about other nest sites. In light of this information, a trip was made to Long CAE (considered by Steve Platt to be the second most important in the country). Evidence of four nests was found, and a gentleman clearing his property was persuaded to leave the area where two of the nests were found as a private crocodile reserve. A total of 17 hatchlings were taken from this site.

The second trip was to the main nesting area on Northern CAE on the Turneffe Atoll. On the northern tip of Blackbird CAE we discovered evidence of four successful nests and collected five hatchlings. The remainder of the hatchlings from 2001 (25) all were taken from the lagoon on Northern CAE. We discovered evidence of at least 14 nests at this site (five more than in 2000). It was noted during our visit that the sea had breached the lagoon, as a result of Hurricane Keith, we were told. As a result of this the water level was much lower than during our previous visits. While this made our own collecting efforts much easier, it stands to reason that it makes hunting a lot easier for the herons and other predators that were observed in the

vicinity. This factor, as well as the increase in the salinity of the lagoon, may have a marked effect on the survival rate of future hatchlings. The management and staff of Turneffe Flats Resort, on the northern end of Blackbird CAE, again expressed their willingness to assist in any way to provide some form of protection to this valuable nesting area.

Due to financial constraints and lack of space, no collection will be carried out in 2002.

The first group of juveniles are ready for release. We would like to enter into discussions with the authorities and other conservation groups to find the most appropriate and useful sites to begin this part of the program. At the same time, we would like to do what we can to alleviate any prejudices and fears the general public may have.

The nesting site on Long CAE appears safe. The voluntary help and enthusiasm of the fishermen who have camps in this area is to be commended. Indeed their cooperation and intimate knowledge of the Cayes in general is a positive asset in the conservation of this species, and we will be doing all that we can to encourage their involvement in the future.

Unfortunately, shortly after our collecting trip in 2001 we lost a major part of our funding with the death of our main sponsor. This made it necessary for us to use what little cash we had just to feed and maintain the crocodiles we have. Happily we now have secured the help of two new supporters: The Netherlands Foundation for International Nature Conservation (the van Tienhoven Foundation) and the Dutch Zoological Society (Stichting Dierentuinen Helpen).

Through the generosity of these organizations and the continuing support of ITCF, we now are embarking on an extensive building, re-equipping and repair campaign to improve the facilities at the Crocodile Crèche. We also will be in a much healthier position to carry out the monitoring of nest sites and the hunting out of new ones in the 2003 season, which is a major factor in the success of the project.

We also will begin negotiations with a sponsor for a possible outreach program to visit schools country-wide, to help spread the conservation message to children who do not have a chance to visit us here in Sarteneja. In response to our recent conversation with personnel of the Conservation Division, we will form a liaison with them and with other conservation organizations before initiating this

part of the program, so that we stay within the latest guidelines.

In addition to our main funding from abroad, we also have received considerable assistance over the last three years from the following Belizean sources, either as cash donations, in-kind donations or generous discounts: Blackbird Caye Resort; Salvador W. Habet, Ltd.; ESSO Standard Oil, SA, Ltd.; Aqua Mar, Ltd.; Orange Walk Cane Farmers Association; San Isidro Construction Center; Orange Walk One-Stop Shell Service Station; San Martin ESSO Service Station; Brother Habet, Ltd.; Santino's, Ltd.; Rick's Block & Tile Factory; Pine Lumber Co., Ltd.; and the People's Store. We much appreciate the logistical support provided by the Turneffe Flats Resort and Blackbird Caye Resort (with a special thank-you to the owners, managers, and staff, as well as the guests, who dig deeply into their pockets to help with expenses). Without their support, nothing would have been accomplished during collecting trips. Finally, a special thank-you to the fishermen and their families of Sarteneja Village for their friendship, knowledge and enthusiasm. — Stephen Nichols, *The Crocodile Crèche, PO Box 77, Orange Walk Town, Belize* <croccreche@btlnet>

## Venezuela

VENEZUELAN CROCODILE SPECIALIST GROUP: UPDATE. Although it was legally established as an NGO just two years ago, the Venezuelan Crocodile Specialist Group (GECV) has been working for the conservation of Venezuelan crocodilians for more than two decades. The specific objectives of the GECV are: (1) To define strategies or operative plans for the conservation of crocodile species of a critical or endangered status; (2) to act as a consultant to government institutions in charge of the management of these species and their natural habitat; (3) to promote legal protection of areas where extant populations of crocodiles are found; (4) to compile information on the conservation and management of crocodilians; (5) to promote training opportunities for professionals in the area of conservation and management of Venezuelan crocodilians; (6) to procure funds to implement programs for the conservation and

management of crocodilians; and (7) to initiate other necessary actions to achieve the organization's goals.

GECV now has 27 members, all of whom are professionals from government and private institutions. Among our honorary members are Tomás Blohm, Cecilia Blohm, Gonzalo Medina-Padilla, and Juhani Ojasti, well-known pioneers in the conservation of Venezuelan fauna. In July 2002, the following members were elected to the GECV Board of Directors for August 2002-July 2004: Andrés E. Seijas, president; Omar Hernandez, secretary; Alfredo Arteaga, treasurer; and Alvaro Velasco and Eduardo Espinoza, members. — Andrés E. Seijas, *Depto. de Biología, UNELLEZ, Mesa de Cavaca, Portuguesa, Venezuela.*

## North America

### Mexico

FOURTH MEETING OF THE COMACROM TECHNICAL COMMITTEE. From 21-24 August 2002, the COMACROM Technical Advisory Subcommittee for the Conservation, Management, and Sustainable Use of Crocodilians in Mexico met in Campeche. COMACROM is an official national body integrating research, government agencies, and private sector interests to develop national goals and policy for crocodilian conservation and use in Mexico.

The focus of this meeting was to present information and discuss options for removing the Morelets crocodile from the US Endangered Species Act (ESA).

After the inaugural event, the meeting began with a keynote speech by Luis Sigler and continued with a series of presentations that lasted all day, finishing at 19:30 h. The second day began with regional reports and discussions of advances and problems in each of these areas. In the afternoon, presentations were given on the subject of wild populations, then on captive management, veterinary care, and the Mexican Scientific Authority and its role in crocodilian conservation. The third day was dedicated to roundtable discussions and the special recognition of four Mexican crocodile specialists

as part of the celebration of Mexico's Miguel Alvarez del Toro "Crocodile Day," declared in honor of Alvarez del Toro's birthday. Dr. Gustavo Casas Andréu, Lic. Marco Lazcano Barrero, Tec. David Montes Cuevas, and Prof. Gonzalo Pérez Higareda are the scientists honored for their valuable contributions to the conservation of crocodilians and their habitat.

The last day was given to discussion of the results of roundtables from the previous days. A tremendous amount of information already has been gathered for nine different states in Mexico. The need to develop a regional strategy (Mexico, Belize, and Guatemala) to compile the needed information for down-listing *C. moreletii* on the ESA was discussed, along with potential funding mechanisms for supporting this work. — *Extracted from meeting reports by Manuel I. Muñiz Canales, President of COMACROM, & Mvz. Odra F. Bustillos Vargas, Financial Officer of COMACROM, Apdo. Postal 41601, Lomas de Chapultepec, Mexico DF CP 11000, Mexico. <moreletii@psi.net.mx>*



"Crocodile Day" celebration, 23 August 2002. Held in Campeche, Mexico during the Fourth Meeting of the COMACROM Technical Committee. Back row, left to right: Chave, David Montes, Marciano Valtierra, Luis Sigler, & Rogelio Cedeño. Front: Manuel Muñiz & Helios Hernández. M. Muñiz photo.

## USA

CROCODILIANS EATING THEIR VEGETABLES. Scientific literature is replete with research on the stomach contents of crocodilians. Nearly all of the reports refer to the plant material found in the animals' stomachs as either an accident (i.e., the crocodilian got leaves in its mouth while trying to swallow a prey item) or secondary (i.e., the crocodilian swallowed a prey item that had grass or leaves in its stomach). One such article lists plants as a "nonfood item," but notes that the plants were found in ninety percent of the animals sampled. During the summer of 2000, some of the keepers at the St. Augustine Alligator Farm told me that they had been seeing American alligators eating fruit from the elderberry plants in the swamp exhibit. Of course I wanted to blame this on the fact that the alligator must have seen an anole or another animal in the plants and lunged for it. The keepers were persistent, saying that the alligator had gotten a mouth full of elderberry, swallowed, and then gone back for more. Reports of the alligators eating elderberry as well as wild grapes from plants in the swamp exhibit occurred several more times that year and have continued ever since.

In May of 2001, we began a mixed species exhibit, which includes American alligators (*Alligator mississippiensis*), Chinese alligators (*Alligator sinensis*), brown caiman (*Caiman crocodylus*), dwarf caiman (*Paleosuchus palpebrosus*), dwarf crocodiles (*Osteolaemus tetraspis*), mugger crocodiles (*Crocodylus palustris*), and red-foot tortoises (*Geochelone carbonaria*). The keepers reported observations of American and Chinese alligators eating out of the tortoises' dishes. Again, I was inclined to explain this away by saying that the alligators must have been attracted to the food dishes by the movement of the tortoises, and just accidentally ate some lettuce. However, it is now a common sight to see the alligators at the tortoise bowls, eating romaine lettuce and yellow squash. Sometimes the alligators even beat the tortoises to the dishes. We have had plenty of opportunities to record this behavior on videotape.

There are several citrus trees in this mixed species exhibit. Occasionally we witness alligators running around with an orange or lemon in their mouth, trying to keep it away from

the other animals. It eventually gets chewed up or torn by other animals and swallowed. In March of this year, we watched as an American alligator raised itself into the lower parts of a small kumquat tree and grabbed fruit directly from the tree. Within a few minutes, we observed this same individual swallowing the fruit and going back for more.

We are not exactly sure why alligators in our park are eating their vegetables. It is possible that our animals, in captivity, are lacking something in their diet that makes them seek out vegetation. Or, is it possible that crocodilians deliberately consume vegetation as part of their normal diet? — John Brueggen, *General Curator, St. Augustine Alligator Farm, St. Augustine, FL, USA* <JBrueggen1@aol.com> [John presented video footage of these interesting behaviors at the recent CSG Working Meeting in Gainesville, Florida. We hypothesize that these are just health-conscious gators, making sure they get their RDA "5-a-day" servings of fruits and vegetables. — Eds.]

---

URBAN CROCODILIANS IN SOUTH FLORIDA. Earlier this year, CSG Executive Officer Perran Ross received the following letter from David Lee of Homestead, Florida:

Dr. Ross,

Thank you so very much for your response and interest in this exciting discovery. I would be more than thrilled for you to use these photos in any way you need to further your research. I don't know what I can tell you, other than a brief summary of what I saw:

At about 12:00 noon on June 10, 2002, I spotted a crocodile about six or seven feet long with an alligator in its mouth. The alligator looked to be about two or three feet in length. At first I was uncertain just what I was looking at, as I had never seen a crocodile in the wild around here before. It was in a drainage canal that runs parallel (north & south) to SW 97 Ave. and SW 232 St. in South Miami-Dade, Florida. Up to this point I'd only seen turtles, fish, snakes, birds and a four- or five-foot alligator (sunning) in this canal. I watched as the crocodile moved north from about 200 ft. south of SW 232 St. through a culvert and continued north in the drainage canal for about 300 ft. with the alligator clinched

tightly in its jaws. I watched it surface several times for very brief moments to breathe but never long enough for another clear photo. I would have loved to see it grab the gator—what a sight that must have been! I could only follow it from a trail of bubbles it was leaving as it apparently walked along the bottom trying to escape my presence. Because the canal was murky, with trash littering its banks from a nearby landfill, you could only see into the water about two or three feet. Altogether I was able to observe the crocodile for about 20 minutes.



Crocodile with alligator, S. Florida. D. Lee photo.

This drainage canal extends about a half-mile north out of a larger canal (Black Creek Canal C-1) which is connected to the bay (Biscayne National Park) by a mechanical dam, to the east. This is about one mile west from the coast of Biscayne National Park in South Miami-Dade County. I had seen alligators in this canal before and had made it a point to look over as I drove past. The waterways (canals) in this area are man-made and freshwater while the swamp and marsh areas, needless to say, are natural and generally brackish. I would have thought that this kind of wildlife would move away from the human activity rather than hang around it.

I work for the water and sewer utility and often visit the sewage treatment plant, where I find an abundance of wildlife living within the confines of the plant. Several alligators have been removed from the plant in the past several years because employees and contractors will sometimes feed them and they'll start to get a little too friendly. I'd heard a story about a large crocodile also being removed from the plant, but didn't witness it. I guess that's why I was so amazed and excited about seeing this. It wasn't fenced in or confined in any way. It could have gone anywhere it wanted to go. — David Lee, 16350 SW 282 St., Homestead, FL 33033, USA.

## Publications

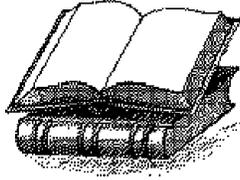


CSG PROCEEDINGS BIBLIOGRAPHY AVAILABLE ON-LINE. A complete bibliography from all published Proceedings of the Crocodile Specialist Group (as well as some regional proceedings) is now available on our USGS Florida Co-op Site. Please set your links to <http://www.wec.ufl.edu/coop/> and navigate to the Unit Announcements page for more information. The bibliography is available in three formats: EndNote 5, MS Word 97, and html. If there are any other volumes you would like to see added to the bibliography, or if you have any other questions/comments, please let me know. — Chris Gregory, *Florida Wildlife Coop Unit/Department of Wildlife Ecology & Conservation, University of Florida, Gainesville FL 32611, USA* <[phd2be@ufl.edu](mailto:phd2be@ufl.edu)>

CSG PROCEEDINGS REPRINTS. After prolonged negotiations, Taxon Media and Zoo Book Sales of Lanesboro, Minnesota, USA; IUCN-The World Conservation Union and CSG have finalized an agreement for Taxon Media to reprint all the Proceedings of past CSG Working Meetings. After obtaining copyright permission from IUCN and master copies from CSG, Dan Beaver at Taxon Media has designed new glossy covers and photos for the older issues. The contents of each Volume have been reprinted unchanged, except for the insertion of additional production and citation information on the title page. Reprint Proceedings should be cited in exactly the same way as the originals. This is an opportunity to replace that lost volume or make up your complete set. For convenience, the first two Proceedings (1971, 1973) have been bound together. Interested buyers should also note that there are NO Proceedings for the third (1975) and fourth (1977) Working Meetings.

The new reprints were released at the CSG 16<sup>th</sup> Working Meeting in Gainesville where brisk sales quickly depleted the available copies, but lots more will be printed in response to demand.

Reprints are available from Taxon Media, P.O. Box 192, 403 Parkway Ave. N., Lanesboro, MN 55409 Tel. 1 507 467 8733, Fax 507 467 8735 <orders@taxonmedia.com> Four dollars of the purchase price will be returned as a donation to CSG. — *Editors.*



**HERPETOLOGY OF NEPAL:  
A FIELD GUIDE TO AMPHIBIANS & REPTILES  
OF TRANS-HIMALAYAN REGION OF ASIA**

by Tej Kumar Shrestha, Phd; DSc; FLS

This user-friendly book describes newts, frogs, snakes, lizards, crocodiles, and turtles, illustrating the species with photographs and drawings. Each species description provides information on distribution, habitat, and characteristic features and includes general comments on ecology, natural history, and conservation.

**For further information, write:**  
GPO Box 6133, Kathmandu, Nepal  
E-mail <drtk@ccsl.com.np>

**Book available from:**  
Steven Simpson Natural History Books  
Rising Sun, Kelsale  
Saxmundham IP17 2QY  
United Kingdom  
Tel: 01 728 604 777  
Fax: 01 728-604-555  
E-mail <sjs5555@fsmail.net>

SCIENCE IN POETRY. Nine leading contemporary poets have written original poems in response to recent Royal Institution Discourse, given by nine leading contemporary scientists. The book of poems and the CD of the poets reading them both have been published in June 2002 by the Royal Institution of Great Britain in association with Calouste Gulbenkian Foundation (£5 for the paperback book and £8 for the CD, both available at the Royal Institution), entitled “Discourses—Poems for the Royal Institution.”

One of the nine scientists featured is Professor Mark W.J. Ferguson, of the University of Manchester. In response to Professor Ferguson’s Royal Institution discourse entitled “Scars, Sex and Alligators: Unexpected Discoveries in Biomedical Research and their Commercial Exploitation,” leading contemporary poet Ruth Padel has written a six-part poem entitled “Sex, Scars and Alligators.” In this discourse of poems she covers many aspects of alligator biology, wound healing and scarring. Ruth Padel has won the UK National Poetry Competition and has published five collections of poetry: her previous collection, “Rembrandt Would Have Loved You,” was short-listed for the T.S. Elliot Prize. She invented and wrote the popular “Sunday Poem” column for the Independent on Sunday and currently writes “Wild Thing,” a column in the Weekend section of the Times. Her fifteen minute reading of poetry on Mark Ferguson’s research includes the poetic description of the wounds healing process, which finishes:

“So, finally you get a dense and bumpy mass  
of fibre with few living cells: the scar.”

— Mark Ferguson, *Dean of Biological Science, 3239 Stoppford Bldg., University of Manchester, Manchester M13 9P7, United Kingdom.* <mark.ferguson@man.ac.uk> [*Editor’s note: See next page for two of Ruth Padel’s crocodilian poems, taken from page 22 of the London Review of Books, March 21, 2002. We will feature more of Ruth’s poems in future newsletters.*]



## VERSIONS OF ALLIGATOR CREATION

She made the world's first alligator from a spine  
Of sugar-cane,  
Binding the spring growth's joints and knuckles,  
Then rind-peelings,  
The eyes from saffron, tail from the leaves and  
fruit  
Of betel-nut,  
Clay mould from a sheet of upish,  
Squelching from sheaths  
Of betel-nut palm: and prayed  
It might have life.  
Along the Yellow River, China's sorrow.  
The lemon-eyed  
Chinese alligators burrow. Brandishing their  
mouths  
Of burning torches,  
Their breath of brindled coals, and guided by  
their Lord,  
The Lung dragon,  
They foretell rain in the Celestial Empire  
With their calls.

— Ruth Padel

---

## VENTRICLES OF AN ALLIGATOR'S HEART

...related more to birds, than lizards.  
For a start,  
  
They architect up their nests from plants,  
Lay calcified eggs in them, go in—  
  
As dinosaurs must have done—  
For long-term parenting.  
  
Forget molecular tissues of the skin:  
Both boost an elongate ear canal,  
  
A muscled gizzard, and  
In both, my friend, you find  
  
A total separation  
Of the ventricles of the heart.

— Ruth Padel

## Trade



COLOMBIA: EXPORT OF  
SKINS OF CAIMAN  
CROCODILUS. A recent  
CITES notification to the

Parties (No. 2002/031) provides information on size limits established for crocodylian skins or parts thereof that can be exported from Colombia. The Management Authority of Colombia requests the assistance of all Parties in checking that shipments are in conformity with the sizes indicated and that it be notified in cases of irregularity. This Notification replaces Notification to the Parties No. 978 of June 2, 1997.

The new size limits in the Notification are:

(a) *Full skins, salted*: maximum length of 125 cm, 80% of skins should not exceed 120 cm;  
*Full skins, tanned*: maximum length of 86 cm, 80% of skins should not exceed 125 cm.

(b) *Flanks, salted*: maximum length of 63 cm, 80% of skins should not exceed 60 cm;  
*Flanks, tanned*: maximum length of 86 cm, 80% of skins should not exceed 125 cm.

These lengths apply to the large flanks, i.e., those which include the throat skin. No lengths are given for flanks which do not include the throat skins and are therefore shorter. The relatively large difference between size limits for salted and tanned flanks is due to increased variability in hydration rates, the way the flanks are cut and the changes in shape resulting from the tanning process.

(c) *Tails, salted or tanned*: maximum length of 60 cm.

(d) *Bellies, salted*: maximum length of 45 cm.; *Bellies, tanned*: maximum length of 50 cm.

— *Excerpted from the web-site below and CITES Update #84, August 2002, a bulletin provided by the US Department of the Interior, Fish and Wildlife Service, Washington, DC 20240, USA.*

[To see the entire text of the Notification, visit: [www.cites.org/eng/notifs/2002/031.shtml](http://www.cites.org/eng/notifs/2002/031.shtml)]

**SEND MORE STUFF FOR THE  
NEWSLETTER! KEEP YOUR  
SUBSCRIPTION ACTIVE.**

## Personals



David Blake wrote to tell us that he left Crocworld at the end of February 2001, after

three years when they originally took him on for three months, after he retired from the Natal Parks Board. His new address is below. Following the development of pneumonia while hiking in the Drakensberg, he had a double bypass in August 2001, which set him back a bit. Fortunately he writes that he is now fitter than he has been for years.

Dave also reports that Mark Robertson, who took over the St. Lucia Crocodile Centre from him, resigned in November 2001 to go trout farming in the Drakensberg with his father-in-law. To date a new OIC has not been appointed due to budgetary cuts, etc. — D.K. Blake, PO Box 551, Scottburgh 4180, South Africa.

Les Garrick wrote to let us know that Robert Sutton of Mandeville, Jamaica, passed away on 22 July 2002. Robert was an internationally-known Jamaican ornithologist who was very helpful in crocilian conservation in his country, mainly behind-the-scenes and in support of visiting scientists, like Les and Jeff Lang. The Society for the Conservation and Study of Caribbean Birds (SCSCB) and the National Fish and Wildlife Foundation (NFWF) have established a Memorial Fund in Robert's honor, to support an aspect of Jamaican bird conservation. For further information, contact Lisa Sorenson of the SCSCB: <lsoren@bu.edu>

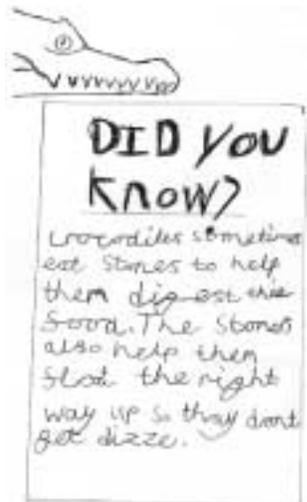


Tomas Waller and his wife (La Pampa 1815-5B, 1428 Buenos Aires, Argentina) proudly announce the arrival of son Max on 29 August 2002. Congratulations!



Kuhn Utai Youngprapakorn, founding member of CSG and of Samutprakan Crocodile Farm, examines a crocodile hatchling during celebrations of his birthday and founding of the farm. We wish Kuhn Utai the very best.

— CSG Editorial Staff and members.



Artwork by John Hutton's daughter. Submitted by Dr. John Hutton, Africa Programme, Fauna & Flora International, Great Eastern House, Tenison Road, Cambridge CB1 2DT, United Kingdom.

WHAT IS A CROCODILE? This is a real-life primary school exam of Grade 5 (Std. 3) pupil Christiaan Janse van Vuuren, in Zimbabwe:

*Write an essay on the following question:*  
What is a crocodile?

*Answer:*

The crocodile is a specially built so long because the flatter the better swimmer.

At the front of the crocodile is the head.

The head exists almost only of teeth.

Behind the crocodile the tail grows.

Between the head and the tail is the crocodile.

A crocodile without a tail is called a rotwieler.

A crocodiles body is covered with handbag material.

He can throw his tail off if he gets a fright but it doesn't happen much because a crocodile is scared of nothing.

A crocodile stays under the water because if you were so ugly you would also stay under the water.

It is good that a crocodile stays under the water because a person gets such a big fright if a crocodile catches you that he first has to rinse you off before he can eat you.

A crocodile isn't hardly as dangerous as people say he is except if he catches you.

The longer he bites you, the more it hurts.

Very old crocodiles suck their people and buck that they catch dead.

If you eat him, he is a crocosatie.

A crocodile did not learn to swim with his arms so he uses his tail.

The little brother of the crocodile is a lizard.

The slow sister of the crocodile is a chameleon.

The gay brother of the crocodile is a daffodile.

And the crocodile also has a dead brother the frikkidel.

— Submitted by Kevin van Jaarsveldt, *PO Box 129, Chiredzi, Zimbabwe.*

---

CHOCO-CROC CAKE. Adorned with chocolate crocodiles, this wedding cake (above right) was made by Rosemary Holcombe of Absolutely Gorgeous Cakes! in Crowborough, East Sussex, United Kingdom. Modeling of the crocodiles & Bushmen paintings done by Sarah Churchward.



This creative cake is in honor of happy couple Sue and Mark Simpson, who recently were married at Crocodile Pool, Zimbabwe. R. Holcombe photo.

## Requests

FIELD TECHNICIAN/GRADUATE STUDENT wanted for projects dealing with conservation of the endangered American crocodile and alligators. Applicant should have strong skills in the area of seamanship, all-terrain vehicle operation, and GIS/GPS technology. Field experience is a must. Experience with catching crocodiles is better. Technician will perform surveys for crocodilians both day and night by skiff, canoe, jon boat, and airboat. Surveys are conducted in remote locations under sometimes harsh field conditions of intense heat and humidity, lightning, high-winds, and biting bugs. Pay starts at \$10 per hour depending upon experience. Please send resume and letter of interest by mail or e-mail to: Dr. Frank J. Mazzotti, University of Florida-IFAS, 3205 College Ave., Ft. Lauderdale, Florida 33314, USA <fjma@mail.ifas.ufl.edu>

**EDITORIAL POLICY** - All news on crocodilian conservation, research, management, captive propagation, trade, laws and regulations is welcome. Photographs and other graphic materials are particularly welcome. Information is usually published, as submitted, over the author's name and mailing address. The editors also extract material from correspondence or other sources and these items are attributed to the source. If inaccuracies do appear, please call them to the attention of the editors so that corrections can be published in later issues. The opinions expressed herein are those of the individuals identified and are not the opinions of CSG, the SSC, or the IUCN-World Conservation Union unless so indicated.

## Steering Committee of the Crocodile Specialist Group

**Chairman: Professor Harry Messel**, School of Physics, University of Sydney, Australia.

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

**Deputy Chairmen: (New World) Prof. F. Wayne King**, Florida Museum of Natural History, Gainesville, FL 32611, USA. Tel: (1) 352 392 1721 Fax: (1) 352 392 9367. E-mail <kaiman@flmnh.ufl.edu> **(Old World) Dr. Dietrich Jelden**, Bundesamt für Naturschutz, Konstantin Str. 110, D-53179 Bonn, Federal Republic of Germany. Tel: (49) 228 849 1453 Fax: (49) 228 849 1470 E-mail <jeldend@bfn.de>.

**Africa: Vice Chairman: Dr. Richard Fergusson**, P.O. Box 10160, Bamburi, Mombasa, Kenya. Tel: 254 1148 6448, Fax: 254 1148 6459, E-mail <fergfam@swiftmombasa.com>. Deputy Vice Chairman: Olivier Behra, Lot 1 BG, 24 Isoraka, Antananarivo, Madagascar. Tel: 261 20 22 29503 Fax: 261 20 22 29519. E-mail <OlivierBehra@MATE.mg>

**Eastern Asia, Australia and Oceania: Vice Chairman: Dr. Grahame J.W. Webb**, P.O. Box 530, Sanderson, NT 0812, Australia. Tel: (618) 8 992 4500 Fax: (618) 8 947 0678. E-mail <gwebb@wmi.com.au>. Dr. Robert Jenkins, Australian National Parks & Wildlife, Australia. Mr. Paul Stobbs, Mainland Holdings, Papua New Guinea. Koh Chon Tong, Heng Long Leather Co., Singapore. Dr. Yono C. Raharjo, Research Institute Animal Production, Indonesia. Dr. Parntep Ratanakorn, Faculty of Veterinary Science, Mahidol University, Thailand. Dr. Choo Hoo Giam, Singapore.

**Western Asia: Vice Chairman: Romulus Whitaker**, P.O. Box 21, Chengalpattu, India 603001. Tel. 91 984 002 3770, Fax. 91 44 491 8747. Deputy Vice Chairman: Dr. Lala A.K. Singh, Similipal Tiger Reserve, Khairi-Jashipur, Orissa, India 757091. Harry Andrews, Madras Crocodile Bank, Post Bag No. 4, Mamallapuram 603 104 Tamil Nadu, India. Fax: (91) 44 491 0910. E-mail <sthiru@giasmd01.vsnl.net.in>.

**Latin America and the Caribbean: Vice Chairman: Alejandro Larriera**, Bv. Pellegrini 3100, (3000) Santa Fe, Argentina. Tel: (543) 42 453 1539 Fax: (543) 42 558 955. E-mail <yacare@arnet.com.ar>, Deputy Vice Chairman: A. Velasco B. Salas a Caja de Agua, edif Atures apto 8-C, Parroquia Altigracia, Caracas 1010 Venezuela. Tel: 58 212 860 4108 <velascoalvaro@tutopia.com>. Aida Luz Aquino, Paraguay. Dr. Miguel Rodrigues M., Pizano SA, Colombia. Dr. Obdulio Menghi, Argentina. Luciano Verdade, University of Sao Paulo, Brazil.

**Europe: Vice Chairman: Dr. Dietrich Jelden**, Bundesamt für Naturschutz, Germany. Dr. Jon

Hutton, Fauna & Flora International, Africa Programme, Great Eastern House, Tenison Rd., Cambridge CB1 2DT UK Tel: (44) 1223 571000 Fax: (44) 1223 461481 E-mail <jon.hutton@fauna-flora.org>.

**North America: Vice Chairman: Ted Joanen**, Route 2, Box 339-G, Lake Charles, LA 70605, USA. Tel: (1) 337 598 3236 Fax: (1) 337 598 4498. Deputy Vice Chairman: Dr. Ruth Elsey, Louisiana Wildlife and Fisheries Commission, 5476 Grand Chenier Way, Grand Chenier, LA 70643, USA. Tel: (1) 318 538 2165 Fax: (1) 318 491 2595. Deputy Vice Chairman Allan Woodward, Florida Fish & Wildlife Conservation Commission, 4005 S. Main Street, Gainesville, FL 32601, USA. Tel: (1) 352 955 2230 Fax: (1) 352 376 5359. E-mail <woodwaa@fwc.state.fl.us>

**Science: Vice Chairman: Dr. Valentine A. Lance**, San Diego Zoo, P.O. Box 551, San Diego, CA 92112, USA. Tel: (1) 619 557 3944 Fax: (1) 619 557 3959. Deputy Vice Chairman: Dr. John Thorbjarnarson, Wildlife Conservation Society, 4424 NW 13<sup>th</sup> St., A-2, Gainesville, FL 32609, USA. Tel: (1) 352 371 1713 Fax: (1) 352 373 6443. E-mail <jthorbjarnarson@wcs.org>. Deputy Vice Chairman: Prof. I. Lehr Brisbin, Savannah River Ecology Lab, Aiken, SC 29802, USA. Tel: (1) 803 725 2475 Fax: (1) 803 725 3309.

**Trade: Vice Chairman: Kevin van Jaarsveldt**, PO Box 129, Chiredzi, Zimbabwe. Tel: (263) 31 2751 Fax: (263) 31 2928. Deputy Vice Chairman: Mr. Y. Takehara, Japan Leather & Leather Goods Industries Association, Kaminarimon, 2-4-9, Taito-Ku, Tokyo 111, Japan. Tel: (813) 3 865 0966 Fax: (813) 3 865 6446. Deputy Vice Chairman: Don Ashley, Ashley Associates, P.O. Box 13679, Tallahassee, FL 32317, USA. Tel: (1) 850 893 6869

**Trade Monitoring: Vice Chairman: Stephen Broad**, TRAFFIC International, 219 Huntingdon Rd Cambridge CB3 0DL UK. Tel: 44 122 327 7427 Fax: 44 122 327 7237.

**Veterinary Science: Vice Chairman: Dr. Fritz Huchzermayer**, P.O. Box 12499, Onderstepoort, 0110, South Africa Tel/Fax: 27 12 808 3462 <crocvet@mweb.co.za>.

**Ex-Officio.** Dr. James Armstrong, CITES Secretariat. Mr. Bernardo Ortiz, TRAFFIC-South America. Dr. David Brackett, SSC-IUCN.

