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AFRICAN HERP NEWS

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CONTENTS

EDITORIAL 1
LETTER TO THE EDITOR 2
THIRD H.A.A. SYMPOSIUM ON AFRICAN HERPETOLOGY 3
EIGHTH MEETING OF THE AFRICAN AMPHIBIAN WORKING GROUP 8
HERP-INFO 10
HERPETOFAUNA ON STAMPS
O. Bourquin 11

SHORT COMMUNICATIONS
A trek through the British Museum
J.C. Poynton 16
The rules of Namibian herpetology
M. Griffin & D. Morsbach 19
Notes on the Web-footed gecko *Palmatogecko rangei* in captivity
H. Jauch 22
Dangerous and not so dangerous snakes
J. Marais 24
A glossary of some terms associated with colour variation in snakes
R.M. Douglas 26
Conservation and Legislation - A letter from 1975
D.E. van Dijk 34
Storage of preserved amphibians and reptiles at the National Museum, Bloemfontein
M.F. Bates 37
Reptiles killed by noise?
J. Marais & C. Coulson 43

REPRINT
Stun-gun for snakebite
B. Marsh (reprinted from *Magnum*) 44

FROM THE PRESS 47
HERPETOLOGY 1992/93 48
HERPETOLOGICAL BOOKS 51
RECENT HERPETOLOGICAL BOOKS: PART I
W.R. Branch 57
TORTOISE VIDEOS 63
THE CAMBRIDGE-TANZANIA AMPHIBIA CONSERVATION PROJECT 1993 64
TROPICAL REPTILE BREEDING PROJECT 67
NEW JOURNAL 69
REPORT OF THE AUDITORS TO MEMBERS OF THE H.A.A. 70
INCREASE IN H.A.A. MEMBERSHIP FEES 72

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AFRICAN HERP NEWS

HERPETOLOGICAL ASSOCIATION OF AFRICA NEWSLETTER



JULY 1993 NO. 19

HERPETOLOGICAL ASSOCIATION OF AFRICA

Founded 1965
The HAA is dedicated to the study and conservation of African reptiles and amphibians. Membership is open to anyone with an interest in the African herpetofauna. Members receive the *Journal of the Herpetological Association of Africa* (which publishes technical articles- subject to peer review, notes, book reviews and bibliographies) and *African Herp News* (HAA Newsletter) which includes news items, short communications, husbandry hints, announcements, etc).

Editor's note:
Articles will be considered for publication as Short Communications provided they are original and have not been published elsewhere.

The views and opinions expressed in articles are not necessarily those of the Editor.

Articles and news items appearing in *African Herp News* may be reprinted, provided the author's name and newsletter reference are given.

Typist:
Mrs H. de Villiers, National Museum, Bloemfontein.

COMMITTEE OF THE HERPETOLOGICAL ASSOCIATION OF AFRICA

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M.F. Bates, Department of Herpetology, National Museum, P.O. Box 266, Bloemfontein 9300, South Africa.

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G.V. Haagner, Port Elizabeth Museum, P.O. Box 13147, Humewood 6013, South Africa.

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E.H.W. Baard, Scientific Services, Chief Directorate: Nature & Environmental Conservation, Private Bag 5014, Stellenbosch 7600, South Africa.
O. Bourquin, Natal Parks Board, P.O. Box 662, Pietermaritzburg 3200, South Africa.
B.C. Boycott, Malolotja Nature Reserve, P.O. Box 1797, Mbabane, Swaziland.
J.C. Poynton, 14 Mordern House, Harewood Avenue, London NW1 6NR, England (temporary address).

CO-OPTED ADDITIONAL COMMITTEE MEMBER
G.V. Haagner, Port Elizabeth Museum, P.O. Box 13147, Humewood 6013, South Africa.

HONORARY LIFE MEMBERS
Dr R. Laurent, Prof. J.C. Poynton, Dr C. Gans, Dr D.G. Broadley.

EDITORIAL

As most of you probably know, the *Third H.A.A. Symposium on African Herpetology* is to be held at the Transvaal Museum in Pretoria from 11-15 October 1993 (see p. 3). The venue has been changed from the National Zoological Gardens to the Transvaal Museum.

The *FitzSimons Day* session at the symposium will be of particular interest, at which time specially chosen speakers will review and update the systematic status of all southern African lizard families. If you have not yet decided to attend, you will be missing a very exciting meeting!

The *Exceptional Contribution to African Herpetology* award will be presented for only the second time at an H.A.A. symposium this year. The recipient chosen for this year's award is, like the first two recipients - J.C. Poynton and D.G. Broadley - a living legend in the field of herpetology. His identity will, for the time being, remain a secret.

I would like to end by thanking all contributors of articles and news items appearing in this issue of *African Herp News*. It is good to know that the newsletter is so well supported.

See you at the 1993 H.A.A. Symposium in Pretoria.

All the best.

Mike Bates
Chairman/Newsletter Editor

Richard C. Boycott (Malolotja Nature Reserve, P.O. Box 1797, Mbabane, Swaziland) was wondering how an invitation might be received by the delegates (or some of them) to come to Swaziland after the symposium for a bit of collecting? He would suggest two nights at Malolotja Nature Reserve and two nights at Mlawula Nature Reserve which would give the delegates a chance to collect highveld, lowveld and Lubombo Mountain species. However, he cannot offer any free accommodation, but could waive entry fees and car charges. At Malolotja Nature Reserve, Log Cabin accommodation for six people per cabin (at R150,00/night for Friday and Saturday) or (R110,00/night for Sunday to Thursday) and camping accommodation (R15,00/night per person) are available. At the Mlawula Nature Reserve the only accommodation that is available is the Tented Camp (two tents sleeping two people each at R40,00 per night) and the large Siphiso Campground for camping at R15,00/night/person.

LETTER TO THE EDITOR

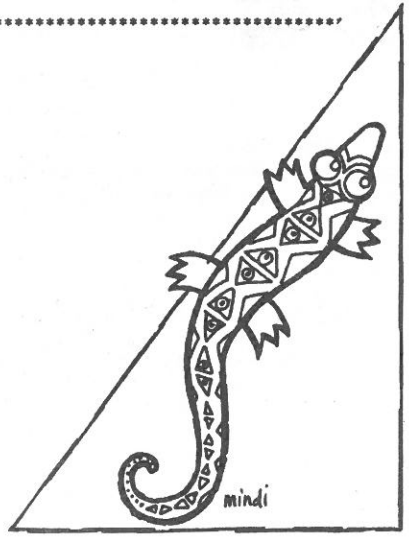
Dear Editor

I would like to comment on two enjoyable articles in *African Herp News* 18.

The first was by Stephen Spawls on "Reporting snake bite case histories". I agree with much of what he has to say, but I would however make a plea for more cases to be reported. Most case histories in our region where the identity of the snake is known are from the herpetological literature. There are only a few well documented reports, which means that the natural history of many of our snake bites is still unknown. I know of three published reports of bites by *Naja haje* and one from *Naja melanoleuca* in southern Africa. The list is endless.

The second article, on snake venom ophthalmia by Rod Douglas, was excellent. Additions to it include the use of local anaesthetic eye-drops in order to open tightly closed, painful eyes, the use of Fluorescein to assess corneal ulceration (rare with *N. mossambica* and more common with *N. nigricollis*), and the use of a mydriatic (pupil dilator) to prevent intraocular adhesions should ulceration be present. An antibiotic eye ointment and pad are routine. Resolution with no ulceration is usually 12-24 hours and with new ulceration, well treated, 24-48 hours. Two southern African references were missed - 37 cases from Zimbabwe and 34 from Zambia: i) Blaylock, R.S. 1982. The treatment of snake bite in Zimbabwe. *Cent. Afr. J. Med.* **28**(10): 237-246 and ii) Lath, N.K. & Patel, M.M. 1984. Treatment of snake venom ophthalmia. *Cent. Afr. J. Med.* **30**(90): 175-176.

Mr. R.S.M. Blaylock, Principal Specialist Surgeon, Eshowe Hospital, Private Bag 504, Eshowe 3815, South Africa.



THIRD H.A.A. SYMPOSIUM ON AFRICAN HERPETOLOGY

NEW VENUE: TRANSVAAL MUSEUM, PRETORIA
11-15 OCTOBER 1993

CONFIRMATION OF REGISTRATION

Thank you for indicating that you will be attending the above-mentioned meeting at the Transvaal Museum in Pretoria. The completion of a new lecture hall allows us to use this venue instead of the facilities of the National Zoological Gardens. This circular provides information about the general development of the plans.

PAPERS, POSTERS, SLIDE SHOWS:

Enclosed is a provisional list of titles that have been offered. Please encourage friends and colleagues, as there is little time to further extend this fine selection.

PRESENTATIONS:

PAPERS:	15 mins delivery + 5 mins discussion.
POSTERS:	Acceptable size 1,2 m x 0,9 m. Must be put up in the foyer of the Geological Survey Display Hall at the Transvaal Museum on Monday afternoon 11 October.
ABSTRACTS:	Please do not exceed 200 words.

ACCOMMODATION:

Enclosed is a list of establishments within easy walking distance from the museum which charge reasonable fees. Please mention your symposium attendance at the Park Lodge as special tariffs apply. Its family units, which can be shared by three adults, appear to be very reasonable. Not mentioned are some more expensive hotels, which names will be supplied on request. Please make your own reservations and remember that rates can change without notice.

REGISTRATION FEES:

Members if paid before 1 September 1993	R160,00
Non-members if paid before 1 September 1993	R190,00
Daily rates	R70,00
Extra for late registration, unless special arrangements have been made	R30,00

IMPORTANT DATES:

Final date for return of abstract	15 August 1992
Final date for registration	31 August 1993

TRANSPORT FROM AIRPORT:

Bus journey from Jan Smuts Airport to Pretoria takes 30-40 minutes. Departures hourly, on the hour or 15 minutes after. Please enquire on arrival. Single fee R15,60.

ENQUIRIES AND ADDRESS FOR REGISTRATION:

H.A.A. Symposium Committee, Herpetology Department, Transvaal Museum, P.O. Box 413, Pretoria, 0001

Tel: (012) 322-7632 Fax: (012) 322-7939

See you in Pretoria

MR W.D. Haacke
SYMPOSIUM CHAIRMAN

PROVISIONAL LIST OF TITLES

PAPERS

Baard, E.H.W. A conservation strategy for the Geometric tortoise, *Psammobates geometricus.*

Bates, M. Reptilian distribution patterns in the Orange Free State.

Bodbijl, T. Feeding in Gaboon Adders.
Gaboon adder temporal and spatial patterns.
Gaboon adder habitat selection.

Branch, W.R. Diet and reproduction in *Homoroselaps.*

Broadley, D.G. The Herpetofauna of the East African Coastal Mosaic.

Burger, M. The Herpetofauna of the Formosa Conservation Area.

Cordes, I.G. & Mouton, P. le F.N. An evaluation of the cryptic function of colour in cordylid lizards in the Saldanha-Langebaan area.

Douglas, R.M. The influence of the central-western Orange Free State "panveld" on the distribution of amphibians and reptiles.

Flemming, A.F., Mouton, P. le F.N. & Herselman, Y.M. Geographical variation in reproduction and body size in *Agama atra atra* (Sauria: Agamidae).

Haagner, G.V. & Hall, R.J. Captive propagation of the South African Boomslang, *Dispholidus t. typus.*

Haagner, G.V. Observations on the geology of two terrestrial monitor lizard species in the Manyeleti Game Reserve, eastern Transvaal.

Haagner, G.V. & Branch, W.R. A taxonomic revision of the dusky-bellied watersnake, *Lycodonomorphus laevissimus.*

Heideman, N.J.L. A comparison of some life-history aspects of *Agama a. aculeata* and *Agama p. planiceps* in the Windhoek area (Reptilia: Agamidae).

Marais, J. & Smith, G.A. Notes on Reproduction in the Nile Crocodile (*Crocodylus niloticus*).

Smith, G.A. & Marais, J. The Role of Commercial Crocodile Farming in the sustainable utilization of the Nile crocodile.

Mouton, P. le F.N. Phylogeny of the family Cordylidae.

Mouton, P. le F.N. & Van Wyk, J.H. Biogeography of the lizard family Cordylidae.

Penrith, M.L. Some infectious conditions in captive snakes.

Sachse, B., Mouton, P. le F.N. & Van Wyk, J.H. Sexual dimorphism and the social structure in the Cape crag lizard, *Pseudocordylus microlepidotus.*

Tilbury, C. Snakebite - Making the most of it.

Van Wyk, J.H. The reproductive biology of the viviparous lizard, *Cordylus giganteus.*
The population dynamics of a *Cordylus giganteus* population.
An introduction to the histology of skin glands in cordylid lizards.
Reproductive cycle of the lizards *Platysaurus capensis* and *P. minor.*

POSTERS

Baard, E.H.W. Influence of fire on two lizard communities in the eastern Cape mountain fynbos.

Bodbijl, T. Threats to Gaboon adders.
Gaboon adder reproduction.

Cordes, I.G., Mouton, P. le F.N. & Van Wyk, J.H. Conservation status of the lizard fauna associated with the Atlantic Ocean upwelling zone in the Saldanha-Langebaan area.

Du Preez, L.H. Tadpole bronchial filament morphology: its role in parasite host specificity.

Engelbrecht, E. The diet, thermoregulation and water balance of the Geometric tortoise, *Psammobates geometricus.*

Flemming, A.F. & Bates, M.F. The reproductive cycle of *Pachydactylus bibronii* (Sauria: Gekkonidae) in the Orange Free State.

Flemming, A.F. & Douglas, R.M. The reproductive cycle of *Psammophylax rhombeatus rhombeatus* (Serpentes: Colubridae) in the Orange Free State.

Huchzermeyer, F.W. Diseases of crocodiles.
Parasites of crocodiles.

Smith, G.A. & Marais, J. The Role of Commercial Crocodile Farming in the sustainable utilization of the Nile Crocodile.

MacKay, H.C., Mouton, P. le F.N. & Van Wyk, J.H. Cloacal anatomy of cordylid lizards.

Mason, M.C. The SADF and Reptile and Amphibian Conservation.

Moodley, G.K. Reproduction in male *Hemidactylus mabouia* (Sauria: Gekkonidae).

Mouton, P. le F.N. & Van Wyk, J.H. A unique fat storage site in cordylid lizards.

Mouton, P. le F.N. & Van Wyk, J.H. A new *Cordylus* species from Namaqualand.

Mouton, P. le F.N., Flemming, A.F. & Engelbrecht, E. The role of the gular region in visual communication in the family Cordylidae.

Penrith, M.L. Diagnostic techniques in reptiles.

Redeker, H. & Mouton, P. le F.N. The role of the tail in antipredator mechanisms in cordylid lizards.

Tilbury, C. *Rhampholeon.*
Africa's 3-horned chameleons.

Van Wyk, J.H. Seasonal variation in the diet of the sungazer *Cordylus giganteus.*
Seasonal changes in reproductive condition and energy stores in the viviparous lizard, *Cordylus giganteus.*

VIDEOS

Blake, D.K. St Lucia Crocodile Centre.
Du Preez, L.H. Breeding behaviour of the African bullfrog.

SLIDES

Blaylock, R.S. Treatment of Snakebite.
Pressure immobilisation and Electrotherapy.
Branch, W.R. Collecting in the Sperrgebiet, southern Namibia or Ethiopia.
Dawson, P. Cobras, Crocodiles and Curries (covering some of the reptiles in India).
Knöthig, M. Eublepharinae, their Biology, Breeding and Keeping.
Morgan, D.R. Tortoise facility at Tygerberg Zoo.
Sachse, B. Sexual dimorphism and reproduction in the Cape crag lizard, *Pseudocordylus microlepidotus.*
Schmidt, W. *Brookesia*, their biology, breeding and keeping.
Tilbury, C. Herps of interest - around the world in 80 slides.

SUGGESTED ACCOMMODATION WITHIN WALKING DISTANCE OF THE TRANSVAAL MUSEUM

	ACCOMMODATION RATES	
• **AFRIKAANSE JEUGORGANISASIE (AJO)** 235 Visagie St. Pretoria 0002 Tel. no.: (012) 322 3979	Double (2 beds), shower, basin, breakfast incl. Double (2 beds), breakfaSt. incl.	R50,00 R40,00
• **ASSEMBLY HOTEL** 390 Van der Walt St. Pretoria 0002 Tel. no.: (012) 322 7795 Fax: (012) 320 0721 Free parking behind hotel with security.	Single with bath, breakfast incl. Double with bath, breakfast incl.	R75,00 R140,00
• **EATON HALL HOTEL** 266 Visagie St. Pretoria 0002 Tel. no.: (012) 3227623 office (012) 320 0015	Old building: Single, basin, breakfast incl. Double, basin, breakfast incl. New wing: Single, basin, breakfast incl. Single, shower, breakfast incl. Double, basin, breakfast incl. Double, shower, breakfast incl.	 R51,30 R102,60 R62,70 R74,10 R125,40 R148,20
• **IMPALA RESIDENSIE** 227 Visagie St. Pretoria 0002 Tel. no.: (012) 322 4184	Single Single, breakfast incl.	R30,00 R45,00
• **KAROS MANHATTAN HOTEL** 247 Scheiding St. P.O. Box 2612 ARCADIA 0007 Tel. no.: (012) 322 7635 or 320 0172	Group tariff: Single, bath, breakfast incl. Double, bath, breakfast incl.	 R154,00 R174,00
• **PARK LODGE** Cnr. Jacob Maree & Andries St. P.O. Box 55405 Arcadia Tel. no.: (012) 320 8230/ 1/2/3/4/5 Fax: (012) 320 8230	Tariff incl. breakfast: Studio: Single, shower, basin, TV, telephone Double, do Family unit: (3 adults sharing) Two linked rooms, one with double bed, one with two single beds	 R70,00 R150,00
• **SOLARIO** 327 Visagie St. Tel. no.: (012) 322 4119	Single: Single, breakfast, shower, w/b Double: Double, breakfast	R51,00 R57,00 R85,00 R96,00

EIGHTH MEETING OF THE AFRICAN AMPHIBIAN WORKING GROUP

SECOND NOTICE

Thank you for indicating an interest in this meeting. It has been planned to take place after the Second World Meeting in Adelaide. Further copies of this notice may be obtained from Mike Griffin.

The meeting is being co-hosted by the State Museum of Namibia and the Ministry of Wildlife, Conservation and Tourism.

All participants are invited to present a paper.

The meeting will take place at the Waterberg Plateau Park. This is a well equipped Nature Reserve. Many frogs should be active during the meeting, as it will be the rainy season, so bring your cameras.

A range of accommodation is available. Included with this notice is a list of options and tariffs. Please inform Mike Griffin of your accommodation needs, and he will make the necessary bookings.

PLANNING DETAILS: EIGHTH AFRICAN AMPHIBIAN WORKING GROUP MEETING

Place: Waterberg Plateau Park, 150 km north of Windhoek, Namibia.
Dates: Arrive: Sunday 16 January 1994.
Depart: Wednesday 19 January 1994.
Action required:
1. Inform Mike Griffin of your accommodation needs before June 1993.
2. If you require transport between the airport and the Park, inform Mike Griffin of your flight details.
3. Please inform us of the title of your talk.
4. If you can offer transport, please tell Mike Griffin.

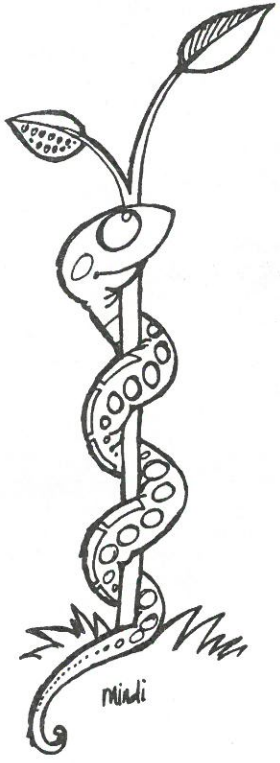
TENTATIVE SCHEDULE

Sunday 16 January
Arrive during the day, traditional "braai" (bar-b-que) that evening.
Monday 17 January
Morning and early afternoon: papers.
Late afternoon: Game viewing, free time.
Evening: Business meeting to choose place for 9th meeting and organizing committee.

Tuesday 18 January
Morning and early afternoon: papers.
Late afternoon: free time.
Evening: Final social.
Wednesday 19 January
Leave for Windhoek, arriving lunchtime.

CONTACT ADDRESS

Mike Griffin, Ministry of Wildlife, Conservation and Tourism, Private Bag 13306, Windhoek, Namibia. FAX: (+27)-61-63195. Tel: (+27)-61-37552.



HERP-INFO

Advertisement rates:

H.A.A. members:	No charge.
Non members:	R7.50 per 50 words or part thereof. Over 50 words R4.00 per 15 words or part thereof. Any request for information regarding research and studies will be printed free of charge.

Advertisements with payments made payable the H.A.A. should be sent to: Rod Douglas, H.A.A. Herp-Info, National Museum, P.O. Box 266, 9300 Bloemfontein.

The Editor retains the right to exclude any advertisement from publication. The Editor will presume that any persons placing advertisements and/or responding to advertisements shall be fully aware of any regulations and laws governing the sale of reptiles and amphibians in his/her area, and no correspondence will be entered into as regards these matters. Neither the Editor nor the H.A.A. shall be held responsible for any legalities or claims arising from advertisements. Requests from foreingn countries for South African specimens will not be published.

****

WANTED

African rock python (*Python sebae natalensis*). Healthy male aproximately 1.5 - 2 meters long urgently required for breeding purposes. Must be legal with permit. **Rod Douglas, P.O. Box 266, 9300 Bloemfontein. Tel. H (051) 365052; B (051) 479609.**

Boa constrictor information. Boa Survey: Please write for my questionnaire on *Boa constrictor* reproduction. Even if your animals have not reproduced, please respond if they are at least 4 years old and have had the opportunity. In return for a completed survey you will receive a chart showing the subspecies, their scale counts and range. **Willian Joy, P.O. Box 821433, Dallas, TX 75382-1433, United States of America.**

Leopard and African Spur tortoise information. Any person with information on keeping these species in captivity can pass this information on to Ron & Chris Petras, 304 Avon Beldon Road, Avonlake, ON 44012, Unites States of America.

Herpetofauna on Stamps

Part 3: Crocodiles

O. Bourquin

Natal Parks Board, P.O. Box 662, Pietermaritzburg, 3200

There are 23 recognised species of living crocodilians, of which 16 (possibly 17) species are depicted on stamps. There is a problem with the identification of crocodilians on some stamps because of pictorial stylisation in many cases, and because the species are sometimes not named on the stamps or in the stamp catalogues to which reference was made. Where there is a degree of uncertainty, a bracketed question mark is given behind the country and date of issue. Unless otherwise indicated, each country and date of issue is for one stamp.

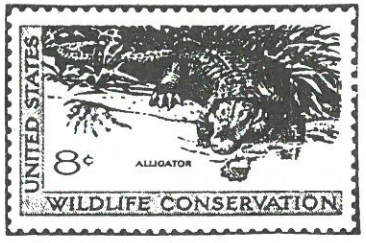
1. Black caiman (*Melanosuchus niger*): Surinam, 1988
2. Chinese alligator (*Alligator sinensis*): Peoples Republic of China, 1983 - 2 stamps
3. American alligator (*Alligator mississipiensis*): United States of America, 1971; Surinam, 1988



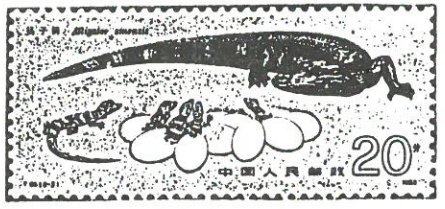
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1.



3.



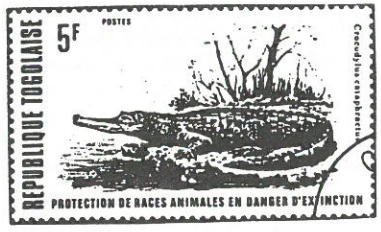
2.

4. Cuviers dwarf caiman (*Paleosuchus palpebrosus*): No stamps known
5. Schneiders dwarf caiman (*Paleosuchus trigonatus*): No stamps known
6. Broad-snouted caiman (*Caiman latirostris*): No stamps known

7. Common caiman (*Caiman crocodilus*): Surinam, 1969
8. Yacare (*Caiman yacare*): Argentine, 1959 (two stamps), 1987; Paraguay, 1970; Brazil, 1975
9. Cuban crocodile (*Crocodylus rhombifer*): Cuba, 1969, 1981; 1982 - two stamps
10. *Morelets crocodile (Crocodylus moreletii)*: Belize, 1991
11. American crocodile (*Crocodylus acutus*): El Salvador, 1976; Dominican Republic, 1980; Nicaragua, 1982
12. Slender snouted crocodile (*Crocodylus cataphractus*): Dahomey, 1968; Togo, 1977; Sierra Leone, 1982; Nigeria, 1986; and Congo Republic, 1987 - two stamps



9.



12.

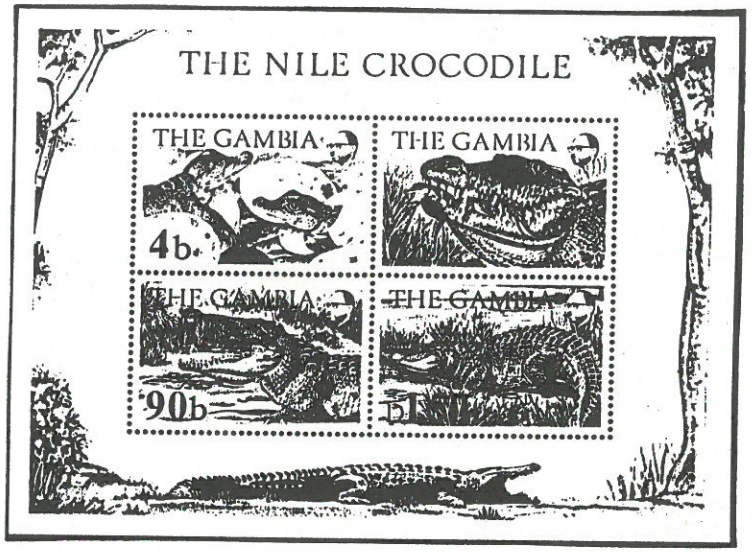


11.



10.

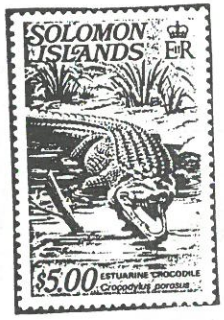
13. Nile crocodile (*Crocodylus niloticus*): Liberia, 1921 - 5 stamps (?); 1966 (?), Basutoland, 1933 - 10 stamps, 1938 - 10 stamps; Mocambique, 1937, 1939; French West Africa, 1947 - 1951; Angola, 1953; Upper Volta, 1965; Lesotho, 1967; Gabon, 1967, 1983 (?); Guinea, 1968 - stamp one plus miniature sheet, 1978; Swaziland, 1969, 1975, 1980; Mauritania, 1969; Congo Republic, 1971; Manana, 1971 (?); Poland, 1972 (?); Niger, 1973; Ethiopia, 1976; Mali, 1976; Togo, 1977 - two stamps; Bophuthatswana, 1977 - two stamps; Burundi; 1977 - two stamps; Gambia, 1977, 1984 - four stamps; 1985; Kenya, 1977, 1988; Tanzania, 1977, 1987; Uganda, 1977, 1991; Central



13.

African Empire, 1978 - two stamps; Cameroon, 1980; Central African Republic, 1981, 1982 (MS); Zambia, 1984; Rwanda, 1986 (?); Malagasy, 1987 (?); Suriname, 1988; Ivory Coast, 1989; Senegal, 1991; Umm el Qiwain, year of issued not obtained; Egypt, 1991 (in miniature sheet), Venda, 1992

14. Orinoco crocodyle (*Crocodylus intermedius*): Venezuela, 1986 (?)
15. Indopacific or Saltwater crocodile (*Crocodylus porosus*):
North Borneo, 1894 - 5 stamps, 1895 - 4 stamps, 1897 - 4 stamps, 1899 - 3 stamps, 1901 - 3 stamps, 1902-1905, 1904-1905 - 3 stamps; Labuan, 1894 - 3 stamps, 1897–6 stamps, 1899 - 3 stamps, 1901 - 2 stamps, 1904 - 2 stamps; Indonesia, 1966; Solomon Islands, 1979, 1982; Kampuchea, 1983; Palau, 1986
16. Johnsons crocodile (*Crocodylus johnsoni*): Australia, 1982
17. Mugger - (*Crocodylus palustris*): Laos, 1967; Pakistan, 1983
18. Siamese crocodile (*Crocodylus siamensis*): No stamps known



15.



16.



17.

19. Phillipine crocodile (*Crocodylus mindorensis*): No stamps known
20. New Guinea crocodile (*Crocodylus novaeguineae*): Papua-New Guinea, 1975(?). Two crocodiles depicted on a stamp showing new coins are thought to represent the New Guinea crocodile.
21. Dwarf crocodile (*Osteolaemus tetraspis*):
    Belgian Congo, 1939; Rio Muni, 1964 - 3 stamps; Zambia, 1981, 1988; Congo Republic, 1987 - 2 stamps; Sierra Leone, 1987; Ghana, 1990.
22. False gharial (*Tomistoma schlegelii*): No stamps known
23. Gharial (*Gavialis gangeticus*):
    Nepal, 1984; Bangladesh, 1984, 1990 - 4 stamps;
    East Germany, 1985; India, 1986; Surinam, 1988



20.



21.



23.

The identification of the crocodile on three Rio Muni (1964) stamps and on a Bulgaria (1968) stamp, and the caiman on a Venezuela (1986) stamp, a Brazil (1904) stamp and a Surinam (1969) stamp are still required.

Stylized crocodilians appear on stamps as carved canoe-brows (Papua-New Guinea, 1965 - 3 stamps, 1979; Sarawak, 1950), as ornaments and figurines (Peru, 1968; Colombia, 1975, 1982; Costa Rica, 1964 - 2 stamps), as illustrations for legends and folk-lore (Botswana, 1980; Guinea, 1968; Thailand, 1977), as paintings or painted decoration (Botswana, 1970; Panama, 1968; Thailand, 1991), as characters in cartoons (Dominica, 1980; Russia, 1988; Togo, 1980) or as a toy (Togo, 1977).

Badges, crests or flags on which crocodilians appear on stamps include postage due and revenue stamps of Lesotho (about 25 altogether, from 1933 to 1978), the Jamaican arms depicted on at least 73 stamps from 1855 - 1987, and on two Turks and Caicos stamps (1973); a Malagasy stamp (1963) depicting the arms of Majunga, and two stamps of Mali (1967, 1972) with crocodiles on Rotary club banners.











A TREK THROUGH THE BRITISH MUSEUM

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may seem paradoxical to mount an expedition to a museum, but almost every major ıseum collection has a huge quantity of unpublished locality data. Usually there is ıo a quantity of habitat information that has not seen the light of publication.

ıe reason for this situation revolves around museums tending to be under-staffed, ually quite grossly so. This is much to the disadvantage of biogeographical and nservation work, and it should be of particular concern to conservationists that so ıny animals have been killed to so little advantage to their studies. I have been rtunate enough to be able to convince the *Worldwide Fund for Nature* (WWF) of this, the extent of receiving through them a grant to work through probably the largest d most comprehensive collection of African amphibians in the world - in the **Natural story Museum** in **London**, formerly known as the British Museum (Natural History), , more familiarly, the BM.

is not known how many specimens of African amphibians are in the BM. The vast ıjority are accessioned and catalogued, but this has been done by hand, with the sult that data are not easy to extract. I intend working specimen by specimen through e African material, entering the data in **RapidFile**, a combined database and readsheet which will allow ready extraction of information regarding localities, llectors, collecting dates, habitat and details such as whether a specimen is a type or t.

hat is it like, working through the BM collection in this way? Let one not say boring - scientific work is laborious to the point of becoming boring when one is neck-deep data. The collection is nevertheless particularly easy to work through. Specimens are ıused in a highly accessible manner: each individual specimen or individual series is pt in a separate bottle, with catalogue data attached. Collectors' labels and data are ıo stored in the bottles. This means that one can readily search for material from a rticular country and locality, or for specimens collected by a particular collector, or en material collected in a particular time range. The collection goes back to the 40's, and the early specimens are still perfectly preserved in alcohol. Habitat notes e also bottled with the specimens, although it must be said that most collectors, rticularly those of the past, were not particularly bothered to provide such formation, and usually (and annoyingly) did not provide precise information about calities. Attempts to track down obscure localities can be very time-consuming!

any BM specimens carry locality data that are too vague or imprecise to count as able records. This again is true especially of the older material, but I include such aterial in my computer catalogue since other attached data, particularly the llector's name, have potential historical and even geographical value. All rrespondence to do with collections has been kept by the museum, and sometimes

habitat and locality information can be retrieved from there. The quantity of correspondence is awesome, and includes great names in collecting and exploration (although there seems to be nothing from David Livingstone). It is encouraging that several present-day collectors have provided excellent documentation with their material, and one hopes that this is a trend that will be conscientiously developed.

I chose the family **Bufonidae**, which includes toads and toad-like amphibians, as the first group to work through. This family has been particularly well worked over by several specialists, most notably by Miss A.G.C. Grandison before her retirement from the BM. But taxonomic understanding and treatment of African bufonids is by no means complete, and no two authorities are likely to agree on the exact number of valid species, or even genera, of bufonids. **According to my estimate there is a total of 86 valid species and subspecies of African bufonids**, of which 81 are represented in the BM collection, 45 being supported by type material. All 13 genera which I believe valid are represented. The total number of specimens is 3068.

The five species and subspecies of African bufonids not represented in the BM have very localized distribution ranges. The 94% representation of species and subspecies, over half of which include holotypes or paratypes, means that one can tackle the African amphibian fauna fairly adequately within the walls of the BM. This work is backed by probably the most comprehensive library in the world. I have come across only one journal not held by the BM library - an obscure Indian journal that probably had a transient existence. All the herpetological journals are taken in, and conveniently, are housed in the Reptile & Amphibian Section, not the main library.

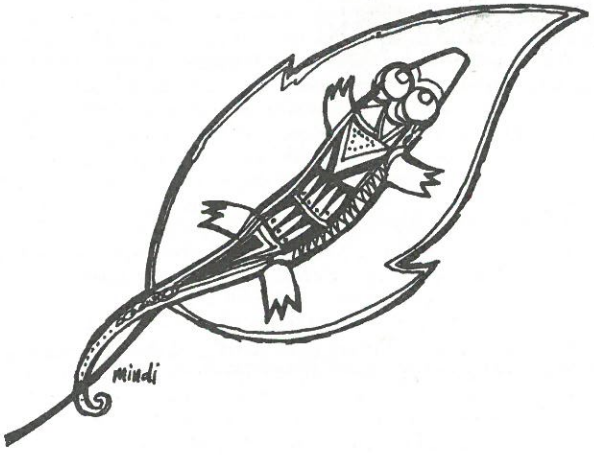
While the collection may be comprehensive from a taxonomic point of view, and the number of specimens more or less adequate for carrying out taxonomic analysis, the number of localities sampled for nearly all species is sufficient to give only a patchy coverage of species ranges. The collection is particularly lacking in localities from areas of Africa formerly occupied by France and Belgium - a reflection of past colonial history. Southern Africa is not particularly well represented, since nearly all South African collectors from about 1910 onwards have deposited their material in local museums. Biogeographical work therefore has to rely fairly heavily on literature records, and although all the journals are available, extracting data is very time-consuming and one is often uncertain about the correct identification of the reported material.

Clearly, the material in every major collection needs to be continually re-worked, and this, by and large, is not happening in European and American museums. That is why I opened this article by saying that there is a need for mounting expeditions to major museums. In the case of African bufonids in the BM, I found reason to re-identify only 69 specimens, which reflects an "error rate" of only 2,25%. This might not seem too bad, but the bufonid material has been worked very thoroughly by a number of people. For some obscure reason, bufonids have attracted more attention than any other amphibian family, with the possible exception of the Pipidae, to which platannas belong. It is likely that other families in the BM collection will show a higher "error rate", and judging from my experience in other European and American museums, the African collections there have relatively more misidentifications. Sadly, quite a lot of the misidentified material comes from collectors resident in Africa, and their locality records can also be highly questionable.

At the end of my trek through the BM African amphibian material, I hope to be in a position to write a biogeography of African amphibians. At the rate things are going, I anticipate that the trek will last at least four years, and I hope that during that time I shall have some intervals at other major collections in Europe and America, and a chance to return to some of the treasure-houses in African museums. My work on the bufonids suggests a rich biogeographical harvest. The distinctiveness of the southern temperate fauna continues to draw attention to itself, as does a north-temperate fauna in the Mediterranean region. The south temperate fauna has unmistakable affinities with groups confined to montane areas to the north, suggesting the existence of a distinctive Afrotemperate fauna that contrasts with the mainly wide-ranging, lower altitude and latitude species. The Afrotemperate bufonid fauna shows affinities with elements of the Australian fauna, suggesting that at least some elements of the Afrotemperate fauna have a past going back to Gondwana times.

The Afrotemperate fauna is particularly vulnerable to global warming, in addition to other environmental upheavals. Areas such as the south-western Cape Province, and montane areas to the north, must be of particular concern, especially as most of the species are associated with a forest habitat (many are climbers and could accurately be called "tree-toads"). Even among the widespread lowland species, it appears that the greatest species diversity is in woodland/forest regions, again making this habitat type of great conservation concern. This is something to shout from the museum rooftops as much as anywhere else.

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THE RULES OF NAMIBIAN HERPETOLOGY

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With 83 species of snakes, 138 lizards (including amphisbaenids), 18 chelonians and 52 frogs, Namibia is a herp fancier's paradise. Add to this the facts that Namibia has a well established infrastructure, but one of the lowest human population densities in the world, encompasses a major portion of the Namib Desert (with all its inherent endemics), has conservation authorities who actively encourage research and are generally tolerant of strange sorts of people, and you have the recipe for a great situation, or chaos. To avoid the latter and promote the former, we have developed a detailed permit policy with a strong conservation bias.

Firstly, all research, collecting and keeping (pets, husbandry, etc.) are co-ordinated by the Ministry of Wildlife, Conservation and Tourism, and permits are required for all these activities. However, we view permits not as a method of limiting *who* can be involved with a particular activity, but as a means of monitoring *what* is being done.

The policies and procedures can be divided into two broad categories: i) those concerning local amateur activities, and ii) those for legitimate research activities. The policy on commercial activities is simple: they are not allowed, except in the case of captive-bred crocodiles from licenced facilities, of which there are two in Namibia.

Namibians are allowed to keep indigenous herps as pets provided they can provide adequate housing facilities. There are no restrictions on which species may be kept, the most common one being the Leopard Tortoise (*Geochelone pardalis*), a protected species in Namibia. Permits are required, but once again, this is not to restrict legitimate interest, but to keep track of the activity as a whole. There are however, three restrictions which cause some dissatisfaction among local amateur herpetologists:

1) If animals are to be housed in a municipal area such as Windhoek or Swakopmund, then municipal approval must be obtained before the application can be considered. This is quite often not forthcoming. Reasons given vary from something about "dangerous wild animals" to "putting the serpent under the heel".

2) We do not allow the importation of exotic species, even if they are so-called "captive-bred".

3) We do not allow indigenous herps to leave Namibia, even if captive-bred. This curtails any out-of-country trading and exchanging, which is very popular amongst amateur herpetologists. This policy has occasionally led to a local glut of captive-bred animals (e.g. Leopard Tortoises), but we have always managed to find a satisfactory local solution.

These last two points are based on an ethic which is influenced by both an awareness of the rights and welfare of animals, and a general antipathy towards the exotic pet trade. This trade reminds us of the words of an early herpetologist-philosopher: "Small boys throw stones at frogs in sport, and the frogs die in earnest".

Few people will argue against the control of illegitimate marketing, but the ethics of "captive-breeding" are not so clear. Although we are aware of and acknowledge the many benefits of legitimate captive breeding programmes, we do not feel compelled to allow locally captive-bred animals to enter the international market-place, a practice which would further promote the demand for exotic pets - captive-bred or not. We do encourage captive breeding if related to legitimate conservation programmes (we are involved with such a programme with Dwarf Pythons), but this is only encountered in the second category of Namibian herp activity: scientific research.

Scientists are encouraged to conduct herpetological research in Namibia. Prospective researchers should apply at least eight weeks in advance of the proposed work. Standardized application forms and information sheets are available on request. This processing period gives us time to send the application around for review by local (by this we mean Southern African) authorities. In so doing, we are not looking for reasons to turn down the proposal, but seeking ways to strengthen the motivation, avoid potentially conflicting situations and reach consensus on the conditions of the permit. The majority of prospective researchers are foreigners, and we openly admit that we take seriously the opportunity to exploit these people - that is, make sure that their research has local benefits and relevance.

Researchers usually like to work in game parks, and more specifically, within walking distance of swimming pools and pubs. In general though, some aspects of research, especially collecting, go against the "wildlife sanctuary" ethic of formal conservation areas, and past experience has shown that facilities and relations with local staff can easily become severely strained. For these reasons research and especially collecting in parks, must be strongly motivated. Convenience alone is usually not a good reason, and we generally try to steer researchers away from formal conservation areas. Where biogeography is a factor (for instance, all *Angolosaurus* in Namibia occur within the Skeleton Coast Park), this is obviously taken into consideration. The Namib Desert Research Station at Gobabeb in the Namib-Naukluft Park is a notable exception. Non-destructive herp research is encouraged here, and some of the best areas are within walking distance of the swimming pool!

As far as inventory work is concerned, we have found that Namibian parks are probably the best-collected areas in Namibia, and that short-term and opportunistic collecting rarely adds significantly to the already available body of knowledge. Due to the relatively low human population pressure in Namibia, there are still vast tracts of natural habitat available in non-conservation areas, where serious inventory work is highly recommended.

The State Museum of Namibia (SMWN) currently houses about 9000 herp specimens and is Namibia's official repository. Unless otherwise motivated in the initial proposal, all specimens collected are deposited there. Since many researchers also want to keep specimens for their home institutions, the arrangement of depositing one-half of all duplicate specimens (a taxonomic/locality unit) in the SMWN is usually agreed upon.

What is not open for negotiation is the deposition of type specimens. The Government of Namibia expects that a "proportion" of all new type material will be deposited at the SMWN. We prefer that holotypes be deposited there also, but this is open to negotiation. In any event, the repository must be agreed upon before any collecting of specimens commenses. The storage facilities for type material at the SMWN are as secure as any in southern Africa, and a good deal better than those of many larger institutions.

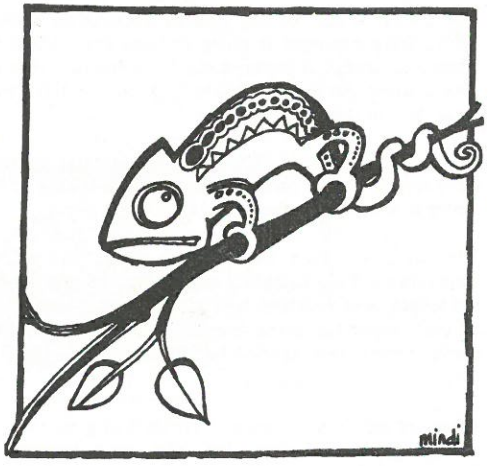
Regarding non-inventory research (another common permit condition, besides the usual annual reports), permission from land authorities and liaising with local scientists deals with the deposition of voucher specimens. We believe that specimens should be made available for the broadest possible array of future uses. Therefore, we require that specimens collected for ecological, physiological and/or behavioural studies be properly prepared and deposited in a mutually agreed upon institution. This policy is in reaction to past situations, where potentially valuable material was merely discarded after use.

Although it is not a condition of the permit, we also recommend that at least a portion of the research results be published in *Cimbebasia* (journal of the State Museum of Namibia) or *Madoqua* (journal of the Ministry of Wildlife, Conservation and Tourism).

For further information on herpetological research in Namibia, please contact:

Mike Griffin
(Tel. 061-37552/3)

and for permits go directly to
Dieter Morsbach
(Tel. 061-63131).



NOTES ON THE WEB-FOOTED GECKO *PALMATOGECKO RANGEI* IN CAPTIVITY

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The Web-footed Gecko *Palmatogecko rangei* of the Namib Desert is rarely kept in captivity and little is known about its reproduction under captive conditions. In this article basic husbandry techniques and problems in raising juveniles are discussed.

Five adult *P. rangei* were collected near the Swakop River mouth in April 1991. They were housed in a glass terrarium of 100 x 50 x 36 cm with a perforated masonite board lid. The base was covered in 8-10 cm of dune sand, onto which bark and stones were placed. Two light bulbs (Concentra or Tungsram, 60 W) were attached to the masonite board lid and regulated by a time switch to provide a regular day and night cycle. In midsummer the lights were operational for 12 hours as compared to seven hours during midwinter. Temperatures ranged from 25-45°C in summer and 18-40°C in winter.

The geckos were fed mainly small to medium-sized house crickets (*Gryllus domesticus*) and occasionally termites or mealworms enriched with multivitamin powder (Beefee powder, Centaur Labs, Pty Limited). Water was provided in a small dish and was also sprayed into the terrarium 2-4 times a week. Water was occasionally poured onto the sand to retain moisture - especially during the breeding season.

The geckos spent the day in their burrows or under the bark at temperatures of 28-32°C. They emerged at dawn to hunt for crickets which were available at all times. They also accepted medium-sized mealworms, offered occasionally to supplement the diet. During the winter months of June and July the lizards were less active and spent most days in their burrows.

At the end of August 1991 one of the females became gravid with a pair of eggs which were clearly visible through the translucent skin of the belly. The eggs were deposited under sand at the beginning of October.

The sand was then kept slightly moist and after approximately 70 days, on 16 December 1991, a hatchling measuring 23,5 mm snout-to-vent length (SVL) and 25 mm tail length, and weighing 0,42 g, emerged. It was kept in a smaller terrarium (60 x 32 x 30 cm) under the same conditions as the adults. The hatchling immediately fed on small crickets, and increased its mass to 0,46 g after seven days. The other egg did not hatch.

After the initial mass increase (from 0,42 g to 0,46 g), the hatchling decreased in mass to 0,41 g after 14 days, and died on 3 January 1992 at the age of 18 days. An inappropriate food source probably explained the death of this hatchling.

A second female laid two eggs on 23 December 1991. Unlike the first female, she did not deposit her eggs under the sand, but on the surface. These eggs were kept in an incubator at a constant temperature of 28°C, but failed to hatch.

A juvenile gecko measuring 30,2 mm SVL and 29 mm tail length, and weighing 0,58 g, was collected on 21 April 1992 near the Swakop River mouth. Despite a constant supply of small crickets, it had not increased in size or mass after three months. Weekly measurements showed that its mass fluctuated between 0,55 g and 0,63 g.

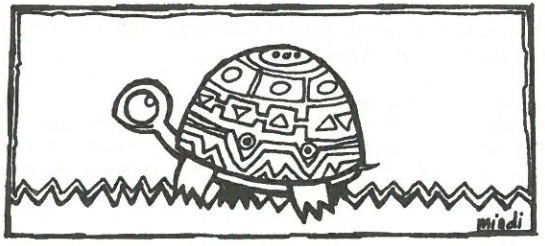
Adult *P. rangei* adjust easily to captive conditions if provided with a thick layer of dune sand, sufficient sheltering places and approximately natural temperatures. The common house cricket (*Gryllus domesticus*), supplemented with calcium- and multi-vitamin powder, forms an ideal food source for adults, being easy to breed and therefore available throughout the year.

Hatchling and juvenile *P. rangei* however, seem to have different food requirements. It appears that crickets alone do not meet the energy requirements of juvenile *P. rangei*. Termites may be a more appropriate food source, especially for juveniles, and experimentation in this regard is being conducted.

ACKNOWLEDGEMENTS

I wish to thank Prof. Elizabeth McClain, Dr Neil Heideman and Dr Anna Marais of the Zoology Department at the University of Namibia for their support and assistance in the writing up of this paper. I am also grateful to the Ministry of Wildlife, Conservation and Tourism of Namibia for granting the necessary permits to collect and keep the geckos.

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DANGEROUS AND NOT SO DANGEROUS SNAKES

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iile working in the Pilanesberg area near Sun City I came across many snakes. They re observed basking in the mornings, disturbed during gardening operations and asionally stumbled upon by visitors.

ese incidental sightings at Kwena Gardens Crocodile Farm over a six-month period re very interesting as most of the snakes observed were very poisonous. As many as r Mozambique Spitting Cobras (*Naja mossambica*) were captured in one day. This ; also the most abundant snake species in the area, followed by the Stripe-bellied id Snake (*Psammophis subtaeniatus subtaeniatus*.

e often reads that snakes are not really a great danger to man and that less than 6 of our snake species are considered "dangerous to man". A clear distinction uld perhaps be drawn between the percentage of dangerous snake species and the centage of dangerous snakes that people may encounter in a particular region.

ow live in the western Transvaal, and during the past six months I have carefully umented snake sightings at our game lodge which is situated 12 km out of fikeng/Mmabatho on the road to Zeerust. These sightings are incidental and lude snakes deliberately hunted.

ewith a summary of snake sightings:

f Adder (*Bitis arietans arietans*)

A total of ten specimens were observed. Four were found in my garden at home. One of these, a large specimen, bit our Staffordshire Bull Terrier. The dog died within an hour. Three specimens were found on the tarred road and one on a dirt road. Two further specimens were found at the office block. One of them, a very large female, was laying right across a concrete path leading to our restaurant! Puff Adders accounted for 42% of the snakes encountered during the six-month period.

ptian Cobra (*Naja haje annulifera*)

Six specimens were encountered. Two large specimens, both banded, were found in the open veld during normal farming operations. Another two were dead-on-road specimens (not banded), while one specimen was cornered on my verandah by our dog. A medium-sized banded, specimen was accidentally cornered by my 5-year old daughter who was very nearly bitten! This species accounted for 25% of all snakes encountered during the six-month period.

Boomslang (*Dispholidus typus typus*)

A single female, brown in colour, was captured under a cabinet in one of our chalets, making up for the remaining 4% of snakes encountered during the six-months period.

Short-snouted Grass Snake (*Psammophis sibilans brevirostris*)

Three specimens were encountered - one at Manyane Game Lodge and two in my garden. One specimen had a juvenile striped fieldmouse in its mouth. As often happens with this species, it twisted violently when I tried to catch it, snapping off a portion of its tail. This species accounted for 13% of the snakes encountered during the six-month period.

As mentioned, these snakes were not found while actually looking for snakes. It is certainly not my intention to present these figures as significant statistics, but it is of interest to note that more than 70% of the snakes encountered during a six-month period at Manyane were in fact potentially dangerous and capable of inflicting a fatal bite on a human being. It would be of interest to hear if other H.A.A. members have similar statistics.

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A GLOSSARY OF SOME TERMS ASSOCIATED WITH COLOUR VARIATION IN SNAKES

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or the uninitiated, going through a simple price list or a book containing information n the breeding of snakes may result in the reader sinking into a quagmire of nfusion. With the large variety of hybrids now being produced, new colour variations e becoming common-place on price lists, and unless one has all the latest literature at and, many of the terms used are rather meaningless. Usually these terms do not give ny indication as to exactly what the new colour is, or how the new colour phase was otained. Although some people might not agree with hybridization and the new olour terminology that goes with it, it is a reality which is already well established in ie literature and price lists. If these current trends should continue to grow, and an's insatiable curiosity will ensure that they do, then so will the associated rminology.

his short glossary attempts to provide the reader with at least some of the more ommonly used colour terms likely to be ecountered on price lists and in the literature. owever, as colour is a genetic trait, for those interested in breeding and in order to nderstand how many of these colour variations have been produced, it was also ecessary to provide some genetic and physiological terminology as well. Many words nd terms have been not been included, but most of those that have are cross-eferenced. Many of the colour terms may appear synonymous, and therefore omewhat confusing, but why one term has been chosen over that of another in the terature, was not investigated. Further information can be obtained from the eference list or your local library. References 4, 13, 15, and 16, will provide more etailed and understandable information on selective breeding and the genetics ereof.

LBINISM The heritable condition observed as the inability to form *melanin* in the skin and scales[3]. Absence of pigment in animals usually pigmented[2]. State of having colourless chromatophores[2]. Lacking pigment and therefore appearing pink or white[6]. A genetic absence of *tyrosinase*[12]. See *Albino*.

LBINO Normal pigment is absent from the scales[4]. The blood pigment, *haemoglobin*, is however present and may result in pinkish specimens or specimens with red eyes[4]. A commonly used term for amelanistic[13]. See *Albinism; Amelanistic*.

LLOPHORE A cell or chromataphore containing red pigment in the skin of reptiles, amphibians, and fish[1;2]

MELANISM A term sometimes used instead of amelanistic[13]. *See Amelanistic*.

AMELANISTIC The pigment *melanin*, which is responsible for black, brown and yellow colours, is absent[4]. Specimens are pale in colour, although they may have some colour, especially red or pink, due to the presence of other pigments[4]. A single recessive mutation resulting in a lack of black pigment in both skin and eyes - bright red and orange predominate[13]. Also referred to as amelanism[13].

ABUNDISMUS A type of *melanism* in which the specimen is not completely black, but shows a change in the elements of the basic pattern as a consequence of an increase in the number of isolated black spots or dots in the non-black area of the pattern[1].

ALLELE A shortening of the term allelomorph[14]. One of two or more forms of gene arising by mutation and occupying the same relative position (locus) on homologous chromosomes[14]. May be distinguished by their differing effects on the phenotype[14].

ANERYTHRISTIC Having a lack of red pigment and all red markings[4]. A mutation which can be caused by two separate defective genes resulting in a lack of red and orange pigment[13]. Predominantly marked with greys but also black, brown or yellow[13]. Sometimes referred to as 'black albino'[13], incorrectly so[4]; also incorrectly as melanistics[13].

AXANTHIC Frequently having a lack of yellow pigment[13]. A term sometimes used instead of anerythristic, but not appropriately correct[13].

BLACK ALBINO As in black albino Corn[13]. A colour phase usually referred to in Corn snakes (*Elaphe guttata*)[13]. Also occasionally used when referring to an anerythristic colour phase [13]. An incorrect term when referring to anerythristic[4].

BLOOD RED As in blood red Corn[13]. A colour phase usually referred to in Corn snakes (*E. guttata*)[13]. Rather intense dark red-orange colouration with an abnormal ventral pattern (elimination of checkered ventral pattern) obtained through inbreeding[13].

CANDY As in candy Corn[13]. A colour phase usually referred to in Corn snakes (*E. guttata*)[13]. An amelanistic strain with deep red-orange blotches on a whitish background[13].

CAROTENE Widely distributed often as a yellow pigment in animals[2]. Yellow pigment[12].

CAROTENOIDS Fat soluble pigments widely distributed in animals and including *carotenes* and *xanthophylls*[2].

CAROTIN *See Carotene.*

CHLOROPHANE Green chromophane[2].

CHROMATOCYTE Any cell containing a pigment[2].

CHROMATOPHORES Cells in the skin which usually contain pigments of different colours[12]. A colourless body in cytoplasm and developing into a leucoplast, chloroplast, or chromoplast[2].

CHROMOPHANE Retinal pigment of reptiles, fish, birds,etc = [2].

CHROMOSOME Occurring on the nucleus of a cell[14]. Composed mainly of DNA and basic protein and bearing the genes in a linear order[2]. Chromosomes are arranged in pairs with the genes being arranged on the chromosome[4]. The presence of homologous chromosomes is referred to as the diploid state[3].

CREAMSICLE As in creamsicle Corn[13]. A variable colour phase usually referred to in Corn snakes (*E. guttata*)[13]. The yellow-orange or light orange resulting form the crossing of an amelanistic Corn snake with *Elaphe guttata emoryi*[13]. An amelanistic specimen which is a lighter orange than other amelanistics[13].

DIPLOID Having two sets of chromosomes[2]. An individual with two chromosome sets in each cell (excluding a sex chromosome)[14]. Typical zygotic number of chromosomes[2].

DOMINANT GENE The normal form of the gene which is usually denoted by an upper case symbol[13] eg. A. An allele which determines the phenotype of the heterozygote[11].

ERYTHRISM Having red skin and scales caused by a lack of black pigment (*eumelanin*) which allows the red pigment (*phaeomelanin*) to dominate[3]. Abnormal presence, or excessive amount, of red colouring[2]. The occurrence of unusual amounts of redness in an individual or population as compared with the normal pattern of the species[1].

ERYTHROCHROISM *See Erythrism.*

ERYTHROCYSTIC *See Erythrism.*

ERYTHROCYTE Red blood cell[14] or red blood corpsuscle[2].

ERYTHROPHORES Reddish-purple, pigment bearing cell[2]. Cells containing *carotenes* or yellow pigment[12].

EUMELANIN A form of *melanin* which is black or dark brown[6]. *See Phaeomelanin.*

F1 Denotes 1st filial generation, being hybrids arising from a first cross: successive generations arising from this one being denoted by F_2, F_3, etc[2]. P_1 denotes parents of the F_1 generation, P_2 the grandparents, etc [2].

GAMETE Haploid cells which fuse to form a zygote in sexual reproduction, for example, a male gamete is called a spermatozoon and a female gamete an ovum[2]. A specialized haploid cell (sex cell) whose nucleus and often cytoplasm fuses with that of another gamete in the process of fertilization, thus forming a diploid zygote[14].

GENE A unit hereditary factor consisting of a short length of chromosome and having a particular effect on the phenotype[2].

GENOTYPE Genetic constitution of an organism as opposed to its physical appearance (phenotype)[14]. Genetic constitution of an individual[2]. The fundamental physical unit of heredity[14]. Refers to the state of the genes, for example, 'homozygous for amelanism' or 'heterozygous for striping'[13] *See Phenotype.*

GHOST As in ghost Corn[13]. A colour phase usually referred to in Corn snakes (*E. guttata*)[13]. A specimen which is both anerythristic and hypomelanistic resulting in a tannish colour[13]. Specimens lack red but maintain some melanin pigmentation[13].

GUANINE Pale granules produced in the guanophore and usually having a pale colour, or as iridescent crystals in the skin of reptiles where it is known as an iridocyte[2]. *See Iridocyte.*

GUANOPHORE A chromatophore containing guanine[2]. *See Guanine.*

HAEMOGLOBIN A red haemochrome pigment[2]. Conjugated protein that binds molecular oxygen in a loose, easily reversible manner and is used as a respiratory pigment in numerous groups of animals[14]. Confined on the surface of specialized blood cells, the erythrocytes[14].

HAPLOID Having the number of chromosomes characteristic of the gametes for the organism[2]. The typical gamete number after meiosis[2]. Having only one copy of each chromosome[13]. A haploid cell has only one chromosome set, and a haploid organism contains only haploid cells[14]. The number of chromosomes in a gamete are designated *n* (*2n* = diploid, *3n* = triploid, etc.)[14].

HETEROZYGOSIS Decedents from two different varieties, species, or races[2].

HETEROZYGOUS Also referred to as 'hetero'. Animals appear to be normal (dominant genes) but carry a recessive gene (hidden gene) for some known characteristic[4]. The recessive gene may be passed on in future generations[4]. Heterozygous genes may be represented as Aa, with the upper case A being the dominant gene and the lower case a being the recessive gene[13]. Having different genes[15]. Two copies of a particular gene are not the same[13].

HOMOLOGOUS Homologous chromosomes are those which contain identical linear sequences of genes, and which pair during meiosis[14]. Genes determining

the same character[2]. Alternating generations which are fundamentally alike in origin[2].

HOMOZYGOUS Animals only possess their original wild type genes which may be represented as AA, with both genes being dominant[13]. Two copies of a particular gene which are the same[13].

HYBRID Any cross-bred animal[2]. Individuals resulting from a cross between parents of differing genotypes[14]. Heterozygous[2].

HYPOMELANISTIC A single recessive mutation which greatly reduces the amount of black pigmentation in the skin but does not eliminate it entirely[13]. Eyes remain black, with colouration varying between normal and amelanistic[13].

IRIDOCYTES *See Iridophores.*

IRIDOPHORES Cells which lie between the *melanophores* and *xanthophores* and contain *pteridine platelets* which reflect light[12]. Guanine bodies, granules, or plates, of which the reflective tissue of the skin of reptiles (and fishes) is composed[2].

LEUCISM Paleness, as of colouration[11].

LEUCISTIC All pigment except that in the *Xanthophores* is absent, producing a totally yellow individual[6]. White, clourless, albinistic[1].

LEUCOPHORE A white chromatophore[2]. One of two types of guanophore characterized by the presence of guanine in the form of granules[1].

LIPOCHROME A more-or-less indefinate group of animal and plant pigments such as carotins, luteins, and zooneтythrin[2].

LIPOPHORE A wandering cell containing lipochrome[2]. A chromataphore characterized by the presence of lipids in the form of oil droplets within which naturally occurring pigments are disolved[1].

LUTEIN A yellow lipochrome; being a xanthophyll carotinoid[2].

MELANIN One of a group of dark pigments found in the skin and formed in the melanoblast cells[3]. A black or brown pigment[12]. *See Eumelanin; Phaeomelanin.*

MELANISM Excessive development of black pigment [2]. An unusual increase in the normal amount of black pigment within a particular individual as contrasted with other members of his species[1]. Occasionally used to characterize a species in which all individuals are equally black[1]. Abundance of black pigment, sometimes resulting in an all-black animal; opposite of *albinism*[9]. A condition in which an animal has an unusually large amount of dark pigment so that it appears black or blackish[7]. Not the same as anerythristic, which is an absence of red and orange pigment[13].

MELANISTIC The condition in which black pigments are accentuated, sometimes to the point of obscurring all other colour[10]. Totally black owing to the abundance of the black pigment, *melanin*, which obscures all other colours and markings[6]. A term sometimes used erroneously for anerythristic specimens[13].

MELANOPHORES Cells found in the deeper layers of the skin which contain *melanin*[12].

MELANOTIC Having black pigment unusually developed[2]. Dark coloured as a result of an exceptional development in the amount of black pigment[8]

MORPH One of the members of a polymorphic population[2].

NIGRISCENT Nearly black; blackish; turning black[2].

NIGRISMUS A type of *melanism* in which the specimen is not completely black, but shows a change in the elements of the basic pattern of his species as a consequence of increased size of the black portion of the pattern[1].

PHAEOMELANIN A form of *melanin* which is light brown or yellowish [6]. A brownish *melanin*[2]. *See Eumelanin.*

PHENOTYPE The observable manifestation of a specific genotype[14]. Genetic constitution of a group of individuals[2]. Properties of an organism produced by the genotype in conjunction with the environment which are observable[14]. A group of individuals exhibiting the same phenotypic characters, for example, 'normally pigmented' or 'amelanistic'[13]. Some organisms with the same overall genotype may have different phenotypes due to the effects of the environment and gene interaction[14].

POLYCHROMATIC With several colours as pigmented areas[2]. Two forms of erythrocytes with well defined chromatin[2].

POLYMORPHISM The occurrence of more than one colour type or pattern within a single species or subspecies, and should not be confused with occasional mutants, such as albinos, or instances where juveniles are differently marked to adults[4]. The occurrence of two or more forms that are genetically distinct from one another but contained within the same interbreeding population[14]. The occurrence of more than one type of individual in a species[5].

PTERIDINE PLATELETS Platelets in the *chromatophores* which reflect light and produce an iridescent appearance[12].

RECESSIVE GENE Character or gene possessed by one parent which in a hybrid is masked by the corresponding alternative or dominant character derived from the other parent[2]. The recessive non-functional form of the gene is usually denoted by a lower case symbol[13], eg. a. Gene whose phenotypic

effect is expressed in the homozygous state but masked in the presence of the dominant allele (when the organism is heterozygous for that gene)[14].

RED ALBINO As in Red albino Corn[13]. A colour phase usually referred to in Corn snakes (*E. g. guttata*)[13]. A term sometimes used for amelanistic specimens[13].

RHODOPHANE Red chromophane[2].

RUFINISM Red pigmentation due to inhibition of the formation of dark pigment[2]. *See Erythrism.*

RUTILISM *See Rufinism.*

SNOW As in Snow Corn[13]. A colour phase usually referred to in Corn snakes (*E. g. guttata*)[13]. A specimen with both amelanistic and anerythristic mutations producing a whitish specimen[13]. Not a true albino and specimens may display considerable colour variation[13].

TYROSINASE An enzyme used in the formation of tyrosine, from which *melanin* is formed[12]. A lack of tyrosinase in the skin leads to amelanism[13].

WHITE ALBINO As in white albino Corn[13]. A colour phase usually referred to in Corn snakes (*E. g. guttata*)[13]. Another term for snow corn. *See Snow Corn.*

XANTHIC Having only red pigment in the skin[5].

XANTHINES Red pigments[12].

XANTHOPHANE Yellow chromophane[2].

XANTHOPHORES Cells containing *Xanthines* or red pigments, and which lie closest to the surface of the skin[12]. A yellow chromatophore[2].

XANTHOPHYLL A group of compounds that are oxygenated derivatives of *carotenes*[3]. A type of photosynthetic pigment[11].

ZOONERYTHRINE Red lipochrome pigment[2].

ZYGOTE The cell formed by the union of two gametes in sexual reproduction[2]. The fertilized ovum of an animal or plant formed from the fusion of male and female gametes[14].

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CONSERVATION AND LEGISLATION - A LETTER FROM 1975 -

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)ear Sir

n the broadcast of 2nd October your panel discussed, in the light of a letter from a stener, the listing of certain frogs as protected in the Cape; Dr Millard expressed oubts about the listing of these animals. I would like to support her and to ask a few uestions and make a few comments:

'irstly, it was stated that the listing was done "after consultation with experts" or words) that effect. This implies support by experts for the action. I am certain that issentients would exist among responsible Cape herpetologists. Were no reservations xpressed?

econdly, Dr. McLachlan referred to a need for knowledge of the status of the species oncerned. How is this to be acquired if interest in the animals is to be stifled by rohibitions on collecting, unless, of course, the Department of Nature Conservation olicits aid and provides permits; it is not enough to *grant* permits on request as though favour was being conferred; a collector who extends the range of *Microbatrachella* to omerset West, as mentioned, is doing more for this frog than a declaration that it is rotected, and prospective collectors must not have to involve themselves in an nflatation-boosting paper-chase.

n connexion with this frog I append a resolution of the South African Association for ne Advancement of Science which I instigated in 1970. I envisaged a protected area on ne perimeter of Youngsfield Airport, but examination of the Cape Flats Floral teserve suggested by Prof. Rycroft convinced me that it was a suitable refuge for the pecies and the matter was dropped - survival of the species is ensured as long as such eserves exist. I think the reserve in question is the same as that mentioned in the iscussion by Prof. Schelpe in connexion with the preservation of *Isoetes*, the Quillwort. he limited access which the public has to airfields makes it easy to protect a species reeding in such areas and I am strongly in favour of a study to see whether *licrobatrachella* occurs at Youngsfield with a view to protecting this area for research nto the species. I might mention that no specimens of the tadpoles exist in collections nd they have been recorded only once, in 1925, by John Hewitt, who described them. his is one of the very few species of which I have not seen the tadpoles.

leleophryne was mentioned as possibly a rare frog. A few days collecting in 1969 has oubled the number of locality records along the Cape Coast and there are also as

many unpublished records in Natal as published ones; the genus is not rare, despite infestation of some of their potential habitats by trout.

Regarding measures to protect endangered frogs and toads, I have the following comments:

Firstly, use in schools and universities, together with habitat destruction, has endangered *Rana temporaria* in Britain and *Rana pipiens* in the United States; Dr Nace in the US combines genetic studies with providing a supply of *Rana pipiens* for educational and research institutions. In Europe *Hyla arborea*, the only leaf-frog, is endangered through destruction of habitat and collection by aquarium suppliers. The common factors in all three cases are habitat destruction and exploitation. Effective measures in South Africa would be the listing of species collected on a *large scale* for *commercial purposes* as protected, and restriction by permit of their collection for *commercial purposes*. No other species need to be listed as protected, and in fact, to list a species as protected does little more than conceal the fact that very little is actually being done to protect it - it is too easy to list such species and ignore habitat destruction, and in addition it discourages interest by children if they risk collecting a protected species.

Secondly, the ease with which a frog species can be protected is indicated by a habitat about 3 metres square with a shady pool 1½ metres by 1 metre in my garden, in which about half the species recorded in Pietermaritzburg are breeding, apparently having been attracted by the calling of the toads, the first to appear. There are incidentally as many species of frogs and toads in Pietermaritzburg as in the whole of Europe, despite systematic destruction of the natural bodies of water and stands of reeds, and predation by motorcars and domestic cats. Rigid control of cats would do more for most herpetiles in built-up areas than any other enforceable legislation.

1	Regular Toad	*Bufo regularis*
	Ranger's Toad	*Bufo rangeri*
	Angolan Frog	*Rana angolensis*
	Gray's Frog	*Strongylopus grayi*
	Natal Burrowing Frog	*Tomopterna natalensis*
	Natal Toad-frog	*Phrynobatrachus natalensis*
	Small Froglet	*Cacosternum nanum*
	Marbled Reedfrog	*Hyperolius marmoratus*
	Senegalese Kassina	*Kassina senegalensis*

CAPE TOWN 1970 (RESOLUTIONS)

Microbactrachella Capensis: (Section D.)

"That the Department of Nature Conservation in the Cape be asked to take steps to proclaim a protected area in a suitable locality to make possible continued study in this important genus."

fessor Rycroft has kindly offered to make available the Cape Flats Floral Reserve work in connection with the protection or preservation of *Microbactrachella ensis*. Professors Broekhuysen and Rycroft have now been asked to discuss the next re.

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ıard Hoffman photographing a Boomslang (*Dispholidus t. typus*). Leonard's ıary appeared in *African Herp News* **16**, p. 19. The photograph was taken by a ıd, Marius Burger.

STORAGE OF PRESERVED AMPHIBIANS AND REPTILES AT THE NATIONAL MUSEUM, BLOEMFONTEIN

Michael F. Bates

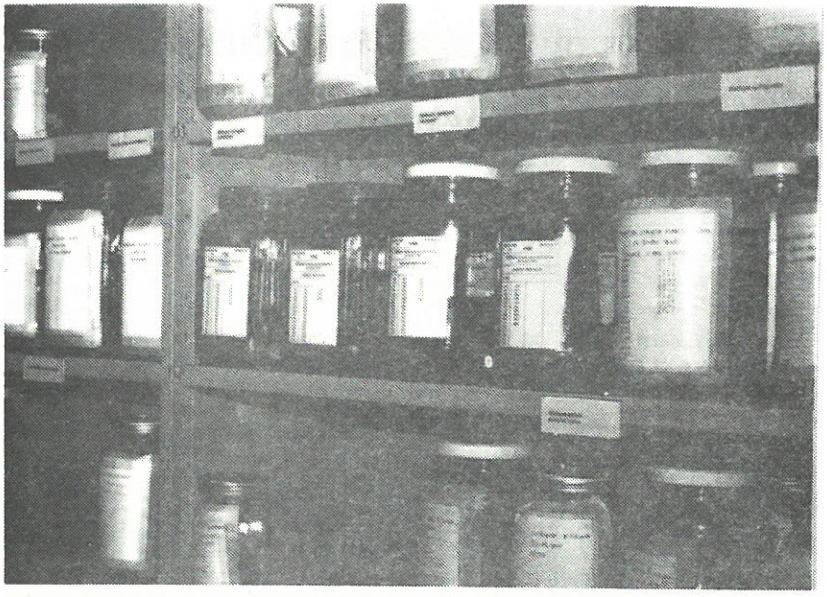
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Much has been written about curatorial procedure and the preservation and maintenance of amphibian and reptile wet collections at museums (e.g. Pisani, 1973; Simmons, 1987; Bates, 1989). However, details concerning the actual labelling of storage vessels and shelves, and the arrangement of taxa in storage areas, are less commonly reported. In this article I will discuss various aspects pertaining to the storage of specimens, with particular reference to the labelling of shelves and storage vessels at the National Museum in Bloemfontein.

The National Museum houses separately stored wet collections of about 6000 amphibians and 7000 reptiles, representing about 70 amphibian and 160 reptile species and subspecies. Once a specimen has been sacrificed, documented and tagged, it is stored in a transparent glass jar or plastic bucket containing fluid preservative. Most specimens are kept in either 3-litre Consul Cookie Jars (no longer available) or 3-litre Consul Catering Jars (R6.51 per jar from Trade Centre in Bloemfontein). The preservative used at the National Museum is 70% ethyl alcohol (R969.09 per 210-litre drum of 96,4% rectified spirits, i.e. R4.61 per litre, from C.G. Smith Chemicals in Merebank).

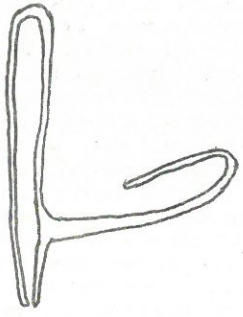
Each storage area or collection room contains several steel rack and shelf units arranged in rows. Racks are labelled alphabetically from left to right in a row, while shelves are numbered sequentially from top to bottom in a rack. Each shelf is given a code, made up of the rack and shelf number - e.g. D4 (i.e. forth shelf of forth rack) (Fig. 1). Containers are stored in systematic order according to family (amphibians according to Poynton, 1964; lizards - FitzSimons, 1943; snakes - Broadley, 1990) and thereafter alphabetically according to genus, species and finally subspecies name. An alphabetical list of species and subspecies names, together with the relevant shelf codes, is taped to a wall in each storage area, making it an easy task to locate the relevant storage vessels when particular specimens are required for examination.

Depending on how many taxa are stored on a particular shelf, one or more name labels are attached to the front of the shelf in such a way as to separate jars containing specimens of different taxa. Any one jar always contains specimens of only one species or subspecies. In the past a plastic-covered, printed label was attached to the front of the shelf using transparent tape, but as the collection expanded and storage vessels had to be moved in order to make space for additional ones, it became necessary to find a more easily transferable label. It was decided that some form of "clip-on" transparent plastic label holder would be most appropriate. The price label holders



ıre 1: Rack and shelf units in the National Museum's reptile wet collection store room. Note the shelf codes (D3, D4), species/subspecies name labels, and labels on storage vessels.

(photo: R. Luwes)



e 2: Side view of the "clip-on" transparent plastic label holder used for holding species/subspecies name lables (life size).

used by the supermarket chain Checkers were considered ideal, and after initial enquiries, Checkers very kindly donated several hundred pre-cut label holders (9 x 4 x 0,1 cm) to the National Museum (Fig. 2). These holders are ideal as they are easily detached from the shelves and can therefore be moved if and when necessary without the complication of untaping and then re-taping the labels as was previously the case. Also, if the name of a taxon changes, e.g. when a subspecies is elevated to specific status, the paper inside the label holder is simply removed and an updated one inserted. The label holder is also effective in preventing dust from gathering on the label. The new labels were lazer printed using italicised Helvetica print type.

Once the correct shelf for the storage vessel has been located using the shelf code, and its position on the shelf confirmed by the species or subspecies name label, it is necessary to determine which jar contains the required specimens. This is not a problem when there is only one storage vessel for a particular taxon, but when large collections of the same species or subspecies are available, they are usually stored in two or more jars. The label on a jar includes a numerical list of catalogue numbers representing the specimens stored in it (usually each specimen is given a separate number). When there is more than one bottle for a particular taxon, the catalogue numbers on the second jar's label run in numerical order starting with the next highest number after the last one in the first jar, and this procedure is continued to the third and other jars when present. All jars for a particular taxon (from the same province or country) are arranged on the shelves in number order from front to back - e.g. jar no. 1 in front of no. 2, and no. 3 in front of no. 4 and to the right of no. 1.

Until recently a hard paper label was taped to the front of each container and all pertinent information recorded on it using indian ink, but a new labelling system is now being used. Once a jar contains sufficient specimens, i.e. about half its volume is taken up by specimens, a lazer-printed label (Times Roman print type) set to a specific format and size for all bottles, replaces the old label. It contains the following information: shelf code, bottle number (=storage vessel number), name of taxon, name of person who originally described the taxon and its year of description, province or country (if not from South Africa) and a numerical list of specimen catalogue numbers (Fig. 3). The old label is used to obtain information needed for typing the new label. After thoroughly cleaning the outside of the jar, the new printed paper label is pasted face down onto the sticky side of a pre-cut piece of Fascal adhesive plastic (R6.85 per 100 x 70 cm sheet from Haddons in Bloemfontein) which is 1 cm longer and wider than the label, and then stuck to the middle of one side of the jar (Fig. 4). The old type labels are only removed and replaced with new labels once a storage vessel is "full" (i.e. when half the container's volume is taken up by specimens). The new labels are neat and easy to read, and the fairly thick plastic cover prevents dust and spilled alcohol from polluting the paper. The plastic can be marked by koki pen, e.g. when ticking off catalogue numbers to check which specimens were examined, and the marks can be removed by simply rubbing them off by hand. Before pasting on the new labels, a careful check is made of what specimens are in each container, but it may happen that a mistake is made on one or more labels. This could mean that the entire label has to be replaced, but small errors can be remedied by sticking a piece of paper bearing the correct information over the relevant part of the label and covering it with adhesive plastic. The typed labels have been stored on computer discs and if a particular label needs amending, this will not necessarily involve retyping the entire label, but merely amending the error and printing out an "updated" label.

SHELF CODE A1	NMB	BOTTLE NO. 1
Afroedura karroica halli (Hewitt, 1935)		
ORANGE FREE STATE		
NMB R		

97	5222		
887	5223		
891	5224		
893	5225		
1140	5226		
1141	5227		
1142	5804		
2727	5805		
5215	5806		
5216	5841		
5217	5842		
5218	5843		
5219	5844		
5220			
5221			

igure 3: Standard format for printed labels used on storage vessels at the National Museum (life size). The catalogue numbers listed on the label represent specimens stored in the container.

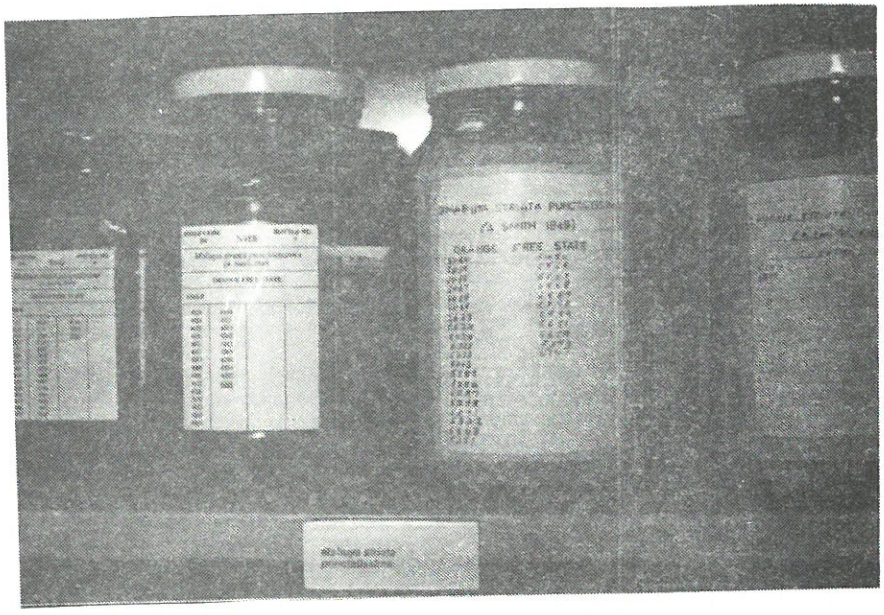


Figure 4: Shelf in reptile wet collection store room showing a subspecies name label (*Mabuya striata punctattissima*) and both the new, lazer-printed labels (left) and old, hard paper labels (right).

(photo: R. Luwes)

he new labels used on shelves and storage vessels at the National Museum constitute n attempt at improving storage conditions and making the collection as a whole more nctional. This is important as "the ease with which any one specimen can be trieved from a collection should be regarded as a measure of how well or poorly the llection is organized and managed" (Bates, 1989).

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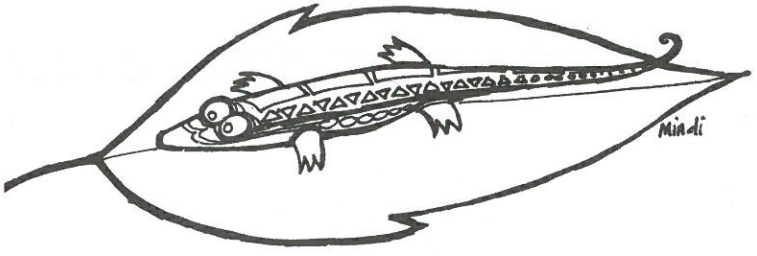
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REPTILES KILLED BY NOISE?

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Peter Watson, owner of Crocodile Creek near Durban, received a great deal of press coverage after losing hundreds of crocodiles on his farm. These sudden deaths were attributed to blasting during the construction of a new highway which bypasses his farm.

Dynamite was used to remove rocks for the road construction. These explosions often resulted in rocks flying over and occasionally onto the crocodiles, sending them scurrying for the safety of the water. To the best of my knowledge, Mr Watson is still in the process of claiming damages from the company concerned.

During 1991 a variety of snakes, lizards and a crocodile were taken to an exhibition in Durban for display purposes. The South African Navy fired ceremonial cannons about 15 m from the reptile stand on three occasions that morning, and in the afternoon a similar cannon was fired once, this time about 80 m from the stand. All the reptiles were removed from the exhibition that afternoon and returned the next morning.

That morning the cannons were fired three times, again about 80 m from the reptile stand. Upon removal of the reptiles it was found that the juvenile crocodile appeared ill and all of the snakes and lizards, except for the Mozambique Spitting Cobras (*Naja mossambica*) and a Python (*Python sebae natalensis*), appeared rather sluggish.

The next morning all specimens, except for the python, were dead. Interestingly enough, the python had coiled around the necks of people for photographs during the blasts, whereas the other reptiles were all in aquarium enclosures.

Herewith a list of specimens that had died: 2 x *Naja mossambica*, 1 x *Dispholidus typus*, 1 x *Bitis arietans arietans*, 1 x *Philothamnus semivariegatus semivariegatus*, 1 x *Causus rhombeatus*, 1 x *Cordylus giganteus*, 1 x *Crocodylus niloticus.*

The specimens were in good health and the people involved in transporting and displaying them were experienced in what they were doing. This happened in March and the reptiles were not subjected to cold temperatures.

From the above it appears as though the reptiles were killed indirectly by the blasts from the ceremonial cannons, a similar situation to that of Peter Watson's crocodiles. While it is common knowledge that noise causes stress in captive crocodiles (especially amongst juveniles housed in controlled environmental chambers), detailed research into the effects of noise is sorely needed and it would be of interest to hear from other H.A.A. members who have had similar experiences in this regard.

REPRINT:

STUN-GUN FOR SNAKE BITE

(Reprinted from *MAGNUM*, October 1991, page 36)

Brian Marsh

I have yet to discover how this trick was discovered, but it has been all but proven that a belt from a stun-gun (evolved from the cattle-prodder), neutralizes snake, scorpion, wasp and bee venom. The Nova Spirit, the make used extensively in experiments, bears a red-lettered warning: "THIS IS NOT A TOY: USE OF THIS DEVICE FOR ANY PURPOSE OTHER THAN SELF-DEFENCE IS A SERIOUS CRIME".

However, sportsmen in America have been carrying them to remedy snake-bite for themselves and their dogs, and now the word has reached Africa. Professional hunters the length of the Continent are carrying them, and consider the stun-gun a more positive cure under field conditions than syringes and serums which, when urgently required, are likely to be on the far side of the hill safely stored behind the seat of the hunting car.

East African professional hunter Henry Henley has used his to good effect on one cobra bite, and on bee and wasp stings, when all victims reported an immediate cessation of pain and exhibited no further toxic symptoms. Although the American Food and Drug Administration has not yet approved the stun-gun for this use, there is considerable evidence emanating from that side of the world that it really does neutralize protein toxins, and missionary doctor Ronald Guderian, working in the jungles of Ecuador, claims to have successfully treated over 100 snake-bite victims with nothing but a Nova Spirit stun-gun, including bites from the South American bushmaster, supposed more deadly even than the African black mamba.

No one has yet put forward a reason why, but researchers believe the electrical current changes proteins in the venom so that the body cannot absorb it, while interrupting the pain message to the brain. The pain from even scorpion stings, which victims testify as acute, is apparently immediately neutralized, and a bird dog bitten on the cheek by a rattler was reported eager to be back on scent within minutes of being struck.

The battery-operated Nova Spirit stun-gun, which fits into a belt-pouch and can be comfortably carried, has two prongs which if pushed against the body of an assailant while the button is being pressed will knock him to the ground. When used to treat a snake-bite or insect sting, two wires are attached to the prongs, with small crocodile-clips which are nipped onto the skin on either side of the snake-bite punctures, or the sting, and a two-second charge is administered, the procedure being repeated in the case of a snake-bite on the second fang puncture. Naturally, this will produce a violent muscular reaction in the victim, which is entirely harmless, but it is likely he will need to be held still. The stun-gun is also claimed to be an added safeguard against allergies to insect stings. Safari clients are not prone to be stung while out in the bush, but it does happen, and perhaps the man in strange surrounds and attire who permanently

carries antihistamine in his pocket may have forgotten it in his tent. But, while it certainly *seems* to work, users are reminded that is has not been *officially proved* to work, and victims of serious bites or allergies to insect stings, should also be taken to the nearest medical practitioner for expert follow-up treatment.

When the Nova Spirit stun-gun first reached Africa in 1989 it was selling for US$140. An up-to-date price is not to hand, but enquiries can be directed to Nova Technologies, 2207 Braker Lane, Dept. HM, Austen, Texas 78758, USA.

Submitted by: Mr G.V. Haagner, Port Elizabeth Museum, P.O. Box 13147, Humewood 6013, South Africa.

Note: *Mr R.M. Douglas (National Museum, Bloemfontein) comments as follows on the above report:*

According to an article by Dr L. Altman in the *New York Times* of 5 August 1986 (from a report in the *The Lancet*, 26 July 1986), the practical use of shock therapy in the treatment of snake-bite has been around since about 1984. It appears that the missionary physician in Ecuador, Dr R. H. Guderain, had noted that at this time the notion was already widespread in Ecuador, and that snake-bite victims tried to get to an engine where they could take a wire from the coil to the area of the bite. Another apparent advantage of shock treatment is that even after serious symptoms and pain have developed (up to two hours after the bite), these are immediately arrested. However, I do remember seeing a recent article (the reference of which I cannot recall) in which a person was bitten on the face by a poisonous snake and shock therapy was applied. This apparently resulted in severe damage to the person's eye. As to exactly how electroshock treatment 'relieves' depressed and mentally disturbed patients remains unclear and unexplained, and so might the neutralizing effects of electric current on snake venom. Further details on this article can be found in *H.A.A. Newsletter* no. 9, page 18.

Some years ago the Venom Ex apparatus (manufactured in Switzerland) for the treatment of snake-bite was popular. The manufacturer claimed that its effectiveness was due to 75% of the injected venom being safely removed from the bite site. The Venom Ex has a spring-loaded cutting head consisting of 6 parallel blades each 5 mm wide which are adjustable up to 5 mm in length. The blades are "shot" into the skin at the site of the bite and the venom sucked out with an adapted syringe with suction cups.

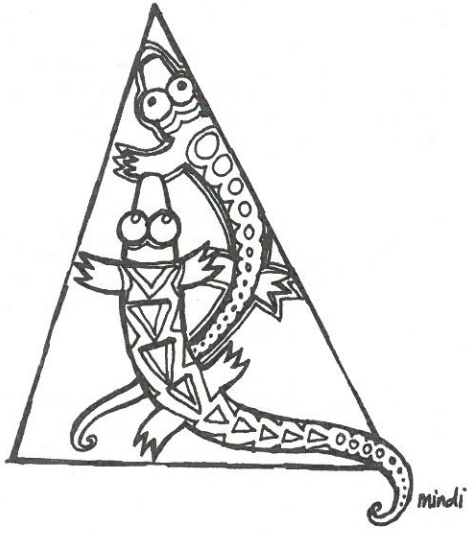
Using rabbits, Reitz, Goosen, Odendaal, Visser and Marais (Unpublished report: Evaluation of the "Venom Ex" apparatus in the treatment of Egyptian cobra (Naja haje annulifera) envenomation. H.A. Grove Animal Research Centre) concluded that the claimed amount of venom was not removed. Using double the lethal dose of venom, seven out of eight rabbits recovered completely when treated within 5 minutes of the injection. However, mortality rose to 100% when treatment with the Venom Ex was delayed for 30 minutes. When the lethal dose was again increased, survival dropped to 50%, even when treatment commenced immediately. Reitz *et al.* also concluded that

the relatively small amount of venom that was extracted, was insufficient to account for the survival of the animals, and therefore alternative reasons were investigated.

One of the control groups of rabbits was injected with double the lethal dose of venom, a tourniquet applied, and the area of the bite traumatized by bruising the area with an artery forceps. This can be considered similar to the traumatization that takes place when the Venom Ex strikes the site of the bite, but in this experiment the Venom Ex was not used. Surprisingly, survival was 55% based only on the trauma treatment. A number of hypotheses for this survival rate were put forward by the authors, who stated that at this stage the hypotheses were speculative. Therefore, the singular effect of trauma also appears to have some sort of neutralizing effect on snake venom, although as yet there is no definite explanation for this. Therefore, beating a friend who has been bitten by a snake may just save his life

Another observed advantage of the Venom Ex when used on adder bites is that it dramatically, if not totally retards necrosis. When the Venom Ex was used on bites from large specimens of *Bitis gabonica*, *Crotalus atrox* and *Trimeresurus albigularis*, which were so severe that the victims had to be hospitalized, no indications of necrotic tissue were evident, and there was also no scaring or signs of the bites after only a few months.

****



FROM THE PRESS:

CHINEES VERKIES DAT SY DIS NOG SIS

(*Die Volksblad*, 1 June 1993)

BEIJING. - Hy voel maar miserabel as hy nie sy daaglikse lewende slang geëet het nie, sê mnr. Li Hongzhong, 'n boer van die Liaoning-provinsie in die noorde van die land.
Hy het die inwoners van sy dorp verstom met sy inname van 10 000 lewende slange.
Toe verslaggewers hom besoek het, het hy pas 'n slang van 60 cm geëet. Die slang se kop was nog in sy mond, en 'n mens kon aan sy gorrel sien hoedat die slang se lyf in sy slukpyp wriemel.
Mnr. Li sê hy het in die afgelope 20 jaar sowat 10 000 slange geëet, en party dae kry hy tot 20 slange in sy liggaam.
Dit is seker die rede waarom niemand met hom wil trou nie, het 'n Nanjingse koerant lakoniek opgemerk. - Sapa-R.

MET HEKELPEN VOEL VROU VERE VIR SLANG IN STOEL

(*Die Volksblad*, 19 February 1993)

PRETORIA. - 'n Vrou van Ellisras in Noord-Transvaal het 'n dodelike groen boomslang morsdood gesit.
En was dit nie vir 'n vermiste hekelpen nie, was dié giftige gebroedsel se oorblyfsels seker nou nog knus in die vere in 'n huis op dié dorp.
Maar dié einste vere - darem van staal en in die sterk onderstel van 'n leunstoel in die voorhuis - het meegebring dat die slang net daar dood is deurdat hy tussen mev. Kotie van der Merwe (47) en die staalvere van haar gunstelingstoel beland het.
Mev. Van der Merwe hoef ook nie skaam te wees om te vertel dat sy die boomslang doodgesit het nie. Sy is glad nie groot of geset nie. Die geluk - en die vere - was maar net aan haar kant.
"Ek voel vere vir die slang. Ons het hom in die asblik gegooi," het mev. Van der Merwe gister dapper gesê nadat sy oor dié skok gekom het.
Sy vertel hoe 'n rustige hekelsessie onderbreek is toe die telefoon lui. Ná die gesprek het sy weer gaan sit, maar die hekelpen was skoonveld.
Hier gesoek en daar gevroetel, en eindelik die kussing opgelig. En daar lê die groen boomslang - poegaai met 'n geknakte nek tussen die vere vasgeknyp.
Die vermoede is dat die boomslang in dié Verre Noord-Transvaalse hitte die koelte van die voorhuis opgesoek het.
As die slang mev. Van der Merwe gebyt het, sou sy, pleks van die dodelike boombewoner, binne 48 uur morsdood gewees het, het 'n slangkenner gesê.

ALDABRA TORTOISES FOR SA

(*The Star,* 15 July 1993)

The Seychelles government has donated two Aldabra tortoises to South Africa as a token of goodwill, says the National Zoological Gardens, Pretoria, which is to be the reptiles' new home. Nique, the female weighs 90 kg, while her male companion, Oute, weighs 95 kg. Sapa.

Submitted by: Mr E. du Pisani, Department of Anthropology, National Museum, P.O. Box 266, Bloemfontein 9300, South Africa.

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HERPETOLOGY 1992/93

C. Conant [1993, *Bull. Chicago Herp. Soc.* 28(4): 77-78] reports on the longevity record of a snake of any kind, namely a male Ball Python (*Python regius*) which died at the Philadelphia Zoological Gardens on 7 October 1992. The snake was of "young adult size" when received on 26 April 1945, and although it grew little in length and weight, it survived for almost 47½ years in captivity. The snake was stolen from the zoo in the late 1940s, but after newspaper reports in the Sunday papers, it was returned unharmed.

L. Langerwerf [1992, *British Herp. Soc. Bull.* 41: 15-18] reports on the captive maintenance and reproduction of wild-caught Natal Midland Dwarf Chameleons *Bradypodion thamnobates*). Females gave birth to 8-20 young during March, April and May 1992, although actual breeding in captivity could not be proven. The neonates measured 20-21 mm SVL + 20-21 mm tail length at birth and fed on fruitflies.

D. Appleyard [1992, *Herptile* 17(3): 134-135] reports on the breeding and unsuccessful rearing of the skink *Mabuya striata.* A pair of skinks were maintained in captivity. The female produced four litters within nine months - 8 were born on 20 April, 10 on 10 July, 6 on 15 October 1991 and 6 on 15 January 1992. All neonates measured 9,5 cm in length at birth.

Editor

DE VERZORGING EN KWEEK VAN *PYTHON MOLURUS MOLURUS* EN *P. M. BIVITTATUS* IN HET TERRARIUM

Kim M. Johansen

Lacerta 51(3): 72-78 (1993)

English Summary

BREEDING *PYTHON MOLURUS MOLURUS* AND *P. M. BIVITTATUS*
The author describes the successful captive reproduction of two *Python molurus* subspecies during 1991-1992.
The article contains a detailed description of the terraria, important factors inducing copulation, egg laying, artificial incubation and hatchling husbandry.
The author believes the most important factor in breeding this species and indeed all boids, is to keep the sexes separate until introduction in the breeding season. This season is triggered by a lowering of temperature to 22-23°C a month prior to introduction.
Artificial incubation at 31-32°C and 85-95% humidity is preferred by the author, although he also states that maternal incubation can be equally successful.

EEN HERPETOLOGISCH BEZOEK AAN MADAGASCAR

René Koller

Lacerta 51(3): 87-103 (1993)

English Summary

A HERPETOLOGICAL VISIT TO MADAGASCAR
In September 1988 the author visited Madagascar in search of reptiles and amphibians. The visit was successful, and a number of different species were recorded, including seven species of chameleon of which four were found in the wet forest near Perinet, while *Chamaeleo pardalis* was found near the coast. Of the geckos, *Hemidactylus mabouia* was more or less ubiquitous, while *Blaesodactylus boivini* was only seen on a small island near Nosy Bé. The colourful *Phelsuma* species were observed in several different locations on Madagascar. *Mabuya gravenhorstii* was the most common of the skinks seen and was found in a variety of environments. *Cryptoblepharus boutonii* was only found in coastal regions (including beaches). The endemic iguanid *Chalarodon madagascariensis* seemed relatively common and could be found all over Madagascar. During the visit to Madagascar two snakes were seen. The first was severely damaged and could no longer be identified. The second was *Mimophis mahafalensis* which was found in the thornbush habitat in the south of the island. Other species which were recorded included the only crocodile on the island (*Crocodylus niloticus*

adagascariensis) which is an endemic subspecies, and the tortoise *Geochelone radiata* hich was found in an area without shrubs. This latter species is considered threatened, it is killed for food as well as for souvenirs. The most common amphibian observed as *Ptychadena mascareniensis*. All other frogs recorded belonged to the Rhacophorid mily which includes the genus *Heterixalus*. These are discussed in detail in the article they have been recently imported into the Netherlands.

"EXTINCT" LIZARD FOUND

(*Bull. Chicago Herp. Soc.* 28(3): 63; 1993)

n amateur herpetologist 100 miles north of Adelaide, Australia, picked up a road-lled brown snake and found a pygmy blue tongue lizard in the dead snake's gut. The ard was last seen (by science) in 1959. A pink tongued colony of the apparently isnamed blue tongue lizards were found under grass tussocks nearby. [All dated ecember 28, 1992: Moline, IL *Dispatch* - Mark Seaholm; Sacramento *Bee* - Bruce annem; and *Daily Herald* - Lawrence Akins]

MASS DEATHS AND EXTINCTION OF THE MOUNTAIN YELLOW-LEGGED FROG

(*Bull. Chicago Herp. Soc.* 28(3): 67; 1993)

.F. Bradford [1991, *J. Herpetol.* 25(2): 174-177] reports that *Rana muscosa* is one of veral high-elevation amphibians that have recently disappeared from seemingly istine sites. This report deals with an event of mass mortality among larval and etamorphosed *R. muscosa* in a lake in Kings Canyon National Park, California, and e ultimate extinction of the population. In 1979 metamorphosed individuals declined om about 800 individuals in early summer to nearly zero in late summer. During this ne many carcasses were collected. Individuals showed symptoms of red-leg disease, id blood from an affected individual contained the bacterial pathogen characteristic this disease, *Aeromonas hydrophila*. Also during the summer of 1979, almost all of e 1100 tadpoles began metamorphosis, but all metamorphosing individuals were nsumed by Brewer's blackbirds, *Euphagus cyanocephalus*. The frog population ntinued to exist until at least 1983, but was extinct by 1989. Recolonization of the site ll probably never occur because streams connecting to extant populations of *R. uscosa* now contain introduced fishes.

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ut the Authors

n M. Barnard is a graduate of the Santa Fe munity College Biological Parks Program, and eceived her Bachelor of Science degree in Liberal ies from the University of the State of New York 83. She is currently Lead Keeper of Herpetology o Atlanta. Ms. Barnard has served on the Board irectors of the American Association of Zoo Keep-ıd has written over seventy papers on various :ts of reptilian husbandry, parasitology and bat ɔilitation, including the text THE MAINTE-ICE OF BATS IN CAPTIVITY. Ms. Barnard is also nsed wildlife rehabilitator in the State of Georgia.

teve J. Upton received his Bachelor of Science e in Zoology from Oregon State University in his Master of Science in Biology from the ersity of New Mexico in 1981, and his Ph.D. in ıgy-Entomology from Auburn University in He is currently an associate professor in the ion of Biology at Kansas State University. Dr. ı has published over 120 papers in scientific als on parasitology, primarily on parasitic zoa, and he has described nearly one hundred pecies of parasites.

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Contents

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Appendix I. Parasiticides Used in the Treatment of Protozoan Infections
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UNITED KINGDOM

The Adder

Peter Stafford, 1987. 24 pp., 19 figs, 12 in colour, including a detailed distribution map. Shire Natural History (Cromwell House, Church Street, Princes Risborough, Aylesbury, Bucks HP17 9AJ, UK). UK pound 1.25.

This small, but detailed, soft-covered booklet forms part of the voluminous Shire Natural History series. It summarises the life of the adder, *Vipera berus*. This well-known snake extends throughout much of northern Europe and Asia, ranging from Britain, across northern Europe and Russia to the Far East, and from Italy northwards to Finland within the Arctic Circle. Much is known about this common, wide-ranging snake, and obviously some detail has had to be left out (this contrasts with the situation in southern Africa, where we would have difficulty filling even five pages with all that is known about our most common species!).

There are some incorrect generalizations (e.g. ".. the genus *Vipera* ... are all viviparous" (p. 2) is untrue; *Vipera palaestinae* and a number of others have long been known to produce eggs). The fine studies of Andren have also been ignored, and althougnh based on the ecology of the adder in southern Sweden, many of the findings have at least partial applicability to British populations. Nonetheless, this book is a well-written, accurate species summary.

Frogs and Toads

Trevor Beebee, 1985. 121 pp. numerous line drawings. Whittet Books (113 Westbourne Grove, London W2 4UP, UK); UK pound 5.95.

This small book is an introductory text on British amphibians, aimed at young naturalists and the concerned layman. It is intended to dispel "prejudices against these fascinating (and very useful) creatures" and to "present the important (and some not so important) facts about frogs and toads in a digestible form". With simple text, short, self-contained chapters, and clear, often humerous line drawings, it succeeds admirably.

Beebee has been very prominent during the last two decades studying the ecology of British amphibians and reptiles. Perhaps more important, he has also been very involved with what may be aptly called 'backyard conservation'. With the loss of natural ponds, drained for urban and agricultural development, the artificial garden pond has become an important breeding site for British frogs and toads. Even so,

ogs and toads are disappearing rapidly - down to one-fiftieth of pre-war numbers. eebee takes every opportunity to encourage public participation in conservation. He resses the practical help that can be given by participating in toad patrols on busy oads at breeding times, and the construction, siting and stocking of a suitable garden ond.

/e do not have plentiful water in southern Africa, and our vleis and pans are often nder just as much pressure from pollution and water abstraction as those in Europe. onservation in southern Africa is too often considered the sole responsibility of ature conservation departments, and for too many people an occasional trip to a game ark, or a subscription to *African Wildlife* or *Custos*, is the limit of their involvement. eebee's message for public participation is therefore just as valid and urgent in outhern Africa as it is in Britain. His book is worth reading.

USTRALIA

oxic Plants and Animals. A guide for Australia

anette Covacevich, Peter Davie and John Pearn (eds.), 1987. viii + 504 pp. ueensland Museum (P.O. Box 300, South Brisbane, Queensland 4101, Australia). ust. $24.95 + postage, softcover.

here have been a number of recent Australian books dealing with the region's nomous animals (particularly those by Straun Sutherland). This new book, however, the first to cover both plant and animal toxins of medical importance. There are 45 apters, each written by a local expert, arranged in a number of sections - i.e. Plants, larine Animals and Terrestrial Animals. These are followed by an appendix listing oisons Information Centres, and an easy-to-use index to common and scientific mes.

he first chapter, on the toxic native and garden plants in subtropical Queensland, lists any plants familiar in southern African gardens, including the mango, oleander, arum y, philodendron, caster oil plant, naked lady (*Euphorbia tirucalli*), etc. It has made e realize how potentially dangerous is my garden! This is followed by detailed apters on the dangers of poisonous and hallucinogenic mushrooms, and oleander d *Bryophyllum* poisoning.

ustralian tropical waters contain numerous toxic marine organisms, and these are vered in specific chapters on sponges, jellyfish, corals, cone shells, blue-ringed topus, etc. Later chapters in this section cover the common and more important nomous fishes, as well as discussing ciguatera poisoning (that may sometimes affect e flesh of sea turtles). Two short articles cover sea snakes (by Limpus, and mmerman & Heatwole), and the section ends with a superb review of 'Medical pects of marine envenomation and poisoning'.

e early chapters in the terrestrial section discuss dangerous invertebrates (e.g. cial insects with antisocial behaviour'), with specific chapters on the redback spider *atrodactus hasseltii*, closely related to our own button spiders) and funnel-web iders, both of which cause significant numbers of bites and deaths. There is a short t interesting chapter on 'Frog and Cane toad skin secretions' (M. J. Tyler).

The greatest part of this section is given over to venomous snakes. Hal Cogger gives a brief synopsis of the diversity and distribution of venomous snakes, and includes two interesting density maps of elapids and dangerous elapids (that will not be used to promote Queensland tourist maps!) and a superb illustrated key. The four long chapters by Julian White on 'Elapid snakes: Venom production and bite mechanisms', 'Venom toxicity and actions', 'Aspects of Envenomation', and 'Management of Bites' are excellent and are alone worth the price of the book. The section ends with three small chapters on individual snake groups ('Paradoxical brown snakes' (*Pseudonaja* spp.) by Greg Mengden and M. Fitzgerald; 'The rough-scaled snake (*Tropidechis carinatus*)' by J. Pearn; and 'Two Taipans' by J. Covacevich).

I can find little to fault, and much to praise, about this superb book. The contents are well-illustrated, the graphic design and layout pleasing, and the price very reasonable. The only limitation is the weak binding. A hard-back cover is essential for a book that will be refered to as often as this one. Although most is not specifically appicable to Africa, it has much of interest to the medical practitioner, herpetologist and naturalist.

There's a Frog in my (throat) stomach

Michael J. Tyler, 1984. 52 pp. Collins, Sydney (out of print, but obtainable from the author; Department of Zoology, University of Adelaide, P.O. Box 498, Adelaide, South Australia 5001); Aust. $5.00, softcover.

This small paperback gives a popular and well-illustrated account of the discovery and subsequent studies on the bizarre gastric brooding frog *Reobatrachus silus*, by one of the main researchers. A more recent paper by Tyler (in *Biology of Australasian Frogs and Reptiles*) discusses the mysterious disappearance of this species, which may have become extinct so soon after its discovery. Incidentally, another species, *R. vittilinus*, also discovered within the last few years, has also seemingly disappeared - this time in a National Park!

Handguide to the Frogs and Reptiles of New Zealand

Brian Gill, 1986. 112 pp. W.W. Collins Publ. Ltd (P.O. Box 1, Auckland, New Zealand); NZ $14.95 plus postage, hardcover.

This small (115 x 190 mm) but concise handbook describes the New Zealand herpetofauna, which includes six frogs, the tuatara, nine geckos, 21 skinks, two sea snakes and four sea turtles. This may be a small number (in fact Addo Elephant National Park in the Eastern Cape has a greater species diversity), but it is not without interest. It includes: the only existing rhynchocephalian, the tuatara; three species of primitive leiopelmatid frogs, whose nearest relatives are two species restricted to North America; as well as viviparous, diurnal geckos (*Naultinus*) and nocturnal skinks (*Cyclodina* spp.). Each species is beautifully illustrated in colour, accompanied by a page of text that summarizes its description, size, distribution, habitat and habits. As is the way of such things, this superb handguide became out-of-date within months of its publication.

In a recent paper, Bauer & Russell (*New Zealand J. Zoology* 13: 141-148, 1986) describe the world's largest gecko, *Hoplodactylus delcourti*, which they suggest may have been found in the northern forests of North Island, New Zealand. This gigantic gecko (snout-vent length 370 mm!) is known only from a single stuffed specimen, and

ay now be extinct. Oh that it may yet be found, and along with the tuatara, grace the ıges of a future revision of this excellent handguide to a unique herpetofauna.

ıa Snakes
arold Heatwole, 1987. vii + 85 pp. New South Wales University Press Ltd. (P.O. Box Kensington, New South Wales, Australia 2033); Aust. $12.95 plus postage, softcover.

ɔr many years studies on sea snakes were restricted to their taxonomy and stribution. The 1960-70's saw some detailed epidemiological studies on sea snake tes and their symptoms. These were reviewed in the excellent book *Biology of Sea ıakes* edited by Dunson in 1975. In recent years detailed ecological investigations ɡan, and these are excellently summarised in this small book by one of the leading searchers in this field.

f particular interest is the final chapter on 'Sea Snakes and Humans', where the ıssible 'ranching' of sea snakes is noted. In the Ryukyu Islands of Japan there is a riving sea snake industry; based on the sea krait *Laticauda semifasciata*. Possibly as ıny as 50 000 sea snakes per year are killed and their skin used in the leather ıdustry; and their flesh is eaten raw, smoked or cooked. Preliminary studies have ɔked at the feasibility of incubating, hatching and raising young obtained from eggs moved from gravid females. The commercial possibilities don't stop there. Sea snake nom is used in basic biochemical research, as well as in medicine, and as they are ɔduced in such minute amounts, they are correspondingly expensive. Almost US$ 12 llion per kg! It is unfortunate that we have only a single, vagrant sea snake in uthern African waters - the Yellow-bellied sea snake *Pelamis platurus*, which ranges roughout the warm waters of the Indo-Pacific. They would make a colourful, eresting, and not to mention possibly financially rewarding, contribution to our rpetofauna. Heatwole's book is a good introduction to these interesting snakes.

ıIA
ıide to the Snakes of Sri Lanka
ıslem de Silva, 1990. vi + 130 pp. 12 col. pls. R & A Publishing Ltd (3 Highfield llas, Newlands Hill, Portishead, Avon, England BS20 9AU), UK pound 18.75 + 1.50 · postage (surface mail), hard-cover, with dust jacket.

is small book in many ways replaces P.H.D.H. de Silva's (1978; I'm not sure whether : two author's are related) earlier unwieldy and now out-dated handbook on the ıkes of Sri Lanka. It is more concise and better illustrated (the latter not being too ficult, given the horrendous quality of P.H.D.H. de Silva's illustrations), although l following much the same groundplan. It is divided into five chapters that discuss : following topics:

Snakes of Sri Lanka: Indian and Malayan affinities (11 pages).
The chapter discusses the relationship between the distribution of snakes and the geology, climatic and vegetational regions of Sri Lanka. A brief summary of the zoogeographical affinities of the different families is also included.
Man and Snakes in Sri Lanka (eight pages).
Local beliefs and folklore concerning the country's snakes are discussed.
Venomous snakes, snakebite and snakebite treatment (Ancient and Modern) (14 pages)

The types of venomous snakes present, the incidence of snakebite, and the application of western and folk medicine is discussed. Of interest is the finding that 4737 snakebite cases were recorded in 1986, of which 182 (3,84%) were fatal. The cobra (*Naja naja*) and Russell's viper (*Vipera russelli*) were responsible for most snakebite deaths.

4. Key to the snakes of Sri Lanka (22 pages).
5. Checklist to the snakes of Sri Lanka (56 pages)
   Ninety-three taxa are recognised, and differences between the accepted list and previous checklists are discussed. Taxa needing further study are briefly discussed, and a table lists the snakes and their distribution in the major habitat zones.

The book concludes with four pages of maps illustrating provincial, climatic, vegetational, and altitudinal zones in Sri Lanka, 12 pages of references, and an index of scientific names. The 12 colour plates illustrate 54 of the 93 species and subspecies recorded from the island and adjacent coastal waters. They are basically good, although few have impact and some are poor. The species accounts emphasize natural history notes, but also include sections on common names, distribution, and status. There are no additional details of morphology, but further references are listed where these may be found. A comprehensive (11 page) bibliography, and index to scientific names (three pages), conclude the book. De Silva's book forms a useful, well illustrated and well written summary of the snakes of this poorly known region.

The Snakes of Thailand and their husbandry
Merel J. Cox, 1991. xxxviii + 526 pp. 164 col. pls, 36 figs. R. E. Krieger Publ. Co. (P.O. Box 9542, Melbourne, Florida 32902, U.S.A.), US $69.50, plasticized hardcover.

Previously, no popular book in English on the snakes of this region has been available. The only recent summary has been Ed Taylor's scientific monograph on the serpents of the country and its adjacent waters (*Univ. Kansas Sci. Bull.* 45(9); 1965), and which is now almost unobtainable. This book updates Taylor's monograph, adds another 13 species to the region's snakes and reports range extensions within Thailand for another 13 species. Unfortunately, given Taylor's scholarly base, this work is not up to the standard one would expect. Below are just some of the more obvious mistakes and oversights that I spotted.

Throughout the book higher taxonomic categories (e.g. superfamily, family, subfamily) have been printed italicised. This is incorrect, as only generic, specific and subspecific names should be italicised. The statement that the hemipenis of *Ramphotyphlops* remains partially everted, suggests it is not fully retracted into the tail. This is misleading as the hemipenis is fully retracted, but the solid distal region does not evert, but is rather surrounded by the everted proximal region. The statement that the medium-sized (about 1 m maximum length) Checkered keelback (*Xenochrophis piscator*) "... is prolific; clutches containing 100 eggs have been recorded." is misleading, as most clutches average around 40 eggs and only rarely exceed 70 eggs. The largest I know of consisted of 92 eggs, but they measured only 27 x 18 mm (Daniel, 1983, *The Book of Indian Reptiles*, Bombay Nat. Hist. Soc.).

Some taxonomic decisions in the book may be controversial. Although in the Preface he species *Boiga saengsomi* and subspecies *Trimeresurus puniceus wiroti* are "offered" is new, Cox, in reality, is simply recognising the new taxa described informally by Wirot Nutphand in 1985-86. Other taxonomic statements in the book are to be discouraged. For years the taxonomy of Asian cobras has been chaotic, and only recently have the tudies of Wurster & Thorpe (1989, *Biol. J. Linn. Soc.* **36**: 391-409; 1990, *Amphibia-Reptilia*. **11**: 385-400) begun to unravel some of the taxonomic complexities of these nportant snakes. It is understandable that Cox should therefore have difficulties aming certain cobra populations. Their variability is well captured in his 24 colour lates of colour variants. Whilst he correctly heads some cobra 'species' accounts with *Naja* sp., he then discusses possible new names, albeit vaguely. For instance, he notes at a cream-coloured cobra from Suphan Buri province ".... may ultimately prove to be new subspecies, but currently the name *Naja kaouthia suphanensis* is not scientifically lid." (p. 295). Again, for the Isan spitting cobra from north-east Thailand, he states at "This form has been referred to as *Naja naja isanensis*, a name not yet officially cognized." They may have to be now, as despite Cox's printed reservations, his colour ates, descriptions and distributions in these species accounts may constitute formal conomic descriptions!

ne of the most disappointing aspects of the book is the 'computerized' line figures. ey appear to have been computer-scanned from original line-drawings, but using a y course pixel grid. The result is that curves are registered as stepped lines making le rows very irregular in appearance. The pictures are thus scientifically useless, and thetically unpleasing. The colour plates vary in quality from fair to poor, with some ng very poor (e.g. pls 80, 150 & 162). In addition, plates 20, 22, 28, 35, 65, 66 and are upside down, whilst plate 36 is printed sideways, and a very similar picture is d on the front cover (also sideways!).

book is also wasteful on space, with a large print font and wide margins. I fail to the need for a 16 page appendix listing world herpetological societies in a book on iland snakes. This summary has appeared in other Kreiger publications (Welch's k on husbandry, reviewed in *African Herp News* **17**: 61-63). Appendices 2 to 7 on atic data for six regions within Thailand could have been drastically summarized, Appendix 8 on water surface conditions off the coasts of Thailand should have n omitted. Appendix 10 (22 pages) analyses common Thai snake names and their lish translations. It surely has limited appeal, and as it lacks the scientific names it most impossible to use. For instance, you have to return to page 98 to find that the can bite snake' is usually called the red-tailed pipe snake (*Cyclodrophus rufus rufus*) e of the equivalent English common names however, are very funny, e.g. 'house o-headed green snake', ' fire touching snake', and 'black-banded red central rib of nut leaf snake'! A 12 page bibliography and 14 page index complete the book.

n-all, not a very inspiring book!

****

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THE CAMBRIDGE-TANZANIA AMPHIBIA CONSERVATION PROJECT

The Amphibia of The East Usambara Mountains

The Usambaras contain the richest Herpetological fauna among all of the East African forests (Table 1). Comparable in species richness to those of important West and Central African forests, especially when the relatively minute size of the Usambara Mountains is taken into consideration (1200 km²) Making these animals of great interest for the study of evolution and speciation.

The Usambaras contain the greatest number of endemic treefrogs of the East African forests with at least 15 species belonging to 11 genera. One of the more archaic types of tree frog, Leptopelis (see cover), has its main centre along the coast and in the adjacent Usambara mountains, whereas Hyperolius, a very numerous group of minute frogs, is widespread and abundant throughout Africa. Those most ancient of amphibians, the worm like caecilians are found in the Usambaras where they emerge from the soil after heavy rain (Kingdon 1990).

Table 1 The rain forest amphibia of the forested basement mountains of East Africa:

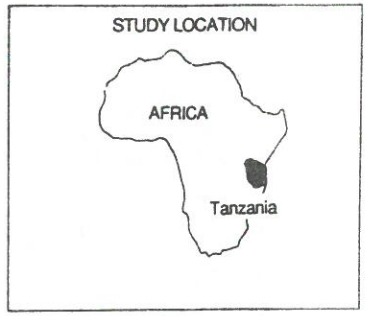
	Usambara	Uluguru	Udzungwa	Rungwe
Leptopelis vermiculatus	x			x
L. parkeri	x	x		
L. uluguruensis	x	x		
L. barbouri	x		x	
Afrixalus uluguruensis	x	x	x	
Hyperolius spinigularis	x			
Phyctitimantis keithae			x	
Bufo brauni	x	x		
Nectophranoidies tornieri	x	x		
N. vivipara		x	x	x
Arthroleptides martiensseni	x	x		
Arthroleptis affinis	x		x	
Phrinobatachus kreffti	x			
Callulina kreffti *	x	x		
Hoplophryne rogrsi *	x			
H. uluguruensis		x		
*Parhoplophryne usambarisus**	x			
*Probreviceps m. macodactylus**	x			
P. m. loveridgei		x		

* Genus endemic (From Schiotz 1981 and Evans and Anderson 1992)

The separation between this Eastern rain forest fauna and the rain forest fauna in the congo forest block is complete at species level. Four of the eleven genera and all the species occurring on these eastern basement hills are endemic. Among the tree frog species it is not possible to identify any relationship below genus level linking the Eastern forest from the Congo Forest Block. To emphasise this the colour pattern of the eastern *Leptopelis* found in the Usambara mountains is unique for this genus and suggests a distinction above genus level.

Thus the amphibian fauna indicates that the Eastern forest basement hills have long been isolated from the remaining rain forests; in fact there are no indications of a connection based on amphibia alone.

The fauna and flora have developed over a very long period of isolation. This is most clearly seen in amphibia an excellent indicator group, where the speciation has been rapid enough and the means of dispersion limited enough to lead to the greatest possible taxonomic isolation; leading to the evolution of new genera and species. However due to the minute distribution of theses communities, they are extremely vulnerable to forest destruction (Schiotz 1981 and Howell 1989).



OBJECTIVES

We intend to further conservation initiatives in the East Usambara Mountains by supplying information to the WCST and IUCN East Africa on amphibia from several poorly known foothill forests and the montane forests of Mount Nilo. At each site we will:

1.) Draw up species list and relate to previous data to obtain distribution pattern.
2.) Determine habitat requirements.
3.) Estimate population densities, to suggest conservation priorities.
4.) Record calls and study behaviour.

INTRODUCTION

This project will involve a graduate in Environmental Science from Anglia University (Cambridge) teaming up with a Tanzanian counterpart to study the Amphibia of the East Usambara Mountains, during the months of July, August and September 1993.



We intend to work closely with the International Union for the Conservation of Nature and Natural Resources (IUCN) based in the Mountains. Our results will be made available to the Wildlife Conservation Society of Tanzania, the IUCN and will help towards a better understanding of the ecology and evolution of East African rainforests. It will also contribute valuable information to the Kambai Conservation Program currently being organised by two colleagues (Alex Hipkiss and Andrew Perkin graduates of Anglia University).

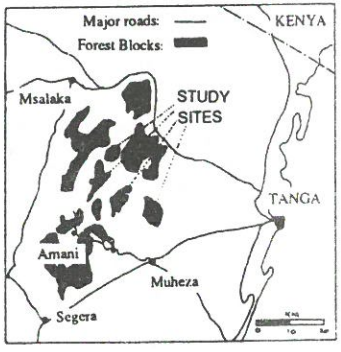
A preliminary identification of study sites was made by the Cambridge-Tanzania Rainforest Project 1992. This was successful in identifying priority areas along with logistics and administration.

BACKGROUND

The Usambara Mountains in Tanzania (Fig 1) are extremely rich in terms of species numbers, rates of endemism and concentration of threatened species. The forest contains 276 species of tree and shrub (more than all the forests of Malawi) 50 being endemic; 50 Red Data Book bird species and 11 genera of Amphibia known of which 4 are endemic. The forest amphibia of the Usambaras have only been lightly studied; initially by Reichenow (1887), Matschie (1892), Barbour and Loveridge (1928) and (1957), by Arne Schiotz in the late seventies and early Eighties and most recently by Evans and Anderson (1992). The Usambaras may contain additional threatened species or new populations of known species. Certain areas of lowland forest are excluded from conservation efforts in the Usambaras, due to lack of resources and biological data. Mount Nilo, highest point in the East Usambaras, is also in need of a survey to indicate its importance to threatened amphibia species.

Further research on Amphibia is urgently required as there have been few studies in this field and it is necessary for the fuller understanding of rainforest ecology and evolution. This research will bolster efforts made by the Kambai conservation program currently involved in purchasing and protecting the East Usambaras.

THE EAST USAMBARAS



PROPOSED STUDY SITES

CONCLUSION

Following the Cambridge-Tanzania Rainforest Project 1992 and previous work it was deemed essential to study the Amphibia of this area. Intensive studies over a three month period would be extremely useful to gain a better understanding of rainforest ecology and evolution and ultimately help towards the protection of the Usambaras unique flora and fauna.

TEAM MEMBERS

John Douglass: (Leader and Treasurer) 22. BSc.Hons. Environmental Science, Anglia University (Cambridge). Widely travelled with expedition experience. Undertaking MSc in Behavioural Ecology and Conservation Biology at Manchester Metropolitan University in October 1993.

Counterpart being arranged with Dar Es Salaam University.

ANTICIPATED EXPENDITURE	£
Pre-Expedition:	
Administration (postage, printing).	175
Work Permits	100
Equipment (recorders, lamps, nets etc)	300
Film	150
Medical, Insurance	150
International Travel	600
Fieldwork:	
Internal Travel	150
Living Costs:	
Field: 2 researchers (@ £2/Day)	372
Field: local labour	100
TOTAL	2097
Personal contribution (£500)	500
TO RAISE	1597

ITINERARY

25th June: Leader flies to Dar Es Salaam permits finalised and meets up with Tanzanian.counterpart.

STUDY SITES

1st July: Marimba forest reserve.
25th July: Middle Siga valley.
15th Aug: Kambai forest reserve.
15th Sept: Mt Nilo montane forest.
30th Sept: Return to Dar Es Salaam, write preliminary report, discuss proposals with Tanzanian conservationists.

Acknowledgements I would like to thank the following people for their time and expertise: Julian Hector, Dr Roger Avery, Andrew Perkin, Alex Hipkiss, Dr Arne Schiotz, Dr Tim Howell, Dr W.R Branch , Dr Donald Broadley.

The Cambridge-Tanzanian Amphibia Conservation Project 1993 is dependent for its success on the financial and material backing of companies and charitable trusts. By supporting the project you are helping to preserve the Usambaras and contribute to rainforest research.

Correspondence and Cheques (Made payable to 'Anglia polytechnic University') send to: 156 Stanley road, Cambridge, CB5 8LB. Tel : 0223 359223.

Endorsed by : Anglia Polytechnic University (Dep't of Applied Sciences)

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T.R.B.P.
TROPICAL REPTILE BREEDING PROJECT

As a concerned nature lover, the Swadini Reptile Park would like to appeal to you.

We have for the last ten years concentrated our energy towards the conservation of reptiles. Our aim is reached through extensive research and educational programmes. In our plight for reptile conservation, we have saved and relocated hundreds of animals here in South Africa.

At the beginning of this year the **Tropical Reptile Breeding Project** (T.R.B.P.), in conjunction with the Swadini Reptile Park and so far with support from the Port Elizabeth Museum, had been created. Other sponsors include The Talking Picture Company, Hunter Fencing & Transport and Russel Friedman Books. Throughout the tropics of the world are reptiles of such a specialised nature that the slightest environmental disturbance could render them extinct. The T.R.B.P. plans to prevent this from happening.

A tropical house is needed by the T.R.B.P. for breeding with the rare and little known Dwarf Crocodile found in the jungles of central Africa. These crocodiles attain a maximum length of 1.5 m and are becoming rare due to pollution and habitat destruction. They are also utilised as a food source in their countries of origin and are sold as stuffed souvenirs. We propose to build an artificial environment so as to keep the species alive. The Swadini Reptile Park has three of these crocodiles of which one has been successfully kept for the last six years. The enclosure at the park is not adequate for breeding so it is of utmost importance to construct an appropriate house. Such an enclosure will also be utilised to breed other rare tropical reptiles from throughout the world. The ultimate aim of such a project is to release the animals back into the wild as soon as a successful breeding colony has been established here in South Africa.

As can be expected, the expenses of such a development are going to be high. The Swadini Reptile Park will carry the bulk of the costs but we are going to need your help in order to make the T.R.B.P. a success.

Russel Friedman Books will make available 250 copies of **Crocodiles & Alligators** at below cost for resale. The price of this excellent book in the United Kingdom is twenty-five pounds, while the normal selling price in South Africa (excluding VAT) is R170-00. The T.R.B.P. will be selling them to you for a price that you decide upon. The categories are R60-00, R100-00, R150-00 or more. Whatever you decide, the whole amount will go towards funding a tropical house for the T.R.B.P. So take advantage of this special offer, it is for the benefit of nature conservation.

Crocodiles & Alligators, edited by Charles A. Ross, is an illustrated encyclopaedic survey by international experts, it has 240 pages, is 248 x 318 cm in size and is illustrated in full colour throughout.
The contents of the book are:

EVOLUTION AND BIOLOGY
- The place of Crocodilians in the living World.
- Evolution
- Structure and Function
- Living Crocodilians

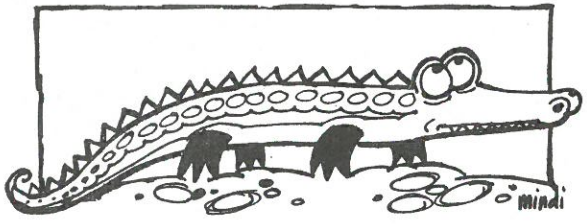
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- Mortality & Predators
- Food and Feeding
- Social behaviour
- Reproduction
- Habitat

Please give this your **urgent** attention and if there is anything more that you would like to know about the T.R.B.P., please don't hesitate to enquire at the address below:

Donald Strydom
Swadini Reptile Park
P.O. Box 175
Hoedspruit 1380
South Africa

All cheques and postal orders can be made out to the **T.R.B.P.** Money deposits can be paid into **Acc. No. 55138504-00104** of the **Perm Bank, Hoedspruit.**



NEW JOURNAL

The **International Herpetological Symposium, Inc.**, announces the publication of *Herpetological Natural History,* a peer-reviewed journal devoted to all aspects of natural history of amphibians and reptiles.

The editorial staff of *Herpetological Natural History* seeks original manuscripts that provide new theoretical and/or empirical insights within the broad topics of behavior, ecology, evolution, and life history. Both field and laboratory studies are welcomed. Review papers that synthesize previous studies also will be considered. Papers will be published as either feature articles or notes. A book review section will appear in forthcoming issues.

Herpetological Natural History initially will be published semi-annually. Authors should expect accepted papers to be published within 6 to 12 months.

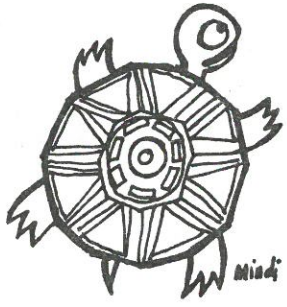
Manuscripts and requests for information should be directed to:

Gordon W. Schuett
General Editor, Herpetological Natural History
Department of Zoology & Physiology
University of Wyoming
Laramie, Wyoming 82071
UNITED STATES OF AMERICA

Subscription to *Herpetological Natural History* is $20.00/yr. International surface postage included; air mail quotes provided upon request.

Payment, by check or money order in U.S. dollars, should be made out to *International Herpetological Symposium, Inc.*, and directed to:

David Hulmes
Treasurer, International Herpetological Symposium, Inc.
361 Van Winkle Avenue
Hawthorne, New Jersey 07506
UNITED STATES OF AMERICA



eral Building
Street
4001

3456
4000

31) 305136472
31) 3043300

SELVAN PILLAY
Chartered Accountants (S.A.)
incorporating D'ABBADIE & PARTNERS

Our Ref:

Your Ref:

RT OF THE AUDITORS TO THE MEMBERS

ETOLOGICAL ASSOCIATION OF AFRICA

ave examined the annual financial statements set out on
s 2 and 3. Other than as explained in the following
graph, our examination included such audit procedures
e considered necessary.

ommon with similar organisations, it is not feasible for
association to institute accounting controls over
ections from subscriptions and fund-raising projects prior
he initial entry of collection in the accounting records.
rdingly, it was impracticable for us to extend or examination
nd the receipts actually recorded.

ect to the effect of any adjustment which may have been
ssary had it been possible for us to extend our examination
eceipts, in our opinion, the Financial Statements fairly
ent the financial position of the organisation at 28 February
and the results of its operations for the year then ended
ccordance with Generally Accepted Accounting Practice.

SELVAN PILLAY

AN PILLAY
tered Accountants (S.A.)
RPORATING D'ABBADIE & PARTNERS

AN
ne 1993

1

HERPETOLOGICAL ASSOCIATION OF AFRICA
BALANCE SHEET
28 FEBRUARY 1993

	1993 R	1992 R
FUNDS EMPLOYED		
ACCUMULATED FUND		
Balance at beginning of year	15 211	25 230
Net (Surplus/Deficit) for the year	8 132	(10 019)
	23 343	15 211
EMPLOYMENT OF FUNDS		
CURRENT ASSETS		
USB - Bloemfontein	306	244
USB - Durban	10 468	4 215
Standard Bank - Bloemfontein	12 401	10 709
Cash on hand	168	43
	23 343	15 211

HERPETOLOGICAL ASSOCIATION OF AFRICA
INCOME STATEMENT
FOR THE YEAR ENDED 28 FEBRUARY 1993

	1993 R	1992 R
	17 498	23 608
INCOME		
Interest	2 212	2 389
Sales	493	131
Subscriptions	8 793	8 428
Symposium	-	12 660
Donation	6 000	-
EXPENSES	9 366	33 627
Audit fees	385	300
Symposium	-	11 600
Journals	7 015	17 603
Newsletters	1 572	3 001
Postage, photocopies and telephone	394	914
NET SURPLUS/(DEFICIT) FOR THE YEAR	8 132	(10 019)

The annual financial statements set out on pages 1 to 3 were approved on 2 June 1993 and are hereby signed to that effect.

.....
CHAIRMAN

.....
TREASURER

2

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INCREASE IN H.A.A. MEMBERSHIP FEES FROM 1994

'ellow members, I am afraid an increase in fees is inevitable, but for your benefit I ave put it off as long as I was able. Postage rates have risen rapidly and are due to do ɔ again in 1994, printing costs and indeed all costs have risen and further, are liable to 14% VAT. Just to make sure our fees go further, in May our bankers decided to rocess their own FOREX (Foreign Exchange) at a charge of R15/cheque - this means ıat every foreign cheque, albeit for £5, incurred a commission of R15 (more than the ıeque was then worth). On our current $20 fee this meant that 25% of our foreign *ıcome* would disappear in commission!

ı principle I refuse to raise foreign membership fees just to pay the dividends of our ıcal bankers, so I have transferred our accounts to the last remaining South Arican ank with a reasonable commission. However, it is probably only a matter of time efore they in turn are forced to up their rates. (If any members can devise a legal, asonable and practical way of bypassing or reducing this exchange commission I ould be very pleased to hear from them).

ast year we overspent and had to dig into our reserves. This year we have seen a very ıodest accrual of funds to Association, and therefore I have been obliged to present ıe Association with increased rates to cover our expected 1994 expenses:

AFRICAN MEMBERS

rdinary Members	1 year R40 (or Rand equivalent + 10%)
	3 year R110 (or Rand equivalent + 10%)
holars	1 year R30 (or Rand equivalent + 10%)

OVERSEAS MEMBERS

ollar Payments	1 year $25 (US $ Personal cheque or Money order)
	3 year $70 (US $ Personal cheque or Money order)
and Payments	1 year R80 (ZAR or R Bankers draft or Money order)
	3 year R220 (ZAR or R Bankers draft or Money order)

elieve this increase will be sufficient for the purpose and yet will still be acceptable our members. I truly believe that our Association still offers not only exceptional lue for money (in terms of our Journal), but also a friendly forum for like-minded rpetologists (in our Newsletter).

ithout the voluntary and unpaid efforts of our Officers this Association would cease exist. I thank you fellow members for your financial support.

ank L. Farquharson
on. Secretary/Treasurer

HERPETOLOGICAL ASSOCIATION OF AFRICA
MEMBERSHIP FEES AS AT 1 JANUARY 1993

AFRICAN MEMBERSHIP

ORDINARY MEMBERSHIP

1 year membership **R30.00.** Submit in Rand or equivalent U.S. Dollar plus 10%.
3 year membership **R84.00.** Submit in Rand or equivalent U.S. Dollar plus 10%.

SCHOLARS MEMBERSHIP

1 year membership **R20.00.** Submit in Rand or equivalent U.S. Dollar plus 10%.

OVERSEAS MEMBERSHIP

DOLLAR PAYMENTS

1 year membership **$20.00.** Submit in U.S. Dollars by personal cheque or money order.
3 year membership **$56.00.** Submit in U.S. Dollars by personal cheque or money order.

RAND PAYMENTS FROM OVERSEAS

1 year membership **R49.00.** Submit in ZAR or Rand by bankers draft or money order.
3 year membership **R136.00.** Submit in ZAR or Rand by bankers draft or money order.

Owing to numerous banking problems, members are kindly requested not to submit payments directly to any Building Society or Bank account. All payments must be submitted directly to:

THE SECRETARY/TREASURER
HERPETOLOGICAL ASSOCIATION OF AFRICA
P.O. BOX 20142
DURBAN NORTH
4016 REP. SOUTH AFRICA

PLEASE STATE IN WHICH YEAR YOU REQUIRE MEMBERSHIP TO BEGIN. MEMBERSHIP RUNS FROM 1 JANUARY TO 31 DECEMBER OF ANY YEAR. SHOULD MEMBERSHIP BE TAKEN OUT IN THE LATTER PART OF THE YEAR, YOU WILL RECEIVE ALL JOURNALS AND NEWSLETTERS PERTAINING TO THAT YEAR.