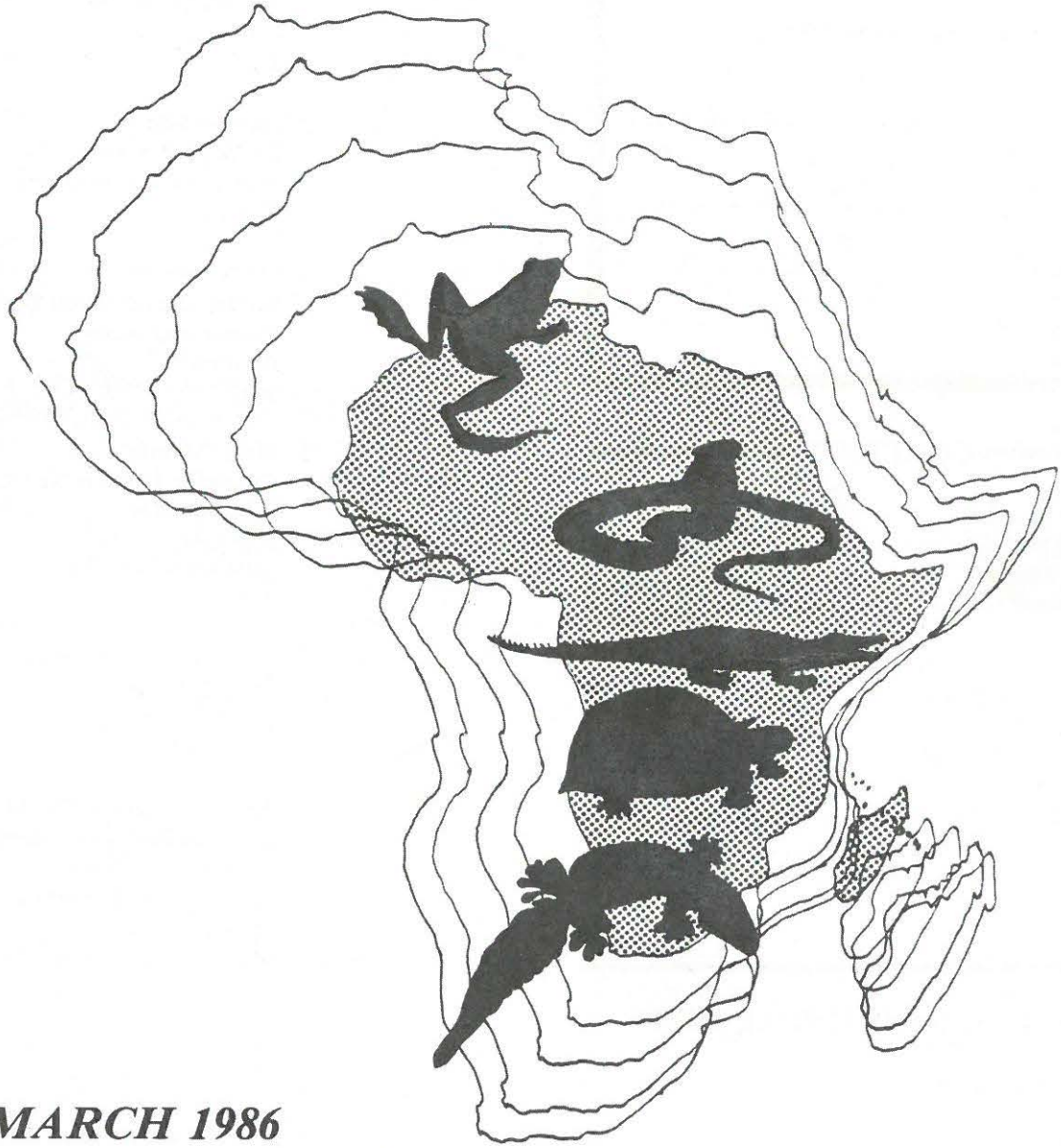
H.A.A.

ISSN 0257-7054

NEWSLETTER 7



MARCH 1986

Herpetological Association of Africa

HERPETOLOGICAL ASSOCIATION OF AFRICA

Founded 1965

The H.A.A. 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* (two issues per year) and the *H.A.A. Newsletter* (three issues per year).

Subscription rates 1986

African members — R9,00
Members from other continents — US $ 10.00 (by internatonal money order).

For information about H.A.A. membership, write to
Mr R. Douglas
National Museum
P.O. Box 266
Bloemfontein 9300
South Africa

CONTENTS

NEWSLETTER EDITORIAL STAFF

J.H. van Wyk (Editor)
R. Douglas
T. Saaiman

Department of Herpetology
National Museum
P O Box 266
Bloemfontein, 9300

Tel. 051-79609

H.A.A. COMMITTEE

EDITORIAL

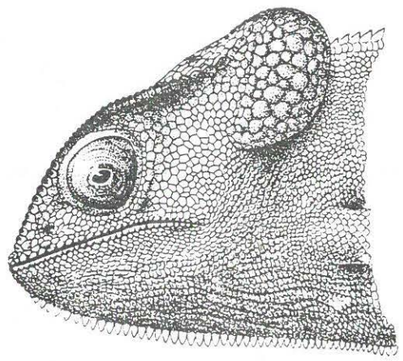
Although 1986 is well on its way for most of us I would like to make use of the opportunity to wish all the members of the H.A.A. a happy and prosperous 1986. I sincerely hope that each and every member will find the H.A.A. a worthwhile association and encourage more people to join.

When I commited myself to play editor of the *Newsletter*, I decided not to rely on a flow of contributions from H.A.A. members but rather to be independant. I have two methods of material collecting namely, the **Search It Yourself** technique and the **Getting Ink On Paper,** asking for contributions technique. I think the *Institutional News* collum validate the latter technique. Concerning the first technique, I expect problems to occur from time to time, mainly because I am a research herpetologist and tend to gather more academic literature for the *Newsletter*. If you do not like this approach, please feel free to send me more informal news and I will be happy to publish it.

Being a keen conservationist and more frequently reading about Post Office and aircraft staff, discovering "bags of herps", I get the feeling that everyone does not share my sentiments. I give you a few statistics from "Biology of Reptiles", a small book written by I.F. Spellerberg (1982). It is estimated that trade in European reptiles has led to such a decline in populations that 47 species were in more or less immediate danger of extinction, way back in 1982. In the U.S.A., 99 % of crocodile imports are destinated for the pet trade. At least 28 reptile taxa are thought to have become extinct since 1600 (Honegger 1981), of which 36 % were slaughtered for meat and 40 % became extinct through predation or through habitat destruction.

This time of the year is permit time, for me anyway, I hope for you too!

EDITOR



INSTITUTIONAL NEWS

Department of Lower Vertebrates and Invertebrates
Transvaal Museum, Pretoria
Mr W.D. Haacke reports:

1. **Staff**

(a) "The Reptiles of the Namib desert" — an ecologically based zoogeographic study. Dealing with about 180 taxa recorded from the below 100 mm average annual rainfall zone.

(b) "The Southern Kalahari — a transition area defined by reptilian range limits". (Follow up on a preliminary publication. See list below.)

(c) "The reptiles of Ngamiland". With Dr D.G. Broadley. Proposed project in collaboration with the J.L.B. Smith Institute for Ichthyology.

(d) "Dynamics of a confined lizard population". Seasonal fluctuations of the isolated and most southern population of Bouton's Snake eyed skink at Black Rock — normally consisting of less than 100 individuals. (Ongoing)

(d) "Marine Turtles of the Namib Coast" with R. Loutit and S. Braine, S.W.A. Department of Nature Conservation.

(e) Possible bimodal reproduction in a South African skink *Mabuya capensis.*

3. **Other projects as collaborator or supervisor**

(a) "The Reptiles of the Skeleton Coast Park" — S. Braine.

(b) "The lizards of Damaraland west of the farms" — K.P. Erb.

(c) "Reproduction and growth of African adders" — C.V. Haagner.

4. **News**

(a) Our Department, in collaboration with the Education department of our Museum, presents an annual evening course "Introduction to Reptiles" to any interested layman.

(b) Mr Haacke is an active member of the Transvaal Herpetological Association.

(c) The Natal Parks Board is conducting a survey of Reptiles and Amphibians in their National Parks. These specimens are sent to us for identification, verification and are housed by us. All the reptiles of the survey by T.P.A. Nature Conservation on Transvaal Reptiles, will also eventually be housed in this collection.

(d) Mrs Sebakeng is sorting the snake and lizard collections into a more usable order that regional populations of each taxon are now housed in seperate jars.

(e) We are building up a comprehensive snake skeleton collection and plan to start with a cleared and stained lizard collection in the near future.

(f) We are also in the process of starting an external parasites collection.

5. **Recent publications**

HAACKE, W.D., 1984. The Herpetology of the Southern Kalahari Domain. Supplement to Koedoe: 171-186.

HAACKE, W.D., 1985. Occurrance of the Spotted bush-snake (*Philothamus semivariegatus semivariegatus*) in the arid south-west of Southern Africa. J. Herp. Associ. Afr. 31. in press.

HAACKE, W.D. 1985. In Press. Checklist of the reptiles of the Aughrabies Falls National Park N.P.B.

HAACKE, W.D. 1985. In Press. Description of a new species of *Typhlosaurus* (Reptilia: Scincidae) from the west coast of Southern Africa, with new records of related species.

HAACKE, W.D. and WESSELS, H.L. In Press. The frog/Die padda, Pretoria, HAUM.

6. **Popular articles**

WESSELS, H.L. 1983. *Lacerta australis* in die Sederberge. S. Afr. Mountain Club, Jul.

WESSELS, H.L. 1984. Mambas. Custos, April.

WESSELS, H.L. 1985. Egg-eaters — bark worse than its bite. Custos, March.

WESSELS, H.L. 1985. Reptiele van die Namibwoestyn. Archimedes 27(1).

Desert Ecological Research Unit
Transvaal Museum/Council for Scientific and Industrial Research
Dr R.D. Pietruszka reports:

Current Herpetological Projects:

1. Assessment of the applicability of stomach-flushing to Namib desert lizards. R.D. Pietruszka.

2. Population ecology of the wedge-snouted lizard, *Meroles cuneirostris.* R.D. Pietruszka.

3. Reproductive patterns in *Angolosaurus skoogi.* R.D. Pietruszka, M.K. Seely and C.S. Roberts.

4. Dietary specialization in *Angolosaurus skoogi* in relation to habitat and environmental variables. R.D. Pietruszka, M.K. Seely, D. Mitchell, and S. Hanrahan.

5. Thermal constraints on the surface activity of *Angolosaurus skoogi.* M.K. Seely, R.D. Pietruszka, D. Mitchell and C.S. Roberts.

6. Brain-body temperatures in *Angolosaurus skoogi.* C.S. Roberts, M.K. Seely and D. Mitchell.

Recent Publications

R.D. Pietruszka. 1986. Search tactics of desert lizards: how polarized are they? In Press. Animal Behaviour.

S.R. Crowley & R.D. Pietruszka. 1983. Aggressiveness and vocalization in the leopard lizard (*Gambelia wislizenii*): the influence of temperature. Anim. Behav. 31: 1055-1060.

Nature Conservation Division
Transvaal Provincial Administration
Mr N.H.G. Jacobsen reports:

1. Only one research project is currently in progress which is "A Survey of the reptiles and amphibians of the Transvaal". This project was initiated during October 1978 and the fieldwork has more or less been completed. At this stage, the taxonomic phase is in progress with all specimens being examined for positive identification. There are numerous taxonomical problems particularly in the lizards including the genera *Lygodactylus, Afroedura, Bradypodion Panaspis, Mabuya, Platysaurus* and *Cordylus*. I hope to complete this phase by the end of 1986.

   Initially the research involved one Nature Conservation Scientist (myself) and two Nature Conservators (R. Newbery and E. Pieteson) but the latter left and we were joined by Wally Petersen who after four years has left to go into the filming business. Before he left he led a camel expedition from Lobatse in S.E. Botswana through to Swakopmund — a noteworthy achievement. Only Richard and myself are currently involved with the project.

2. *Post graduate projects*

   I completed a study on the ecology of the reptiles and amphibians of the *Burkea africana* Savanna on the Nylsvley Nature Reserve for an M.Sc (1983) and have registered the current survey for a Ph.D at the University of Natal under Prof. J.C. Poynton.

3. **Recent publications concerning reptiles and amphibians include:**

JACOBSON, N.H.G. (1984). A new subspecies of *Chirindia langi* (Reptilia: Amphisbaenia) from Southern Africa, with notes on the Ecology of the species. Annals of the Transvaal Museum 33 (26): 391-398.

JACOBSEN, N.H.G. (1983). The distribution and status of Crocodile populations in the Transvaal outside the Kruger National Park. Biological Conservation 29: 191-200.

JACOBSEN, N.H.G. & U. de V. Pienaar (1983). New reptile records from the Kruger National Park. Koedoe 26: 135-144.

JACOBSEN, N.H.G. (1984). The Lesser creatures of the Steenkampsberg. Fauna & Flora 41: 25-27.

JACOBSEN, N.H.G. (In Press). A new subspecies of *Amblyodipsas microphthalma* (Bianconi), 1980, (Serpenter: Colubridae) from the Transvaal. Annals of the Transvaal Museum.

JACOBSEN, N.H.G. (In Press). Notes on reproduction in *Ichnotropis squamulos* and interspecific competition with *I. capensis* (Reptilia, Lacertidae) in the Transvaal, H.A.A. Journal.

JACOBSEN, N.H.G. (In Press). Growth of Puffadders (Bitis arietans) in captivity. H.A.A. Journal.

JACOBSEN, N.H.G. (In Press). Additional notes on reproduction in the Horned Adder (*Bitis caudalis*) and a note on reproduction in the Berg adder *Bitis atropos*.

PETERSON, W., NEWBERY, R.E. & JACOBSEN, N.H.G. (1985) Cordylus giganteus is alive and well and living at Rietpoort. Fauna & Flora 42: 26-29.

NEWBERY, R.E. (1984). The American Red-eared Terrapin in South Africa. African Wildlife 38(5): 186-189.

NEWBERY, R.E. (1983). The Water leguan. Bush news (Nature Conservation Newsletter to the lowveld farmers).

NEWBERY, R.E. (1985). The crocodile. Bush News (Nature Conservation Newsletter to lowveld farmers).

7. **Other News**

During a recent field trip Richard Newbery collected a series of specimens of an *Afroedura* species from the Wolkberg which have turned out to be *A. pondolia multiporis* which was last collected in 1916 although a juvenile probably of this species but unidentifiable was collected more recently in the Wolkberg.

Taxonomical work on the *Bradypodions* is progressing well and hopefully will be written up this year. A total of seven species and two subspecies is the likely result but this may be subject to charge as the data is analysed. The *Cordylus warreni* complex has received considerable attention and will also be finalised during the year. As time permits other groups will be completed.

In conjunction with Drs. E. Maclain (Department of Physiology, Medical School, Wits University) and Dr. M. Markus (Department of Zoology, Wits University) research into fever in *Cordylus vittifer* is being undertaken. All populations of *Cordylus vittifer* sampled so far (4), have been heavily infested with malarial parasited (*Plasmodium* spp.) as well as other blood parasites such as *Haemogregarine* spp. and probably a host of other protozoans. These parasites as is to be expected cause extensive mortalities when these lizards are subjected to the stress of captive conditions, particularly those with a heavy parasite load. It now remains to find a plasmodium-free population to compare the thermal preferences and behaviour of these, to those heavily infected. Failing to find a population free of these parasites a group of infected animals will have to be treated with drugs to kill the parasites and initiate a colony free of the malaria. It promises to be interesting.

Department of Biological Sciences
University of Natal, Durban
Prof. J.C. Poynton reports:

1. Research project. Taxonomy, zoogeogrphy and ecology of southern African amphibians.

2. Postgraduate projects. Herpetology of the Transvaal (Ph.D.: N.H.G. Jacobsen). Herpetology of Durban (M.Sc.: G. Alexander) Zoogeography of Natal amphibians (M.Sc: A.J. Lambiris).

3. **Recent publications**

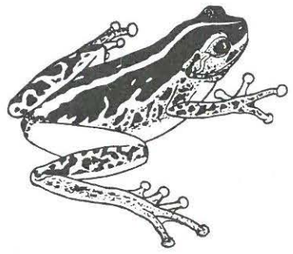
POYNTON, J.C. 1985. On the *Hyperolius marmoratus* complex (Anura). S. Afr. J. Sci. 81: 179-181.

POYNTON, J.C. 1985. Nomenclatural revision of southeast African treefrogs of the genus *Leptopelis* (Amphibia: Hyperoliidae). S. Afr. J. Sci. 81: 466-468.

POYNTON, J.C. 1985. Durban's amphibians are interesting and varied. Durban: Parks, Recreation & Beaches, Department of Durban Municipality.

POYNTON, J.C. & BROADLEY, D.G. 1985. Amphibia Zambesiaca 1. Scolecomorphidae, Pipidae, Microhylidae, Hemisidae, Arthroleptidae. Ann. Natal Mus. 26: 503-533.

POYNTON, J.C. & BROADLEY, D.G. 1985. Amphibia Zambesiaca 2. Ranidae. Ann. Natal Mus. 27: 115-181.



1. **Research project.** *Amphibia Zambesiaca* (amphibians of the Zambezi area) by J.C. Poynton and D.G. Broadley is being prepared mainly in the Natal Museum, and is being published in the museum's *Annals* (see references under the University of Natal, Durban). Part 3 (Rhacophoridae and Hyperoliidae) is due to go to press in January.

4. The Natal Museum is currently receiving a large amount of amphibian material from the Natal Parks Board. The museum has no permanent curator of herpetology, but the collection is being curated by Professor Poynton, an honorary research associate of the museum.

Durban Natural History Museum
Durban
Mr G.J. Alexander Reports:

There is no Herpetologist employed by the Durban Museum at the moment. I am filling this gap to the extent of making sure the wet collection is kept in good condition and increased in size. We are working closely with FitzSimon's Snake Park and are gaining much material from this source. Our Reptile collection has increased from approximately 500 specimens at the beginning of 1985 to a total of approximately 1 500. The amphibian collection has had a similar increase. We are in the process of checking specimen numbering and indentification.

You have already been informed as to the subject of my Masters Degree (by Prof. J.C. Poynton). I am also involved with a capture, recapture project on *Afroedura pondolia pondolia* and *Hemidactylus mabouia mabouia* in the Pigeon Valley Nature Park in Durban. This project is aimed at learning something of the Biology of *Afroedura pondolia pondolia* and the effect that the exotic species (*Hemidactylus mabouia mabouia*) is having on its populations. This work should result in a publication at the end of 1986.

Natal Parks, Game and Fish preservation Board
Pietermaritzburg
Dr O. Bourquin reports:

The numbered titles are registered as research projects with the Natal Parks Board.

Turtles

1. **Sea turtle population assessment**

Dr G.R. Hughes

A monitoring project ongoing since 1963 — has resulted in numerous publications and one Ph.D. thesis. An annual tagging and recording programme is carried out by NPB & KwaZulu. The breeding population of both loggerhead and Leatherback turtles has doubled since the inception of the programme which includes anti-poaching activities.

Crocodiles

2. **Individual identification and observation of sexual specific behaviour in crocodiles**

Mr. J. Fiedler-Buerk — recently registered.

3. **The effects of egg-incubation temperature on sex determination in the Nile Crocodile.**

Mr J. Fiedler-Buerk — ongoing for about 6 months.

4. **Identification of Crocodile nesting sites in the Hluhluwe and Umfolozi Game Reserves, with notes on incubation temperature.**

D. Hartley (recently completed).

The population and breeding status of the Nile Crocodile in the Hluhluwe Game Reserve — Northern Corridor, Zululand.

D.S. Reynolds — recently registered.

In addition to this, an annual assessment of crocodile numbers, and nest site surveys is undertaken by Mr. D. Blake (St. Lucia Crocodile Centre), and KwaZulu is also doing counts at Sibayi and Kosi. A project plan is being drawn up for a monitoring programme of crocodiles in Natal, & proposals for a crocodile diet study are being considered.

Snake

Assistance has been given to Ms. Toy Bodbijl in the compilation of a synopsis of biological data on the Gaboon viper. This work will hopefully be completed during 1986.

Reptiles — General

6. The distribution of wild vertebrates in Natal

Dr. O. Bourquin

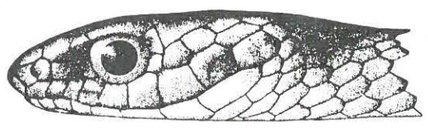
Data on the distribution and habitats of amphibians and reptiles in Natal are collected as part of this project, which has been ongoing for 5 years. The object is to consolidate known records for Natal and to fill in gaps where possible by collecting, so that requirements relating to conservation of the species can be clarified. The information is to be computerised for easy access and updating. A programme has been completed and is being tested using records of "red-data" reptiles.

Any good sight records, or records of collected specimens of common or rare species will be welcome, as there are still many gaps in our knowledge of distributions.

A number of range extensions have already been established, some new species (dwarf chamaeleons) found, and populations of *Cordylus giganteus* have been discovered.

Amphibians

Angelo Lambiris will be carrying out a project on amphibians distributions and conservation issues — this project has not yet been finalized or registered, but will probably start during 1986.



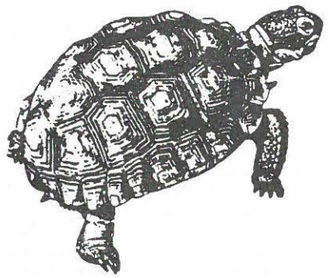
ANNOUNCING

THE

TENTH INTERNATIONAL HERPETOLOGICAL SYMPOSIUM

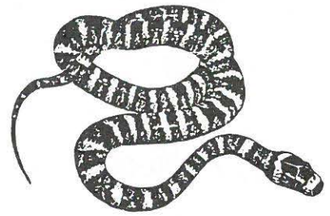
ON CAPTIVE PROPAGATION & HUSBANDRY

AT



SAN ANTONIO, TEXAS

JUNE 25-28, 1986



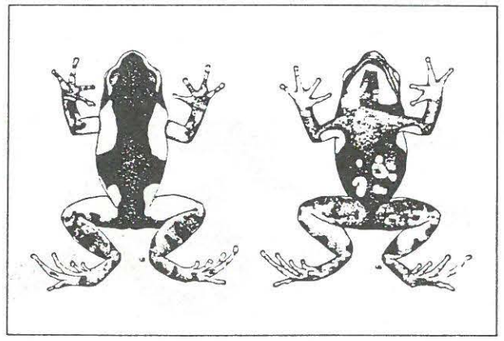
CALL FOR PAPERS

All amateur and professional herpetologists are invited to submit for consideration the titles of papers they wish to present at the 10th International Symposium on Captive Propagaion and Husbandry to be held at the El Tropicano Hotel along the River in San Antonio, Texas. Time allotted for papers is 30 minutes. A preliminary program will be established by January 25, 1986 so a 100-150 word abstract of a presentation should be submitted by contributors prior to January 11, 1986. Final manuscripts should be submitted prior to June 12, 1986. Submit all program information to: Mike Bumgardner, Department of Wildlife and Fisheries Biology, University of California, Davis, California 95616; (916) 752-8934. Symposium Coordinator is Randall Gray, P.O. Box 1850, Chinle, Arizona 86503; (602) 674-5269. Symposium Series Director is Richard A. Hahn, Zoological Consortium, Inc., 13019 Catoctin Furnace Road, Thurmont, Maryland 21788; (301) 662-0328. Program Committee members are Karl Peterson, 1513 Outerbelt Drive, Houston, Texas 77030; (713) 520-3226 and Sean McKeown, Roeding Park Zoo, 894 West Belmont Avenue, Fresno, California 93728; (209) 488-1096. Host Committee members are Joseph Laszlo, San Antonio Zoo, 3903 North St. Mary's Street, San Antonio, Texas 78212; (512) 734-7183; Jim Seippel, Greater San Antonio Herpetological Society, 9708 Braes Valley Street, Austin, Texas 78729; (512) 258-8584 and Tom Vermersch, Greater San Antonio Herpetological Society, 3130 Waurika Street, San Antonio Texas 78223. European Liaison is Quentin Bloxam, Jersey Wildlife Preservation Trust, Channel Islands, Great Britain 0534 61949. Australian Liaison is Chris B. Banks, Department of Herpetology, Royal Melbourne Zoological Gardens, P.O. Box 74, Parkville, Victoria 3052, Australia; (03) 347-1522.

New from E. J. Brill of Leiden:
A multidisciplinary journal devoted to all aspects of herpetology

Amphibia-Reptilia

Publication of the Societas Europaea Herpetologica



E. J. BRILL PUBLISHERS
P.O.Box 9000 — 2300 PA Leiden — The Netherlands

ISSN 0173-5373

AMPHIBIA-REPTILIA

Publication of the Societas Europaea Herpetologica

Amphibia-Reptilia is published by the Societas Europaea Herpetologica (SEH), an international scientific society which takes as its aim the furthering of scientific research, participation in all problems regarding the conservation of amphibians, reptiles and their habitats, and the encouragement of closer collaboration between all European and non-European herpetologists. The Executive Council of the SEH consists at present of eight persons representing five European countries.

SEH tries to realize its aims by organizing meetings, congresses and symposia, in order to encourage a lively exchange of information, but mainly by publishing the journal *Amphibia-Reptilia*.

Amphibia-Reptilia is a multidisciplinary journal devoted to all aspects of herpetology, including e.g. the use of biochemical techniques in herpetological research, electron microscopy, genetics, palaeoherpetology, taxonomy, zoogeography, behaviour, physiology, ecology, etcetera. *Amphibia-Reptilia* accepts original articles in English, French, German and Spanish. Each article is provided with a summary in English, and when applicable, one in the language in which it has been written.

Amphibia-Reptilia, which is currently in its fifth year of publication, has been enthusiastically received by the herpetological community world-wide. It is published quarterly and distributed to members of the SEH and to subscribers all over the world. Each volume consists of 360 pages of scientific articles and book reviews, and an additional 24 pages with SEH-news and information on other herpetological societies or on conservation activities. Volume 6 (1985) costs Gld. 120.00 or US$ 44.00 exclusive of forwarding charges.

E. J. Brill — P.O.B. 9000 — 2300 PA Leiden — The Netherlands

Notice to readers of 'Amphibia-Reptilia'

Due to the bankruptcy of the former publisher of 'Amphibia-Reptilia', the production of Vol. 4 (2-4) and 5 (1) has been seriously hampered. Because of financial commitments of the former publisher to a type-setting firm in Wiesbaden that had not been met, the type-setting firm first refused to hand over the plates to the Editors of 'Amphibia-Reptilia' and it took long negotiations to get the 'co-operation' of the type-setting firm, which was needed for correction of errors in the galley-proofs. The very tedious process of correcting the plates only was finished towards the middle of October, when the 'corrected' plates were at last handed over to the First Co-Editor. At that moment it was discovered that there still remained a number of errors, but as time was pressing, new corrections were likely to take some more months and as the new publisher (using a different system) could not correct the plates, it was deemed wisest to go ahead with printing and take the errors for granted.

The Council wishes to apologise for this rather low standard of quality in these two issues, in the first place to the authors, but also to the members of SEH and other readers. We hope you can accept these apologies in the light of the difficult circumstances that have surrounded the journal the past year.

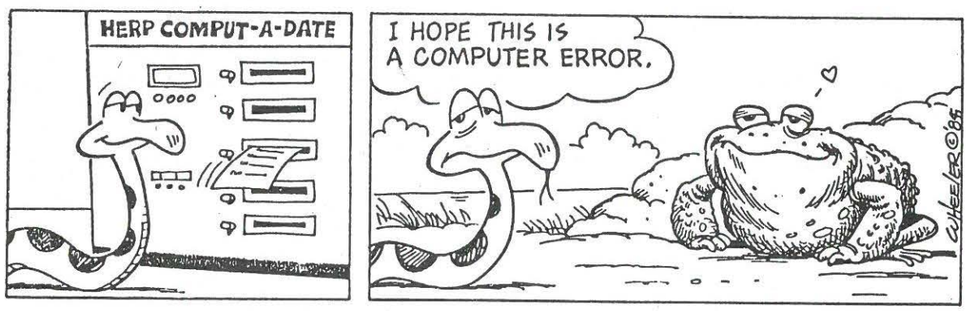
Another matter, important because of nomenclature and for bibliographic references, is the date of publication of these issues (vol. 4 (2-4) and 5 (1)) of 'Amphibia-Reptilia'. The dates mentioned on the cover and on the title pages are only those on which the issue should have appeared. However, they were published much later, due to the circumstances outlined above. They were printed in early November 1984 and were sent from the printer in Wiesbaden to the new publisher in Leiden on November 12, 1984. Due to customs, they only arrived in Leiden on November 30, 1984 (coinciding with a meeting of the publisher, the Co-editors and the General Secretary). Thus, a specimen of each issue arrived in the Rijksmuseum van Natuurlijke Historie, Leiden on November 30, 1984. The Treasurer (Dr. H. Wermuth) already received some voucher copies of the issues on November 7, 1984. Also, several authors in Germany by November 9, 1984, already had reprints in their possession, which were mailed by the printer probably on November 5 or 6, 1984. Distribution by mail of both issues to members of SEH (not to subscribers) was on December 7, 1984. This complicated history does not exactly simplify the determination of priorities and such, but at least decisions can be taken on this basis.

With this (vol. 5 (2)) issue of 'Amphibia-Reptilia', completely produced by our new publisher Brill in Leiden, we hope to resume a regular pattern of publication. As soon as we are up to date, publication will be in the months February, May, August and November.

This notice also gives me an opportunity to remind you of the fact that vol. 4 (1), which should have been distributed by our former publisher, was not sent to all members who paid their dues for 1983. Despite several requests I sent out to all members in the past year, asking them to notify Council when they had not received vol. 4 (1), it turns out that not everybody did so at that time and we are still receiving complaints. Thus, if you did pay your dues for 1983 and yet did not receive vol. 4 (1), please inform me as soon as possible (in writing) and I will take care that you receive it. After December 31, 1985 complaints no longer can be taken into account.

Formerly, SEH members could purchase back-issues of 'Amphibia-Reptilia' by paying the regular membership fees for the year(s) concerned. Since E. J. Brill, Leiden, our new publisher, now has taken over all assets and actually also some of the liabilities (printing of vol. 4 (2-4) and 5 (1)) of the former publisher, a new regulation has come into force on January 1, 1985. Back-issues only can be obtained from the publisher, without any interaction of SEH. All members interested in buying back-issues consequently should contact the publisher at the following address:

Uitgeverij E. J. Brill
c/o Dr. W. Backhuys
Postbus 9000
2300 PA Leiden
The Netherlands



Two reptiles among the 12 most threatened animals of the world

During its recent 16th General Assembly in Madrid IUCN, on November 14, 1984, released a list of the most threatened animals and plants of the world. This list was selected by specialists of IUCN's Species Survival Commission from an initial 'hit list' that contained 34 animals and 32 plants. All species on this hit list were selected using a specified set of criteria. The top twelve of each group were selected with the aim to direct public awareness to their precarious situation, in order to obtain top priority for conservation action and—hopefully—recovery in the wild. As Mr. Grenville Lucas, Chairman of the SSC, put it: "The animals and plants we are highlighting face many threats within these two (ill-considered and careless development, and destruction of resources) areas. They are not necessarily the most threatened—although several are on the brink of extinction. We hope they will act as standard bearers to alert the world to the grave situation facing the complex web of life on earth for which we humans are responsible". Among the 12 species of animals selected are a tortoise and a crocodile. The tortoise is threatened by destruction of its habitat, the crocodile by the hide trade. Following are short statements concerning these species as made by IUCN:

Agonoka—The Madagascan Tortoise

The angonoka *Geochelone yniphora* is the rarest tortoise on earth, with probably fewer than 200 specimens alive. The majority of the known specimens are in private hands in Madagascar. They are kept as pets because they are believed to clean up backyards and prevent poultry disease. In the field the number of individuals found by researchers has never exceeded 10, however long the search.

An immediate species rescue programma must be started. Unfortunately no wild nests have ever been found and efforts at captive breeding have so far been almost totally unsuccessful. Only one tortoise has been bred with the help of electro-ejaculation and artificial insemination. The remaining habitat in the north of Madagascar is sub-optimal and the depredation of grazing animals is further reducing the area's viability for this very rare species.

The Tortoise Group of IUCN's Species Survival Commission has prepared a rescue programme involving captive breeding and habitat conservation. Members have made many visits to Madagascar in the last few years and it is now clear that, if the present captive breeding facilities there are unsuitable (a member is currently there examining the situation), a formal request will be made for some more privately-held specimens to join the world "herd" of a handful of animals in the New York Zoological Society's facility at St. Catherine's island, Georgia.

The existing wild habitat on Cape Sada can be conserved relatively simply. With the help of Operation Tortoise and the support of the Malgâche authorities it is hoped to save this remarkable tortoise from extinction.

Orinoco Crocodile

The Orinoco crocodile *Crocodylus intermedius* is considered critically endangered with extinction. It has been wiped out in most of its former range in the Orinoco river system

in both Colombia and Venezuela by hide collectors. Only 1,000-1,500 individuals may survive of this crocodile, which was once the dominant carnivore of the Orinoco rivers.

The situation is most critical in Colombia because there are fewer crocodiles left there and the Colombian Government has not made any special effort to save them, except for a weakly-enforced ban on hunting and sale of hides.

In Venezuela there are individual crocodiles scattered through a number of rivers and there are small populations in isolated areas. One population of 15-30 crocodiles was discovered last year on the Caura river, where the government has proposed building a dam. The area should be declared a wildlife refuge to protect the crocodiles and other wildlife from the hunting that will be inevitable with the arrival of construction workers.

The Venezuelan Ministerio de Ambiente y de los Recursos Naturales Renovables, and its Direccion de Informacion y Investigacion, have mounted an aggressive programme to protect the crocodiles. Hunting has been banned, and the authorities are considering the establishment of refuges and other protected areas.

The Ministerio is also assisting several private land-owners and non-governmental conservation organisations to establish captive breeding programmes. One centre has been established by Tomas Blohm and the Fundacion para la Defensa de la Naturalea (FUDENA) on the Hato Masaguaral ranch with the Ministerio's assistance. Captive bred offspring will be used to restock rivers and wetlands, where the species can be protected.

A special effort is being made to protect the Orinoco crocodile when controlled hunting is again permitted of the spectacled caiman *Caiman crocodylus* after a 10-year gap.

The Orinoco crocodile is a large animal, which can grow to over six metres (20 feet). It is a pale yellow-green. The narrow snout is probably an adaptation to a diet rich in fish. It accounts for the scientific name *intermedius* because it is between the round snout of the Nile crocodile *Crocodylus niloticus* and the extremely slender snout of the fish-eating Indian gharial *Gavialus indicus*.

It was deemed useful to inform SEH members about this IUCN action, mainly aimed at the public domain, in order to alert them to any opportunity to reinforce the action (fundraising, research, conservation action), proposed by IUCN. On the other hand any information on action detrimental to the species should also be brought to the attention of IUCN as soon as possible.

Data (positive or negative) on *Geochelone yniphora* should be brought to the attention of Dr. Ian Swingland, Chairman SSC Tortoise Group, c/o Ecology Research Group, Rutherford College, University of Kent, Canterbury, Kent CT2 1NX, United Kingdom.

Any data (positive or negative) on *Crocodilus intermedius* should be brought to the attention of Dr. F. Wayne King, Chairman SSC Crocodile Group, Florida State Museum, Fainesville, Florida 32611, U.S.A.

Amphibia-Reptilia 6 (1985): 101-115, E. J. Brill, Leiden

M.S. Hoogmoed

PROCEEDINGS B of the 2ND EUROPEAN CHELONIAN SYMPOSIUM
held at Oxford, England, 3–4 October 1981
organized by Dr M. R. K. Lambert

Published in the journal of the British Chelonia Group, *Testudo* **2**(2): 1–32, 1983

Editor: M. R. K. Lambert

Contents

Copies of the *Testudo* number containing Proceedings B are available at £ 1.50 from: Mr G. N. Wallace, Librarian, British Chelonia Group, 36A Wetlands Lane, Portishead, Bristol BS20 8NF, U.K. Cheques, postal orders and international money orders should be made payable to the 'British Chelonia Group'.

Background

During a visit to London in August 1979, Jean-Paul RISCH discussed with me the coordination of interests in tortoises and other chelonians in Europe on rather similar lines to the Desert Tortoise Council, California (for SW U.S.A. since 1975). This resulted in the first European symposium on tortoises ('I. Symposium Cheloniologicum Europaeum') being organised by Jean-Paul RISCH, in conjunction with the Annual Meeting of the French herpetological society on 15 and 16 May 1980 at Nancy. The First European Chelonian Symposium was thus appropriately held in France where three Mediterranean species are indigenous and legally protected. The Proceedings were later published in the *Bulletin de la Société herpétologique de France,* no. 19, 1981.

In 1980, the IUCN (International Union for the Conservation of Nature and Natural Resources) Species Survival Commission (SSC) founded a land tortoise specialist group with Dr. I.R. SWINGLAND (University of Kent, Canterbury, England) as Chairman. Dr. SWINGLAND's previous experience, while with the University of Oxford and sponsored by the Royal Society, London, includes several years' work as part of a research team on the ecology of giant tortoises *(Geochelone gigantea)* on Aldabra Atoll, Indian Ocean. Also during 1980, the IUCN/SSC fresh-water chelonian specialist group was founded with Dr. E.O. MOLL (Eastern Illinois University, Charleston, U.S.A.) as Chairman.

In Europe, 1981 saw the proliferation of multinational herpetological meetings including the Franco-Spanish Herpetological Colloquium at Jaca (Huesca), Spain, 23–31 May; the First Herpetological Conference of Specialists of the Socialist Countries (I. Conferencia Herpetologica Respublicarum Socialisticarum') at Budapest, Hungary, 25–29 August; the First Ordinary General Meeting of Societas Europaea Herpetologica (SEH) at Vienna, Austria, 13–16 September (immediately followed-on by the Annual Meeting of the 'Deutsche Gesellschaft für Herpetologie und Terrarienkunde' (DGHT), also in Vienna, 16–20 September), and the International Herpetological Congress at

Oxford, England, 3–9 October. Largely for convenience, financial expediency and the international character of the last, together with appropriate facilities provided by the Department of Zoology, University of Oxford, it was decided to hold the Inaugural Meeting of the IUCN/SSC Tortoise Group at Oxford, 1 and 2 October, immediately preceding the Congress. The programme for the Colloquium at Jaca was full and the meeting rather too soon after the First Chelonian Symposium, and so in view of the significance of the IUCN/SSC Inaugural Meeting, although only 16 months later, it was agreed the 2nd European Chelonian Symposium should be held as a follow-on, 3 and 4 October, and integrated with the first two days of the Congress. (Thanks are due to the IUCN/SSC Tortoise Group for contributing towards the costs of the Symposium). The Congress's organisation was assisted by the British Herpetological Society (BHS), London, and the Association for the Study of Reptilia and Amphibia (ASRA), Burford, Oxon, Although invitations to the 2nd Symposium were sent from the BHS with rather short notice in July, the response was good, acceptances rapid and a programme established by September.

The European Chelonian Symposia aim in particular to bring together amateur and professional European and other specialists working on different aspects of the biology, especially ecology, relating to the conservation of Mediterranean species. It was intended that investigations on terrestrial forms would primarily be considered at the 2nd Symposium, although papers on fresh-water species were invited, either as part of the Symposium or as part of the Congress; time, programme space and subject-matter allowing. Since English was laid down earlier by the SEH for their Meeting in Vienna and was the language of the Congress, most of the Symposium papers were read in English, although to allow for continuity following the First Symposium, papers in French and, if offered, German, were to be considered with written English summaries available for circulation. As a principle, this was generally accepted. Papers were not in any case accepted without written summaries forwarded beforehand. This helped in drawing up the programme.

British dealers have been a major, although not the only, culprit in the European bulk import trade in pet tortoises from the Mediterranean Basin (an annual average of over 150,000, 1968–78), even since the U.K. Government's 1964 Animals (Restriction of Importation) Act and CITES ratification in 1976. The acts involved have now been largely superceded by the 1981 Wildlife and Countryside Act in line with the Convention on the Conservation of European Wildlife and Natural Habitats, Berne 1979. was fortunate enough to be able to attend the SEH Meeting in Vienna and read a paper on the conservation of Mediterranean (W. Palaearctic) tortoises, as well as have discussions with SEH Council members on the question of a greater herpetological input from Britain (I would like to thank the Royal Society, London, for approving a Travel Grant from the U.K. Parliamentary Grant-in-Aid to go to Vienna). During the meeting, Keith CORBETT, another BHS Council member, proposed the formation of an SEH Conservation Committee, with species mapping included in its remit, and later was accepted as Chairman. On the strength of its own Conservation Committee's involvement with the protection of species in Britain, the BHS was approved a member of IUCN as a national Non-Governmental Organisation at the 10th IUCN Council meeting in October 1981 at Christchurch, New Zealand. Hopefully, this will also be of interest of SEH in the future.

The aims of SEH are multinational and concerned with scientific research and nature conservation, which are particularly important for southern Europe where most species of herpetofauna, including the tortoises, occur. I am therefore most grateful to the Co-Editors of *Amphibia-Reptilia,* Prof. Dr. H. HEMMER and Dr. J. J. van GELDER, for enabling the scientific Proceedings A of the 2nd European Chelonian Symposium to be published in this journal. I would also like to thank Dr. R. A. AVERY (BHS Editor, British Journal of Herpetology) for providing a second opinion on their editing. The more general Proceedings B, including any abstracts of papers presented if published elsewhere, will be published in *Testudo,* the journal of the British Chelonia Group, Bristol. At this pioneering stage in the development of an interest in W. Palaearctic tortoises, the papers in both Proceedings parts will hopefully pose questions, stress the lack of data and available information and stimulate further conservation research and field work on Mediterranean chelonians which one anticipates learning about in a 3rd Symposium!

Michael R. K. Lambert

Introduction

Amphibia-Reptilia 5 (1984): 3–4, E. J. Brill, Leiden

It has become increasingly obvious that tortoise populations are being reduced or decimated throughout their global distribution because of range fires, habitat destruction and the trade in pets. Tortoises are peculiarly vulnerable to these threats being slow moving and defenceless. In recognition of these urgent problems, the Tortoise Group was formed as a result of the IUCN Species Survival Commission meeting in Florida 1980 and Sir Peter SCOTT, the then Chairman of the Commission, invited me to serve as founding Chairman.

The Tortoise Group exists to make governments and decision-makers aware of the need to conserve tortoises; to advise on National Red Data lists and laws for the protection of tortoise species on those lists; to encourage international agreements through which nations can co-operate in conserving endangered species; to provide accurate, current information concerning problems that may threaten species and an effective information network to recognise opportunities of enhancing the status of endangered species; to advise the Species Conservation and Wildlife Trade Monitoring Units; to put forward specific proposals for conservation projects; and to stimulate, encourage and help in research, extending our knowledge of these reptiles.

In order to fulfill these responsibilities, we have 22 members and over 200 correspondents representing every country in which tortoises are found. During our inaugural meeting* in Oxford just before the Symposium started, we discussed the conservation problems of the European Mediterranean species, several of which are involved with the bulk pet trade to northern Europe: *Testudo hermanni, T. graeca* and *T. marginata,* and the other western Palaearctic species, *T. kleinmanni* and *T. (Agrionemys) horsfieldii.*

Our feelings were that both the *hermanni* western population and *kleinmanni* require monitoring. Indeed, under my direction, a three-year research project on the ecology of *Testudo hermanni robertmertensi* funded by the Natural Environment Research Council in Britain is already underway and it is hoped to be able to produce a detailed conservation management plan applicable to most Mediterranean species populations apart from the more esoteric scientific results. The Tortoise Group hopes to encourage many more such projects elsewhere in Europe and in the World as the problems facing tortoises in the Mediterranean are a microcosm (and symptomatic) of precisely what is happening elsewhere (with the addition of tortoises being used as a food source by humans in some countries). Our greatest fear is that we are seeing a fragmentation of populations worldwide which, from our experience of other animal population trends, indicates not only a reduction in numbers but a greater vulnerability to extinction.

The most often heard view at the Group meeting was "we do not know the status of this species" and the second comment "we must find out more about the ecology of this animal if we are to know how to conserve it in the future if it becomes necessary". The means of conservation is knowledge; the aim, to secure the long-term survival of the species in its natural environment. We need to know much more about the distribution, population structure and dynamics, and behavioural patterns in tortoises and turtles. Excellent field work has been done on some of the *Gopherus* ssp. in the U.S.A., on giant tortoises (*Geochelone* ssp.) on some *Testudo* ssp. and on *Emys orbicularis* which lays a strong foundation for future fundamental research in evolutionary ecology and conservation of chelonians. But there is still much work to be done: further status surveys of species (around the Mediterranean, for example); more basic research; the production of management models from existing raw data on populations; greater representations to organisations, national governments and transnational authorities (such as the EEC and the European Parliament); the education of people living in areas inhabited by chelonians and finally, rapid implementation of necessary conservation measures.

The Second European Symposium embraces a wide area of tortoise ecology. I am sure it will be of great interest and most stimulating. I expect everyone will enjoy the occasion, both intellectually and socially, which are very good reasons for repeating the event at another venue and at regular intervals! Our thanks to Dr. Michael LAMBERT and M. Jean-Paul RISCH for organising this meeting.

It was once said by a colleague of mine that the ultimate form of "one-upmanship" for an animal ecologist was to have studied an extinct species. I sincerely hope we shall never be able to make such a boast!

December 1981

Dr. Ian R. Swingland
(Chairman, IUCN Species Survival Commission Tortoise Group)
University of Kent, Canterbury, U.K.

* A report of this meeting is available from Dr. Swingland.

ABSTRACTS

Preliminary Observations on the Ecology of the angulate Tortoise (*Chersina angulata*) in the Eastern Cape Province, South Africa

W.R. Branch

Port Elizabeth Museum, P.O. Box 13147, Humewood 6013, South Africa. This paper was read at the 2nd European chelonian Symposium by Dr. M.R.K. Lambert.

Abstract. The ecology of the angulate tortoise, *Chersina angulata* SCHWEIGGER, has been studied using mark-recapture techniques, on a 100 ha farm near Port Elizabeth, Eastern Cape Province, South Africa. Biometrical parameters of sexual dimorphism are analysed, and preliminary estimates of growth, home range and density given. Temperature recordings from wild, active and sedentary toirtoises indicated a prefered maximum temperature of 28-32° C.

Amphibia-Reptilia 5 (1984): 43-55, E.J. Brill, Leiden

Conservation Status of South African Land Tortoises, with Special Reference to the Geometric Tortoise (*Psammobates geometricus*)

J.C. Greig

Cape Department of Nature and Environmental Conservation, Jonkershoek Nature Conservation Station, Private Bag 5014, Stellenbosch, 7600, South Africa.
Present address: Editor, 'African Wildlife', 55 Reitz Street, Somerset West, 7130, South Africa. This paper was read at the 2nd European Chelonian Symposium by Dr I.R. Swingland.

Abstract. The geometric tortoise, *Psammobates geometricus* (L.), is one of eleven South African species. It is confined to the south-west Cape region. A 7.5 ha reserve of natural veld was established near Paar in 1972. By 1976, 80 *P. geometricus* and by 1980, 170 *P. geometricus* and 94 *Homopus areolatus* (THUNBERG) had been marked, work on the latter starting in 1979. The tortoise population was estimated at 260 (ca. 10 ha ^{1}), half being *P. geometricus*. Twenty *P. geometricus* were lost to predators, a bush-cutting machine and emigration. Twelve further *P. geometricus* areas have been identified, two of which have been formed into reserves. A large (3 000 ha) private nature reserve established in 1973 north of Paarl hold the largest surviving population.

Amphibia-Reptilia 5 (1984): 27-30, E.J. Brill, Leiden

Description of a new species of *Afroedura* (Loveridge) Reptilia: Gekkonidae) from the south-western Cape

P. le F.N. Mouton and D.P. Mostert

A new gekkonid species, *Afroedura hawequensis*, is described from the south-western Cape (South Africa). The three species groups recognized in the genus are discussed.

S. Afr. J. Zool. 1985, 20: 246-249.

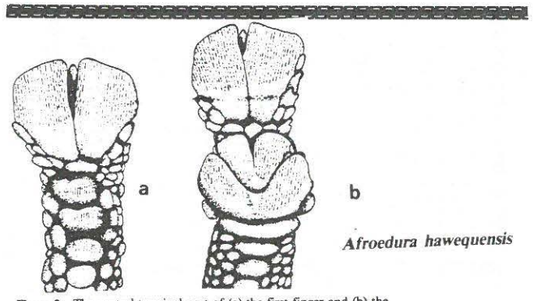


Figure 2 The ventral terminal part of (a) the first finger and (b) the third finger of the left hand of the holotype, TM 58437.

WORLD CONGRESS OF HERPETOLOGY

Planning for the first World Congress of Herpetology is proceeding on schedule. The Executive Committee, an international group of 17 persons, and the recently-elected 50-member International Herpetological Committee are now evaluating the criteria to be used in choosing a site and date, and discussing the format and content of the Congress. It is our plan to organize a Congress to be held in about 4 years that will be accessible to and of interest to all persons who study amphibians and reptiles. Potential hosts should contact the Secretary-General: Kraig Adler, Cornell University, Seeley G. Mudd Hall, Ithaca, New York 14853, USA. As soon as a decision on venue and date is reached, an announcement will be published in this journal giving the full details and the address to write for further information.

The Congress itself will be self-supporting, but in the meantime, during these all-important planning years, the organization will have considerable expenses—mostly printing and postage—yet it has, at the moment, no budget. The Committee has decided to raise the necessary funds by asking interested individuals to make a one-time contribution. Those persons donating 100 Dutch guilders (U.S. $35) would be named as "Sponsors," a designation that would appear in the formal program of the meeting; those able to contribute 1000 guilders would be designated "Benefactors." In the meantime, all such persons will receive copies of our *Newsletter* which will keep them informed of Congress planning activities. We hope that many colleagues will join with us in promoting herpetology on an international basis through the Congress. If you are able to do so your contribution can be made to one of our official accounts:

—POSTAL CHECKING ACCOUNT: Dr. M. S. Hoogmoed, Leiden, account number 5327161.
—BANK ACCOUNT: World Congress of Herpetology, Algemene Bank Nederland (A.B.N.), Leiden, account number 566274078.
—BANK ACCOUNT: World Congress of Herpetology, Marine Midland Bank, New York City, account number 006667341.

Contributions can be made in Dutch guilders to either account in Leiden or in U.S. dollars to that in New York. Checks may also be sent directly to the **Treasurer: Marinus S. Hoogmoed, Rijksmuseum van Natuurlijke Historie, P.O. Box 9517, 2300 RA Leiden, The Netherlands.**

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

The following opinion have been published by the International Commission on Zoological Nomenclature in the Bulletin of Zoological Nomenclature, Volume 42(4), December 1985.

OPINION 1364
KASSINA GIRARD, 1853 (AMPHIBIA, ANURA): CONSERVED
(see Opinion 849)

RULING.—(1) Under the plenary powers the generic name *Eremiophilus* Fitzinger, 1843, is hereby suppressed for the purposes of the Principle of Priority but not for those of the Principle of Homonymy.

(2) The generic name *Hylambates* Duméril, 1853 (gender: masculine), type species, by monotypy, *Hylambates maculatus* Duméril, 1853, is hereby placed on the Official List of Generic Names in Zoology with an endorsement that it is not to be given precedence over *Kassina* Girard, 1853, whenever the two names are considered synonyms (Name Number 2297).

(3) The specific name *maculatus* Duméril, 1853, as published in the binomen *Hylambates maculatus* (specific name of the type species of *Hylambates* Duméril, 1953) is hereby placed on the Official List of Specific Names in Zoology with the Name Number 3038.

(4) The generic name *Eremiophilus* Fitzinger, 1843, as suppressed under the plenary powers in (1) above, is hereby placed on the Official Index of Rejected and Invalid Generic Names in Zoology with the Name Number 2173.

HISTORY OF THE CASE Z.N.(S.)2343

An application for the conservation of *Kassina* Girard, 1853, was first received from Dr A. Dubois and Dr J. J. Morère (*Muséum National d'Histoire Naturelle, Paris, France*) and Mr A. F. Stimpson and Mr B. T. Clarke (*British Museum (Natural History), London*) on 22 April 1980. After some correspondence, a revised draft was sent to the printers on 19 April 1983 and published on 15 July 1983 in *Bull. zool. Nom.*, vol. 40, pp. 114–116. Public notice of the possible use of the plenary powers was given in the same part of the *Bulletin* as well as to the statutory serials, to seven general and three herpetological serials. A supportive comment was received from Dr H. M. Smith (*University of Colorado, U.S.A.*). No adverse comments were received.

DECISION OF THE COMMISSION

On 15 April 1985 the members of the Commission were invited to vote under the Three-Month Rule on Voting Paper (1985)32 for or against the proposals set out in *Bull. zool. Nom.* vol. 40, pp. 114–115. At the close of the voting period on 15 July 1985 the state of the voting was as follows:

Affirmative Votes — twenty-three (23) received in the following order: Melville, Cocks, Holthuis, Halvorsen, Binder, Savage, Gruchy, Trjapitzin, Mroczkowski, Corliss, Lehtinen, Ride, Alvarado, Willink, Hahn, Schuster, Uéno, Brinck, Dupuis, Kraus, Bayer, Heppell, Bernardi

Negative Votes — none (0).

Late affirmative votes were returned by Cogger and Starobogatov.

ORIGINAL REFERENCES

The following are the original references for the names placed on Official Lists and an Official Index by the ruling given in the present Opinion:

Eremiophilus Fitzinger, 1843, *Systema Reptilium*, p. 32
Hylambates Duméril, 1853, *Annls. Sci. nat. (Zool.)*, vol. 19, p. 162
maculatus Duméril, 1853, *ibid.*, p. 165.

CERTIFICATE

I hereby certify that the votes cast on Voting Paper (85)32 were cast as set out above, that the proposals contained in that voting paper have been duly adopted under the plenary powers, and that the decision so taken, being the decision of the International Commission on Zoological Nomenclature, is truly recorded in the present Opinion No. 1364.

R. V. MELVILLE
Secretary
International Commission on Zoological Nomenclature
London
12 August 1985

Bull. zool. Nom., vol. 42, pt 4, December 1985

Operation Tortoise

Patron: Mr. Gerald Durrell, Jersey Wildlife Preservation Society

Director: Dr. Ian Swingland, University of Kent, Chairman IUCN Tortoise Specialist Group

Aim: To determine the status and examine the comparative ecology of many of the world's species of tortoise for the purposes of conservation.

The Tortoise Specialist Group of the IUCN Species Survival Commission was set up in October, 1981, to provide an action plan for ecological research and the world-wide conservation of tortoises. Although two major single-species studies in Europe and N. America have been successfully funded, there are considerable gaps in our knowledge of the status, distribution and ecology of the 39 species which still survive. Without even the most basic information on most species it is impossible to formulate effective conservation plans.

OPERATION TORTOISE is planned as a 4-year project to study tortoise species around the world. It is to take place in association (where possible) with "Operation Raleigh", a multinational expedition headed by HRH The Prince of Wales, which will supply some logistic support and additional manpower, thereby minimizing the budget.

The project will involve animal ecologists in a large number of countries who specialize on tortoise ecology and behaviour and will also provide opportunities for a large number of young people to become involved with field-work, on tasks ranging from general prospecting in search of tortoise populations, to detailed observations focused on individual animals.

The work can be carried out entirely in the field with only a modest amount of equipment and is not dependent on major back-up facilities. The methods have been used successfully on previous single species studies, including expeditions, and have provided rigorous data suitable for publication. Research will be carried out in the same manner at each site visited so that data will be directly comparable between sites and with existing data sets for European and other species.

Many of the species to be studied are endangered and populations are being decimated each year by fires, development, gassing, dune buggies, missile site construction, competition with grazing stock, and by collecting and use in making musical instruments and other souvenirs. Comparative studies should enable the development of common themes for the conservation of several species.

The Ecology Group at the University of Kent will be the coordinating base and data bank for OPERATION TORTOISE and all results will be published by the participants both in the form of scientific papers and as reports to conservation bodies and the governments concerned.

A few of the study species

Geochelone yniphora (Angulated Tortoise): restricted to forest areas in the vicinity of Baly Bay, north-western Madagascar. "The rarest tortoise on earth ... requiring immediate conservation measures" (Sir Peter Scott, 1983). STATUS ENDANGERED.

Gopherus flavomarginatus (Bolson tortoise): occurs in the Bunch Grass ecosystem, Mexico. "It is nearing extinction and a research project is the only hope for its survival" (Prof. Hobart Smith, University of Colorado, 1982). STATUS ENDANGERED

Terrapene nelsoni (Pedro-Pablo box tortoise): found only in one small location near Pedro Pablo, Mexico. "Little if anything is known about this species" (Dr. Peter Pritchard, Florida Audubon Society, 1981). STATUS RARE.

Geochelone elephantopus (Giant Galapagos tortoise): a recensus of the various island populations on the Galapagos archipelago is needed. The last census was carried out well over ten years ago since when a large number of feral mammal control programmes have been executed and the effects of the captive breeding/captive rearing programmes should be measurable. "An animal that Charles Darwin saw and used in his thinking on the Origin of Species" (Andrew Mitchell, Scientific Coordinator, 'Operation Drake'). STATUS ENDANGERED.

Geochelone radiata (Radiated Tortoise): another endemic species, restricted to Didierea forest across southern Madagascar. "An illicit consignment of these tortoises was found in Hong Kong and has been returned to Jersey to enable the setting up of breeding groups" (Jeremy Mallinson, Jersey Wildlife Preservation Society, 1983). STATUS VULNERABLE.

Operation Tortoise itinerary

Phase 1: CENTRAL AND SOUTH AMERICA
February, 1985 - January, 1986
Phase 2: SOUTH-EAST ASIA AND INDIA
January, 1987 - November, 1987
Phase 3: AFRICA, ALDABRA & MADAGASCAR
January, 1988 - December, 1988

Operation Tortoise sponsorship fund

A proportion of the funding for this project will be generated by the individual scientists undertaking particular phases of this project in the form of grants for scientific research and conservation. However, this will still leave a substantial amount to be raised. The estimated funding required for each phase is as follows:

Phase 1: £5,200
Phase 2: £6,000
Phase 3: £5,000
Thus: Initial funding requirement by early 1985 = £5,000
Total funding requirement by late 1987 = £16,200

If sufficient sponsorship is obtained it will be possible to employ a full-time, or possibly phase-long, field officer. This would ensure that all the projected fieldwork is carried out and would provide a greater degree of on-ground cohesiveness. The funds required for this would be in the region of £30-45,000.

All donations or sponsorships will go directly to supporting people in the field.

ZOOLOGICAL BOARD OF VICTORIA
THE ROYAL MELBOURNE ZOOLOGICAL GARDENS
PARKVILLE, VICTORIA 3052, AUSTRALIA
PATRON: HIS EXCELLENCY REAR-ADMIRAL SIR BRIAN MURRAY, K.C.M.G., A.O.

POST OFFICE BOX 74, PARKVILLE,
VICTORIA 3052, AUSTRALIA
TELEPHONE: (03) 347 1522

14 March, 1986

Dear Sir

As you may be aware, Melbourne Zoo's Reptile Department was successful in reproducing Arafuran File Snakes *(Acrochordus arafurae)* in 1983 and again in 1985. Although the young snakes were raised without difficulty, an infection developed amongst the first litter late in 1984. This appeared to be fungal in origin and subsequently led to the death of a number of the young despite a range of treatments. A similar problem arose with the second litter but first appeared when they were only three months of age.

The parent snakes are still in the collection and further breeding is anticipated in late 1986/early 1987. In order to avoid further problems, we are seeking your assistance through the attached questionnaire. Should the results prove of value, they will be published and all respondents will receive a copy of the printed paper.

Yours sincerely,

R.W. DUNN
Curator of Reptiles & Birds

C.B. BANKS
Keeper-in-Charge

7th Working Meeting of IUCN Crocodile Specialists Group

The 7th working meeting of the IUCN Survival Service Commission's Crocodile Specialists Group (CSG) was held in Caracas, Venezuela 21 to 28 October, 1984. Hosted by Cecilia de Blohm, Director of the crocodilian conservation program of Venezuela's FUDENA (Fundacion para la Defensa de la Naturaleza), the meeting had over 75 participants representing 15 countires. The four days of meetings consisted of presentations of the present status of wild crocodilians, management programs for wild and captive crocodilians, and new developments in crocodilian research, as well as the working session of the CSG.

Research on crocodilians in Venezuela was well represented with the entire first day of meetings devoted to presentations by Venezuelan scientists. Andres Eloy Seijas discussed the status and distribution of *Crocodylus acutus* and *Caiman crocodilus* in coastal Venezuela. The status and ecology of *Caiman*, and *Paleosuchus* in the Venezuelan Guyana was summarized by Stefan Gorzula. Carlos Rivero Blanco remarked on methods of censusing "babas" (*Caiman crocodilus*) and on baba ecology as well as reviewing the history of crocodilian research in Venezuela. Other presentations by Venezuelan researchers included censuses of *Crocodylus intermedius*, notes on growth and disease in babas, buccal morphology and feeding in crocodilians, and an explanation of the wildlife policies regarding the experimental exploitation of *Caiman crocodilus* in the Venezuelan Llanos.

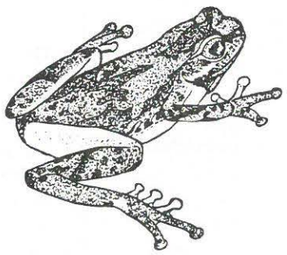
International presentations included African reviews of the status of *Crocodylus niloticus* in Zimbabwe by David Blake, and in Botswana, Mozambique, and Malawi by Kevin van Jaarsveldt. Australian crocodile research was well represented with eight participants at the meetings. Harry Messel and George Vorlicek reviewed ten-years of work on the status of *Crocodylus porosus* in northern Australia. Grahame Webb and Goff Letts discussed management plans of *C. porosus* in Australia. Martin Hollands summarized the status and management of crocodiles in Papua New Guinea. India's programs in crocodilian conservation were discussed by L.A.K. Singh and B.C. Choudhury. Other presentations on research in Latin America included a report by Eduardo Asanza on his work with caimans in amazonian Ecuador, John Thorbjarnarson's review of the distribution and ecology of *Crocodylus acutus* on Hispaniola, a note of crocodilian population dynamics and management strategies by William Magnusson, and a review of crocodile conservation in Mexico by Marco Lascano-Barrero. Reports on research of *Alligator mississippiensis* in the United States included reviews of alligator status, management, reproduction, and behavior. Ginette Hemley of TRAFFIC/US presented data on international trade in crocodilian hides. Richard Luxmoore, of IUCN's Conservation Monitoring Centre, summarized results of a worldwide survey of crocodilian farms.

Items discussed during the business meeting included CSG's support of Australia's proposal to CITES for the downlisting of *Crocodylus porosus* in Australia from Appendix I to Appendix II. The CSG could not endorse a similar proposal for the transfer of *Crocodylus niloticus* from Appendix I to Appendix II of CITES proposed by 24 African countries due to lack of knowledge on the population status of crocodiles in those countries and lack of proper management plans. The CSG also could not endorse the downlisting of *C. porosus* in Indonesia for similar reasons. The CSG did support the commercial exploitation of *Caiman crocodilus* in Venezuela and congratulated Venezuelan wildlife authorities for their work in developing a management plan, while offering constructive criticism to improve the management. In closing statements, F. Wayne King, Chairman of the CSG, stated that this 7th working meeting had been the most successful meeting to date.

The formal meetings were followed by a three day field trip into the Venezuelan Llanos. A stop was made at Hato Masaguaral, the ranch of Tomas Blohm at which research has been conducted on *Caiman, Iguana*, and many species of birds and mammals. Facilities for the captive breeding and raising of babas and *Crocodylus intermedius* had recently been completed at the ranch. Participants then visited Hato El Frio in Apure state to see more captive *C. intermedius* and many babas in the wild, as well as other abundant wildlife. The final stop before a return to Caracas was a visit to a field station of the Universidad Nacional Experimental de los Llanos Occidentales "Ezequiel Zamora" in the lower Llanos.

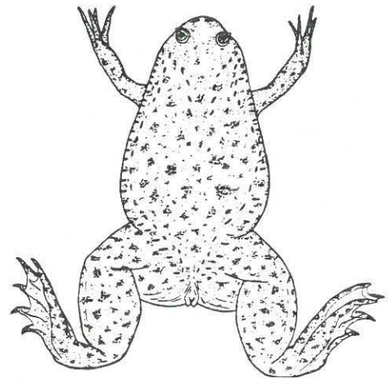
The Crocodile Specialists Group will meet again in two years. The site of the next meeting is as yet undecided.

Kent A Vliet
University of Florida
Department of Zoology
Gainesville, Florida 32611, U.S.A.



AFRICAN AMPHIBIANS

The 6th International Symposium on African Amphibians, sponsored by the Working-group on African Amphibians will be held the week of 13 April 1987 in South Florida, with the University of Miami, Department of Biology as host. Participation will be by invitation only and is restricted to scientists actively working on African amphibians. Qualified individuals may contact the chairman of the local committee to receive further information on the program as it develops. Please write: African Amphibia, Jay M. Savage, Department of Biology, University of Miami, Coral Gables, Florida 33124.



GIANT TORTOISES DOWN UNDER

Nature 311: 303.

The present-day animals of Australia are a peculiar bunch, but those that lived one million years ago, in the Pleistocene, were even stranger. There was a giant wombat called *Diprotodon* which was the size of a rhinoceros, and a monster 3-metre-high kangaroo named *Procoptodon*. This trend to large size was also seen in the turtles. The available specimens of the tortoise *Meiolania* have recently been restudied (Gaffney, E.S. *Bull. Am. Mus. nat. Hist.* **175,** 361; 1983) and some important new finds are reported.

Meiolania platyceps was a 2-metre-long tank-like land tortoise that is known from numerous remains found on Lord Howe Island. New South Wales. Its skuli was heavy and covered with an outer armour of plates and horns — no doubt so that is could withstand the impact of a giant kangaroo landing on its head. *Meiolania, like most turtles, had a relatively small braincase, so it probably wasn't very bright. Its shell was huge, and its arms and legs could be pulled in beneath it. One remarkable feature of Meiolania* is its tail which was long and carried at its end a bony mass made from rings and spikes. Like certain armoured dinosaurs (the ankylosaurs), *Meiolania* could have swung its tail from side to side to deliver a powerful blow to any potential predator.

All the material has been collected from shoreline and soil deposits on Lord Howe Island, and these have been tentatively dated as 100,000 - 120,000 years old. The first *Meiolania* bones may have been collected in 1844, when John Foulis MD visited the island. He later recommended that it be developed as a penal colony, stating that the island could "support a population of 5,000 souls if under control". One wonders what 'control' he had in mind. The island was not developed in that way. Later, Robert D. Fitzgerald visited the island and found turtle bones in 1869. He sent specimens to Sir Richard Owen, the leading British comparative anatomist of his day. Further bones have been collected since then, with recent finds in 1971, 1980 and 1982; most of these went to the Australian Museum, Sydney.

Richard Owen identified the first skull and tail club of *Meiolania* that he saw as that of a giant lizard (1881, 1882) and, later (1886), other remains as those of a large turtle. It was Thomas H. Huxley, a rival of Owen's, who gleefully pointed out that Owen's 'giant lizard' was in fact a turtle (1887). Since then, other British and australian scientists have identified various *Meiolania* bones, and speculated wildly about the animal's precise taxonomic relationships.

In the new work, Gaffney redescribes the skull in detail, and concludes that *Meiolania* is a cryptodire turtle, related to present-day soft-shell turtles and tortoises.

Meiolania died out, with the giant wombats and kangaroos, some time ago. This may have been caused partly by climatic changes during and after the Ice Ages, or by the arrival of humans in Australia. Giant tortoises still survive, but only just, on the islands of Aldabra and the Galapagós, but these are not close relatives of *Meiolania. Meiolania* would have been a tempting food-source for humans because of its large size, although it would not have been easy to kill because of the heavy armour over its head and body. It was probably very slow-moving and dimwitted, however, and an enterprising group of aborigines could hve stood on the tortoises back to avoid the tail-club, and attacked its unprotected neck with blunt instruments.

From Michael J. Benton, who is in the Department of Geology, The Queen's University of Belfast, Belfast BT7 1NN.

ANCIENT AMPHIBIAN FILLS EVOLUTION GAP

Spectrum 23: 48.

Scientists have unearthed an assembly of fossils, including the earliest known land-living amphibian in Europe — an ancestor of today's frogs and toads — and an array of insects and other arthropods which may provide a unique window on life 330 million years ago.

The discovery, made by Mr Stanley Wood in Midlothian, Scotland, and investigated by scientists from Newcastle University, is unique in that it is the first intact fossil assembly to be recovered from the Lower Carboniferous period.

It can provide both a picture of land-based life at that time and links in the evolutionary chain to the later tetrapods.

It is an interesting accident of modern history that the great coal deposits of the Upper Carboniferous have allowed palaeontologists to study this period more completely than any other which is likely to add to the still incomplete picture of early evolution.

Up to now, finds have been confined to periods more recent than 300 million years ago and involved only aquatic fauna.

Various tetrapods emerge as land-living creatures in later epochs, but their ancestors remain unrecorded in the fossil sequence — which is rather like a jigsaw puzzle with most of the pieces missing.

The Midlothian amphibian, a tailed creature rather larger than the present-day common frog, is different.

It limb bones, preserved intact in their original articulation, are heavy and it has few of the characteristics of an aquatic animal.

The Newcastle scientists speculate this animal used water only for breeding and spent the rest of its life on land.

Close by in the same fossil layer are myriapods — large centipede-like animals — early scorpions and the first known harvestman.

It is a curious fact that many groups of terrestrial animals actually appear in the fossil record as a *fait accompli* about 50 million years later than the Midlothian find.

Among them are the reptiles, creatures which went on to dominate the world for 200 million years. The Newcastle scientists are optimistic that they may, in the near future, have something important to say about the evolution of reptiles.

REPRINTS

The following are the reprints of papers which are currently available from the Division of Amphibians and Reptiles, Museum of Zoology, The University of Michigan. Check those titles listed below hwich you would like to receive (those in limited supply will be sent on a "first come - first served" basis) and return the list to:

Secretary, Division of Amphibians and Reptiles
2015 Museum of Zoology
The University of Michigan
Ann Arbor, MI 48109-1079 U.S.A.

Please type your name and current address on the enclosed mailing label and return it with this checklist.

Each of the curators in the Division of Amphibians and Reptiles, A.G. Kluge and R.A. Nussbaum, maintain personal research libraries and hope to continue reprint exchanges with you. In addition to these libraries, the Division curates a Graduate Student Research Library, to which we also hope you will send separates of your published papers. Whenever your reprint stock is limited, the Division's Graduate Student Library should receive priority.

PART II

MOORE, E., RONALD A. NUSSBAUM AND EDWARD L. MOCKFORD. 1983. Caeciliidae in Amphibia and Insecta (Psocoptera): Proposals to remove the Homonymy. Z.N. (S.)2333. Bull. zool. Nom. 40(2): 124—128.

NAYLOR, BRUCE G. AND RONALD A. NUSSBAUM. 1980. The Trunk Musculature of Caecilians (Amphibia: Gymnophiona). Jour. of Morphology 166:259—273.

NUSSBAUM, RONALD A. 1977. Rhinatrematidae: A New Family of Caecilians (Amphibia: Gymnophiona). Occas. Pap. Mus. Zool. Univ. Mich. (602): 1—30.

NUSSBAUM, RONALD A. 1979. The status of *Copeotyphlinus syntremus* (Amphibia: Gymnophiona). J. Herpetol. 13(1): 121—123.

NUSSBAUM, RONALD A. 1979. The Taxonomic Status of the Caecilian Genus *Uraeotyphlus* Peters. Occas. Pap. Mus. Zool. Univ. Mich. (687): 1—20.

NUSSBAUM, RONALD A. 1980. Cytotaxonomy of the Seychelles tree frog, *Megalizalus seychellensis* (Dumeril and Bibron) (Amphibia: Hyperoliidae). Experientia 36: 400—401.

NUSSBAUM, RONALD A. AND GLEN W. CLOTHIER. 1973. Population Structure, Growth and Size of Larval *Dicamptodon ensatus* (Eschscholtz). Northwest Science 47(4): 218—227.

NUSSBAUM, RONALD A. AND CARL GANS. 1980. On the *Ichthyophis* (Amphibia: Gymnophiona) of sri Lanka. Spolia Zelanica 35, Parts I and II: 137—154.

NUSSBAUM, RONALD A. AND MARINUS S. HOOGMOED. 1979. Surinam Caecilians, With notes on *Rhinatrema Bivittatum* and the Description of a New Species of *Microcaecilia* (Amphibia, Gymnophiona). Zoologische Mededelingen 54(14): 217—235.

NUSSBAUM, RONALD A. AND BRUCE G. NAYLOR. 1982. Variation in the trunk musculature of caecilians (Amphibia: Gymnophiona). J. Zool., Lond. 198: 383—398.

NUSSBAUM, RONALD A. AND GLENN TREISMAN. 1981. Cytotaxonomy of *Ichthyophis glutinosus* and *I. kohtaoensis*, Two Primitive Caecilians from Southeast Asia. J. Herpetol. 15(1): 109—113.

NUSSBAUM, RONALD A., ALAN JASLOW AND JEFFREY WATSON. 1982. Vocalization in Frogs of the Family Sooglossidae. J. Herpetol. 16(3): 198—204.

PFINGSTEN, RALPH A. AND CHARLES F. WALKER. 1978. Some Nearly All black Populations of *Plethodon cinereus* (Amphibia, Urodela, Plethodontidae) in Northern Ohio. J. Herpetol. 12(2): 163—167.

REYNOLDS, R.T., J.M. SCOTT AND R.A. NUSSBAUM. 1980. a Variable Circular—Plot Method for Estimating Bird Numbers. Condor 82:309—313.

SCHUETT, GORDON W. 1982. A Copperhead (*Agkistrodon contortrix*) Brood Produced from Autumn Copulations. Copeia (3): 700—702.

SETO, TAKESHI AND RONALD A. NUSSBAUM. 1976. Mitotic and Meiotic Chromosomes of *Ichthyophis orthoplicatus* Taylor (Amphibia: Gymnophions). Caryologia 29(3): 317—331.

TINKLE, DONALD W. 1982. Results of Experimental Density Manipulation in an Arizona Lizard Community. Ecology 63(1): 57—65.

TINKLE, DONALD W. AND ARTHUR E. DUNHAM. 1983. Demography of the Tree Lizard, *Urosaurus ornatus*, in Central Arizona. Copeia (3): 585—598.

TINKLE, DONALD W., JUSTIN D. CONGDON AND PHILIP C. ROSEN. 1981. Nesting Frequency and Success: Implications for the Demography of Painted Turtles. Ecology 62(6): 1426—1432.

NUSSBAUM, RONALD A. 1980. Phylogenetic Implications of Amplectic Behavior in sooglossid Frogs. Herpetologica 36(1): 1—5.

NUSSBAUM, RONALD A. 1980. The Brahminy Blind Snake (*Ramphotyphlops braminus*) in the Seychelles Archipelago: Distribution, Variation, and Further Evidence for Parthenogenesis. Herpetologica 36(3): 215—221.

NUSSBAUM, RONALD A. 1981. *Scolecomorphus lamottei,* a New Caecilian from West Africa (Amphibia: Gymnophiona: Scolecomorphidae). Copeia (2): 265—269.

NUSSBAUM, RONALD A. 1981. Seasonal Shifts in Clutch Size and Egg Size in the Side—Blotched Lizard, *Uta stanburiana* Baird and Girard. Oecologia (Berl) 49: 8—13.

NUSSBAUM, RONALD A. 1982. Heterotropic Bones n the Hindlimbs of Frogs of the Families Pipidae, Ranidae and Sooglossidae. Herpetologica 38(2): 312—320.

NUSSBAUM, RONALD A. 1983. Herpetology of Africa: A Checklist and Bibliography of the Orders Amphibaenia, Sauria and Serpentes. By K.R.G. Welch. 1982. (Book Review) Copeia (2): 574—575.

NUSSBAUM, RONALD A. 1983. Reptiles of North america, A Guide to Field Identification. By Hobart M. jSmith and Edmund D. Brodie, Jr. Illustrated by David M. Dennis and Sy Barlowe. (Book Review) Herpetologica 39(2): 185—186.

NUSSBAUM, RONALD A. 1983. The evolution of a unique dual jaw—closing mechanism in caecilians (Amphibia: Gymnophional and its bearing on caecilian ancestry. J. Zool., Lond. 199: 545—554.

NUSSBAUM, RONALD A. 1984. Snakes of the Seychelles. **In:** D.R. Stoddart (ed.), Biogeography and ecology of the Seychelles Islands. Chapt. 20: 361—377.

NUSSBAUM, RONALD A. 1984. Amphibians of the Seychelles. **In:** D.R. Stoddart (ed.), Biogeography and ecology of the Seychelles Islands. Chapt. 21: 379—415.

NUSSBAUM, RONALD A. 1985. jAmphibian Fauna of the seychelles Archipelago. Nat. Geog. Soc. Research Reports 18: 53—62.

NUSSBAUM, RONALD A. 1985. Evolution of parental care in salamanders. Misc. Publ. Mus. Zool., Univ. Mich. (169): 1—51.

NUSSBAUM, RONALD A. AND EDMUND D. BRODIE, Jr. 1982. Partitioning of the Salamandrid Genus *Tylototriton* Anderson (Amphibia: Caudata) With a Description of a New Genus. Herpetologica 38(2): 320—332.

REPRINTS AVAILABLE

1. Bestimmungsschliissel zur Gattung *Platysaurus* (Sauria: Cordylidae).
2. Bestimmungsschlüssel zur Gattung *Cordylus* (Sauria: Cordylidae) (1984).
3. Bestimmungsschlüssel zu den Gattungen *Chamaesaura, Gerrhosaurus, Pseudocordylus, Tetradactylus* (Sauria: Cordylidae) (1985).
4. Vorläufige Angaben zur Taxonomie der Gattung *Cordylus* (1985).

All the reprints are obtainable from the author:

Klaus Adolphs
5205 St. Augustin
Pastor-Hochhard-Strasse 8
West German
Include 10 US$ for all of them or 4 US$ for separate ones.

P.S. The H.A.A. want to thank Klaus for advertizing the H.A.A. in *Salamandra* Nr 86

EDITOR.

New Journal

Mr Thomas A. Huff, Director of the reptile Breeding Foundation in Canada, intends to start a new journal: "The Herpetoculturist". The contents will consist of articles on various phases of herpetoculture, some regular columns on lizards, turtles, crocodilians, amphibians, boas & pythons, venemous snakes, colubrids and other specialized areas which are of interest. There will also be regular interviews with notable herpetologists and herpetoculturists. This will give many readers an opportunity to "meet" those individuals, although they may never have the opportunity to see them in person. Mr Huff hopes to be able to publish a quality publication, at a reasonable cost, which will have a world-wide distribution and readership. In order to assess the publication costs, he needs to have a rough idea of interest; he therefore urges the members of HAA to inform him when they are interested. He also sollicits any suggestions you might have for improving "The Herpetoculturist".

Initially "The Herpetoculturist" will be issued as the house publication of the Reptile Breeding Foundation, and, as such, will include news and information on their propagation, education and conservation projects. However, it is their intention, with support from the herpetocultural community, to eventually publish a quarterly journal, which will be of value to, and reflect the interests of all within that group. The inaugural issue was scheduled for January 1985. Papers for inclusion in "The Herpetoculturist" should deal directlly with captive husbandry or maintenance of reptiles and amphibians. Topics such as cage design and record keeping are acceptable, as they relate to the study of herpetoculture.

Subscription rates have not been established at the present time, but if you would like to receive the first issue, please send your name, membership or organization(s), address and phone to:

Reptile Breeding Foundation, P.O. Box 1450,
Picton, Ontario, Canada KOK 2TO.

BOOK REVIEW

Reptile Ecology

H. Heatwole., University of Quensland Press: 1976; 178 pp; 31 figures; 36 colour plates.

The preface reprinted from this book:
"Ecology is the science involved with the interactions of organisms and their physical and biotic environments. This field has always been a source of fascination to professional biologists, naturalists and conservationists. In recent years, as human population has progressively increased, environmental problems have also become of vital interest and importance to the public as well. It has now become imperative that ecological principles, and the ecology of specific regions be understood by a wide variety of people. The present series is designed to help fill this need."

It is felt that the volumes in this series will serve as a source of information for university students, teachers and the interested public who require a basic factual knowledge to broaden their understanding of ecology, and for those conservationists, agriculturists, foresters, wild life officers, politicians, engineers, etc., who may need to apply ecological principles in solving specific environmental problems. In addition, it is hoped that the series will be a valuable reference work and source of stimulation for professional ecologists, botanists and zoologists. The writing is at a level that will neither encumber the layman with unnecessary jargon nor be too elementary to be of interest to the professional ecologist.

The study of ecology can be approached on various levels. For example, one can emphasize the biotic community and analyze the kinds and numbers of organisms living together in a particular habitat, the way they are organized in space and time and the interactions they have with each other. This type of ecology is known as synecology.

Another way of studying ecology is by systems analysis. In this method, the biotic community and the physical environment which together make up what is known as an ecosystem, are looked upon as a functioning unit. In such an approach the main emphasis is on the cycling of energy, minerals or organic materials within the ecosystem and the factors influencing these processes, rather than specifically upon the organisms themselves. Often mathematical or theoretical models are constructed and tested, frequently with the aid of computers.

Both of the above approaches are synthetic; they take an overview of entire communities or systems and do not emphasize individual species. By contrast the following two approaches, collectively known as autecology, are concerned mainly with particular species.

The population approach, often called demography, is concerned with: (1) fluctuation in the abundance and distribution of individuals of a given species in an area; (2) the contributing phenomena such as birth and death rates, immigration, emigrtion, longevity and survival; and (3) the influence of the physical environment and of other species on these characteristics. Of major interest are mechanisms regulating population density and factors influencing population stability.

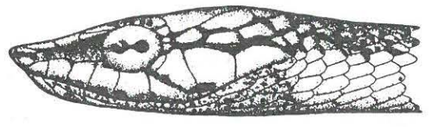
The final approach to ecology is one primarily concerned with the effect of the environment on the individuals of a species, that is how they are affected by temperature, moisture, light or other external factors. This approach is known variously as environmental physiology or physiological ecology. The keynote is adaptation to specific environments.

All of the above approaches will be employed with varying emphasis in the volumes of this series.

Certain topics, such as ecology of grasslands, ecology of forests and woodlands, or ecology of deserts lend themselves to a community approach; grassland, forest, and desert *are* types of communities and ifstudied as an entity must be approached on the community or ecosystem level. On the other hand, where specific taxa such as reptiles, birds or mammals are treated, the autecological approach is more often used. The particular aspect emphasized varies from group to group, depending on the information available.

Regardless of emphasis, in each book of this series the available information in a particular field is reviewed critically and summarized, so that the reader might be brought abreast of current knowledge and developments. Recent trends are indicated and the foundations for future developments are prepared by highlighting conspicuous gaps in knowledge and pointing out what appear to be fruitful avenues for research.

Armidale, N.S.W.
May 1975. *Harold Heatwole*



NEW MEMBERS

Mr R.B. Yeadon
5 Armadale Road
Sea View
4094 Natal
R.S.A.

A.R. Wood
42 Grimthorpe Ave.
Lincoln Meade
3201 Pietermaritzburg
R.S.A.

Dr R.D. Pietruszka
Desert Ecological Research Unit
P O Box 953
9000 Walvis Bay
Namibia

K. Bismeyer
P O Box 1384
2054 Kelvin
R.S.A.

D. van der Zee
612 Hofet Street
Elardus Park
0181 Pretoria
R.S.A.

J.M. Corbo
4216 Lambert Road
South Euclid
Ohio
4412 U.S.A.

J. Stewart
11 Malgas Road
Birchacres Ext 3
1620 Kempton Park
R.S.A.

Lincoln Park Zoo
2200 N. Cannon Drive
Chicago
IL 60614
U.S.A.

University of Mississippi
Serials Section Library
University MS 38677
U.S.A.

L. Hoffmann
8 Astor Court
Leeuwenhout Road
Tamboerskloof
8000 Cape Town
R.S.A.

Miss K.E. Malan
P O Box 177
7655 Wellington
R.S.A.

Mr. A.F. Flemming
2 Taljaard Street
Morgenster
7560 Brackenfell
R.S.A.

I.A. Kirk
Glenasby
Private Bg X513
5200 East London

R.S.A.

Prof. C.H. Reitz
Jolivetstraat 281
Groenkloof
0181 Pretoria
R.S.A.

Johannesburg Public Library
Market Square
2001 Johannesburg
R.S.A.

Mr. P.J. Witherden
P O Box 2791
2125 Randburg
R.S.A.

National Parks & Wildlife
Management Board
P O Box 8365
Causeway
Harare

Zimbabwe

J. Kling
Larlingsgatan 12
56133 Huskvarna
Sweeden

Swadini Reptile Park
P O Box 175
Hoedspruit
1380 R.S.A.

B. Lwandowsky
Raschdorffstrasse No 79
1000 Berlin 51
West Germany

G.A. Dykes
10 Sysie Road
Sunward Park
Boksburg
1460 R.S.A.

P.F. Swanepoel
c/o Marisny & Lello
Suit 35
Musgrave Centre
Musgrave Road
Durban
4001 R.S.A.

M. Colen
20137 Gilmore Street
Canoga Park
91306 California
U.S.A. N.J.L. Heidehan

Dept. Zoology
Academy
Windhoek
9000 Namibia

Dr. K. Klemmer
Senkenberg Museum
Senkenbergawlage 25
D-6000
Frankfurt M-1
West Germany

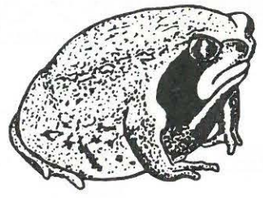
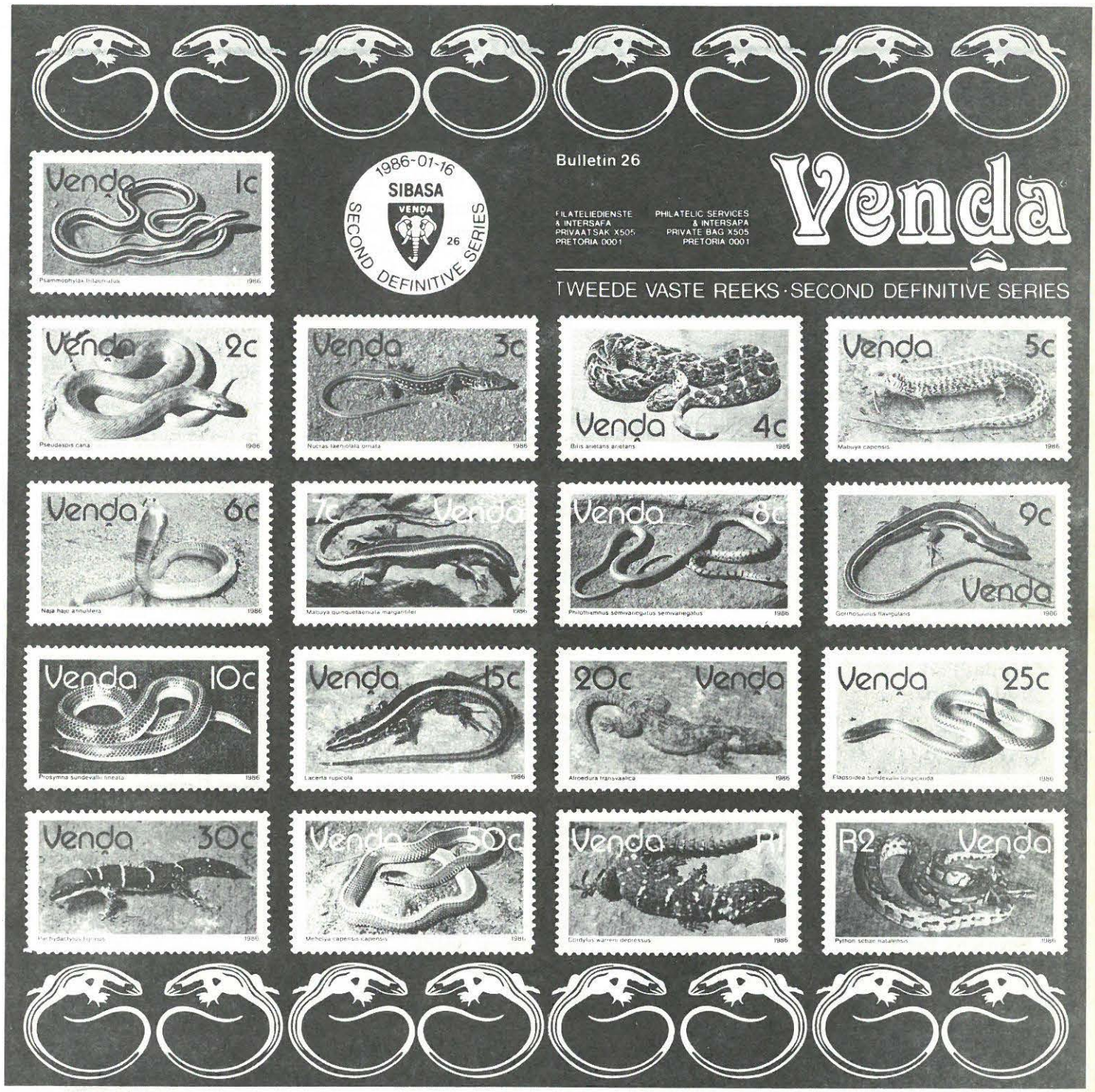


Fig. 14. *Breviceps mossambicus* (x1). (After Rose, 1962).



PHILATELIC SERVICES & INTERSAPA,
PRIVATE BAG X505, PRETORIA 0001.
TEL. 293-1029: 293-1031/2 TA: SASTAMPS

9211

CASH ORDER

Second definitive series: Reptiles (1986-01-16)

SURNAME INITIALS

ADDRESS

Postal code

Payment:
Inland — Postal order, cheque or money-order.
Overseas — Bank draft only.
Post-dated cheques are not accepted.

A DEFINITIVE STAMP SERIES

Mint = M, Cancelled = C		Code	Number	R	c
Single stamps @ R4,95 per set	(M)	4344			
Single stamps @ R4,95 per set	(C)	4351			
Control blocks @ R19,80 per set	(M)	4369			
Control blocks @ R19,80 per set	(C)	4377			
Full sheets @ R123,75 per set	(M)	4385			
Full sheets @ R123,75 per set	(C)	4393			

B

Mounted sets @ R5,55 each	(M)	4408			
Mounted sets @ R5,55 each	(C)	4416			