The Snakes of Texas

- a comprehensive account of the physiology of venomation (from research that received the Austin Jones prize from the Texas Medical Association)
- an examination of the population dynamics leading to the controversial legal status of the state's eighteen protected species and subspecies
- a complete glossary and index

Texas Monthly Press
P.O. Box 1569
Austin, Texas 78767

CHECKLIST TO THE TERRESTRIAL PROTEROGlyphS OF THE WORLD

The Book.

Never before has a publication been devoted to the systematic determination of all the terrestrial proteroglyphs. The work we now offer finally meets the requirements of the interested circles. It contains not only the keys permitting the rapid identification of each genus, species or subspecies, but also a complete list of the proteroglyphs snakes of the world.

This book is addressed to all herpetologists, researchers, doctors and all persons in contact with the terrestrial proteroglyphs.

Comment

"I am most impressed with the amount of work that you have put into this project ..." Donald G. BROADLEY Curator of Herpetology National Museum, Zimbabwe.

elapsoidea

Content.

38 genera are recognized as valid. They include 203 species, of which 55 possess one or several subspecies. For each species or subspecies, bibliographic references are provided. The bibliography contains over 400 taxonomic references.

Technical data:
- Size: 14.5 x 21.6 cm
- Pages: 50 including 4 illustrated plates
- Print: Offset, black on white
- Cover: front colour

HERPETOLOGICAL ASSOCIATION OF AFRICA

founded 1957

NEWSLETTER 4

FEBRUARY 85
Dr. Branch has asked me to take over as editor of the H.A.A. Newsletter. After giving the idea some thought I decided this was the only way fresh wind could be blown into the cold seas of the H.A.A. Because the Newsletter will in future be produced at the National Museum, Bloemfontein, I have decided to form a team to assist me in keeping this Newsletter on your doorstep. I have already had some positive reaction on sponsorship from various publishers.

The basic idea behind the Newsletter is communication and participation. The H.A.A. Journal is moving more and more towards a recognized scientific journal, and therefore, my aim is to introduce scientific herpetology to the H.A.A. members, our members. I think amateur herpetologists can make a valuable contribution to herpetology in Africa if their hobby has a sound scientific base.

We would like to give the H.A.A. Newsletter a specific format in order to make it easier for members to contribute. Hopefully this issue will portray what we have in mind. If you have anything on your mind please write to me and I will publish your letter under "Letters to the Editor". Share any practical hints with other members, especially our new younger members who would appreciate experience in the form of Practical Tips.

In each issue we will give you Institutional News, Introducing new full books, Absences of interesting scientific articles, Short notes and a short feature article on subjects which may prove helpfull in the study of reptiles and amphibians.

HANDING OVER OF H.A.A. SECRETARIAL RESPONSIBILITIES

It is with great pleasure that I have accepted the position as secretary of the H.A.A. Therefore, with immediate effect, the secretarial functions of the H.A.A. will move to the National Museum at Bloemfontein. I would like to ask members to make a note of the new address so that all future communications relating to membership, both new and renewals, change of address and general enquirys relating to the Association can be addressed to:

The Secretary
Herpetological Association of Africa
c/o National Museum
P.O. Box 266
BLOEMFONTEIN 9300
REP. OF SOUTH AFRICA

ROD DOUGLAS
SECRETARY

INSTITUTIONAL NEWS

1. National Museum, Bloemfontein
2. Dept. Zoology UOFS
3. Dept. Nature Conservation

The Staff consists of: J.H. von Wyk, MSc (Stell), Mr. Mike Bates (Nat. Dep. Nat. Conv.), Miss Trudie Saaiman (B. Agric.), Mr. Rod Douglas and Mr. Frans Mokhoeli.

We house a collection consisting of 5260 reptiles and 2360 amphibians, mostly collected in the O.F.S. We use a card index system but are hoping to complete computerization of our collection soon.

Research activities centre around a main project initiated in 1984, concerning the ecology of the lizard, Corythos giganteus. We study feeding, food resources, energy utilization, reproduction, behaviour, population dynamics etc. We are busy setting up a microenvironmental monitoring system in the field. We aim to gather basic geological knowledge to assist Nature Conservation departments to save this endangered species from extinction. Trudie Saaiman assists with the苦恼 of insects, laboratory work and field work. Rod Butch and Mike Bates assist with the field work concerning this project.

Rod Butch joined our team in July 1986 and with his interest on snakes he started looking into the Herpetology of the O.F.S. During the course of this project Rod became acquainted with the identification of mammal hairs and after making a reference collection for the potential prey in the Free State he is now able to identify the small mammal prey items.

Michael Bates is currently doing his National service. Before going to the army he worked on our curatorial system and supervised the computerization of the catalogue cards. He also started to collect reproductive material from lizards in our collection. We are also hoping to publish a field guide of the snakes of the O.F.S. in the near future. Frans Mokhoeli has been occupied for a year now putting more informative labels on the specimens in the collection. I have completed a study of the femoral glands of Corythos giganteus which is in preparation for publication. We are also involved together with Dr. D. J. Kok, Dept. of Zoology, UOFS, in a project concerning a Polyctena sp. parasite in the bladder of K.,n/a, i.sus.

Publications from this department:

Scientific articles


Popular articles

Papers read at Symposia

2. DEPARTMENT OF ZOOLOGY, UNIVERSITY OF THE O.F.S.

Dr. D.J. Kok and his students study parasites of amphibians with a special interest in Xenopus and lately Hyla.

Dr. D.S. Kok has initiated an extensive research program concerning termites (Scolopterygidae) as a food resource. His research naturally includes the utilization of reptiles and amphibians of this resource.

Publications

Papers read at Symposia

3. DEPARTMENT OF NATURE CONSERVATION, O.F.S.

No herpetologist is employed by the O.F.S. department of Nature Conservation. However, under supervision of Dr. L. Stols (CPO) a survey of Cordylus giganteus is being conducted in order to determine the status of this endangered lizard in the O.F.S.

Publications

H.A.A. ONE-DAY SYMPOSIUM

A one day herpetological symposium will be held at the University of Pietermaritzburg on 26 July 1985. Your participation will be highly valued.

Cheap accommodation will be available at the University Student hostel for H.A.A. members.

The proceedings of the symposium will be published in a special issue of the H.A.A. Journal that will be distributed free to members attending the meeting.

People wishing to submit papers should contact Dr. E. van Dijk
Department of Zoology
P.O. Box 375
PIETERMARITZBURG 3200
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.

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 site and date is reached, an announcement will be published in the 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 those interested to make a one-time contribution. Persons donating 100 Dutch guilders (U.S. $53) would be named 'Sponsors', a designation that will appear in the formal program of the Congress; 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 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 566774078.
- BANK ACCOUNT: World Congress of Herpetology, Manufacturers 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, Reeksmeren van Natuurlijke Historie, P.O. Box 9517, 2300 RA Leiden, The Netherlands.

A TECHNIQUE FOR INDIVIDUALLY MARKING FROGS IN BEHAVIOURAL STUDIES

There are a number of methods for individually marking anurans (reviewed in Fenner, 1979). Toe-clipping and tattooing are particularly useful in long term studies of marked populations. In behavioural studies, however, these techniques have the severe disadvantage that the frog has to be captured and its mark examined before its identity can be established. It is often impossible to be sure of the identity of the protagonists throughout a fight or courtship display.

In a behavioural study of bullfrogs, Rana catesbeiana, Emelen (1988) marked individuals with colour-coded elastic waistbands so that they could be identified without disturbance. I tried this technique on the following Australian hydrid and leptodactylids: Litoria aurea, L. gramina, L. peronii, L. verreauxii, Limnodynastes tasmaniensis, L. dumerilii, Uperoleia rugosa, U. marmorata, Pseudophryne bibroni and Neobatrachus sudelli. In all cases the frogs did not tolerate the waistbands but attempted to shake them off by twisting, jumping and somersaulting. The larger hydrids, particularly Litoria austera and L. graminia, began struggling as soon as bands were placed on them and did not stop until the bands were removed. The other species of frogs reacted to the bands more intermittently, but it was clear that the bands were disrupting their normal behaviour. It is also difficult to make waistbands small enough for marking the smaller species of frogs. I describe below a method which I developed for use in a behavioural research project on the breeding biology of a small (30-40 mm snout-vent length) leptodactylid Uperoleia rugosa in which it was essential to identify individual frogs without disturbance (Robertson 1982, in press and in preparation). This technique was only tested with U. rugosa but it is likely to work with other species.

Each frog was marked with a unique combination of one to three squares (c. 1 mm x 1 mm) of Scotchlite® brand reflective sheeting (3M company) attached to the head. The head of the frog was first wiped dry with tissue paper and the reflective squares were glued in place with a fast-setting cyanoacrylate tissue cement (Ethicon Bucrylat). The frogs were then marked by excising the last digit of one to three toes in a unique sequence (Nace, 1974). The reflective squares would stay in place for up to two weeks, which was sufficient for some short term experiments but not for long term studies. The reflective squares were apparently becoming detached because of the secretions from the skin glands under the adhesive. Freeze-branding the top of the head for 10 sec with a pressurized refrigerant (Lazarus and Lowe, 1975) inhibited the skin glands.

This method has been used successfully on about 100 individuals of U. rugosa. I did not always record when the reflective squares needed to be replaced, but generally they stuck to the brand for about three weeks and sometimes as long as six weeks. For 15 frogs on which I have detailed notes, the reflective squares remained attached for between 15 and 41 days (X = 26.27, S.D. = 6.49). The length of time that a reflective square remains attached will probably vary with other species of frogs but by experimenting with the timing of the freeze-branding it should be possible to attach the reflective squares for at least three weeks.

In combination with toe-clipping this is a useful method for identifying frogs in behavioural studies. Frogs can be identified without disturbance for several weeks and when the reflective squares of reflective Scotchlite™ sheeting are removed the frog can still be identified from its toe-clips. The reflective squares can be replaced successfully after a fresh freeze-branding the reflective squares should be removed in the light of a torch and can be identified at up to 5 m which is far enough away to avoid disturbance. The range at which the frogs can be identified can be increased by using binoculars or by attaching larger squares of reflective sheeting to the frogs. The frogs seem to suffer no ill effects from this marking technique and their behaviour is unaltered distinguishable from that of unmarked frogs.

LITERATURE CITED


calculating the basic biological principles as exemplified by amphibian and reptiles, therefore, herpetology that would apply throughout the world.

The introduction begins with the taxonomic position of Amphibians and Reptiles in the animal kingdom followed by a discussion on the basic principles of classification and the system of nomenclature. The origin of Herpetology as a science is also discussed.

The next two chapters deal with the structure of Amphibians and Reptiles. Although very basic they introduce the reader to characteristic morphological features of these animals. The following chapters give insight into the origin and evolution of the two classes. Chapter 6 through to 10 are concerned with aspects of the natural history with special reference to reproduction and growth. A chapter on Homeostasis follows, including thermoregulation, gas exchange and water balance.

Chapter 9 introduces the reader to the whole idea of ecology, including population dynamics, feeding, competition, predators, and parasites. The study of behaviour follows in chapter 10. The basic principles of speculation and reference to geographic distribution is discussed in chapter 11.

The last six chapters summarize the living amphibians and reptiles. World distribution maps of families are included with a few general notes up to the sub-familial level. The first appendix is a summary of the classification of living amphibians and reptiles set out to sub-family level. The second appendix gives a short list of useful reading for each zoogeographic region. A scientific name and a author index complete this very useful book.

BOOK REVIEWS

The object of this column is to introduce those interested in reptiles, or as they are now more affectionately known as 'Herps' to interesting books which are perhaps not widely advertised or are thought to be for the interest of a broad spectrum of those interested in the subject. These reviews will be brief by nature and will discuss mainly content. They are not intended as a criticism or a detailed analysis of the book concerned. It is however hoped that they will be found useful as references to various aspects of herpetology.

Snakes-a natural history


As each subject is dealt with briefly the book does not become tedious reading and the interesting points are easily understood and remembered. This book concerns the fascinating natural history of snakes and takes the reader right back to the serpentine beginning. Some physiology and anatomy are dealt with under such headings as reproduction, senses, tooth replacement and locomotion. The snake's environment, thermoregulation and behaviour are also dealt with. Nutrition and defence are yet other subjects which make interesting reading.

The book then takes the reader on a discussion through the major groups of snakes. Starting with the primitive blind and burrowing snakes, it moves through the groups up to the more advanced cobras and vipers giving descriptions of various members of the group and why they have been placed into the various groups. Having evolved over some 130 million years and still being in existence today makes snakes unique in their own right. To learn and understand how they live and function can only lead to a better understanding of all reptiles.

R.M.D.
**ABSTRACTS**

**THE BIOLOGY OF IGUANINE LIZARDS: PRESENT STATUS AND FUTURE DIRECTIONS**

**Katherine Trover**

**ABSTRACT:** The recent symposium volume *Iguanas of the World* presents new information on members of an unusual group, the iguanine lizards. The features that characterize this subfamily include herbivorous habits, large body size, long life, large clutch size, and in many species, attractive nests as a human food. This review describes the current state of knowledge of iguanine biology, based in part upon the contents of *Iguanas of the World*, and recommends topics and appropriate methodologies for future investigations. Successful conservation of many endangered iguanines will require much more detailed information than is presently available. Notably, deficient or lacking are comprehensive data on feeding ecology, digestive physiology, energetics, reproduction, and nearly all aspects of demography.

*Herpetologica, 39(3), 1983, 317–329*

**Courtship, Male Combat and Dominance in the Western Diamondback Rattlesnake, Crotalus atrox**

**James C. Gillingham, Charles C. Carpenter, and James B. Murphy**

**ABSTRACT:**—The courtship behavior of *Crotalus atrox*, always initiated by males, follows a triphasic schema: tactile-chase, tactile-alignment, and intromission and copulation. The third phase is longer than in other snakes (20–28 h). Female lateral tail-whipping and the slower tail-waving are apparently not indicative of her receptivity, although the latter is correlated with an increased male tongue-flick rate. Caudal gaping by females apparently indicates female receptivity and occurs prior to successful intromission. Combat behavior between males is similar to other vipers and pit vipers. Combative coping is observed in the field that are as reliable as good short notes. Their Blood Runs Cold is an entertaining, informative reading that not only enhances our understanding of a unique group of animals, but also provides excellent insights into the mind and character of a research scientist. Thirty illustrations complement the text.


**TAIL LOSS IN LIZARDS: THE SIGNIFICANCE OF FORAGING AND PREDATOR ESCAPE MODES**

**Laurie J. Vitt**

**ABSTRACT:** The correlations of tail morphology, tail loss frequency and position at which tails are autotomized relative to the tail base with foraging mode and predator escape tactics are examined in 12 species of sympatric tropical lizards. Species that are widely foraging show generalists, and use their running speed for escape, have relatively longer tails than most species that are sit-and-wait predators, habitat specialists, and use crypts to escape detection by predators. There were, however, no significant differences in tail loss frequency or position of which tails are lost between sit-and-wait and widely foraging lizards.

*Herpetologica, 39(2), 1983, 151–162*