

# *African Herp News*

**Newsletter of the  
Herpetological Association of Africa**



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## HERPETOLOGICAL ASSOCIATION OF AFRICA

<http://www.wits.ac.za/haa>

### FOUNDED 1965

The HAA is dedicated to the study and conservation of African reptiles and amphibians. Membership is open to anyone with an interest in the African herpetofauna. Members receive the Association's journal, *African Journal of Herpetology* (which publishes review papers, research articles, and short communications – subject to peer review) and *African Herp News*, the Newsletter (which includes short communications, natural history notes, geographical distribution notes, herpetological survey reports, venom and snakebite notes, book reviews, bibliographies, husbandry hints, announcements and news items).

### NEWSLETTER EDITOR'S NOTE

Articles shall be considered for publication provided that they are original and have not been published elsewhere. Articles will be submitted for peer review at the Editor's discretion. Authors are requested to submit manuscripts by e-mail in MS Word '.doc' or '.docx' format.

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**COVER PHOTOGRAPH:** *Naja (Boulengerina) annulata annulata* from Lagoa Carumbo, Lunda Norte, Angola. Photograph by: Bill Branch.

## ARTICLES

### THE 11<sup>TH</sup> SYMPOSIUM OF THE HERPETOLOGICAL ASSOCIATION OF AFRICA

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The National Zoological Gardens of South Africa in Pretoria hosted the 11<sup>th</sup> Herpetological Association of Africa Symposium. The Symposium was held from the 25<sup>th</sup> February to 1<sup>st</sup> March 2013 and attended by some 57 delegates, including several international members. The symposium was opened by Dr Clifford Nxomani, the Managing Director of the National Zoological Gardens, followed by a welcome by the Chairman of the HAA, Prof Aaron Bauer.

Thirty-five papers were presented covering a range of herpetological disciplines. These included diseases and parasites, conservation projects, including *ex situ* projects such as the breeding programme for the endangered Pickersgill's Reed Frog (*Hyperolius pickersgilli*), behaviour and ecology, genetics and phylogenetics, thermoregulation and physiology, taxonomy and evolution and reproductive biology.

Two workshops were held during the Symposium. These included a discussion on the Revised IUCN Reintroduction & Other Translocations Guidelines and *ex situ* conservation of Sungazers (*Smaug giganteus*). Following the workshops, a field trip was arranged for delegates to see the N14 Total Biosphere Reserve – a rehabilitated wetland for Bullfrogs (*Pyxicephalus adspersus*). Delegates then proceeded to Fourways where they were given a tour of the Monte Casino Bird Gardens.

The auction has become a popular event at Symposia and Bill Branch once again did a sterling job as auctioneer, assisted by Ed Stanley. As with all previous symposia, this one brought herpetological colleagues and enthusiasts together where there was ample opportunity to network and share ideas at the social events, including the gala dinner.

## Student Awards

The Student Award for best presentation was jointly awarded to Shivan Parusnath from the School of Animal, Plant and Environmental Sciences, University of the Witwatersrand, and Ed Stanley of the American Museum of Natural History.

Shivan's paper, *Population ecology and conservation of the Sungazer (Smaug giganteus)*, discussed recent surveys for this grassland specialist including evidence of a significant population decline over the last 30 years. Ed Stanley presented a paper titled 'Arms and armour: evolutionary patterns in the osteodermal armour of Cordylid lizards.'



Recipients of the Student Award for best presentation, Ed Stanley (left) and Shivan Parusnath (right).



**Left to right:** Bill Branch, Wulf Haacke, Johan Marais, Donald Broadley and Aaron Bauer.

## CHAIRMAN'S REPORT

During the period since the last election I dealt with approximately 500 e-mails dealing with H.A.A. business. A large proportion of these were from other committee members, although there were also a number of queries from members and two main requests for H.A.A. support for extra-association issues. The first of these was a request for H.A.A. support of a request to the relevant authorities in Tanzania to provide protection for the endangered dwarf day gecko, *Lygodactylus williamsi*. This received unanimous support from the committee members responding and was considered non-controversial and fully consistent with the H.A.A. constitution. Thus, I prepared and sent a letter to the relevant Tanzanian authorities on behalf of the Association. A second request came from Dr. Hinrich Kaiser and called for H.A.A. support for his forthcoming point of view article on taxonomic vandalism to appear in *Herpetological Review*. This is a complex subject and while all committee members oppose this practice, there was substantial difference of opinion with respect to actual support of the article, which specifically highlights the actions of two accused taxonomic vandals, one of whom has published extensively on African taxa. Given the disparate views held by the committee, and the fact that the request was time-sensitive and did not allow consultation of the membership before this meeting, I prepared the following statement and submitted it to Dr. Kaiser:

*The Committee of the Herpetological Association of Africa is strongly opposed to taxonomic vandalism. Support for your point of view article in its entirety, however, was divided. Those not endorsing the paper did not feel comfortable supporting all arguments or statements made, but there was unanimity in regarding the issue of taxonomic vandalism as both pressing and troubling and we endorse ethically conducted, scientifically sound taxonomic practices.*

Another issue dealt with was the successful World Congress of Herpetology held in Vancouver, Canada in August 2012, for which I served as Secretary General. This was attended by over 1700 delegates and the H.A.A. was represented by a minimum of 23 "core" members, mostly from South Africa, as well as many others (possibly 50 or more additional). African topics were in evidence across the entire programme, most notably in the symposium "Advances in the Biogeography of African Amphibians and Reptiles," which was very well attended. The Congress returned approximately US \$100,000 in profit, which will provide the World Congress with options for promoting herpetology in the coming years, possibly including the sponsorship of attendees from developing countries.

Andrew Turner, who was elected to the H.A.A. committee in 2011 was given the web portfolio and managed to get our content onto our own domain, although some

material was temporarily lost. This included the back issues of Herpetological Association of Rhodesia, which were successfully put on the web in 2011.

Two issues raised by members of the committee were also dealt with. First, a new logo for the H.A.A. keeping the outline of Africa map but deleting national boundaries, was approved. Second, options for student support for meeting attendance were explored and a proposal presented by an ad hoc committee consisting of Bryan Maritz and Graham Alexander. This will be discussed under new business.

The next H.A.A. committee elections will take place later this year. The call for nominations will appear in the next issue of the newsletter. As discussed at the 2011 meeting in Cape Town, although this results in a slight delay in ballot distribution it enfranchises the maximal number of members. This year we have a major challenge before us as we will be replacing the Chairman, Secretary, Treasurer, and *African Herp News* Editor. It is critical that these posts are filled. As a consequence, as several of the incumbents have requested to step down as soon as possible because of other commitments, the committee has taken the extraordinary measure of appointing volunteers to these positions until the next election. To that end we thank Warren Schmidt for being willing to take on the job of *African Herp News* Editor and Johan Marais for accepting the role of Treasurer. It is assumed that these volunteers, who will transition into their positions with the help of their respective outgoing counterparts, will also stand in the coming election. The committee is still seeking volunteers to take over the position of Secretary.

On behalf of the Association I wish to thank Abeda Dawood — our local host, Fulufhelo Ramaphosa, Dr. Clifford Nxomani, and the rest of the staff of the National Zoological Gardens for taking on the task of organizing this fine meeting. We are all aware of the time and effort involved. We also thank Bill Branch for organizing and running the auction, which I think was a huge success and has by now earned a spot as a permanent feature of H.A.A. conferences.

I am again pleased that both Don Broadley and Wulf Haacke were able to attend this conference and I thank them for their participation. Although we can be pleased that there are many younger members in attendance and presenting their research, we all benefit from the continuing participation of the more senior members of our community. We have all lost with the departure of long time H.A.A. member John Visser, who after a period focusing on other organisms, returned to herpetology in earnest several years ago and was present at the meetings in Potchefstroom and Cape Town. John passed away in 2012 and his unique combination of collegiality and cantankerousness will be missed by all who knew him. I invite anyone who knows of an H.A.A. member who has passed away to let the committee know so that their name can be announced and their lives honoured at the next H.A.A. symposium.

As this will be my final report as H.A.A. Chairman, I would like to take this



opportunity to thank all of the committee members with whom I have served as well as the membership at large for their support and contributions to the Association.

AARON M. BAUER

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## TREASURER'S REPORT

### Bank accounts balances

The Association has two bank accounts. One for subscriptions and one for conferences. The two accounts run on different profiles to allow the conference organiser access to the conference account for payments. The HAA treasurer is the only signatory on the two accounts. The total bank balances since the current executive took over in 2008 are given below.

28/02/2008	28/02/2009	28/02/2010	28/02/2011	28/02/2012
R92,271	R148,821	R159,769	R292,785	R313,646

### Income from member subscription

Member subscriptions totalled to the following since 2008. This includes payments from members directly to the HAA Treasurer, from Breck Bartholomew for international credit card payments, from Taylor and Francis for institutional members, from SABINET for SA ePublications and from EBSCO for institutional newsletter requests.

28/02/2008	28/02/2009	28/02/2010	28/02/2011	28/02/2012
R101,266	R75,914	R97,543	R257,531	R54,558

### Income from royalties from the use of HAA works

Since 2012 income has been received from The Dramatic, Artistic and Literary Rights Organisation (Pty) Limited (DALRO) for use of "unknown" work from the AJH by the Copyright Agency Limited, Sydney Australia. Royalties were received in the 2013 financial year which will be reflected in the 2013 financial statements.

28/02/2008	28/02/2009	28/02/2010	28/02/2011	28/02/2012
-	-	-	-	R9,232

### Journal and newsletter costs

An estimate of the cost of producing and distributing the AHN and AJH are calculated below:

AHN (2012/2013) :  $R4,145 + R8,441 + R10,646 = R23,232$

AJH (2012/2013 Taylor & Francis):  $R26,518 + R24,420 = R50,938$

**Total = R74,170**

### Audits

The accounts were audited by M&D Finansiële Dienste for February 2009 and 2010 at a cost of R2,500 for 2009. Unfortunately, M&D Finansiële Dienste destroyed the H.A.A. financial records that were still in their safe keeping due to their having to complete the 2010 financial statements. This was discovered in 2011. The HAA Treasurer has had to reconstruct the financial statements from the bank account statements with the assistance of an accounting company called Greyrek. The draft financial statements produced by Greyrek has cost R16,000 and will now be forwarded to an auditing company. See attached draft financial statements for 2010, 2011 and 2012. The H.A.A. executive have resolved that all H.A.A. records will be archived at the Bloemfontien Museum.

### Tax exemption status

The accounting officer must submit tax returns and audited financial statements to SARS for 2009 to 2013 in order to apply for renewal of our tax exempt status. This is currently in progress.

### NPO status

The accounting officer will re-apply for NPO status of the H.A.A. has lost its status due to de-registration of most South African NPO's over the



past financial year. This application is currently in progress.

ABEDA DAWOOD

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## SECRETARY'S REPORT

The current total membership of the association stands at 258 paid members (Table 1). This is an increase of 32 members since January 2011 and an overall increase of 148 paid memberships since the current committee took over. We have 20 (8 African, 12 Overseas) new members for 2013 as of 26 February.

<b>Type</b>	<b>Number</b>
African	130
Overseas	122
AHN only	6
<b>Total Membership</b>	<b>258</b>

Renewal notices were sent out to African member's whose membership ended December 2012 on 10 January 2013. Response so far has been good, with 25 renewals. As of today I am awaiting response from approximately 50 members. A second reminder was sent in March. Overseas membership continues to be handled by Breck Bartholomew (ZenScientist/ Bibliomania) and this system is working well, especially considering that at this stage we cannot offer payments by credit card. They are also currently running a renewal campaign. Many members are taking advantage of the 3-year membership offer (10% discount), with 57 African members and 33 overseas members currently with 3-year memberships.

There are currently 17 Student members (all African). This is something that should be more strongly promoted, e.g. through facebook and other social media, as a) they get a great discount, and b) it is a good way of attracting new members.

## **Subscriptions Management**

There is a need for central management of back-issues due to the relatively high turn-over of committee staff (matter of storage of back-issues and cost of posting) as well as daily input required for subscription management. NISC in Grahamstown already handles distribution of AJH for South Africa and are a candidate for such a task

JEANNE TARRANT

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## **JOURNAL EDITOR'S REPORT**

This report covers my second period as editor for African Journal of Herpetology (January 2011 to January 2013). Since my last report (African Herp News 53:5-7), the journal has continued to grow and strengthen. We have seen the 60<sup>th</sup> volume reporting a widening of research interests covered in the journal together with increasing rigor in publication quality over 47 years of publications (see *Afr. J. Herpetol* 60:89-100). Since the last report there has also been some shuffling of personnel associated with the journal: two new Associate Editors and a new Chair of the Editorial Board, Graham Alexander. I'd like to take this opportunity to thank the outgoing chair, Mike Bates, for all his work toward making the journal a success.

## **Taylor & Francis Publishing AJH**

Our arrangements with Taylor & Francis (T&F) for publishing AJH have seen stability and quality in the appearance of the journal. After some difficulties in the distribution arrangements (previously with UNISA) these duties have been outsourced to NISC at no additional expense to the HAA.

Our members continue to have free access to all AJH pdfs right back to Volume 1 in 1965 via the T&F website (<http://www.tandfonline.com/>)

toc/ther20/current). Each password changes annually, so make sure that you don't discard the emails that you receive from T&F issuing these. Contact the HAA secretary in case of doubt.

It was anticipated that using T&F and their online platform would help increase visibility of AJH throughout the academic world. With the launch of the "Taylor & Francis online platform" (in June 2011), we can now see how wide our current distribution is. In the last 1.5 years, 11 669 AJH articles were downloaded by a total of 494 institutions; number one in this period was Seoul National University of South Korea with 1 368 downloads! We can also see which articles were downloaded. Congratulations to Greenbaum *et al* (2012) for the massive 424 downloads of their paper describing a new Congolese cordylid. Other mega-downloaded articles were Branch & Tolley (2010), van der Meijden *et al* (2011), Wallach *et al* (2010), Measey *et al* (2011) and Meyer *et al* (2010) who all exceeded 200 downloads during the past 1.5 years.

For submissions, we continue to use an online system (ScholarOne: [mc.manuscriptcentral.com/ther](http://mc.manuscriptcentral.com/ther)) which really helps ease the complexities of editorial work. During the scope of this report we received 42 submissions (one mini-review, one review, 32 original articles, and eight short communications) The ScholarOne system produces its own metrics which were carried in the last report, and continue below. The following metrics relate to the 2011 and 2012 activity for AJH on ScholarOne:

ScholarOne metrics	Days
Average Time to First Decision	29
Average Referee Turnaround Time	20
Average Time to Final Decision	48
Proportion Accepted	40.5%

### Associate editors

As before, work on the journal has not been achieved by the editor alone but through a concerted effort from a committed editorial team. I'd

like to take this opportunity to thank all the Associate Editors (AEs). Two new AEs were appointed during this period: Jörn Khöler (Hessisches Landesmuseum Darmstadt) and Bryan Maritz (Cornell University). They join the now veteran AEs: David Blackburn (now at the Californian Academy of Sciences) and Eli Greenbaum (University of Texas at El Paso). AEs take on an important and vital role investing a lot of time in reading and assessing manuscripts, reading reviewer's reports and making recommendations. Their work lies at the heart of the quality of outputs that we see when we read AJH.

## **Special Edition**

A special edition of African Journal of Herpetology (Volume 62; Issue 1) will appear in April 2013. This will carry a series of papers dedicated to the herpetological career of John Poynton, and follows a symposium held in honour of him during the 15<sup>th</sup> African Amphibian Working Group in Trento, Italy during May 2012. This special edition is being jointly edited by Simon Loader, Hendrik Müller and myself. If you wish to organise a special edition of the journal, please contact the editor.

## **Metrics**

As many members will be aware, the world of scientific publishing is now largely governed by metrics, and you'll be happy to know that African Journal of Herpetology continues to rise through the ranks. Our Impact Factor (IF) reached an all-time high in 2011: 0.714. (from 0.500 in 2010).

JOHN MEASEY

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## NEWSLETTER EDITOR'S REPORT

This report covers a period of two years during which 6 issues (Issues 53 – 58 inclusive) of *African Herp News* were produced. During this period a total of 288 pages were produced, at an average of 48 pages per issue. This represents an increase in total page output when compared to the last previous 6 issues (34 pages per issue; *African Herp News* 53:8).

The 6 issues covered during this period saw a total of 13 Articles, 29 Natural History Notes, and 19 Geographic Distributions published (compared with 15, 40, and 16 publications respectively during the previous 6 issues). However, these have been supplemented with the publication of 6 book reviews (that would have formerly been submitted to *African Journal of Herpetology*) as well as 3 obituaries. Additional published material (representing a significant proportion of the observed increase in total page output during this period) includes three submissions describing the images used on the cover of the issue, one erratum, the details of the 10<sup>th</sup> Herpetological Association of Africa meeting in Cape Town, South Africa, and all Africa-related abstracts from the 7<sup>th</sup> World Congress of Herpetology held in Vancouver, Canada.

Melrose Arch Jetline has been responsible for all printing of issues during this period, and have additionally been responsible for the distribution of *African Herp News* to members since Issue 55 (December 2011). Prior to this distribution was the responsibility of the editor and generous volunteers.

I will be standing down as Editor in the near future, after seeing through the transition to a newly-elected Editor. My time as editor has, and continues to, teach me much. I hope that *African Herp News* will go from strength to strength and strongly encourage members to consider it as an avenue for publishing Africa-related herpetofaunal observations and findings.

BRYAN MARITZ

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**Delegates at the 11th Herpetological Association of Africa Symposium held at the National Zoological Gardens of South Africa, 25th February to 1st March 2013.**



## NATURAL HISTORY NOTES

### AMPHIBIA: ANURA

#### BUFONIDAE

*Amietophrynus pantherinus* (Smith, 1828)

**Western Leopard Toad**

#### DEFENSIVE BEHAVIOUR

Many anuran protective strategies, such as defensive postures and behaviours, toxic and distasteful skin secretions and cryptic and aposematic colouration have evolved in response to predation (Wells 2007, Vitt & Caldwell 2009). Toledo *et al.* (2010) broadly reviewed these defensive behaviours categorising 30 different types of behaviours among which anurans may display what is known as “*tonic immobility*”. Toledo *et al.* (2010) suggest that this can be separated into two distinct categories of defensive behaviour: thanatosis or death feigning and contracting.

Thanatosis may divert the attack of a potential predator as the animal adopts a posture of appearing dead (Honma *et al.* 2006) and would probably be effective against predators which need movement cues to locate prey or those that do not feed on dead animals (Toledo *et al.* 2011). The limbs remain loose and can easily be moved to any position by the observer while the body remains outstretched (Toledo *et al.* 2010). This behaviour may avoid subjugation and is usually displayed by non-toxic species (Toledo *et al.* 2010).

Contracting is the behaviour whereby a frog remains motionless while keeping its bent fore and hind limbs close to the body for protection and in some cases with the head ventrally flexed. It is probably an effective strategy for anurans which produce noxious excretions while being preyed upon as these secretions may elicit the regurgitation of the frog



by the predator while in the mouth or other parts of the digestive tract; limb contraction may protect vital areas like the belly from more serious wounds while being swallowed (Toledo *et al.* 2010).

On 17 October 2012 at approximately 10:45 on the south eastern shore of Little Princess Vlei, Cape Town, Western Cape, South Africa (34°02'59"S, 18° 28'31"E), a juvenile Western Leopard Toad (*Amietophrynus pantherinus*) 34 mm in length was found under a log. When picked up for inspection the frog reacted upon contact first by flipping onto its back with eyes open and head outstretched (Fig. 1A) before pulling its limbs tightly towards its body and flexing its head ventrally a short while later (Fig. 1B). It then remained motionless, with eyes still open, for approximately two minutes after which it flipped back onto its feet and started walking, at which point it was released.

Our initial reaction was that this individual was feigning death; however it now seems that it may have displayed a combination of both thanatosis (Fig. 1 Left) and contracting behaviour (Fig. 1 Right) as described by Toledo *et al.* (2010).



**Figure 1:** *Amietophrynus pantherinus* juvenile (Left) displaying what appears to be death-feigning behaviour, and (Right) the same individual displaying contracting behaviour. Photographs by Grant Smith.

Toledo *et al.* (2010) state that contracting may have evolved from thanatosis because of the higher complexity of the former: eyes generally closed, limbs in fixed positions, and head

ventrally flexed. They also mention that thanatosis is widespread in the anuran clade, whereas contracting seems to be a synapomorphy of given phylogenetic groupings, such as some groups or genera of Hylidae and Bufonidae.

As far as we are aware, this is the first record of either of these defensive behaviours for this species; whether the behaviour displayed is thanatosis, contracting or a combination of the two is still open for debate.

## ACKNOWLEDGEMENTS

We would like to thank Dr John Measey and Dr Atherton de Villiers for their patience and the time taken to scrutinise the format and the content of this note. We would also like to thank Mr Luis Felipe Toledo for his comments.

## REFERENCES

- DU PREEZ, L. H., & CARRUTHERS, V. C. 2009. *A Complete Guide to the Frogs of Southern Africa*. Struik Nature, Cape Town.
- HONMA, A., OKU, S., & NISHIDA, Y. 2006. Adaptive significance of death feigning posture as a specialized inducible defence against gape-limited predators. *Proceedings of the Royal Society* 273: 1631-1636.
- TOLEDO, L. F., SAZIMA, I., & HADDAD, C. F. B. 2010. Is it all death feigning? Cases in anurans. *Journal of Natural History* 44: 31-32.
- TOLEDO, L. F., SAZIMA, I., & HADDAD, C. F. B. 2011. Behavioural Defences of Anurans: An Overview. *Ethology, Ecology and Evolution* 23: 1-25.
- WELLS, K. D. 2007. *The Ecology and Behavior of Amphibians*. Chicago, University of Chicago Press.
- VITT, L.J., & CALDWELL, J.P. 2009. *Herpetology: An Introductory Biology of Amphibians and Reptiles, 3rd Edition*. Academic Press.

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## **RANIDAE**

***Strongylopus grayii* Smith 1849**

**Clicking Stream Frog**

## **COLOUR**

The Clicking Stream Frog has a wide distribution in southern Africa, occupying a wide range of habitats. The species is polymorphic with regard to colour. Four basic patterns are found, which are to some extent habitat related (Jacobsen 1989), three of which are illustrated in Du Preez & Carruthers (2009). (a) The most typical is grey to grey-brown spotted or blotched with dark blackish-brown blotches, with or without a narrow white vertebral stripe. Ventrally white. A dark stripe extends from the posterior margin of the eye through the ear to the top of the shoulder. Dark cross bands on the hindlimbs. This form becomes very dark along forested streams in the southern Cape. (b). Similar to (a). but the vertebral stripe is broad and brown to red-brown. The remainder of the dorsum and ventrum is as for (a). (c) A uniform pale grey above with pale crossbands on the limbs. Remainder of colour is as for (a). (d) This colour morph tends to be pale grey dorsally with a broad yellow to orange vertebral stripe. Both (a) and (b) forms occur mostly in fynbos, grassland, forest margins and coastal thicket while (c) and (d) occur in forest and coastal thicket but not in fynbos and grassland.

During a reptile survey of the former Wilderness National Park (now part of the Garden Route National Park) several immature *Strongylopus*

*grayii* individuals were trapped along the Langvlei Dune Cordon (33° 59' 42,2" S; 22° 41' 34,3" E) between Wilderness and Sedgefield, Western Cape. These frogs exhibited a unique colour pattern being dark brick-red dorsally, including the tibia, almost obscuring the dark dorsal blotches, becoming pinkish on the sides of the snout, body and on the forelimbs and thighs. A pale triangular patch occurs on the snout from the tip to midway between the eyes (Fig. 1) similar to that recorded from form (c) (see Passmore & Carruthers, 2009, p. 424). Dark crossbands occur on the hindlimbs, partly obscured by the red colour on the tibia. Ventrally white.



**Figure 1:** *Strongylopus grayii* from the Langvlei Dunes, Wilderness, Western Cape. 3322DC.

Apart from a pinkish version of form (a) from the farm Joubertsdal 448JT, 2530DB (Fig. 2), this is the only red coloured morph seen and differs from the former in the absence of black facial markings in the triangular nasal patch and the almost obscured dorsal blotching, resembling *Ptychadena anchietae*. It is noteworthy that its occurrence lies within the general area where both colour morphs (a) and (d) have been recorded but not sympatric with this morph which has so far only been recorded from the north-facing slopes of the dunes approximately 100 m from the nearest water on the south side of the Langvlei lake. The habitat is comprised of a mosaic of thicket interspersed with open grassland/scrub.



**Figure 2:** Pink form of *Strongylopus grayii* from the Farm Joubertsdal 448JT, 2530DB.

## **ACKNOWLEDGEMENTS**

I thank the Director of SanParks for permission to work in the National Park and to publish this note. Prof. Allan Channing is thanked for corroborating the identification.

## **REFERENCES**

- DU PREEZ, L. & CARRUTHERS, V. 2009. A complete guide to the Frogs of southern Africa. Struik Nature, Cape Town.
- JACOBSEN, N. H. G. 1989. A Herpetological Survey of the Transvaal. Pp. 1330-35. unpublished Final Report. Chief Directorate of Nature and Environmental Conservation, Transvaal Provincial Administration, Pretoria.

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**REPTILIA: CHELONIA****TESTUDINIDAE*****Homopus signatus* (Gmelin, 1789)****Speckled Padloper****DIET**

The natural diet of *Homopus signatus* consists of plant material (Licitra 2001, Loehr & Harris-Smith 1998, Loehr 2002). Although insect matter has been found in the faeces of *H. signatus*, it occurred in low percentages (Loehr 2002). Insect matter found in the faeces of *H. signatus* may reflect insects consumed by tortoises incidentally while feeding on plants but there are indications that wild *H. signatus* eats insects intentionally (Loehr 2002). In captivity the diet of this species consists of green plants such as dandelion (*Taraxacum* sp.), plantain (*Plantago* sp.), endive and seedlings and this diet may be supplemented with soaked, chopped hay or heucobs (AGROBS ®) to provide fibre for tortoises (Klerks 2002, Loehr 1999). Although animal components may be present in the diet of wild *H. signatus*, they have not been recorded in captive specimens. Supplementation of animal matter in the diet of captive *H. signatus* has been tried without success; cat food and mealworms were provided in a dish but not were not eaten by the tortoises (V.J.T. Loehr, *Pers. Comm.*).

I have a captive *H. signatus* that has shared its enclosure with a male beaver tailed agama, *Xenagama batilifera* for three years. The *X. batilifera* received invertebrates enriched with a calcium and vitamin supplement three times a week (crickets, grasshoppers, wax moth larvae, mealworms and various insects native to the Netherlands). The male *H. signatus* never showed interest in any of these insects. After three years, the tortoise and the lizard moved from the 150 x 50 x 50 cm enclosure to a 100 x 50 x 50 cm enclosure. Both animals adjusted to their new surroundings and soon resumed feeding and basking as they had done in the previous enclosure.

After five days in the new enclosure, I offered the agama mealworms in a small dish. Almost immediately the tortoise moved to the dish and started devouring the mealworms. The mealworms were picked up by the tortoise and cut in several pieces before ingestion. A total of seven mealworms were eaten. The feeding bout lasted for about 15 minutes. Four days after the feeding bout, I found the mealworms seemingly undigested in the enclosure. It was not clear if the mealworms were regurgitated or passed through the gut of the tortoise. After this incident, the tortoise resumed its herbivorous diet.

A reason for the ingestion of mealworms by this captive tortoise might be a need for proteins. However, seedlings of several plants species which are rich in proteins (i.e., legumes) were offered to the animal once or twice every two weeks. This reflects the natural diet of this species in late winter and early spring (Loehr 2002). The reason for the sudden insectivorous behaviour of this individual remains unknown. Incidentally, two *H. signatus* I had enclosed with a pair of tropical girdled Lizards, *Cordylus tropidosternum*, never showed any interest in the invertebrates offered to the lizards.

## ACKNOWLEDGEMENTS

I would like to thank Victor Loehr for sharing his thoughts on this case and commenting on the manuscript. I thank Jordi Janssen for reviewing this manuscript.

## REFERENCES

- KLERKS, M. 2002. Adapting the Namaqualand speckled padloper, *Homopus signatus signatus*, to captive conditions. Turtle and Tortoise Newsletter 6: 30-32.
- LICITRA, J.T. 2001. *Homopus signatus*, Speckled padloper, observations on natural diet. African. Herp News 32: 12-13.
- LOEHR, V. J. T. 2002. Diet of the Namaqualand speckled padloper, *Homopus signatus signatus*, in early spring. African Journal of Herpetology 51 (1): 47-55.



LOEHR, V. J. T. 1999. Dietary requirements of captive hatchling Namaqualand speckled padlopers (*Homopus s. signatus*). African Herp News 28: 23-26.

LOEHR, V. J. T. & HARRIS-SMITH, T. J. 1998. *Homopus signatus*, Speckled padloper, natural diet. African Herp News 28: 33-34.

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## **REPTILIA: SQUAMATA**

### **VIPERIDAE**

*Bitis arietans arietans* (Merrem, 1820)

**Puff Adder**

### **PREDATION**

Predation is known to be an important driver of many ecological systems (Hairston et al. 1960), and is likely responsible for driving patterns of activity of prey animals, and provides a strong selection pressure for the evolution of traits related to camouflage and elaborate defensive morphology and physiology (Sih et al. 1998). However, predation can be difficult to observe because of the nature of the animals involved in the interactions, and because predators may only consume a particular prey species infrequently. As a result, records of particular predators consuming a particular prey species are often limited to isolated observations, many of which are never published, limiting the development of our understanding of predator-prey interactions among those species. In certain instances, biologists may observe predation events and may report these as natural history observations if they realize the significance of the event. However,

many other instances of predation are observed and even recorded by members of the public who often do not recognise the significance of the observation, nor are aware of the appropriate reporting avenues. These observations may be particularly valuable for species that are poorly known, but often go unnoticed by scientists.

As part of a broader study aiming to understand the ecological and behavioural influences of predation on Puff Adders (*Bitis arietans*) I collated observational anecdotes of predation on these snakes. I solicited observations of Puff Adders being killed/eaten by predators from various members of South African university departments, and asked that they distribute my request to appropriate persons. Additionally I performed multiple internet searches seeking reports, photographs, or videos of Puff Adders being killed/eaten. I found several observations of predation events that supported the existing literature (Skinner & Chimimba, 2005; Hockey et al., 2005; Shine et al, 2007). However, I also found evidence of ten additional species of predators of Puff Adders that, to my knowledge, have not been previously been reported.

## **SYSTEMATIC ACCOUNT**

**CLASS: AVES**

**ORDER: ACCIPITRIFORMES**

**Family: Accipitridae**

**Species: *Circaetus fasciolatus* (Southern Banded Snake Eagle)**

Mr. Geoff Lockwood reported having seen a Southern-banded Snake Eagle (*Circaetus fasciolatus*) eating a Puff Adder (of approximately 400 mm TL) near Lalapanzi Camp, Bonamanzi Game Reserve, KwaZulu-Natal, South Africa on October 20, 2007. Hockey et al. (2005) do not list Puff Adders in the diet of this species, although members of the genus *Circaetus* are prolific predators of snakes in general, and several other species of *Circaetus* are known predators of Puff Adders.

**Species: *Melierax canorus* (Southern Pale Chanting Goshawk)**

Mr. André Ligthelm posted a series of images of a pair of Southern Pale Chanting Goshawk killing an adult Puff Adder in the Kgalagadi Transfrontier Park, South Africa. The website (<http://www.wildcard.co.za/blog.htm?action=view-post&id=3794&comment=9325#comment-9325>) included the following description of the interaction.

*“During our visit to the Kgalagadi in May 2012, we came across a puff adder that was injured on the road between Mata Mata and the Sitsas waterhole. Shortly after our arrival, two juvenile pale chanting goshawks arrived on the scene. Initially they were frightened by the movement of the snake but started attacking it after a few minutes. The snake was killed after approximately 10 minutes. One of the birds flew away with the snake and started eating it in a dense patch of grass. This unfortunately eliminated any further photographic opportunities!”*

Hockey et al. (2005) lists snakes (but not Puff Adders specifically) as prey of Southern Pale-Chanting Goshawks. While the Puff Adder in this case had been injured, it would appear that the birds were responsible for killing it, and there is little to suggest this would not happen to a healthy snake.

**Species: *Polemaetus bellicosus* (Martial Eagle)**

Mr. Mark Paxton, a game ranger in Etosha National Park, Namibia in the early 1980s, reported having seen a sub-adult Martial Eagle eating a Puff Adder.

*“The sub-adult Eagle was mantling with wings spread, and did not fly off immediately when I stopped the vehicle. The snake was still alive when I looked through binoculars and I recall the eagle still finishing it off before flying off. It was also not a very large snake and probably only about 50 cm long.”*

Martial Eagles are known predators of snakes, but Puff Adders have never been reported in their diet (Hockey et al., 2005).

**ORDER: GRUIFORMES**

**Family: Otididae**

**Species: *Ardeotis kori* (Kori Bustard)**

Luke Verbugt (*Pers. Comm.*) reported seeing a Kori Bustard in the Blouberg Nature Reserve, Limpopo, South Africa, during February 1995 with a juvenile Puff Adder in its beak. The bird dropped the snake and took off when it was disturbed and closer investigation of the Puff Adder revealed that had been decapitated. While Mr Verbugt didn't unambiguously see the Kori Bustard kill the Puff Adder, he reports that the freshness of the kill (the snake was still bleeding) and the nature of the injury suggested that the bird had been responsible for the predation. Hockey et al. (2005) report reptiles, including snakes, in the diet of this species, but do not present details.

**ORDER: PELECANIFORMES**

**Family: Ardeidae**

**Species: *Ardea melanocephala* (Black-headed Heron)**

Although Hockey et al. (2005) does not list Puff Adders as prey of Black-headed Herons, I received a report from Sue Jackson of a Puff Adder (400 - 500 mm TL) being eaten by a Black-headed Heron near Oudtshoorn, South Africa. Additionally Mr. Henri van Rensburg submitted photographs of a Black-headed Heron killing and eating a Puff Adder to the television show 50/50 (Show reference: G237 – TX 26.02.2006).

**CLASS: MAMMALIA**

**ORDER: CARNIVORA**

**Family: Felidae**

**Species: *Caracal caracal* (Caracal)**

An internet search for evidence of Puff Adders in the diet of Caracal (*Caracal caracal*) revealed an anecdotal report from Namibia of a radio-collared Caracal killing and eating a Puff Adder. No additional information regarding the predation was available. Although Skinner & Chimimba (2005) do not report Puff Adders in the diet of Caracal, they do note the presence of other reptiles including snakes.

**Species:** *Leptailurus serval* (Serval)

I located two internet videos (<https://www.youtube.com/watch?v=FUBtccQE04o>; <https://www.youtube.com/watch?v=58d2G9mmx1A>) showing adult Serval killing Puff Adders. Skinner & Chimimba (2005) do not list Puff Adders specifically as prey of Serval, but mention that they capture and consume snakes.

**Family:** Canidae

**Species:** *Canis lupus familiaris* (Domestic dog)

I observed a Jack Russell terrier kill a sub-adult Puff Adder (approximately 400 mm TL) near Hammanskraal, South Africa. The dog located the snake as it was moving across an open lawn, and bit the snake repeatedly in the neck and head. The dog did not eat the snake, and was not harmed during the interaction. Similar events are undoubtedly common given the abundance of domestic dogs.

**Family:** Herpestidae

**Species:** *Galerella sanguinea* (Slender Mongoose)

A web search revealed a ranger's blog reporting a Slender Mongoose (*Galerella sanguinea*) killing a puff adder. The observer noted that the snake had blood all over its head and the body was still moving when it was located. The observer returned later and found snake was half-eaten from the head. Skinner & Chimimba (2005) list snakes, but not Puff Adders specifically, in the diet of Slender Mongoose.

**CLASS: REPTILIA**

**ORDER: SQUAMATA**

**Family: Elapidae**

**Species: *Naja nigricincta woodi***

Sue Jackson (*Pers. Comm.*) reported to have seen a Black Spitting Cobra (*N. nigricincta woodi*) having attacked and a Puff Adder during summer months, near Citrusdal, South Africa. Dr Jackson reports that:

*“It was mid-to-late morning, and we came across the snakes on a jeep track while we were mountain biking. The Puff Adder was dying and on our approach the cobra fled.”*

Although this account does not confirm the presence of Puff Adders in the diet of *N. n. woodi*, it is strongly suggestive of it, especially given the number of species within the genus *Naja* (*N. annulifera*, *N. anchietae*, *N. mossambica*) that are recognized as predators of Puff Adders (Shine et al, 2007). Additionally Phelps (2007) reports on the remains of a Puff Adder in the stomach of a Cape Cobra (*Naja nivea*). Phelps' finding is supported by photographs posted on the SANParks blog (<http://www.wildcard.co.za/blog.htm?action=view-post&id=1474>) of a Puff Adder being consumed by a Cape Cobra, as well as three instances of Cape Cobras eating Puff Adders reported on the television show 50/50 (Show references: G6: TX 02.06.1996; G164 - TX 19.01.2003; NEW045 - TX 11.05.2009).

If we are to better understand the ecology and behaviour of cryptic species like Puff Adders, it is essential that the role of predation on populations be examined closely. This is often difficult, but is often made easier through rigorous and conscientious reporting of predator prey interactions. I strongly encourage such reporting in appropriate fora that make the information available to interested investigators such as ecologists and conservation planners.

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## REFERENCES

- HAIRSTON, N. G., SMITH, F. E., & SLOBODKIN, L. B. 1960. Community structure, population control, and competition. *American Naturalist*. 421-425.
- HOCKEY, P.A.R., DEAN, W.R.J. & RYAN, P.G.(eds) 2005. Roberts Birds of Southern Africa, 7th edn. Trustees of the John Voelcker Bird Book Fund, Cape Town.
- PHELPS, T. 2007. Observations of the Cape cobra, *Naja nivea* (Serpentes: Elapidae) in the DeHoop Nature Reserve, Western Cape Province, South Africa. *Herpetological bulletin*, 99: 29-35.
- SHINE, R., BRANCH, W. R., WEBB, J. K., HARLOW, P. S., SHINE, T., & KEOGH, J. S. 2007. Ecology of cobras from southern Africa. *Journal of Zoology*. 272: 183-193.
- SIH, A., ENGLUND, G., & WOOSTER, D. 1998. Emergent impacts of multiple predators on prey. *Trends in Ecology & Evolution*. 13: 350-355.
- SKINNER, J. D., & CHIMIMBA, C. T. 2005. The mammals of the southern African sub-region. Cambridge University Press.



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**VIPERIDAE**

*Bitis parviocula* Böhme 1977  
**Ethiopian Mountain Adder**

**REPRODUCTION**

*Bitis parviocula* is an enigmatic, large-bodied viperid snake described from montane habitats in Ethiopia (Böhme 1977; Largen & Rasmussen 1993). Despite being known for close to four decades, hardly any information is available regarding its basic biology, primarily as a result of the apparent rarity of the species in nature and the resultant paucity of specimens in museum collections (Phelps 2010). Here we report previously unknown reproductive information for *Bitis parviocula*, based on three litters born to two female snakes living in captivity in Europe. *Bitis parviocula* neonates were born in May and varied substantially in size, ranging from 170 mm to 240 mm in total length, and 8.2 g to 24.0 g in mass. Litter size was correlated with female body size (Pearson's  $r = 0.96$ ), and overall sex ratio for the sample 18 males to 21 females did not differ significantly from 1:1 ( $\chi^2 = 0.051$ ;  $P = 0.82$ ; Table 1).

Data like those presented here are useful in trying to understand patterns of ecological diversification and conservation of the species concerned. Despite their inherent value, they are often unavailable for several species that may be poorly represented in the scientific literature but known to herpetoculturalists. We encourage people with such data to make it available.

**Table 1: Female body size, litter size, and sex ratios for three litters of *Bitis parviocula* born in captivity**

Snake	Year	Total length (mm)	No. offspring	Sex ratio (M:F)
Female 1	2011	780	11	1 : 0.57
	2012	900	12	1 : 1.4
Female 2	2012	1050	16	1 : 1.7

**REFERENCES**

- BÖHME, W. 1977. Eine neue Art der Gattung *Bitis* (Serpentes, Viperidae) aus Äthiopien. *Monit. Zool. Ita.*: 59-68.
- LARGEN, M. J., & RASMUSSEN, J. B. 1993. Catalogue of the snakes of Ethiopia (Reptilia, Serpentes) including identification keys. *Tropical Zoology*. 6: 313-434.
- PHELPS, T. 2010. *Old World Vipers: A Natural History of the Azemiopinae and Viperinae*. Pp 308 - 309. Edition Chimaira, Frankfurt and Main, Germany.

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**VIPERIDAE*****Bitis rubida* (Branch, 1997)****Red Adder****REPRODUCTION**

On 04 January 2013 at approximately 19:20 a female Red Adder (*Bitis rubida*) was discovered beneath a large rock (3320AB, 906 m

a.s.l.; Fig. 1). Upon inspection the snake was assumed to be gravid and a decision was made to house the specimen in captivity in order to gather data on the reproduction of the species. To my knowledge there is only a single record of *B. rubida* reproduction as reported in Branch 1997. The snake was collected under Permit Number 0056-AAA007-00016 of the Cape Reptile Institute of which I am a listed Field assistant.



**Figure 1: Adult female Red Adder (*Bitis rubida*) that gave birth to eleven neonates in March.**

The snake was placed in a 900 mm x 500 mm x 500 mm melamine enclosure which had been thoroughly cleaned using F10 disinfectant cleaning solution. Bags of loose gravel and dead branches were collected from the area the snake was found and used to decorate the enclosure. A basking spot was provided by a heating pad which was placed below the gravel on one side of the enclosure providing a warm area averaging 31°C. The cage was placed in a quiet room and monitored twice daily. Upon capture the female weighed 107g and was weighed periodically over the course of the gestation period during which she refused appropriately sized pre-killed rodent prey on three occasions.

On 04 March 2013 eleven healthy neonate *B. rubida* (zero stillborn) were observed in the enclosure. These were carefully removed and

placed into individual 2L plastic tubs which had been sterilised with F10 disinfectant solution. Two weeks prior to giving birth the adult female weighed 120g, post- birth her weight had dropped to 60g. The weights of the eleven young ranged between 2.1g – 3.8g (Table 1).

**Table 1: Sex, length, mass, and ventral and subcaudal scale counts for eleven neonate Red Adders (*Bitis rubida*).**

ID	Sex	Total length (mm)	Mass (g)	Ventrals	Subcaudals
BR01	Male	144.88	2.9	137	29
BR02	Male	149.02	3.7	137	33
BR03	Female	148.94	3.3	142	22
BR04	Female	148.88	3.2	141	24
BR05	Female	156.35	3.6	146	27
BR06	Female	146.73	2.8	145	23
BR07	Female	154.59	3.2	150	18+
BR08	Male	150.57	2.9	135	29
BR09	Male	146.01	2.1	139	32
BR10	Female	148.28	2.8	146	27
BR11	Female	157.73	3.8	147	24
BRAF	Female	434.11	60	141	24

The snakes were measured using SnakeMeasurer software. To test the accuracy of this software two pieces of flexi-wire measuring 120mm and 150mm were placed on a scanner with a plastic ruler. The scanned image was then placed into the SnakeMeasurer program. Four test measurements were performed showing an accuracy of 0.5mm.

The eleven neonates and the adult female were then scanned individually with each snake measured four times. The adult female measured 434.1mm, the smallest neonate measured 144.9mm and the largest measured 157.7. The young snakes were sexed as four males and seven females. Female ventral counts ranged between 141-150 and subcaudals ranging between 22-27. One female neonate born with a shortened tail showed a subcaudal count of 18. The male neonates

ventral counts ranged between 135-139 and subcaudals ranging between 29-33. The adult female had a ventral count of 141 and a subcaudal count of 24.

On 15 March 2013 all eleven juveniles as well as the adult female were released in an area within 100m of the original capture site which was situated very close to a gravel road. Prior to release ventral scale clippings were taken from the adult female and detailed ID photographs were taken of each neonate, it is hoped that data pertaining to growth, fecundity, and movement may be gathered upon recapture in future.

## **ACKNOWLEDGMENTS**

Dr Tony Phelps for providing guidance throughout this project and assisting in compiling this note, Henco Nienaber who originally discovered the female *B. rubida* and Rob Deans for additional comments on this note.

## **REFERENCES**

- BRANCH, W. R. 1997. 'A new adder (Bitis: Viperidae) from the Western Cape Province, South Africa'. South African Journal of Zoology. 32 920: 37-42.
- BRANCH, W. R. 1998. Field guide to the snakes and other reptiles of Southern Africa. 3<sup>rd</sup> ed. Struik Publishers, Cape Town.
- MARAIS, J. 2004. A complete guide to the snakes of Southern Africa. 2<sup>nd</sup> ed, Struik Publishers.

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**COLUBRIDAE***Dispholidus typus viridis* (A. Smith, 1828)**Common Boomslang****DIET**

On 14 November 2009 a large greenish adult male Boomslang (*Dispholidus typus viridis*) was observed by the second author and L. de Coning while climbing through a large, communal Sociable Weaver (*Philetairus socius*) nest mass in a Camel Thorn Tree (*Acacia erioloba*) at Sandveld Nature Reserve (27°41'21.6'S, 25°43'35.8'E; 2725DA; 1255 m a.s.l.), Hoopstad district, north-western Free State, South Africa. The snake was observed moving from one nest chamber to another on the underside of the nest mass, with its tail anchored in the coarser nesting material higher up. It stuck its head into various nest holes and was photographed while swallowing a fledging Sociable Weaver head-first (Fig. 1). It is well known that the Boomslang includes birds (especially fledglings) and their eggs in its diet (Broadley 1990). A number of different vertebrates live or hunt in the large communal nests of Sociable Weavers (Maclean 1973). In a study conducted at Benfontein Game Farm near Kimberley, Covas (2002) found that Boomslang and Cape Cobra (*Naja nivea*) were the major predators on the eggs and chicks of Sociable Weavers. In small and medium sized nests, large snakes often ate all the eggs and chicks that were available. Snakes often stayed in the colony for several days or even weeks, regularly moving among the nest chambers and feeding on newly-laid eggs and chicks. Braine & Braine (1968) noted that 80% of the Sociable Weaver nests they examined in northern Namibia contained a resident Boomslang. This note represents the first published information on the diet of *D. typus viridis* in the Free State.

Note: We follow Broadley & Blaylock (2013) in using the name *D. t. viridis* (Common Boomslang) for *D. typus* populations found from the Northern Cape – and presumably including the adjacent Free State –

northwards (i.e. excluding Western and Eastern Cape provinces where *D. t. typus* occurs) in which males usually have a mainly green dorsal colouration.



**Figure 1: Common Boomslang (*Dispholidus typus viridis*) swallowing a fledgling Sociable Weaver (*Philetairus socius*) captured in a communal nest at Sandveld Nature Reserve, north-western Free State (Photo: L. de Coning).**

## ACKNOWLEDGEMENTS

We thank L. de Coning who photographed the predatory behaviour of the Common Boomslang.

## REFERENCES

- BRAINE, J. W. S. & BRAINE, S. G. 1968. The Pygmy Falcon. *Bokmakierie* 20(1): 2-3.
- BROADLEY, D. G. 1990. *FitzSimons' Snakes of Southern Africa*. Delta Books, Johannesburg.



- BROADLEY, D. G. & BLAYLOCK, R. 2013. *The Snakes of Zimbabwe and Botswana*. Frankfurt Contributions to Natural History Vol. 39. Edition Chimaira, Frankfurt am Main.
- COVAS, R. 2002. *Life-history Evolution and Cooperative Breeding in the Sociable Weaver*. Ph.D. thesis, Percy Fitzpatrick Institute, University of Cape Town, Cape Town.
- MACLEAN, G. L. 1973. The sociable weaver, Part 4: predators, parasites and symbionts. *The Ostrich* 44 (3&4): 241-253.

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**COLUBRIDAE**

*Duberria lutrix* (Linnaeus, 1758)

**Common Slugeater**

**MAXIMUM SIZE**

On 3 March 2012, I was contacted regarding a snake that was caught, in a garden (Oudtshoorn, Western Cape, South Africa), the snake was handed over to me to release. I identified the snake as a *Duberria lutrix*, and came to the conclusion it was a female due to her size, 378 + 74 mm (452mm Total length) and the shape of the tail.

Branch (1998) states the Max SVL for male 355mm and 360mm female, Broadley (1990) noted a large female of 389 (345+44) mm, FitzSimons (1983) merely mentions that *D. lutrix* seldom exceeds 300 mm and lastly Marais (2004) states the total length as 430 mm. The snake was released in suitable habitat.

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## REFERENCES

- BRANCH, W. R. 1998. Field Guide to the Snakes and Other Reptiles of Southern Africa. Third Edition, Struik, Cape Town.
- BROADLEY, G. D. 1990. FitzSimons Snakes of Southern Africa. Jonathan Ball and Ad. Donker. Parklands.
- FITZSIMONS, V.F.M 1983. A Field Guide to Snakes of Southern Africa. Second Edition. Collins. London and Johannesburg.
- MARAIS, J. 2004. A Complete Guide to the Snakes of Southern Africa. Second Edition. Struik, Cape Town.

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## COLUBRIDAE

*Pseudaspis cana* Linnaeus, 1754

**Mole Snake**

## DIET

On 30 September 2012, while checking on a captive *P. cana*, I noticed behaviour which at that time seemed strange. The juvenile *P. cana* was moving erratically with his body, and seemed busy trying to constrict something. Closer inspection revealed that the snake was busy constricting its cage-mate and attempting to swallow it. At that time approximately 100 mm of the swallowed snake was still protruding out

of the mouth. When disturbed the animal regurgitated the dead conspecific. The live individual measured 268mm (TL) and the dead individual measured 232mm (TL).

Branch (1998), Broadley (1990) and Marais (2004), notes that juvenile moles snakes feed on lizards and adults on mammals were as FitzSimons (1983) and Isemonger (1962) mentions rodents as their staple diet. I could not find any reference to *P. cana* preying on other snakes or any form of cannibalism.

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## **REFERENCES**

- BRANCH, W. R. 1998. Field Guide to the Snakes and Other Reptiles of Southern Africa. Third Edition, Struik, Cape Town.
- BROADLEY, D. G. 1990. FitzSimons Snakes of Southern Africa. Jonathan Ball and Ad. Donker. Parklands.
- FITZSIMONS, V. F. M. 1983. A Field Guide to Snakes of Southern Africa. Second Edition. Collins. London and Johannesburg.
- ISEMONGER, R. M. 1962. Snakes of Africa: Southern, Central and East. First Edition. Nelson Publishers. South Africa.
- MARAIS, J. 2004. *A Complete Guide to the Snakes of Southern Africa*. Second Edition. Struik, Cape Town.

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## **COLUBRIDAE**

*Thelotornis capensis capensis* (A. Smith, 1849)  
**Southern Twig Snake**

## DIET/ACTIVITY

Lowveld National Botanical Garden, Nelspruit, Mpumalanga, South Africa (25°26'654''S, 30°58'166''E, 2530BD, 627m a.s.l).

On the 30<sup>th</sup> of October 2008, while searching a small pond at around 19H00 for frogs, an adult Southern Twig Snake (*Thelotornis capensis capensis*) was spotted, lying on the ground, in the beam of a torch (Fig. 1). At this time, it was already completely dark, as sunset was at 18H11 on this day and it was New Moon on the 29<sup>th</sup> of October 2008. On closer investigation, I discovered that the snake was feeding on a Southern Foam Nest Frog (*Chiromantis xerampelina*). The frog was being eaten from its posterior end, and after the snake completed its meal on the lawn, it moved off into some low lying vegetation, approximately 15 m from where it was initially found. There were no trees, in the immediate area of the discovery.



**Figure 1: Twig Snake (*Thelotornis capensis capensis*) feeding on a Southern Foam Nest Frog (*Chiromantis xerampelina*) at night-time.**

It is well documented that this species of snake eats amphibians. Its main diet consists of lizards, however, examination of the stomach contents of numerous Southern Twig Snakes (*Thelotornis capensis*

*capensis*), has revealed that these snakes mainly consume the following frog species: Rain Frogs (*Breviceps* spp.) and Southern Foam Nest Frogs (*Chiromantis xerampelina*) are the most common, however, Reed Frogs (*Hyperolius* spp.) and Tremolo Sand Frogs (*Tomopterna cryptotis*) have also been recorded. Snakes and birds are also eaten (Broadley 1990, Shine et al. 1996, Branch 1998 and Marais 2004). I have personally also observed this species feeding on mice.

This observation of diurnal snake species feeding at night, could possibly explain some of the other dietary records, which have previously been observed in the Southern Twig Snake (*Thelotornis capensis capensis*).

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## **REFERENCES**

- BRANCH, W. R. 1998. Field Guide to Snakes and Other Reptiles of Southern Africa. Struik Publishers, Cape Town. Pp 399.
- BROADLEY, D. G. 1990. FitzSimons' Snakes of Southern Africa. Jonathan Ball and AD Donker Publishers, Parklands. Pp 387.
- MARAI, J. 2004. A Complete Guide to the Snakes of Southern Africa. Struik Publishers, Cape Town. Pp 312.
- SHINE, R., HARLOW, P. S., BRANCH, W. R. & WEBB, J. K. 1996. Life on the Lowest Branch: Sexual dimorphism, diet, and reproductive biology of an African Twig Snake, *Thelotornis capensis* (Serpentes, Colubridae). Copeia, 1996(2): 290-299.

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## CHAMAELEONIDAE

### *Bradypodion occidentale* (Hewitt, 1935)

#### Western Dwarf Chameleon

### REPRODUCTION/COLOUR

*Bradypodion occidentale* do not exhibit a seasonal pattern of reproductive activity (Jackson, 2007) and two to three litters are believed to be produced per year (Tilbury, 2010). Gravid females have been documented in specimens collected in October through January and in April (Jackson 2007), with clutch sizes ranging from six (Jackson, 2007) to 20 (Tilbury, 2010). Jackson (2007), however, lacked female specimens collected in February, March, June and August, and examined only one to eight female specimens in the remaining months, limiting the application of these data for additional studies for temporal presence of gravid females.

Additionally, *B. occidentale* exhibits two to three deep, pigmented gular grooves (Tolley & Burger, 2007; Tilbury, 2010), which extend posteriorly from the tip of the jaw to the axillary region of the forelimb. These gular grooves appear in a variety of colours, including a deep velvety purple-black, a bright yellow and an electric orange colouration (Tolley & Burger, 2007). The colour of these grooves, however, is not known to change or vary within individuals or to be sex/size dependent as a variety of colours appear to be present within populations, sexes and age classes. These anecdotal observations suggest that gular groove colouration is highly variable within populations.

On 4 March 2012, we collected ten *B. occidentale* individuals, including eight females from Tygerberg Nature Reserve in Western Cape Province, South Africa (CapeNature permit number 0056-AAA007-00005; University of South Florida Institutional Animal Care and Use Committee procedure W4074; South African National Biodiversity Institute ethical clearance 002/2011). These individuals were maintained in captivity for 12 days for a separate project and

during this time, two females gave birth. The first female (86.7 mm SVL and 13.9 g post-partum mass) gave birth to nine neonates and an unfertilized ovum on 13 March. The second female (90.26 mm SVL and 14.4 g post-partum mass) gave birth to eight neonates on 14 March. The clutch of nine had a mean SVL of neonates (mean  $\pm$  SD, [range]) of  $27.26 \pm 1.19$  mm [25.1-29.2] and mean body mass of  $0.52 \pm 0.02$  g [0.50-0.54]. The clutch of eight had a mean SVL of neonates of  $25.88 \pm 1.20$  mm [23.6-27.3] and mean body mass of  $0.44 \pm 0.02$  g [0.41-0.49]. Both females that produced clutches exhibited black coloured gular grooves, while all neonates from both clutches exhibited orange coloured gular grooves. All originally collected individuals were released at their exact site of capture and neonates were released within 1 m of their mother's capture site within 24 hours of parturition. These data build on that already published for reproductive timing and clutch size in *B. occidentale*. Furthermore, with additional study, a better understanding of the inheritance patterns of gular groove colouration for this species could be developed.

## ACKNOWLEDGEMENTS

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## REFERENCES

JACKSON, J. C. 2007. Reproduction in dwarf chameleons (*Bradypodion*) with particular reference to *B. pumilum* occurring in fire-prone Fynbos habitat. Unpublished PhD thesis. University of Stellenbosch,



Stellenbosch, South Africa.

TILBURY, C. 2010. Chameleons of Africa - An Atlas Including the Chameleons of Europe, the Middle East and Asia. Edition Chimaira, Frankfurt am Main.

TOLLEY, K. A., BURGER, M. 2007. Chameleons of Southern Africa. Struik Publishers, Cape Town.

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### **CHAMAELEONIDAE**

*Bradypodion setaroi* Raw, 1976

**Setaro's Dwarf Chameleon**

### **REPRODUCTION**

Sodwana Bay, KwaZulu Natal, South Africa (27°31'329"S, 32°40'146"E, 2732DA, 16m a.s.l).

On the 20<sup>th</sup> of February 2013, an adult female Setaro's Dwarf Chameleon (*Bradypodion setaroi*) was observed giving birth to nine young. Five of the young were alive and the other four were stillborn, yet fully developed. The mean weight of the five live young was 0.180 g and that of the stillborn young was 0.175g (Table 1). Animals marked with an asterisk (\*), are those individuals which were dead at birth.

The female, which was measured after she had completed giving birth, had a snout-vent length of 50 mm and a tail length of 51 mm. Her weight was 1.9 g, which is very close to the combined weight of all nine babies which was 1.6 g.

**Table 1:** Snout-vent and tail length measures for a litter of nine neonate *Bradypodion setaroi* from Sodwana Bay, South Africa.

Individual	SVL (mm)	Tail (mm)
1	20	21
2	20	21
3	20	19
4	21	21
5	20	23
6*	21	22
7*	20	22
8*	20	21
9*	21	22
Mean	20.33	21.33

Birth in this chameleon species does not seem to have been previously documented during the month of February. Branch (1998) states that birth occurs during late April and Tilbury (2010) mentions that birth has been recorded during November and December.

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I would like to thank Dr Donald Broadley for checking the manuscript, as well as allowing me access to his library.

## REFERENCES

- BRANCH, W. R. 1998. Field Guide to Snakes and Other Reptiles of Southern Africa. Struik Publishers, Cape Town. Pp 399.
- RAW, L. R. G. 1976. A survey of the dwarf chameleons of Natal, South Africa, with descriptions of three new species (Sauria : Chamaeleonidae), Durban Museum Novitates, 11 (7): 139 – 161.
- TILBURY, C. R. 2010. Chameleons of Africa - An Atlas. Including the Chameleons of Europe, the Middle East and Asia. Edition Chimaira,

Frankfurt am Main. Pp 831.

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## **CHAMAELEONIDAE**

*Chamaeleo dilepis dilepis* Leach, 1819

**Common Flap-neck Chameleon**

## **REPRODUCTION**

On the 13<sup>th</sup> of March 2013, on the Bluff, KwaZulu Natal, South Africa (29°53'301"S, 31°02'905"E, 2931CC, 82 m a.s.l), while walking around searching for reptiles, the carcass of an adult female Common Flap-necked Chameleon (*Chamaeleo dilepis dilepis*) was found lying on the ground. We saw that the female was gravid, and after removing numerous ants that were busy feeding on the carcass, it was collected for further investigation. This specimen had a snout-vent length of 130 mm, and contained a total of 73 eggs (Fig. 1).

This seems to be a new record clutch size for this species, as previously the highest recorded was 65 eggs (Branch, 1998). Tilbury (2010) reports a 150 mm long female laying 60 eggs.

## **ACKNOWLEDGEMENTS**

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## **REFERENCES**

- BRANCH, W. R. 1998. Field Guide to Snakes and Other Reptiles of Southern Africa. Struik Publishers, Cape Town. Pp 399.
- TILBURY, C. R. 2010. Chameleons of Africa - An Atlas. Including the

Chameleons of Europe, the Middle East and Asia. Edition Chimaira, Frankfurt am Main. Pp 831.



**Figure 1:** Female *Chameleo dilepis* carcass with unhatched eggs from the Bluff, KwaZulu-Natal, South Africa.

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## GEOGRAPHICAL DISTRIBUTIONS

### REPTILIA: SQUAMATA

#### COLUBRIDAE

#### *Lycophidion albomaculatum* Steindachner, 1870

#### White-spotted Wolfsnake

On 13 October 2012, Quintin Smit (All Terrain Services) and Jaco van Niekerk (London Mining Company) found and videotaped an unidentified snake at the LMC Marampa Mine Site in Sierra Leone (8° 40'50.07"N; 12°30'33.69"W). Several herpetologists confirmed that this snake is referable to *Lycophidion albomaculatum* based on its dorsal colouration and head shape (Fig. 1). A fair degree of confidence is associated with this identification since this particular species has a remarkably distinct dorsal colour pattern consisting of uniform dark brown to black dorsal colouration with a vertebral series of orange rectangular blotches (Chippaux 2006, Trape & Mane 2006).



**Figure 1:** An extracted video frame of *Lycophidion albomaculatum* filmed at Marampa, Sierra Leone.

Few books exist that show the geographic distributions of reptile species in West Africa. Trape & Mane (2006) provide a locality record for *L. albomaculatum* that overlaps into Sierra Leone. However, the resolution of their distribution map is at a one degree grid and they do not list Sierra Leone as part of the distribution range ("*Du Sénégal à la Guinée et au Mali*"), strongly suggesting that this record originates from neighbouring Guinea. Chippaux (2006) shows an observed locality record for *L. albomaculatum* in Guinea close to the border of Sierra Leone and provides an extrapolated distribution area that overlaps with the northern portion of Sierra Leone, but no actual locality records within this country. Recently, Uetz (2012) released a new version of the reptile database that collates information from over 30,000 publications on reptiles. For each reptile species, a list of countries that are overlapped by the geographic range is provided and according to this database, there is currently no published record of *L. albomaculatum* from Sierra Leone.

This observation locality of *L. albomaculatum* is well within the interior of Sierra Leone and is more than 70 km from the Guinea border, suggesting a greater geographic distribution of this species than previously known. This species purportedly prefers savanna and open forest where it hunts small lizards on the ground and in the leaf litter at night (Trape & Mane 2006). Forest clearing due to agriculture and mining activities could potentially create favourable conditions for this species and may therefore contribute to the expansion of its geographic distribution.

## REFERENCES

- CHIPPAUX, J-P. 2006. Les serpents d'Afrique occidentale et centrale. IRD editions, Paris.
- TRAPE, J.-F. & MANE, Y. 2006. Guide des serpents d'Afrique occidentale. Savane et désert. IRD Editions, Paris.
- UETZ, P. 2012. The Reptile Database, <http://www.reptile-database.org>, accessed December 31, 2012.

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**COLUBRIDAE: DISPHOLIDINI**

***Thelotornis usambaricus* Broadley, 2001**

**Usambara Vine Snake**

During a survey of the terrestrial fauna of Vamizi Island, Quirimbas Archipelago, Cabo Delgado Province, Mozambique (Farooq, 2012), one of the snakes encountered was a yellow-headed vine snake, which was identified as *Thelotornis usambaricus* after comparison with the type series from the East Usambara Mountains in north-eastern Tanzania. This is a new species for Mozambique and a southern range extension of 700 km. It apparently represents a relict population, as all the vine snakes from the Tanzanian coast and Mafia Island are *T. mossambicanus* (Broadley, 2001).

Vamizi Island (11°00'S, 40°40'E) is one of the northern most islands in the Quirimbas Archipelago. It consists of low-level Pleistocene coral limestone formations with a humid tropical climate. Annual rainfall is ca. 1000 mm, most rain falls from December to April, but no month is completely dry. The vegetation in the interior of the island is closed shrubland grading into open woodland, including such species as *Olax dissitiflora*, *Xylothea tettensis*, *Ochna kirkii*, *Sterculia africana*, *Commiphora schimperi*, *Acacia xanthophloeia* and *Sideroxylon inerme* (Silveira & Paiva, 2009).



Two specimens of *Thelotornis usambaricus* were collected. The one deposited in the Natural History Museum of Zimbabwe (NMZB 17980) is a female collected on 18 March 2012, measuring 640+180+ mm (tail truncated), with 21-19-13 dorsal scale rows, ventrals 163; tail truncated; supralabials 8, the fourth and fifth entering the orbit; infralabials 10 & 11, the first four in contact with the anterior sublinguals; loreals 2, proocular 1, postoculars 3, temporal 1+2. Colour pattern similar to that of typical *T. usambaricus*, except that the top of the head is yellow rather than green, and the black chevrons on the neck are very faint (Fig. 1). The second specimen, deposited in the University of Lúrio, is a male with 154 ventrals and 163 subcaudals.



**Figure 1:** *Thelotornis usambaricus* (NMZB 17980) photographed on Vamizi Island, Quirimbas Archipelago, Mozambique.

Other snakes seen and photographed were *Psammophis orientalis*, *Boaedon capensis* and *Philothamnus punctatus*, while the associated lizards were *Lygodactylus luteopicturatus*, *L. groteti*, *Hemidactylus mabouia*, *H. platycephalus*, *Cryptoblepharus boutonii africanus*, *Afroablepharus wahlbergii* and *Cordylus tropidosternum*.

## REFERENCES

- BROADLEY, D. G. 2001. A review of the genus *Thelotornis* A. Smith in eastern Africa, with the description of a new species from the Usambara Mountains (Serpentes: Colubridae: Dispholidini). *Afr. J. Herpetol.* 50 (2): 53-70.
- FAROOQ, H. O .M. 2011. Preliminary report of the terrestrial fauna of Vamizi Island, Cabo Delgado, Mozambique. Universidade Lurio 18pp.
- SILVEIRA, P. & PAIVA, J. 2009. Second report on the floristic survey conducted at Vamizi and Rongui Islands, Cabo Delgado, Mozambique. Universidade Aveiro 31pp.

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## ELAPIDAE

*Naja (Boulengerina) annulata annulata* Bucholtz & Peters, 1876

## BANDED WATER COBRA

During an Angolan Biodiversity Assessment and Capacity Building Project in April-May 2011 we visited north-eastern Angola as part of a biodiversity inventory team. On 4 May 2011 on the banks of the Lulele River at the survey Base camp, 5 km from Lagoa Carumbo, Lunda Norte, Angola (07°45'10.6"S, 19°57'24.2"E, 772 m) we collected a subadult *Naja (Boulengerina) a. annulata* in the marginal vegetation of the river. The specimen (Fig. 1, cover image) was accessioned into the Port Elizabeth Museum herpetology collection (PEM R19477), and has the following scalation and meristic details:



**Figure 1:** *Naja (Boulengerina) annulata annulata* from Lagoa Carumbo, Angola. Photo: Bill Branch.

Snout-vent length 345 mm, tail length 91 mm, total length 436 mm. Ventrals 195; subcaudals 76+spine; anal divided; upper labials (UL), 7/6 (right/left), 3-4 entering orbit; lower labials 8, first pair in contact behind mental, 1-4 in contact anterior chin shields; nasal pierced by nostril with a single suture to 1st UL; 1 preocular, 2 postoculars; elongated 1<sup>st</sup> lower temporal in contact with 5-7 UL.

The specimen shows coloration typical of *N. a. annulata* (Fig. 1, cover image), with black bands ringing body for its whole length. Head uniform light brown above and on sides, each scale dark edged (Fig. 1), throat uniform cream; neck with a narrow dark collar that extends on to sides, but not onto ventrum; body ringed with 34 black bands, 4-5 scales wide, all with a narrow central pale band one scale or less wide on the dorsum, that is usually bordered with scattered, pale-centred scales on the flanks and usually disappears on the ventrum, particularly posteriorly; tail black above and below.

Although previously placed in the genus *Boulengerina*, a number of elapid phylogenies (Slowinski & Keogh 1997, Nagy *et al.* 2005) show *B. annulata* and *Paranaja multifasciata* (Werner 1902) to be embedded within *Naja*. For this reason Branch (2005) transferred *B. annulata* to *Naja*,

and Wallach *et al.* (2009) later partitioned the genus, employing *Boulengerina* as a subgenus for a clade containing *Naja melanoleuca* Hallowell 1855, *N. multifasciata* Werner 1902, *N. annulata* and *N. christyi* (Boulenger 1904).

The Banded Water Cobra is usually considered to be distributed throughout the Congo River drainage basin, with a characteristically coloured race (*N. a. stormsi*) inhabiting Lake Tanganyika and the major rivers that drain into it. None of the distribution maps for the species in Spawls & Branch (1995), Dobiey & Vogel (2007) and the Reptile Database (2012) show the species to occur in Angola, and we know of no literature records for the country. De Witte (1953) records *N. a. annulata* from Katanga (unspecified), and his most southerly record of *N. a. stormsi* is from Pweto, Democratic Republic Congo (DRC) (08°28'00"S, 28°54'00"E) at the northern tip of Lake Mweru, approximately 960 km east of Lagoa Carumbo. Thys van den Audenaerde (1965) also records the typical race from Kinshasa (04°19'54"S, 15°18'54"E), 622 km north-west of Lagoa Carumbo, but it is possible that the specimen was collected further north. The Lulele River drains north to the Congo River, and our specimen is the first reported from the extensive southern drainage of the Africa's largest river. Although it is possible that the species is more extensively distributed in the northern Angolan Congo River catchment area, it is surprising that the species was not recorded in Laurent's (1952, 1954, 1964) extensive reptile collections from Dondo, only 100 km northeast of Lagoa Carumbo.

## REFERENCES

- BRANCH, W. R. 2005. *A Photoguide to the Snakes and other Reptiles and Amphibians of East Africa*, Struik Publishers, Cape Town, 144pp..
- DE WITTE, G.-F. 1953. Reptiles. Exploration Parc National de l'Upemba, Mission G.-F. de Witte. 6: 1-322, pl. 1-xli.
- DOLBIEY, M. & VOGEL, G. 2007. *Venomous Snakes of Africa*, Edition Chimaira, Frankfurt am Main, 149pp.
- LAURENT, R. F. 1952. Reptiles et batraciens de la région de Dundo

- (Angola du Nord-Est) (Première note). Publ. Cult. Comp. Diamant. Angola 6: 125-136.
- LAURENT, R.F. 1954. Reptiles et batraciens de la region de Dundo (Angola) (Deuxième note). Comp. Diamantes de Angola (Diamang) Serv. Cult. 23:35-84.
- LAURENT, R.L. 1964. Reptiles et amphibiens de l'Angola (troisième contribution). Comp. Diamantes Angola Publ. Cult. 67:1-165.
- NAGY, Z.T., VIDAL, N., VENCES, M., BRANCH, W.R., PAUWELS, O.S.G., WINK, M. & JOGER, U. 2005. Molecular systematics of African Colubroidea (Squamata: Serpentes). pp. 221-228. In: African Biodiversity: Molecules, Organisms, Ecosystems. (B.A. Huber, B.J. Sinclair & K-H Lampe, eds.), Proc. 5th Intern. Symp. Trop. Biol., Museum Koenig, Bonn.
- REPTILE DATABASE 2012. <http://reptile-database.org/> [Access on 17 January 2013].
- SLOWINSKI, J. B., KNIGHT, A. & ROONEY, A. P. 1997, Inferring species trees from gene trees: a phylogenetic analysis of the Elapidae (serpents) based on the amino acid sequences of venom proteins, Molecular Phylogenetics and Evolution 8: 349-362.
- SPAWLS, S. & BRANCH, W. R. 1995. *Dangerous Snakes of Africa*. Blandford Press, London, 192pp.
- THYS VAN DEN AUDENAERDE, D.F.E. 1965. Les serpents des environs de Leopoldville. Rev. Zool. Bot. Afr. (Brussels) 72(3/4): 365-388.
- WALLACH, V., WUSTER, W. & BROADLEY, D.G. 2009. In praise of subgenera: taxonomic status of cobras of the genus *Naja* Laurenti (Serpentes: Elapidae). Zootaxa, 2236: 26–36.

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## LACERTIDAE

### *Meroles ctenodactylus* (Smith 1838)

#### SMITH'S DESERT LIZARD

On 20 April 2007 three species of *Meroles* were found in close proximity on the eastern edge of the southern dune sea west of Sossusvlei Mountain Lodge, NamibRand Reserve, Southern Namibia (24°50'03.3"S, 15°49'36.7"E 856m). They included two specimens of *Meroles ctenodactylus* (Fig. 1), that were accessioned into the Port Elizabeth Museum (PEM) herpetological collection (PEM R17290-91). They were sympatric with *Meroles cuneirostris* (Strauch 1867) and *Meroles anchietae* (Bocage 1867), also accessioned into the PEM as PEM R17288-89 and PEM R17286 respectively.



**Figure 1:** *Meroles ctenodactylus* (PEM R17290) Sossusvlei Mountain Lodge, Namib-Rand Reserve, Southern Namibia (Photo: Bill Branch).

Microhabitat differences between the species were evident. *Meroles ctenodactylus* were active in the well-vegetated dune slacks and dune



hummocks (left, Fig. 2), *M. cuneirostris* on the more sparsely vegetated dune tops (right, Fig. 2). Both species were found in microsympatry in intermediate habitats. *M. anchietae* was less common and only active on the largest mobile dune slipfaces (bottom right, Fig. 2).



**Figure 2:** Southern dune sea west of Sossusvlei Mountain Lodge, Namib-Rand Reserve, Southern Namibia (Photo: Bill Branch).

Branch (1994) recorded *M. ctenodactylus* from Rooilepel Depression (28° 16' 56" S, 16° 37' 23.5" E 440m) in the Sperrgebiet, southern Namibia, and noted that it appeared to be the northern record for the species. The Sossusvlei Mountain Lodge records extend the species' range a further 300km north, and is the first time that sympatry between these three psammophilic *Meroles* species has been documented.

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## REFERENCES

BRANCH, W. R. 1994. Herpetofauna of the Sperrgebiet region of southern Namibia. *Herpetological Natural History* 2(1): 1-11.

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## GEKKONIDAE

### *Pachydactylus rangei* (Andersson, 1908)

#### Web-footed Gecko

Small dune hummocks along the Orange River, Sperrgebiet National Park (ca. 80km east of Oranjemund and 30km southwest of Rosh Pinah, S28.10 E16.51), Namibia. Sparsely vegetated – mainly stunted *Euclea pseudebenus* trees and shrubs – sandy area between the Orange River riparian vegetation and ancient gravel terraces in December 2012. Observed by Peter Cunningham. 6 specimens – photographed (Fig. 1).

According to Koch (1962), Haacke (1976) and Visser (1984) *Pachydactylus* (formerly *Palmatogecko*) *rangei* occurs from the mouth of the Orange River to southern Angola and never further inland than 160 km. They are common in the sand sea south of the Kuiseb River as well as the coastal dunes and ephemeral river beds in the Namib Desert (Haacke 1976, Stuart 1980, Russell & Bauer 1990), mostly associated with fine sand and rainfall below 125mm p.a. (Haacke 1976) and fog (Louw 1972, Seely & Griffin 1986). It is estimated that 80% of the potential proportion of the taxon's range falls within Namibia (Griffin 1985) and it is viewed as a Namib Desert endemic (Herrman & Branch 2012).

Records of *Pachydactylus (Palmatogecko) rangei* along the Orange River are sparse although their presence on the South African side is documented as up to Sendelingsdrift (TM 22977–81, 34191–4) although recent fieldwork did not locate them there again, possibly indicating extirpation (Bauer & Branch 2003). On the Namibian side, inland along the Orange River, they have been recorded just south of Daberas (i.e. ca. 20km west of Sendelingsdrift) (Griffin 2003). They are common at Oranjemund and the Obib dune area approximately 40km northwest (inland) of Sendelingsdrift (Bauer & Branch 2003).

These sightings of *Pachydactylus (Palmatogecko) rangei* in the Sendelingsdrift area were made between 20h00 and 23h00 on 10 and 11 December 2012 with ambient temperatures varying between 18°C and 24°C during a vertebrate fauna survey conducted prior to planned diamond mining in the area.



**Figure 1:** *Pachydactylus rangei* from 30 km west of Rosh Pinah, Namibia, along the Orange River.

This range extension eastwards of at least 20km inland along the Namibian side of the Orange River is probably determined by suitable sandy dune habitat which is generally patchily distributed further inland compared to the coastal and inland sand sea areas. The area from the Sendelingsdrift ferry further inland (eastwards) – i.e. towards Aussenkehr and Noordoewer – is probably less favourable for *Pachydactylus (Palmatogecko) rangei* due to fewer patches of suitable sandy dune habitat along the Orange River. Although widespread in suitable habitat in Namibia, threats include irrigation along the Orange River (especially on the South African side); housing development (Walvis Bay to Swakopmund areas); mining and illegal collecting (Bauer *In press*). Increased mining activity along the Orange River in the Sperrgebiet National Park may further compromise these pockets of *Pachydactylus (Palmatogecko) rangei* associated with suitable riparian dune areas.

## **ACKNOWLEDGEMENTS**

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## **REFERENCES**

- BAUER, A. M. In press. *Pachydactylus rangei* (Andersson, 1908). In M.F. Bates, W.R. Branch, A.M. Bauer, M. Burger, J. Marais, G.J. Alexander & M.S. de Villiers (eds), *Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland*. Strelitzia. South African National Biodiversity Institute, Pretoria.
- BAUER, A. M. & BRANCH, W. R. 2003. The herpetofauna of the Richtersveld National Park, Northern Cape Province, Republic of South Africa. *Herpetological Natural History* 8: 111-160.
- GRIFFIN, M. 2003. *Annotated checklist and provisional national conservation status of Namibian reptiles*. Unpublished Report. Ministry of Environment and Tourism, Windhoek.

- HAACKE, W. D. 1976. The burrowing geckos of southern Africa, 2 (Reptilia: Gekkonidae). *Annals of the Transvaal Museum* 30: 13-28.
- HERRMAN, H.-W. & BRANCH, W. R. 2012. Fifty years of herpetological research in the Namib Desert and Namibia with an updated and annotated species checklist. *Journal of Arid Environments* DOI: 10.1016/j.jaridenv.2012.05.003.
- KOCH, C. 1962. The Tenebrionidae of southern Africa. XXXI. Comprehensive notes on the tenebrionid fauna of the Namib Desert. *Annals of the Transvaal Museum* 24: 61-106.
- LOUW, G. N. 1972. *The role of advective fog in the water economy of certain Namib Desert animals*. pp. 297-314. In: Maloiy G. M. O., Edit. Comparative physiology of desert animals. Symposium of the Zoological Society of London. No. 31. *London: Academic Press*, XXV + 413 pp.
- RUSSELL, A. P. & BAUER, A. M. 1990. Substrate excavation in the Namibian web-footed gecko, *Palmatogecko rangei* Andersson 1908, and its ecological significance. *Tropical Zoology* 3:197-207.
- SEELY, M. K. & GRIFFIN, M. 1986. Animals of the Namib Desert: interactions with their physical environment. *Revue de Zoologie Africaine* 100: 47-61.
- VISSER, J. 1984. Geitjes- die mooiste en die lywigste. *Lanbouweekblad* (23 Maart 1984): 12-15, 17.

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- BRANCH, W. R. 1998. *Field guide to the snakes and other reptiles of southern Africa*. Third edition. Struik Publishers. Cape Town.
- COTTONE, A.M. 2007. Ecological investigations of the Psammophiidae (Squamata: Serpentes). Unpubl. MSc thesis. Villanova University, Pennsylvania.
- FROST, D.R. 2010. Amphibian Species of the World: an Online Reference. Version 5.4 (8 April, 2010). <http://research.amnh.org/vz/herpetology/amphibia/> (accessed 27 April 2010).
- LAMB, T., BISWAS, S. & BAUER, A. 2010. A phylogenetic reassessment of African fossorial skinks in the subfamily Acontinae (Squamata: Scincidae): evidence for parallelism and polyphyly. *Zootaxa*, 2657:33 – 46.

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AFRICAN HERP NEWS

Number 59 APRIL 2013

CONTENTS

11<sup>TH</sup> CONFERENCE OF THE HAA, PRETORIA ..... 1

NATURAL HISTORY NOTES

SMITH, G. & BAX, L. *Amietophrynus pantherinus* (Smith, 1828) Defensive behaviour .....13

JACOBSEN, N. *Strongylopus grayii* (Smith 1849) Colour .....16

STARK, T. *Homopus signatus* (Gmelin, 1789) Diet 19

MARITZ, B. *Bitis arietans arietans* (Merrem, 1820) Predation .....21

MARITZ, B., WALLNER, A. & DEANS, R. *Bitis parviocula* (Böhme 1977) Reproduction .....28

KLOSE, L. *Bitis rubida* (Branch, 1997) Reproduction .....29

BATES, M. F., . & NUTTALL, R. *Dispholidus typus viridis* (A. Smith, 1828).33

STANDER, R. *Duberria lutrix* (Linnaeus, 1758) Size .....35

STANDER, R. *Pseudaspis cana* (Linnaeus, 1754) Diet .....36

REISSIG, J. *Thelotornis capensis capensis* (A. Smith, 1849) Diet/Activity .....38

ANDERSON, C. V. & TOLLEY, K. A. *Bradypodion occidentale* (Hewitt, 1935) Reproduction /Colour .....40

REISSIG, J. *Bradypodion setaroi* (Raw, 1976) Reproduction .....42

REISSIG, J. & BOSHOFF, D. *Chamaeleo dilepis dilepis* (Leach, 1819) Reproduction .....44

GEOGRAPHICAL DISTRIBUTIONS

VERBURGT, L., CLARK, T. K., CAULDWELL, A. E. & BRANCH, W. R. *Lycophidion albomaculatum* (Steindachner, 1870) .....46

BROADLEY, D. G. & FAROOQ, H. O. M. *Thelotornis usambaricus* (Broadley, 2001).....48

BRANCH, W. R. & CONRADIE, W. *Naja annulata annulata* (Bucholtz & Peters, 1876).....50

BRANCH, W. R. *Meroles ctenodactylus* (Smith 1838).....54

CUNNINGHAM, P. *Pachydactylus rangei* (Andersson, 1908).....56