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# African Herp News

## Newsletter of the Herpetological Association of Africa



**FOUNDED 1965**

The HAA is dedicated to the study and conservation of African reptiles and amphibians. Membership is open to anyone with an interest in the African herpetofauna. Members receive the Association's journal, *African Journal of Herpetology*, which publishes review papers, research articles, short communications and book reviews – subject to peer review) and *African Herp News*, the Newsletter (which includes short communications, life history notes, geographical distribution notes, herpetological survey reports, venom and snakebite notes, short 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 long manuscripts by e-mail in Word 7.0 or Windows XP format.

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

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**COVER PHOTO** Waterberg Flat Rock Lizard *Platysaurus ninor* FitzSimons, 1930  
Photo: Mike Bates

**EDITORIAL**

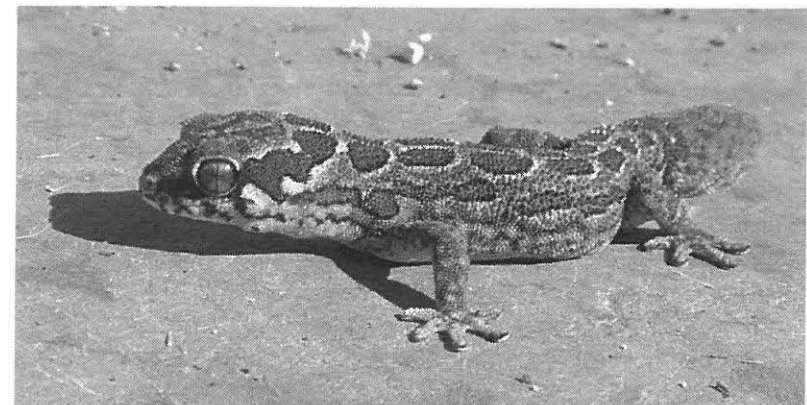
We apologise to the members of the H.A.A. for the very poor quality of printing in the last Newsletter. This was due to circumstances entirely beyond our control and, in view of an imminent and substantial increase in postage costs at that time, I decided to send out the newsletter as it stood rather than incur further delays and costs. That decision was mine alone, and I take full responsibility for it. I can assure readers that such a thing will not happen again.

Preparing the Newsletter in pdf format has, inevitably, produced its own crop of problems, most of which have already been dealt with. However, image size proved problematical in the last issue. Some of the images files were very large and could not be reduced without unacceptable loss of resolution; this meant that the pdf file was too large for efficient transmission and reception, especially by those without broad-band. Images submitted for publication should be about 500 KB in size, with a maximum limit of 1 MB.

**Election of the new Committee**

Single nominations were made for each of the following posts: Chairman; Secretary; Treasurer; and Journal Editor, and are therefore deemed to have been elected unopposed. However, members of the Association are still requested to vote for the Newsletter Editor and for Additional Members of the Committee, using the ballot paper enclosed with this edition of the Newsletter.

Angelo Lambiris  
Editor



*Pachydactylus maculatus* Gray, 1845

Photo: Angelo Lambiris

## REPRODUCTION IN SPEKE'S SAND LIZARD, *HELIOBOLUS SPEKII* (SQUAMATA: LACERTIDAE) FROM KENYA

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### INTRODUCTION

*Heliobolus spekii* is an oviparous terrestrial lizard that occurs in northern and southern Kenya, northern Tanzania and extreme eastern Uganda, southern Ethiopia and Somalia (Spawls *et al.* 2002). To my knowledge, the only information on *H. spekii* reproduction is a report in the field guide by Spawls *et al.*, 2006, that clutches of 4 – 6 eggs are produced. The purpose of this paper is to add information on the reproductive cycle of *H. spekii*. Minimum sizes for male and female reproduction and the first information on the testicular cycle are presented.

### MATERIALS AND METHODS

Sixty-two *H. spekii* were examined from the herpetology collection of the Natural History Museum of Los Angeles County (LACM), Los Angeles, California. The sample consisted of 25 males (mean snout-vent length [SVL] = 40.3 mm  $\pm$  3.7 SD, range = 33 – 47 mm), 15 females (mean SVL = 44.7 mm  $\pm$  5.4 SD, range = 33 – 52 mm) and 22 juveniles (mean SVL = 23.5 mm  $\pm$  1.6 SD, range = 21 – 26 mm). *Heliobolus spekii* were collected in 1968, 1970, 1971 and 1973.

For histological examination, the left testis was removed from males to identify the stage of the testicular cycle and the left ovary was removed from females to check for the presence of vitellogenesis (yolk deposition) and/or corpora lutea. Counts were made of oviducal eggs or enlarged ovarian follicles (>4 mm length). Slides were stained with Harris haematoxylin followed by eosin counterstain (Presnell & Schreiber, 1997). An unpaired *t*-test was used to compare male versus female body sizes (SVL) and linear regression analysis was used to examine the relation between female clutch size and body size (Instat vers. 3.0b, Graphpad Software, San Diego, CA). Histology slides were deposited at LACM.

The following *H. spekii* were examined from Kenya (by province) from LACM: **Coast Province:** 50594, 50596; **Rift Valley Province:** LACM 63245 – 63255,

63257 – 63259, 65776, 65782, 65785, 65787, 65788, 65790 – 65807, 65809, 65811, 65814 – 65818, 65820 – 65824; **North Eastern Province:** LACM 93124, 93125, 93128, 93129, 93136 – 93138, 93140, 93144 – 93146.

### RESULTS AND DISCUSSION

Two stages were present in the testicular cycle of *H. spekii* (Table 1). (1) Recrudescence, which occurs prior to the onset of spermiogenesis (sperm formation). Secondary spermatocytes and spermatocytes are the predominant cells; (2) Spermiogenesis, in which the seminiferous tubules are lined by clusters of spermatozoa and/or metamorphosing spermatids. Sperm formation occurred during the three months from which samples were available. The smallest reproductively active male (spermiogenesis in progress) measured 34 mm (LACM 65799) and was collected in June. One male which measured 33 mm SVL (LACM 65818) had regressed testes and was considered a subadult.

Females of *H. spekii* were significantly larger than males (unpaired *t*-test = 3.10, *df* = 38, *P* = 0.0036). Mean clutch size for nine clutches was 3.8  $\pm$  0.83, range = 2 – 5. Linear regression analysis revealed the relationship between female body size and SVL was not significant. However, this may reflect my small sample size. Clutch sizes of three (LACM 63249) and two (LACM 63259) eggs are new minimum clutch sizes for *H. spekii*. There were three cases (Table 2) in which females with oviducal eggs were also undergoing concomitant yolk deposition for a subsequent egg clutch (LACM 63249, 65787, 93125). This indicates *H. spekii* may produce multiple clutches in the same reproductive season. The smallest reproductively active female (yolk deposition in progress) measured 43 mm SVL (LACM 93128). Two females with quiescent ovaries (no yolk deposition) (LACM 93138, SVL = 33 mm and LACM 93140, SVL = 35 mm) were considered subadults.

While it is not possible to completely characterize the reproductive cycle of *H. spekii*, it is shown herein that females produce clutches of 2 – 5 eggs. Clutches of two and three eggs are new minimum values for *H. spekii*. Evidence that multiple clutches may be produced in the same year is presented. Collection of neonates in January, February and June suggest an extended period of reproduction.

East Africa has a large group of lacertid lizards consisting of 19 species in nine different genera (Spawls *et al.* 2002). Subsequent investigations on different species of East African lacertid lizards are needed before the diversity of reproductive cycles exhibited by these lizards can be ascertained.

### ACKNOWLEDGMENTS

I thank Christine Thacker (LACM) for permission to examine specimens.

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Month	n	Recrudescent	Spermiogenesis
February	2	0	2
March	9	0	9
June	13	1	12

Table 1. Monthly distribution of stages in the testicular cycle of 24 *H. spekii* from Kenya.

Month	n	Quiescent	Early yolk deposition	Enlarged ovarian follicles > 4 mm	Oviducal eggs	Oviducal eggs and yolk deposition
January	1	0	0	0	1	0
February	4	0	2	1	0	1
March	5	1	0	3	0	1
June	3	0	1	1	0	1

Table 2. Monthly stages in ovarian cycle of 13 *Heliobolus spekii* from Kenya.

## REPRODUCTION OF JACKSON'S FOREST LIZARD, *ADOLFUS JACKSONI* (SQUAMATA: LACERTIDAE)

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### INTRODUCTION

*Adolfus jacksoni* is known from northern Tanzania, north-central Kenya, western Uganda, Rwanda, northern Burundi and the eastern Democratic Republic of the Congo (Spawls *et al.*, 2002). There is a report that *A. jacksoni* usually produces clutches of 3 – 5 eggs in the field guide by Spawls *et al.*, 2002. In this paper I add information on *A. jacksoni* reproduction, including the first information on the testicular cycle and evidence that multiple clutches are produced. Minimum sizes for male and female reproductive activity are presented.

### MATERIALS AND METHODS

Thirty-one *A. jacksoni* were examined from the herpetology collection of the Natural History Museum of Los Angeles County (LACM), Los Angeles, California. The sample contained of 19 males (mean snout-vent length [SVL] = 72.5 mm ± 6.1 SD, range = 60 – 80 mm) and 12 females (mean SVL = 67.8 mm ± 7.6 SD, range = 56 – 80 mm). *Adolfus jacksoni* were collected in 1967 – 1969, and in 1973.

For histological examination, the left testis was removed from males to study the testicular cycle and the left ovary was removed from females to check for the presence of vitellogenesis (yolk deposition) and/or corpora lutea. Counts were made of oviducal eggs or enlarged ovarian follicles (> 4 mm length). Slides were stained with Harris haematoxylin followed by eosin counterstain (Presnell & Schreiber, 1997). Histology slides were deposited at LACM. An unpaired *t*-test was used to compare male versus female body sizes (SVL) using Instat vers. 3.0b, Graphpad Software, San Diego, CA.

The following *A. jacksoni* were examined from Kenya (by province) and Uganda (by district) from LACM: **UGANDA, Rakai District:** LACM 35146, 35147, 39487 – 39509, **KENYA, Kenya Rift Valley Province:** LACM 60798, 60857 – 60859; **Eastern Province:** LACM 93307, 93308.

### RESULTS AND DISCUSSION

There was no significant size difference between male and female mean body sizes (unpaired *t*-test, *P* = 0.070).

The only stage present in the testicular cycle was spermiogenesis (sperm formation) in which the lumina of the seminiferous tubules were lined by groups of spermatozoa or metamorphosing spermatids. The presence of reproductively active *A. jacksoni* males at opposite ends of the year (February  $n = 15$ ) and September  $n = 4$ ) suggests an extended period of sperm formation. The smallest reproductively active *A. jacksoni* male measured 60 mm SVL (LACM 60859) and was collected in September.

Mean clutch size for seven *A. jacksoni* females was  $4.1 \pm 0.90$  SD, range = 3 – 5 eggs. Females with quiescent ovaries (no yolk deposition) were found in February and September (Table 1). The smallest reproductively active female (corpora lutea and yolk deposition) measured 56 mm SVL (LACM 60857) and was collected in September. There was evidence that *A. jacksoni* produces multiple clutches (Table 1) as seen by one female each collected in February (LACM 39495) and March (LACM 35147) with oviducal eggs (current clutch) and concomitant early yolk deposition in ovarian follicles for a subsequent clutch. Additional evidence that multiple clutches are produced was seen in one female collected in September that contained corpora lutea from a recently deposited egg clutch and concomitant early yolk deposition for a subsequent clutch (LACM 35147). Production of multiple egg clutches in the same year has been reported for *Heliobolus spekii* from Kenya (Goldberg, 2009) and other species of lacertid lizards from southern Africa (Goldberg, 2006a, b, c, d).

The presence (Table 1) of reproductively active females at opposite ends of the year (February-March and September) suggests *A. jacksoni* has an extended reproductive cycle, although examination of samples from additional months is needed to fully characterize its reproductive cycle.

#### ACKNOWLEDGMENTS

I thank Christine Thacker (LACM) for permission to examine specimens.

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Table 1. Monthly stages in the ovarian cycle of 12 *Adolfus jacksoni*. \*One female

Month	<i>n</i>	Quiescent	Early yolk deposition	Enlarged follicles > 4 mm	Oviducal eggs	Corpora lutea and Yolk Deposition
February	8	2	0	4	2*	0
March	2	0	1	0	1*	0
September	2	1	0	0	0	1

each from February and March contained oviducal eggs and concomitant early yolk deposition for a subsequent clutch.

## CAPTIVE PROPAGATION OF *PYTHON ANCHIETAE* IN NAMIBIA

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### INTRODUCTION

The Angolan python (*Python anchietae*) is still a relatively rare snake in both private and public collections, although the species has successfully reproduced in both the USA and Europe (Branch and Griffin, 1996; Cimatti, 2001). Breeding *Python anchietae* was (and still is) primarily a commercial venture as the snakes were sold for about US\$10 000 ten years ago. Today, *Python anchietae* is sold by private overseas breeders for about US\$2 000 and prices are likely to decline further as more captive-bred specimens become available.

A captive breeding programme for *Python anchietae* was established at the Transvaal Snake Park, South Africa, in 1986 but little success has been achieved. Despite several copulations there was no successful reproduction (Branch and Griffin, 1996). However, a female collected in North-Western Namibia in August 1971 laid five eggs in early December. They were incubated at 28 – 30° C and after 68 – 70 days, four hatchlings emerged. They measured 428 – 465 mm in total length (Patterson, 1978).

In its native range in Southern Africa, *Python anchietae* is not bred for commercial purposes due to the strict legal protection the species enjoys in Namibia. To date, only two cases of successful captive breeding in Namibia are known. The first occurred in the Swakopmund Snake Park in 2002 (Cunningham and Hebbard, 2002) and the second successful captive reproduction was achieved by the author in co-operation with Mike Griffin from Namibia's Ministry of Environment and Tourism in 2005.

This article highlights the insights gained from the captive propagation of the species within its home range.

### CAPTIVE BREEDING IN NAMIBIA

The Swakopmund Snake Park keeps three adult *Python anchietae* (one male and two females) in a large display cage with sandy soil and decorative rocks. Some under-floor heating is provided but the climatic cycle in Swakopmund differs significantly from the temperature conditions in *Python anchietae*'s natural range. Mating was observed on several occasions and on 20 November 2001, four eggs

were deposited. They measured between 73 x 34 mm and 95 x 42 mm. The eggs were artificially incubated at about 28° C and after 81 days one egg was snipped. A fully formed embryo was found, with much egg yolk still evident. The yolk was absorbed within a week but the python died within the egg. One egg was infertile but two hatchlings emerged after 92 – 94 days. They measured 490 and 510 mm. They had to be force-fed initially as they did not show any interest in the small mice offered. They sloughed for the first time at about four months of age (Cunningham and Hebbard, 2002). The juveniles remained reluctant feeders and grew relatively slowly (Stuard Hebbard, personal communication).

### Captive maintenance

Our breeding group consisted of five adult specimens of *Python anchietae* obtained in 1996 and 1997. The male measured 110 cm and weighed 850 g while the four females ranged in size from 130 – 150 cm and weighed 1180 – 1300 g. All had been collected in the wild. In May 2000, a second male of 115 cm length was added to the collection with a view of reproducing the pythons and gaining insights into their reproductive behaviour.

In 1998 and 1999, the pythons were kept in indoor cages that were 100 – 150 cm long and 45 – 60 cm wide and 45 – 60 cm high. These cages were constructed with wood, had sliding glass in front, and partial floor heating ("flexil" heating pads) that was controlled through a thermostat (Biotherm). The thermostat allowed a drop of 8 – 10°C between day and night time temperatures. In order to simulate the natural temperature cycle as closely as possible, temperatures ranged from 14 – 24°C during the winter months (June, July) increasing gradually from August onwards to reach a high of 24 – 32°C in December and January. Due to the high outdoor temperatures, the floor heating was switched off from October to April. All animals readily accepted mice and rats (dead or alive) as food.

In line with outside conditions, our animals were kept under fairly dry conditions during the dry season from May to December, with humidity ranging from 20 – 40%. Cages were sprayed more frequently in line with natural rainfall patterns between January and April, when humidity levels reached 40 – 60%.

Our *Python anchietae* were kept in separate cages from December to July. After the cool winter period, the males were placed in the females' cages for periods of 5 to 15 days from August onwards. At times, both males were kept with one female; at other times two males and two females were kept together or one male with two females. The snakes were rotated in the hope of increasing mating success. Due to the secretive nature of the snakes and the hiding places provided in their enclosures, no mating could be observed and no eggs were laid in the first two years.

### Outdoor cage

Between 2000 and 2003, we changed our breeding strategy. Our pythons were kept in Windhoek, which falls into the species' most southern range. We thus decided to construct an outdoor enclosure covering a floor area of 180 cm x 200 cm with vari-

ous natural hiding places. We thus exposed the snakes to natural weather conditions. However, due to the severe cold winter conditions between June and August, with night temperatures occasionally dropping to freezing point, the animals were kept in indoor cages during that time at temperatures of 14 – 24°C. In August, temperatures were increased to around 28°C during the day, and from September onwards the males were kept with two or three females in the outdoor cage. During the hot summer months, temperatures reached up to 35°C in the day and the snakes became active after sunset. On very hot days the pythons occasionally were found lying in the water container, probably to cool off. On other occasions, *Python anchietae* avoided water and disappeared into its hiding places when the cage was sprayed. After spells of strong summer rains, *Python anchietae* was found basking during the day. On cloudy days, the pythons could be observed outside their hiding places in the late afternoon.

### Egg deposition

The first eggs were laid in December 2001. The females and males had been placed together first in the indoor cages in August and September and then again in the outdoor cage during October and November. Although we once again could not observe mating, one of the females refused food in November. She was then placed in a separate indoor cage which contained a plastic container filled with moist vermiculite to facilitate the egg deposition. However, the female did not use the plastic container and instead deposited her eggs under a flat rock in her cage. She coiled around her eggs and was ready to strike at anything that came near her (Fig. 1). The eggs seemed slightly dehydrated and measured 55 – 76 mm in length and 27 – 43 mm in width. Four of the eggs were similar in size while two were extraordinarily large, measuring 76 x 42 mm and 62 x 43 mm respectively. These large eggs were also partly deformed, with a “nipple-shaped” end.

All eggs were transferred into an incubation container with moist vermiculite and kept at temperature of 31 – 33°C. After five weeks the eggs had turned mouldy brown and the large eggs started turning green. One of them was opened and contained a dead, slightly developed embryo. The other eggs were also opened a few days later and contained no embryos at all. Thus it seemed that only one of the eggs had been fertile.

The next set of eggs was laid in 2003. During that year, some snakes were kept in the indoor cages after the winter months, while others were transferred to the outdoor cage in October. One of the females that was with a male in an indoor cage between mid-September and mid-October 2003, and then in the outdoor cage from 7 November – 12 December, appeared to be gravid. On 17 December she refused the mice on offer which she had accepted without hesitation before. She was then transferred to an indoor cage with partial floor heating that ensured constant temperatures of about 28°C. By 24 December she had not yet deposited her eggs and a plastic container with moist vermiculite was left in the cage to enable her to lay her eggs. When we returned from our holidays, we found that heavy rainfall had partly

flooded the snake room and tragically some water had entered the cage of the gravid female. She had deposited six eggs which had been destroyed by the water in the egg box.

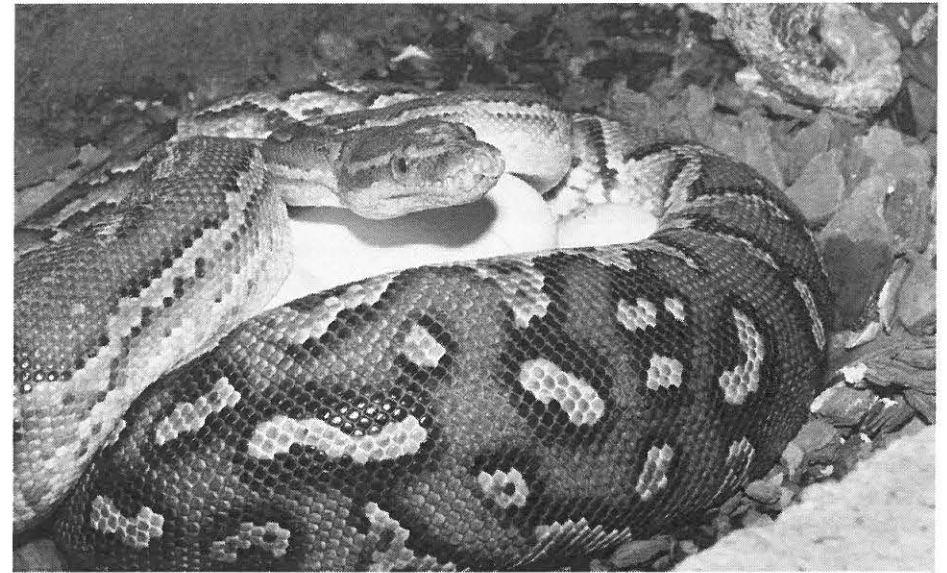


Fig. 1. *Python anchietae* coiled around her eggs.

Photo: Herbert Jauch



Fig. 2. *Python anchietae* hatching.

Photo: Herbert Jauch

### Successful reproduction

In 2004, we finally managed to breed *Python anchietae* successfully. All our snakes were kept indoors from April onwards. Temperatures were gradually reduced from 20 – 28°C in April, to 16 – 26°C in May, and 14 – 24°C during June and July. In August temperatures were increased again, reaching 18 – 29°C in September. On 24 August our largest male was introduced to the female that had laid eggs in 2001. In mid-September the smaller male was added to the pair, followed by an additional female a week later. All four snakes remained together until mid-October when temperatures reached 32°C during the day.

By the end of October the female that had laid eggs in 2001 refused food, which was a certain sign of gravidity. The female was placed in a separate cage and was once again offered a plastic container with moist vermiculite. On 25 November she deposited six eggs in her hiding place and once again ignored the vermiculite box, as she had done in 2001. She curled around her eggs, which were carefully removed and placed in an incubator with moist vermiculite at temperatures of 30-33 C. The eggs measured 85 – 98 mm in length and 40 – 50 mm in width. The female repeatedly returned to the place where she had deposited her eggs and curled around the spot as if she was incubating. She refused food and was then placed into another container, where she accepted food immediately.

After 50 days of incubation, one egg had turned green and was opened. It contained a fully developed but dead embryo. After 55 days, the first hatchling emerged, after cutting the egg open near the centre of the egg (fig. 2). The snake remained in the egg for another 2 days before finally leaving the shell. During the following 2 days another 3 hatchlings emerged, while one egg contained a fully formed but dead snake. Thus incubation took 55 – 57 days until the eggs were slit open. The hatchlings left the eggs 57 – 59 days after egg deposition.

### Growth of hatchlings

The four hatchlings measured 48 – 51 cm and weighed 67 – 69 g. They were placed in small plastic containers with wet paper towel; a water dish and a hiding place (bark) which they accepted readily. They shed their skin the first time after 10 – 12 days and readily accepted fuzzy mice. Raising the young snakes was easy and after five months they had reached a length of 60 – 62 cm and weighed 74 – 81 g. At the age of three years they had reached a length of 98 – 108 cm and weighed 419 – 608 g. One of the hatchlings (a female) grew slower than its siblings as it refused food during the winter months, while all others accepted food throughout the year. Only one of the hatchlings was male.

During the first five months, we measured food intake and compared it to the growth and weight increase of the snakes. The results are summarised in Table 1.

	Sex	Food intake in g	Weight increase in g	Weight increase as % of food intake	Growth in cm
Hatchling 1	Female	161	79	49.1	12
Hatchling 2	Female	148	74	50.1	13
Hatchling 3	Female	161	77	47.8	11
Hatchling 4	Male	164	42	41.8	13

Table 1: Growth compared to food intake during the first 5 months.

Growth and conversion of food into body weight was fairly consistent amongst the four hatchlings. However, the male ratio of 41.8% conversion was lower than those of the females which recorded close to 50%. This could be a reason why female *Python anchietae* tend to be larger than males, although our sample of only one male hatchling is too small to draw a conclusion.

Amongst our adult specimens we observed a difference in size and weight between males and females. After 10 years in captivity our adult females reached 155 – 160 cm in length and weighed between 2190 and 2463 g, compared to our males which only reached 130 – 140 cm in length and weights of 1356 – 1944 g.

### Further breeding attempts

We continued our breeding attempts as in the previous years and obtained two further sets of eggs from two different females in 2006. One of the females deposited three eggs on 19 November. They were relatively small, measuring 58 – 64 mm in length and 32 – 36 mm in width. They turned green after a few days, as they were infertile. The other female laid six eggs on 24 November. Four of them were small (55 – 59 mm x 37 – 38mm), while two were fairly large (87 x 46mm; 72 x 48mm). Only the larger eggs were fertile and were incubated in moist vermiculite at 30 – 33°C. One of the eggs turned green in early January, after about 40 days of incubation. It contained a small, dead embryo. The remaining egg was slit open on 21 January (after 59 days of incubation) and then cut open four days later. It contained a fully developed but dead embryo.

The low fertility rate amongst the last set of eggs seems to indicate that our adult specimens have reached the end of their reproductive lives. As we obtained these pythons as adults 10 – 12 years ago, they are likely to be well over 17 years of age.



We will now focus on breeding with our hatchlings of 2005 and some unrelated males to avoid inbreeding.

### CONCLUSION

*Python anchietae* is a fairly docile snake and relatively easy to keep in captivity. The python easily accepts rodents as food and can tolerate night temperatures as low as 12°C during winter. Annual temperature cycles seem crucial to induce reproduction, and males do not display any antagonistic behaviour towards each other. Mating takes place between August and October, while eggs are laid between November and January.

Even when *Python anchietae* is kept under suitable conditions, breeding success is by no means guaranteed, as we discovered over the last ten years. Eggs should be incubated at fairly high and consistent temperatures of 30 – 33°C. This will ensure healthy hatchlings that can be raised trouble free. Incubation at lower (sub-optimal) temperatures may still produce hatchlings but these tend to be weaker and more reluctant to feed.

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## NATURAL HISTORY NOTES

### REPTILIA: SQUAMATA; SAURIA

#### GEKKONIDAE

*Rhoptropus barnardi* Hewitt, 1926  
Barnard's Namib Day Gecko

#### REPRODUCTION

*Rhoptropus barnardi* is known from the Namib Desert from Central Namibia to southwest Angola (Branch, 1998: *Field Guide to Snakes and other Reptiles of Southern Africa*. Struik, Cape Town). There is a report from a field guide that clutches of two eggs are laid in communal nesting sites in May to June (Branch, 1998: *op. cit.*). The congener *Rhoptropus bradfieldi* deposited two eggs (in the field) in October 2008 (Barts & Ballandat, 2009: *African Herp News* **47**: 39 – 40). In this note I add information on *R. barnardi* reproduction including new dates for egg production, the first information on the testicular cycle, and minimum sizes for male and female reproductive activity.

Eighteen *R. barnardi* from Namibia in the Natural History Museum of Los Angeles County (LACM), including eleven males (mean SVL = 43.5 mm ± 3.2 SD, range = 38 – 48 mm), five females (mean SVL = 43.6 mm ± 1.3 SD, range = 42 – 45 mm), and two juveniles (mean SVL = 34.5 mm ± 3.5 SD, range = 32 – 37 mm) collected in October and November 1972, June 1976, and March 1977, were examined. Localities: **Erongo Region**: LACM 77637, 77640 – 77643, 77645 – 77648, 77650 – 77656; **Kunene Region**: LACM 127473, 127474.

For histological examination, the left testis was removed from males to study the testicular cycle and the left ovary was removed from females to check for the presence of vitellogenesis (yolk deposition) and/or corpora lutea. Counts were made of oviducal eggs or enlarged ovarian follicles (> 4 mm in length). Slides were stained with Harris haematoxylin followed by eosin counterstain. Histology slides were deposited at LACM. An unpaired *t*-test was used to compare male versus female body sizes (SVL) using InStat vers. 3.0b, Graphpad Software, San Diego, CA.

There was no significant size difference between male and female mean body sizes (unpaired *t*-test, *P* = 0.924).

The only stage observed in the testicular cycle was sperm formation (= spermiogenesis) in which the seminiferous tubules are lined by groups of spermatozoa or metamorphosing spermatids. This condition was observed in March (*n* = 1), June (*n* = 1) and October-November (*n* = 7). The smallest reproductively active male meas-

ured 38 mm SVL (LACM 77641) and was collected between 31 October and 12 November 1972.

All five females were collected between 31 October and 12 November 1972. The smallest reproductively active female, with two enlarged ovarian follicles (> 4 mm), measured 42 mm SVL (LACM 77648). One female was not undergoing yolk deposition, two females were undergoing early vitellogenesis, and one female contained one oviducal egg. The mean clutch size for two *R. barnardi* was  $1.5 \pm 0.71$ .

Two subadult *R. barnardi* measured 32 and 37 mm SVL, respectively. The gonads were extremely small and their sex could not be reliably determined.

While there are too few monthly samples to completely characterize the reproductive cycle of *R. barnardi*, my data have indicated an extended period of reproduction with sperm production in spring and autumn. Female *R. barnardi* produce eggs in spring and, according to Branch (1998, *op. cit.*), during autumn.

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### LACERTIDAE

*Adolfus jacksoni* Boulenger, 1899  
**Jackson's Forest Lizard**

### ENDOPARASITES

As part of an ongoing survey of endoparasites of African lizards, we established an initial helminth list for *Adolfus jacksoni* by examining seven specimens (six males, one female) (mean snout-vent length = 73.0 mm  $\pm$  6.7 SD, range = 61 – 80 mm) collected in February 1968, from Rakai District, Uganda, deposited in the Natural History Museum of Los Angeles County (LACM 39487 – 39491, 39494, 39497). The lizards were opened by a mid-ventral incision. The digestive tract was removed, and the oesophagus, stomach, small and large intestines were examined for endoparasites using a dissecting microscope. The body cavity was also searched. Cestodes were cleared in xylol, regressively stained in haematoxylin and mounted in Canada balsam. Nematodes were cleared in glycerol and coverslipped. All endoparasites were identified using a compound microscope. We found 51 larval cestodes (tetrathyridia) identified as *Mesocestoides* sp. in the body cavity of LACM 39487 (prevalence [number infected of lizards/lizard sample  $\times$  100] = 14%), one female nematode identified as *Thubunaea fitsimensi* in the small intestine of LACM 39487 (prevalence = 14%), and two nematodes identified as *Spauligodon smithi* in the large intestines of LACM 39491 and LACM 39494 (prevalence =

29%). Voucher specimens were deposited in the United States National Parasite Collection (USNPC), Beltsville, Maryland, USA, as *Mesocestoides* sp. (USNPC 101970), *Thubunaea fitsimensi* (USNPC 101972), and *Spauligodon smithi* (USNPC 101971).

*Mesocestoides* is a cosmopolitan genus of cyclophyllidean cestodes with a unique larval form called the tetrathyridium. Hosts are listed in Goldberg *et al.* (2005). Lizards are thought to be paratenic (transport hosts) with development to the adult stage occurring in a carnivore final host. *Spauligodon smithi* was described from the gecko *Pachydactylus bibroni* from Cape Province, South Africa by Bursey *et al.* (1997). *Spauligodon smithi* is an oxyurid nematode, a family which does not utilize intermediate hosts; infection occurs by accidental ingestion of eggs (Anderson, 2000). *Thubunaea fitsimensi* was described from *Ichnotropis squamulosa* from South Africa by Ortlepp (1931). *Thubunaea fitsimensi* is a physaloptid nematode, a family which utilizes insects as intermediate hosts; third stage larvae are acquired when infected insects are eaten (Anderson, 2000). *Adolfus jacksoni* represents a new host record for *Mesocestoides* sp., *S. smithi* and *T. fitsimensi*.

#### Acknowledgements

We thank C. Thacker (Natural History Museum of Los Angeles County, Los Angeles, California) for permission to examine specimens and C. Nava (Whittier College) for assistance with dissections.

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**CORDYLIDAE*****Cordylus cordylus* (Linnaeus, 1758)****Cape Girdled Lizard****FIRE SURVIVAL**

In January 2007, at DeHoop Nature Reserve in the Western Cape, a large area of the western parts of the reserve underwent a controlled burn as part of a management programme.

A post-fire survey two days after the fire undertaken by myself and Cape Nature staff revealed a high mortality of reptiles such as the Angulate Tortoise, *Chersina angulata*, and the Puff Adder, *Bitis arietans*. In addition, a variety of surviving reptiles were found under rocks. These included a large number of Cape Skinks, *Trachylepis capensis*, and Cape Girdled Lizards, *Cordylus cordylus*.

Since 2007 the habitat in the burned area has been recovering slowly and is monitored regularly for signs of reptile recolonisation. In December 2008 an adult Cape Girdled Lizard was found under a rock. This specimen, a male, had both hind legs reduced to stumps and the tail was missing. Since that time five more have been found with similar injuries to the hind legs (Fig. 1). These injuries were obviously a result of the fire and show a remarkable degree of survival. Despite these injuries the lizards were very agile and did not seem to be hampered by the lack of hind feet.

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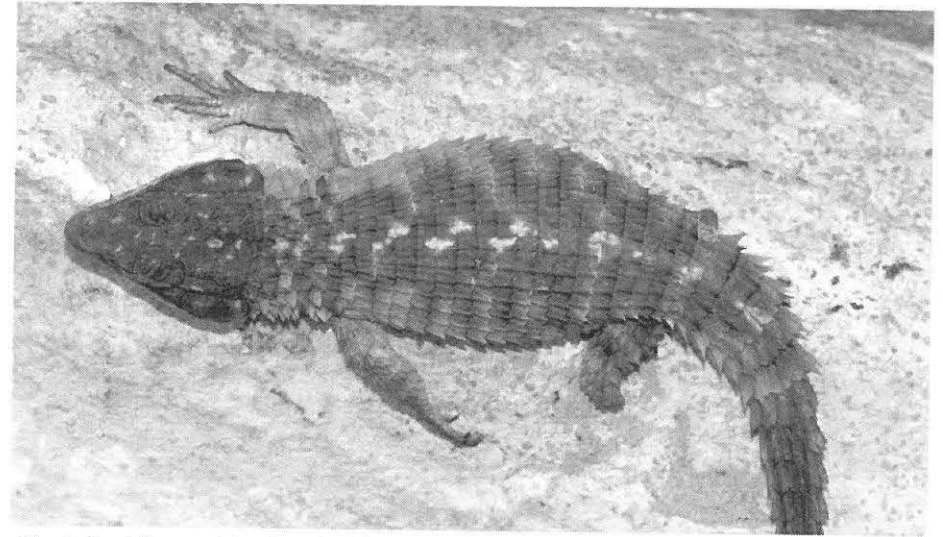


Fig. 1 *Cordylus cordylus* showing hind limbs reduced to stumps by burn injuries. (Photo: Tony Phelps)



BOYCOTT (Overleaf)

Fig. 1. *Amphydipsas concolor*: Record-sized snake from Swaziland. (Photo: Simon Boycott)

**ATRACTASPIDIDAE*****Amblyodipsas concolor* (A. Smith 1849)****Natal Purple-glossed Snake****SIZE, DEFENSIVE BEHAVIOUR AND LEPIDOSIS**

The Natal Purple-glossed Snake (*Amblyodipsas concolor*) is described by Broadley 1983 (*FitzSimons' Snakes of Southern Africa*. Delta Books, Johannesburg) as a small snake averaging about 350 mm with the largest specimen, at the time, having a total length of 550 mm. Branch 1988 (*Field Guide to Snakes and Other Reptiles of Southern Africa*. Struik Publishers, Cape Town) gives the maximum head and body length at around 750 mm, while Douglas 1982 (*Journal of the Herpetological Association of Africa* 28: 14-16) and Marais 2004 (*Complete Guide to the Snakes of Southern Africa*. Struik Publishers, Cape Town) record a maximum total length of 850 mm. More recently Pietersen & Pietersen 2006 (*African Herp News* 41: 2-6) recorded an adult female with a total length of 730 mm.

The species was first recorded from Swaziland about seventeen years ago, based on two records from the Lubombo plateau in the east of the country (Boycott 1992. *Annotated Checklist of the Amphibians and Reptiles of Swaziland*. Conservation Trust of Swaziland, Mbabane). A few years later additional records were documented from western Swaziland, where the species was recorded in moist montane grassland, with one of the localities being Mbabane (Boycott 1995. *African Journal of Ecology* 33: 417-419). In the last four years two more specimens from Mbabane were examined, the last being a specimen of exceptional size and worthy of documentation.

On 5 February 2009, an overcast humid day, at around midday, a large adult female specimen of *Amblyodipsas concolor* was found crossing the driveway of a house on a rocky ridge in the suburb of Dalreich, about six kilometres north of the city centre. A substantial amount of rain had fallen during the previous few weeks, which could have caused the snake to surface. The snake measured 820 + 111 = 931 mm, exceeding the previously recorded maximum sizes of Broadley (*op. cit.*), Branch (*op. cit.*), Douglas (*op. cit.*) and Marais (*op. cit.*). This new record size places *A. concolor* close to the maximum size recorded for the Common Purple-glossed Snake (*Amblyodipsas polylepis*) (Pietersen & Pietersen 2002. *African Herp News* 35: 14 – 15; Alexander & Marais 2007. *A Guide to the Reptiles of Southern Africa*. Struik Publishers. Cape Town). The largest *A. polylepis* recorded from Swaziland is an adult female (TM 82998) found DOR by the writer near St Peregrine's Mission, Balegane district, with a total length of 875 + 58 = 933 mm.

While being measured the Mbabane snake flexed its body, made no attempt to

bite, and exuded a mustard-like (in colour and texture) secretion from glands located in the cloaca. The secretion had a strong musk-like smell that lasted several minutes. When unrestrained and touched or prodded, the snake would whip its body into semi-circular, S-shaped curves and hide the head under parts of the body. The snake never hissed or attempted to bite when handled. In captivity the snake was active at night but preferred to remain buried in damp soil during the day.

Initially thought to be gravid due to its substantial girth, the snake was kept in captivity for observation over several weeks. However, over the succeeding weeks it soon became apparent that the snake had eaten a large meal, and after shedding, no parturition occurred, and the snake was released. The shedded skin has been retained as a voucher specimen (RCBS 2215) and will be deposited in a museum.

The snake was placed on the surface of a photocopier and the ventral surface copied to facilitate scale counting as suggested by Bourquin (personal communication). The scale counts and pattern conform to that of published descriptions of Broadley (*op. cit.*), Branch (*op. cit.*) and Marais (*op. cit.*) and were recorded as follows: midbody scales in 17 rows; ventrals 157; subcaudals 36; anal shield divided; upper labials 6 or 7, with the 3rd and 4th entering the orbit; loreal in contact with the nostril; the single postocular very small and the supraocular large.

It is encouraging to know that despite considerable urban development in and around Mbabane, a population of Natal Purple-glossed Snakes survives in suburbia. It could be argued that their primarily fossorial habits have stood them in good stead and that they do not come into contact with humans very often.

**Acknowledgements**

Thanks are due to Linda Loffler for capturing the snake and for providing the opportunity to record its exceptional size. Simon Boycott took the photograph.

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*Trachylepis capensis* (Gray, 1830). Stellenbosch. Photo: Shirley Lambiris

## GEOGRAPHICAL DISTRIBUTIONS

### REPTILIA: SQUAMATA: SAURIA

#### CORDYLIDAE

##### *Pseudocordylus melanotus melanotus* (A. Smith, 1838) Common Crag Lizard

South Africa, Gauteng Province, Krugersdorp district, Magaliesberg Protected Natural Environment, Farm: Nooitgedacht 471 JQ. Two sites: 1. TM 85038: 25°51'34"S, 27°31'22"E; 2527DC; alt. 1834 m a.s.l.; 8 December 2003; collected by J. Makola; Transvaal Museum (Pretoria). 2. NMB R8665: 25°51'40"S, 27°31'28"E; 2527DC; alt. 1845 m; 9 November 2005; collected by A. Matebane; National Museum (Bloemfontein). Both specimens were collected in grassland with rocky outcrops. NMB R8665 was found in a horizontal crack in quartzitic rocks on the southern slope of the Magaliesberg Ridge. It was initially sent to Prof. Graham Alexander at the University of the Witwatersrand, who kindly donated it to the National Museum. Tissue from this specimen is being used in a molecular analysis of the *Pseudocordylus melanotus* species complex (Bates, Cunningham, Daniels & Mouton, *in prep.*).

The two specimens are males and similar in appearance to specimens of this subspecies from elsewhere in Gauteng (Bates 2007, An analysis of the *Pseudocordylus melanotus* complex [Sauria: Cordylidae], Unpubl. Ph.D. thesis, University of Stellenbosch). Size: TM 85038: Snout-vent length 104.5 mm, head width (measured against lateral temporals at widest part of head) 24.2 mm; NMB R8665: SVL 109.7 mm; head width 27.2 mm. Colour pattern: The two specimens have a broad black dorsal band with scattered pale spots, and pale flanks. A colour photo (Fig. 1) of NMB R8665 in life shows a mustard-yellow flank; the upper limbs are of a similar colour. The throat pattern consists of closely-paired, dark, median longitudinal stripes on a pale (TM 85038) or grey (NMB R8665) background. Scallation: Both specimens – frontonasal wider than long and longitudinally divided; enlarged lateral temporals in two rows, the upper row consisting of vertically elongated scales; a single enlarged subocular posterior to the median subocular (partly

fused with median subocular in NMB R8665); dorsolateral scales closely spaced, the distance between longitudinal rows being less than half the diameter of an adjacent dorsolateral scale. Femoral pores have large openings with waxy secretions and number 14 (7 on each thigh) in TM 85038 and 13 (6 left, 7 right) in NMB R8665; differentiated femoral scales 6 (3 on each thigh) in TM 85038 and 21 (11 left, 10 right) in NMB R8665.

These are the first records of this species from the Magaliesberg range. The sudden discovery of a population of these lizards in the Magaliesberg comes as something of a surprise, considering the fact that this area is frequently used for recreation by hikers and mountaineers. It seems likely that it will occur elsewhere in this mountain range, most of which is protected. The Magaliesberg population appears to be isolated and its relationship to other populations of *P. melanotus* requires investigation (Bates *et al.* in prep.). Apart from one locality in the south-eastern Free State, this is the most westerly record for *P. m. melanotus* (see Bates 2005, *Navors. Nas. Museum, Bloemfontein* 21(4): 37–112). It is also the most north-westerly extension of the species' range. The nearest confirmed record is 90 km to the south-east at Farm Blesboklaagte 181 (2628AC) in the Suikerbosrand area (Jacobsen 1989, *The Distribution and Conservation Status of Reptiles and Amphibians in the Transvaal. Final Report Project TN 6/4/1/30*, Chief Directorate of Nature and Environmental Conservation, Pretoria; Bates 2005).

*Pseudocordylus m. melanotus* occurs at numerous localities in the Free State, KwaZulu-Natal, Mpumalanga and Swaziland. It also occurs at a single locality in Limpopo Province and in the Suikerbosrand area of Gauteng (Bates, 2005). Apart from the Suikerbosrand population, the only other localities for this taxon in Gauteng are "Pretoria Distr." – a rather vague locality – based on three specimens collected in 1896 (as *P. microlepidotus*: Roux 1907, *Zool. Jahrb. Syst. Jena* 25: 403–444, pls 12–15) and "Irene" (as *P. microlepidotus fasciatus*: FitzSimons, 1943, *Transvaal Mus. Mem.* 1: i–xv, 1–528, pls. 1–24.), the latter considered questionable by Bates (2005). In 2007 a team of collectors from Gauteng's Directorate of Nature Conservation conducted a search for this species on Smuts Koppie (25°53'16"S, 28°14'26"E), considered the only potentially suitable habitat in the Irene area, but were unable to find any specimens or suitable habitat (boulders lacked suitable crevices). This area has been subject to tremendous development pressure over recent years and even the ridge adjacent to the boundary of Rietvlei Nature Reserve is now under houses.

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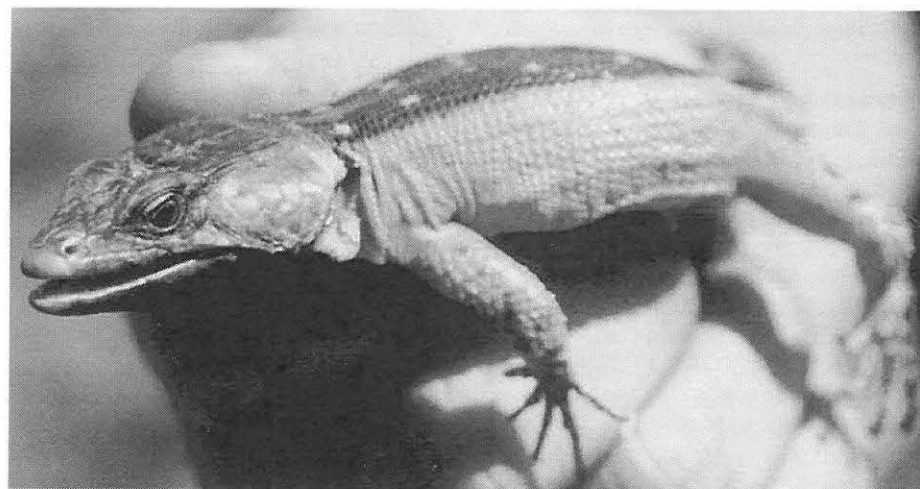


Figure 1: *Pseudocordylus melanotus melanotus* (NMB R8665) from Farm Nooitgedacht 471, Magaliesberg range, Gauteng Province. (Photo: Mike Buchanan)

## INSTRUCTIONS TO AUTHORS

**Contributions (preferably in Windows XP) submitted in an incorrect style (see guide-lines below) will be returned to the authors.**

### ARTICLES

*African Herp News* publishes longer contributions of general interest that would not be presented as either Natural History Notes or Geographical Distributions.

A standard format is to be used, as follows: **TITLE** (capitals, bold, centred); **AUTHOR(S)**<sup>(1,2)</sup> (bold, centred); Author's address(es) (use superscripts with authors' names and addresses if more than one author); **HEADINGS** (bold, centred) and **Sub-headings** (bold, aligned left) as required; **REFERENCES**, following the formats given below:

BRANCH, W.R., 1998: *Field Guide to the Snakes and Other Reptiles of Southern Africa*. Third edition. Struik, Cape Town.

BROADLEY, D.G. 1994: The genus *Scelotes* Fitzinger (Reptilia: Scincidae) in Mozambique, Swaziland and Natal, South Africa. *Ann. Natal Mus.* **35**: 237-259.

COOK, C.L., & MINTER, L.R., 2004: *Pyxicephalus adspersus* Peters, 1854. pp. 303-305, in Minter, L.R., Burger, M., Harrison, J.A., Braack, H.H., Bishop, P.J., and Kloepfer, D. (eds.), *Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland*. SI/MAB Series #9. Smithsonian Institution, Washington, DC.

### NATURAL HISTORY NOTES

Brief notes concerning the biology of the herpetofauna of the African continent and adjacent regions, including the Arabian peninsula, Madagascar, and other islands in the Indian ocean.

A standard format is to be used, as follows: **Scientific name** (including author citation); **Common name** (using Bill Branch's *Field Guide to Snakes and Other Reptiles of Southern Africa*, third edition, 1998, for reptiles; and Passmore & Carruthers' *South African Frogs*, 1995, for amphibians as far as possible); **KEYWORD** (this should be one or two words best describing the topic of the note, e.g. Reproduction, Avian predation, etc.); the **Text** (in concise English with only essential references quoted and in abbreviated form); **Locality** (Country; Province; quarter-degree locus; location; latitude and longitude if available; elevation above sea level); **Date** (day, month, year); **Collector(s)**; **Place of deposition and museum accession number** (required if specimens are preserved). **References**, if only one or two, should be incorporated into the text; three or more references should be placed after the main text, as for Articles. **Submitted by:** NAME, Address.

### GEOGRAPHICAL DISTRIBUTION

Brief notes of new geographical distributions (preferably at least 100 km from the nearest published the nearest published record) of amphibians and reptiles on the Afri-

can continent and adjacent regions, including the Arabian peninsula, Madagascar, and other islands in the Indian Ocean.

A standard format is to be used, as follows: **Scientific name** (including author citation); **Common name** (for sources, see Natural History Notes); **Locality** (Country; Province; quarter-degree locus; location; latitude and longitude; elevation above sea level); **Date** (day, month, year); **Collector(s)**; **Place of deposition and museum accession number** (required if specimens are preserved); **Comments**, including data on the size, colour and taxonomic characters, eg. scalation, webbing, especially for taxonomically problematic taxa; and nearest published locality record(s) in km; **References**, if only one or two, should be incorporated into the text; three or more references should be placed after the main text, as for Articles. **Submitted by:** NAME, Address.

Records submitted should be based on specimens deposited in a recognised collection.

### HERPETOLOGICAL SURVEYS

*African Herp News* publishes succinctly annotated species lists resulting from local surveys of amphibians and reptiles on the African continent and adjacent regions, including the Arabian peninsula, Madagascar, and other islands in the Indian Ocean. The area surveyed may be of any size but should be a defined geographic unit of especial relevance to the herpetological community. For example, surveys could address declared or proposed conservation reserves, poorly explored areas, biogeographically important localities or administrative zones. The relevance of survey results should be judged by the extent that these records fill distributional gaps or synthesise current knowledge.

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As far as possible survey records should be based on accessible and verifiable evidence (specimens deposited in public collections, photos submitted illustrating diagnostic features, call recordings and sonograms, or DNA sequences accessioned into international databases).

### PHOTOGRAPHS AND FIGURES

**Photographs and figures should be submitted as separate JPEG files, and not embedded in the text. They should preferably be 500–800 KB in size, and not more than 1 MB.** The name of the photographer should be given, if not taken by the author or senior author of the article.

HERPETOLOGICAL ASSOCIATION OF AFRICA  
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