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AFRICAN HERP NEWS

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HERPETOLOGICAL ASSOCIATION OF AFRICA NEWSLETTER

DECEMBER 1995 NO. 24

HERPETOLOGICAL ASSOCIATION OF AFRICA

Founded 1965

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

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

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

Articles may be submitted for peer review (at least two reviewers) at the Editor's discretion. Lists of reviewers will be published in the newsletter from time to time.

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

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

EDITORIAL

The *Fourth H.A.A. Symposium on African Herpetology* was held at St Lucia in KwaZulu-Natal from 22-27 October 1995. Sixty-one delegates attended and 45 papers, as well as several slide shows and posters, were presented. The symposium was a great success thanks largely to the superb organizational skills of Orty Bourquin, Frank Farquharson, Dave Blake and others, including the friendly and professional staff of the Natal Parks Board.

The June 1996 issue of *African Herp News* will be the 25th newsletter produced by the H.A.A. This special issue will be dedicated in part to the proceedings of the St Lucia symposium, and will include a listing of all papers, slide shows and posters presented, selected abstracts, an Introduction to the symposium, the Chairman's report, Secretary/Treasurer's report, Journal Editor's report and much more. At this stage we do not have plans to publish a special proceedings issue of the Journal for the St Lucia symposium. Members wishing to obtain a copy of the abstracts of presentations made at the symposium should contact the Secretary/Treasurer.

I regret to say that, as usual, the General Meeting was poorly attended. Only 28 African H.A.A. members were present, and as was the case at the Pretoria symposium in 1993, the required quorum of 30 was not satisfied. In order to make the meeting "official", I therefore urge all members who did not attend the meeting to respond to the voting form on page 2. A proposed amendment regarding the number of persons required to constitute a quorum is set out on page 3, and **all** H.A.A. members are requested to respond to it.

At the General Meeting Alan Channing (University of the Western Cape) kindly offered to organize the next H.A.A. symposium in Stellenbosch in 1998. This is after the *Third World Congress of Herpetology* (2-10 August 1997). Members will be updated as the symposium date approaches.

The new H.A.A. Committee was announced during the General Meeting at St Lucia (see Minutes of G.M. on p. 4). Candidates for the posts of Chairman, Secretary/Treasurer and Journal Editor were unopposed, but five candidates were put forward as Additional Committee Members. Because the costs involved to eliminate one candidate by postal vote were considered excessive, The Electoral Officer, Rod Douglas, suggested at the General Meeting that all five candidates be included on the committee. The meeting unanimously accepted this arrangement. The committee therefore consists of eight persons: Mike Bates (Chairman), Frank Farquharson (Secretary/Treasurer), Le Fras Mouton (Journal Editor), Ernst Baard, Orty Bourquin, Wulf Haacke, Gerald Haagner and John Poynton (Additional Committee Members). Bill Branch was co-opted by the new committee for the main purpose of assisting in the convening of a mini-symposium on African herpetology during the *Third World Congress of Herpetology*.

Finally, I thank all contributors to this issue of *African Herp News*.

Best wishes for a herpetological New Year.

Mike Bates
Chairman/Newsletter Editor

IMPORTANT NOTE TO H.A.A. MEMBERS

At the General Meeting held during the *Fourth H.A.A. Symposium on African Herpetology* at St Lucia, KwaZulu-Natal on 24 October 1995, only 28 African H.A.A. members were present. This is two less than the quorum of 30 required by the H.A.A. Constitution in order to constitute an official gathering. The meeting was nevertheless still held as various important issues needed to be discussed. At least two more persons are required to vote so as to make the meeting "official".

I hereby appeal to all H.A.A. members who did not attend the General Meeting to carefully read through the Minutes as presented on page 4 and then complete a photocopy of this page and return it to: The Chairman, H.A.A., P.O. Box 266, Bloemfontein 9300, South Africa.

I accept all proposals (**N.B.** points 7.2, 7.3, 7.4, 9, 10, 11, 13) and the Minutes in general with reference to the General Meeting of 24 October 1995 at St Lucia.

YES ..... NO .....

If NO, please indicate which proposal/s is/are not acceptable to you, and indicate why.

.....

.....

.....

NAME: .....

SIGNATURE: .....

DATE: .....

PLEASE RETURN NO LATER THAN 15 MARCH 1996

PROPOSED AMENDMENT TO THE CONSTITUTION OF THE HERPETOLOGICAL ASSOCIATION OF AFRICA

According to para 13.1 of the H.A.A. Constitution, "At any General Meeting a quorum shall be 30 Members". Regrettably, at both the 1993 symposium in Pretoria and the 1995 symposium in St Lucia, less than 30 H.A.A. African members attended the respective General Meetings. In order to avoid any further complications in the future, the present H.A.A. committee request that the amendment set out below be approved.

Please make a photocopy of this page, complete the form and send it to the Chairman (P.O. Box 266, Bloemfontein 9300, South Africa) by 15 March 1996.

Please consider the following proposed amendment (see para 11.4 and para 15) to the H.A.A. Constitution:

13 Quorum

Amend:

13.1 At any General Meeting a quorum shall be 30 Members.

to

13.1 At any General Meeting a quorum shall be one-third of the total number of Members registered as delegates.

I accept and approve the above proposed amendment.

YES ..... NO .....

NAME: .....

SIGNATURE: .....

DATE: .....

MINUTES OF THE GENERAL MEETING HELD ON TUESDAY 24 OCTOBER 1995 AT ST LUCIA

ATTENDEES: M. Bates (Chairman), E. Baard (Meeting secretary), V. Egan, M. Mason, W. Branch, A. Bauer, D. Broadley, D. Blake, C. Tilbury, J. Poynton, A. De Villiers, leF. Mouton, S. Docherty, P. Bishop, R. Ansermino, A. Wright, R. Douglas, W. Schmidt, R. Patterson, O. Bourquin, H-W. Herrmann, L. Minter, N. Smit, K. Howell, L. Raw, A. Channing, F. Farquharson, L. Krugel, M. Roodt, R. Tinsley, L. Du Preez.

1. **Welcome**: The Chairman welcomed all members and non-members present.

2. **Apologies**: R. Boycott.

3. **Acceptance of minutes of meeting held on 15 October 1993**: The minutes were accepted by the meeting as a true reflection of proceedings during the meeting held on 15 October 1993.

4. **Matters arising from the minutes**: The Chairman raised certain matters to be discussed at this meeting.

5. **Report of the Chairman**: Mike Bates presented the Chairman's report.

6. **Report of the Newsletter Editor**: Bates presented the Newsletter Editor's report.

   Discussion:

   Allan Channing raised the issue of copyright of cartoons appearing in the newsletter. Bates to attend to the matter.

   The publishing of scientific papers in the newsletter was discussed and general opinion was that the Newsletter was not the outlet for this. Bill Branch mentioned that the Journal would not accept papers on distribution surveys, but leFras Mouton pointed out that these were acceptable if a biogeographical discussion and interpretation are included. Channing argued that the question was about peer reviewing of scientific papers appearing in the Newsletter. By consensus it was accepted that the Newsletter Editor would select certain papers submitted to the newsletter for peer review. Branch congratulated and thanked the Newsletter Editor for a job well done.

7. **Report of the Journal Editor**: Mouton presented the Journal Editor's report.

Discussion

7.1 Mouton suggested that accreditation status for the Journal should wait one more year. Accepted.

7.2 Proposed name change for the journal was discussed. Frank Farquharson opposed. Branch proposed *African Journal of Herpetology*. Seconded by John Poynton. Unanimously accepted by meeting. Editor to include notice of name change in next issue.

7.3 Publication of non-African papers in journal. Channing proposed considering all papers submitted. Seconded by Branch. Unanimously accepted by meeting. Don Broadley suggested that papers written and submitted in French will attract more papers from Africa and Madagascar. Accepted. French papers will be published with extended English abstracts. Captions for figures in French papers will be in bott. English and French. Unanimously accepted. Branch congratulated and thanked Journal Editor for a job well done.

7.4 Editorial committee for journal. New committee to be discussed and voted on by existing committee. Branch proposed 10 members with at least three from outside South Africa. Channing seconded. Unanimously accepted.

8. **Report of the Secretary/Treasurer**: Farquharson presented the Secretary/Treasurer's report.

9. **Publication of H.A.A. Symposium Proceedings**: Proceedings of the 1993 H.A.A. Symposium should be published before the end of 1995. Channing suggested that proceedings should only be published as an exception, not as a rule. Authors are rather encouraged to publish their papers in the journal. Accepted. Titles of papers, posters and slide shows to be published in *African Herp News* following symposia.

10. **Election of H.A.A. committee**: Nominees for Chairman, Secretary/Treasurer, and Journal Editor were submitted unopposed. Five names were submitted for Additional Members, but because the costs involved to eliminate one Additional Member by postal vote were deemed excessive, it was suggested by the Electoral Officer that the number of additional members for the new term be increased to five. Unanimously accepted.

11. **Proposal: That yearly subscription fees be waivered for persons holding the posts of Secretary/Treasurer, Journal Editor and Chairman/Newsletter Editor.** After some discussion the matter was voted on. Eleven for, 10 against and three abstentions. Proposal accepted.

12. **Venue for next H.A.A. Symposium**: The venue and date for the next H.A.A. Symposium are: **Stellenbosch, 1998**, following the *Third World Congress of Herpetology*.

13. **General**:

Overseas membership: Channing led discussion about "unfair" fees for overseas members. He suggested SA Rand equivalent for foreign currency fees. Cognisance was taken by the committee which will re-assess the situation. Air-mailing of journals to members prepared to pay additional costs will be addressed as well.

Third World Congress of Herpetology: Branch suggested that a mini-symposium on African Herpetology be considered as part of the *Third World Congress of Herpetology*. Branch suggested a title to focus attention. Aaron Bauer suggested the following title: *Africa - the neglected continent: Biodiversity and Biology of African Herpetofauna*. Accepted. H.A.A. Committee to approach World Congress steering committee. Branch to be co-opted onto H.A.A. Committee for this purpose.

H.A.A. surfing the Internet: Phil Bishop suggested advertising the H.A.A., *African Herp News*, and Journal on the Internet. Branch suggested that Bishop and Newsletter Editor get together and discuss aspect for go-ahead.

African herpetofauna biodiversity programme: Raw discussed topic. Meeting felt it was a non-H.A.A. issue and Raw to continue with his input. Interested members to contact Raw.

The meeting closed at 17h41.

Minutes prepared by: Dr E.H.W. BAARD (Cape Nature Conservation, Private Bag 5014, Stellenbosch 7599, South Africa.

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NEW EXCHANGE MEMBER

The H.A.A. now exchanges its journal and newsletter with *Reptilia* magazine. This well illustrated colour magazine is printed in Spanish with short English summaries. *Reptilia* will, from time to time, publish short advertisements for the H.A.A. Members interested in the magazine can contact the Secretary/Treasurer or write to:

Servicio de Subscripciones
Muntaner 88, 5^{0} 1^{a}
08011 Barcelona
SPAIN

THE VISITOR:
A CASE FOR THE FBI'S "X" FILE TEAM?

Rob Yeadon

P.O. Box 42, Link Hills 3652, South Africa

Perhaps a paranormal activity newsletter would be more appropriate for this article, but there may be some other herpetologists who are interested in strange happenings. I recently experienced a few incidents which individually could be explained off as being mere coincidences, but as they all occured within a short period of time, and were all concerned with the same subject, namely specimen collection localities, some other force must have been in operation.

It all began with my finding, in a cupboard at the Durban Museum, a small bottle containing a frog. Attached to the bottle was a note from the researcher who had borrowed the frog, asking for confirmation of the frog's collection locality, as it could not be located on a map. Regrettably, I could not add to the information already supplied. The accession book stated that the frog had been collected by L. Bevis in March 1956 at Mdepi Stream, Basutoland, 40 miles east of Maseru. However, I had to add in my reply to the researcher that this record was suspicious, as although L. Bevis had collected a number of herptiles previous to 1915, this was the only specimen since, over 40 years later! Not impossible but just unlikely! The Durban Museum's wet collections have been through some traumatic times in the past due to a lack of curators, so anything could have happened to collection labels and records.

Some three weeks later, while weeding in my garden at Sea View, Durban, I came across a small moth flapping around on the ground and determined to be noticed. As it was unusual in that it had extremely long antennae, I collected it and took it to the Durban Museum, which I visit every Wednesday. The moth was easily identified as a long horn moth. We checked the museum's moth collection and found a nice series of long horn moths collected by L. Bevis in March 1956 from Molepi Stream, Basutoland, 40 miles east of Maseru.

L. Bevis must have been upset at my having rejected his frog collection locality and sent his spirit to force me to collect the little moth so that the frog record could be confirmed. If one took the trouble to investigate, one would probably find that there is no possible other thing in my garden which would have been able to achieve this. For all we know the moth may have had to fly all the way down to me from Molepi Stream, which is why it took three weeks!

The spirit stayed with me for a few weeks, resulting in four more locality "coincidences". I have been working on collection locality latitude and longitude determinations for some time now, for both herptile and butterfly distribution maps. The day that, with a little "spiritual" help, I was able to sort out the Lesotho frog collection locality, I tried to locate Mount Moreland on a map of KwaZulu-Natal. Despite getting several

librarians and others involved I had to eventually give up. The next evening, at a bat interest group meeting, a slide was shown of a banana tree in which a bat had been found, growing at Mount Moreland. At the end of the slide show I found out that one of the museum's staff members actually lived at Mount Moreland! A phone call to her home soon gave me the required locality information.

The following Saturday morning found me trying to locate Cape Maclear, Malawi, without success. The next evening, on SABC TV1's *50/50* programme, Jonathan Rands went diving at Cape Maclear, Malawi. He mentioned in the programme that it was at the south end of Lake Malawi near an island. When I referred to a map of Malawi at the museum a few days later, I knew exactly where to look, and easily found the locality. The next day, at home, I gave up looking for the T.C. Robinson Nature Reserve on a map of the KwaZulu-Natal South Coast. Ten minutes later on East Coast Radio's programme *What's On*? it was announced that there would be a butterfly outing at the T.C. Robinson Nature Reserve, Scottburgh, on the following Sunday morning. It was a simple matter to contact the guide of the outing and find out where the reserve was.

The next Friday, after printing a distribution map for a species of butterfly, I found that a collection locality dot had printed about 20 km out in the Indian Ocean. On checking the co-ordinates for the locality, Ntunjambili Mission, I found that I had made a two degree typing error. An hour or so later, I received a letter from the archaeological society, of which I am a member, announcing that the next outing would be to the Tugela Valley below Ntunjambili Mission! My computer may have been quite literally "at sea" as to where Ntunjambili Mission is, but having just looked it up on a map, I knew exactly where it was.

After this, L. Bevis's spirit must have left me, as I have had no more strange locality "coincidences". A pity, as I still have a few untraceable localities.

Editor: I have examined the frog from Lesotho and identified it as *Breviceps verrucosus*. It was identified as *B. maculatus* (probably a synonym) by Prof. J.C. Poynton and Dr A.J.L. Lambiris. The name "Mdepi Stream" appears on the specimen tag. It would seem that the "o" and "l" (*not* "d") of "Molepi" Stream were written too closely together resulting in some confusion. Unfortunately I have been unsuccessful in trying to locate either "Mdepi" or "Molepi" Stream and the locality therefore still remains something of a mystery. Perhaps one of our readers can help?

NOTES ON A HERPETOLOGICAL COLLECTING TRIP TO THE SOUTHERN GREAT KAROO AND ADJACENT LITTLE KAROO

Gerald V. Haagner & William R. Branch

Department of Herpetology, Port Elizabeth Museum, P.O. Box 13147, Humewood 6013, South Africa

The main objectives of the trip (7-13 February 1995) were to collect fresh material for DNA analysis of a new *Pachydactylus* species from the inland escarpment (Branch, Bauer & Good, 1995) and to make a final collection for the Little Karoo survey (Branch & Bauer, 1995). Aaron Bauer (Villanova University, U.S.A.) had come out specifically for the trip and to complete some joint papers with Bill, whilst Craig Weatherby (Adrian College, U.S.A.) had been here for two months working with Bill and Mervyn Mason radio-tracking tortoises at Tembane in the Addo Elephant National Park. Craig wanted a break and an opportunity to see some of the country. The majority of material collected was deposited in the herpetological collection of the Port Elizabeth Museum (PEM), although DNA voucher specimens and some other representative specimens were forwarded to the California Academy of Science.

7 February 1995

We left Port Elizabeth at 10h45 and drove via Uitenhage and Jansenville to Graaff Reinet where we were booked into the staff quarters at the Karoo Nature Reserve. The day was slightly overcast and not yet too hot. On the way we saw a *Chersina angulata* DOR (dead on road) on the road opposite Springs Nature Reserve (3325Cb) and a large live female *Geochelone pardalis* 5 km north of Springs Nature Reserve (3325Cb). At 24 km south of Jansenville (33°04'16"S, 24°51'57"E; 3324Bb; 361 m a.s.l.) we stopped at a small shale ridge in norsveld (12h30) near Farm Driekoppen, Jansenville district. The cloud had burned off inland and it was boiling hot - the start of many hot days to come! We found only a large colony of *Pachydactylus bibronii* in rock cracks, collecting one individual (PEM R11170) active on the rock face in deep shade 30 cm from a large crack. Also saw *Mabuya s. sulcata* and *Pedioplanis lineoocellata*. Further on we found a *Chersina angulata* DOR 15 km south of Jansenville (32°58'56"S, 24°42'49"E; 3224Dc; 382 m).

Through to Graaff Reinet to collect drinks and keys for the staff quarters at the Karoo Nature Reserve. After a little game viewing we head back to the hut for supper. At 12h00 we try a night drive to Ouberg Pass, although it is windy and with a half-moon shining brightly. We find only a single *Pachydactylus bibronii* DOR. On our return at 21h55 we find a young male *Lamprophis fuliginosus* LOR (live on road) (PEM R11171).

8 February 1995
Up at 06h15 to a clear and cool morning. We drive to Murraysberg via Ouberg Pass and find a *Varanus albigularis* DOR 45 km from Murraysberg. Bill collects a useful gut content which includes tortoise fragments. Stopped 44 km from Murraysberg (32°01'38"S, 24°08'26"E; 3324Aa; 1577 m) in montane *Themeda* grassland with sandstone contour outcrops near Farm Zuurplaats, Graaff Reinet district, where we find 12 *Afroedura karroica* (PEM R11172-76) in rock cracks, one juvenile *Pachydactylus* cf. *oculatus* (PEM R11180) under a stone on a ridge, one *Pedioplanis burchelli* (PEM R11181) running on bedrock, and two *Agama a. atra* on rocks (PEM R11182). Aaron finds a juvenile *Homopus femoralis* under a large rock in *Themeda* grassland, sheltering in a south-facing tunnel about 300 mm long with no turning space. Craig is very excited as it is his first Greater Padloper. Bill also finds a large adult shell (PEM R11183) which is mostly intact, so depriving Craig of a jigsaw to piece together.

We stop 33 km from Murraysberg, near Farm Coetzeekraal, Murraysburg district (31°59'20"S, 24°04'36"E; 3124Cc; 1579 m) to collect on a large rock face beside the road. We winkle out four *Afroedura karroica* (PEM R11184-86) and one *Pachydactylus oculatus* (PEM R11187) in horizontal rock cracks, and get a *Cordylus cordylus* (PEM R11188), an *Agama a. atra* (PEM R11189) and one *Mabuya v. variegata* (PEM R11190) from rocks. Also find *Homopus femoralis* shell fragments and a large scorpion (in a rock crack) that had recently eaten a *C. cordylus*! Further on, 20 km from Murraysberg near Farm Voetpad (31°58'22"S, 23°57'37"E; 3123Dd; 1267 m) we find a *Geochelone pardalis* on the road, which Bill photographs with a wide-angle in habitat, and we then leave. We stop at Murraysberg for food and then take the road to Victoria West. At a roadside cutting (31°49'38"S, 23°35'03"E, 1054 m) we find a *Varanus albigularis* DOR (not kept and no guts) and several *Pachydactylus bibronii* amongst rocks, but collect none.

Before the N1 we stop at a roadside cutting through contour sandstone near Farm Schiethuil, Murraysburg district (31°44'32"S, 23°27'21"E; 3123Cb; 1094 m) and collect two *Pedioplanis lineoocellata* (PEM R11191) and one *Agama a. atra* (PEM R11192), whilst Bill spots a *Mabuya v. variegata*. Turn south onto N1 and at 31 50'18"S, 23°18'26"E (3123Cd; 1269 m) we find a *Lamprophis fuliginosus* DOR but too badly squashed to keep. Drive up to the dolerite pillars in the Karoo National Park (32°15'09"S, 22°34'07"E; 3222Bc; 1077 m) and stop to look for the new *Pachydactylus* species. Bill finds one within two minutes, sitting out in the open on the roadside rock face! In these roadside rocks we collect four more specimens (PEM R11193-95) - three sitting in the open in shaded positions up to 20 cm from their retreats. They will form part of the type series and Molteno Pass will be the type locality. Gerald also collects two *Pachydactylus bibronii* (PEM R11196). We drive further up the pass to a cutting passing from the middle plateau to the slopes leading to the upper plateau (32°12'34"S, 22°33'35"E; 3222Ba; 1164 m) and in roadside rocks collect another three specimens of the new *Pachydactylus* species (PEM R11197-98). All are in rock cracks but sitting at the entrances and visible from a distance.

Drive all the way to summit plateau and across to a Black Eagle's nest site beside the Sak Rivier, looking for a place to camp. No joy, but we stop to collect alongside the Sak Rivier (32°03'56"S, 22°27'01"E; 3222Ab; 1504 m) where Gerald collects a *Pachydactylus*

oculatus and *Pachydactylus* sp. nov. (PEM R11199) in rock cracks. Aaron spots an all-black male *Mabuya s. sulcata* which escapes capture. We stop to camp in the poplar grove at the top of the pass (32°10'24"S, 22°32'55"E; 3222Ba; 1682 m) and as Bill gets the camp ready the others collect another three of the new *Pachydactylus* species (PEM R11200) and two *Cordylus cordylus* (PEM R11201). Also see *Mabuya v. variegata* and *Agama a. atra*. After the evening meal Aaron and Gerald hunt a small pool in the grove to collect frogs, getting four *Rana fuscigula* (PEM A3079) and one sleeping *Agama a. atra* (PEM R11202), and sighting several *Xenopus l. laevis*.

9 February 1995
After a bitterly cold night, Gerald (who has thin lowveld blood and absorbs the cold) can't sleep and rises at 06h30 to a clear, cool morning to collect on the west side of the pass. Pickings are thin and he finds only one *Pachydactylus oculatus* (PEM R11203). We later drive to Farm Oukloof in Oukloof Pass, Nuweveld district. On the dirt road we stop at a sandstone outcrop in grazed veld at 32°11'36"S, 21°55'38"E (3221Bb; 1147 m) and collect two *Pedioplanis lineoocellata* (PEM R11204-05), six *Pachydactylus serval* (PEM R11206-08) and one *Agama a. atra* (PEM R11209), as well as sighting *Mabuya s. sulcata* and *M. v. variegata*.

While collecting we have a 'Haagner' incident! Gerald, working a sandstone ridge, turns over a large rock to expose two *Pachydactylus serval* that escape by running in opposite directions. Instinctively Gerald slaps a hand over each and calls Bill to come and help collect them. Bill runs over, doesn't know which hand to start with, and picks the left. Gerald feels vigorous movement under his right hand and clamps his open palm further down onto the rock to stop it escaping. Bill catches the gecko under the left hand, but as he bags it, the second gecko suddenly shoots out from under Gerald's right hand, which he quickly lifts to grab the gecko again. Looking down we see a large, very angry scorpion walking around with its sting erect. In his rush to catch both geckos, Gerald hadn't seen the scorpion and was holding down both gecko and scorpion, hence the scratching movement under his right hand. Fortunately Bill hadn't selected that hand to try and remove the first gecko!

After this excitement we drive to the summit of Oukloof Pass and stop to collect on a dolerite tower to the west of the road (32°08'50"S, 21°44'18"E; 3221Ba; 1543 m), where we find three *Pachydactylus oculatus* (PEM R11210) and one juvenile *Pachydactylus* sp. nov. (PEM R11211). Saw *Mabuya v. variegata* and one other new *Pachydactylus* which was very warm and active and easily escaped noosing by running *Rhoptropus*-like across hot rocks in the sun, disappearing under large boulders. Returning to the car Craig shot a *Pedioplanis namaquensis* (PEM R11215) with a rubber band as it sat on sandy soil beside the road.

Drive through to Farm De Hoek, the type locality of one of Le Fras Mouton's new cordylid species, namely *Cordylus cloetei*. He drive to the farmhouse to talk to the farmer, Jan Cloete. He is very friendly but reticent to say where the *Cordylus* can be found as he has been warned of 'unscrupulous collectors'! We leave, planning to look on a lower dolerite ridge running to the east of the farmhouse (32°08'24"S, 21°42'55"E; 3221Ba; 1609 m). There we collect three *C. cloetei* (PEM R11216-17) in small rock cracks on slopes of the ridge, one *C. polyzonus* (PEM R11218), two *Pachydactylus*

oculatus (PEM R11219), one *Pachydactylus* sp. nov. (a mummified specimen in a rock crack; Aaron keeps the skull), a *Pedioplanis lineoocellata* (PEM R11220), a *Mabuya v. variegata* (PEM R11222) and a *Homopus boulengeri* shell. A juvenile *Psammophis notostictus* (PEM R11221; 223 + 77 = 300 mm; 4,2 g), collected in a rock crack, has a full stomach in which we discover a *Pachydactylus oculatus* (36 mm SVL; 1,6 g; head-first ingestion). We also see two other *Pachydactylus* sp. nov., *Mabuya v. variegata, M. capensis* and *Agama a. atra*. Before leaving we stop for a cooling swim in the farm dam and Jan comes over to talk about the herps on his farm. He knows the Puffadder, Cape Cobra and also *Chamaeleo namaquensis*, but no small adders.

We drive to Fraserberg in sweltering heat (>40°C) and take the road to Sutherland. About 25 km north-east of Sutherland (32°22'17"S, 20°56'12"E; 3220 Bd; 1438 m) we collect in a roadside cutting through metamorphosed sandstone near Farm Vaalpunt, Sutherland District. Despite the heat we find three new *Pachydactylus* (PEM R11212-13) and one *P. bibronii* (PEM R11214).

10 February 1995
Up at day-break and off by 07h30, driving to the top of Verlatekloof Pass, Roggeveld Mountains, Sutherland district, (32°31'34"S, 20°38'08"E; 3220Da; 1535 m). In a roadside cutting through hard shales we collect two *Pachydactylus* sp. nov. (PEM R11224-25) and one *Agama a. atra* (PEM R11223). Many other *Pachydactylus* sp. nov. are seen, including four that are active at the entrance to their cracks, and two that are basking at 07h50 in the early morning sun! We take the dirt road east along the top of the escarpment towards Komsberg and through Klein Roggeveld. We stop near Farm Gunsfontein (32°35'S, 20°40'E; 3220Da) to collect under hard sandstone slabs on bedrock in Karoo transitional veld, getting one *Pachydactylus geitje* (PEM R11226) and three *Agama a. atra* (PEM R11227). We also see a few *Mabuya v. variegata.*

Drive further into Roggeveld and stop at another hard contour sandstone ridge, well-covered in lichen and transition karroid veld near Farm Schietfontein, Sutherland district (32°39'17"S, 20°45'55"E; 3220Db; 1768 m) where we collect three *Pedioplanis lineoocellata* (PEM R11228, R11233), four *Pachydactylus oculatus* (PEM R11229-31) and one *Pedioplanis burchelli* (PEM R11232). Also see *Mabuya v. variegata, M. s. sulcata* and *Agama a. atra*. Drive down Komsberg Pass, and near the top, stop at hard sandstone cutting near Farm Komsberg, Roggeveldberg (32°40'53"S, 20°45'44"E; 3220Db; 1627 m) where we collect three *Pachydactylus* sp. nov. (PEM R11234-36) and one *Agama a. atra* (PEM R11237). Stop to talk to farmer, Ed Mueller, and have a cool drink. His daughter shows us some herps she collected on the farm, including *Tetradactylus tetradactylus, Acontias meleagris, Pachydactylus serval* and *Bradypodion karroicum*. Ed Shows us his pickled finger! Leave at 12h30 and drive around to rejoin Sutherland to Matjiesfontein tar road. Twenty kilometers from Matjiesfontein (33°01'52"S, 20°35'09"E; 3220Ba; 1105 m) we stop to look for *Cordylus minor*, but it is too hot for much activity. All we see are *Mabuya s. sulcata* but Bill pulls off a good flake with a large *Pachydactylus bibronii* and *Pachydactylus* sp. nov. lying side-by-side beneath it. In surprise he misses both!

Five kilometers from Matjiesfontein (33°12'55"S, 20°35'06"E; 3320Ba; 1002 m) we stop to collect in flats with vertical outcrops of shales in succulent karroid veld on Farm

Doornkloof, Lainsburg district. It is very hot and there is little sign of herps. Several broken flakes and overturned rocks indicate that the area has been well collected by others. We get only one *Pachydactylus serval* (PEM R11238) and two *Mabuya v. variegata* (PEM R11239). We drive through Matjiesfontein to Laingsburg and then on to Sevenweekspoort. There is confusion among biographers over whether this magnificent gorge was named by brandy smugglers, who took seven weeks to get wagons through the gorge, or is a corruption of the name of Rev Zetwink who lived at a mission near the poort. We drive straight in and stop for a picnic as a site 2 km into the northern part of the poort (33°23'12"S, 21°24'33"E; 3321Aa; 1000 m) and look at a lovely waterfall. Aaron looks around the campsite and pulls out the biggest surprise of the trip - another *Pachydactylus* sp. nov. (PEM R11240) in a rock crack at the bottom of the poort next to the campsite!

11 February 1995
Gerald, Craig and Aaron head for Huisrivierpass to look for more *Pachydactylus* sp. nov. while Bill sleeps off a bad migraine. They spend three hours in the pass but see only one gecko. They then give up and retreat to Calitzdorp, taking the back road to Van Wyksdorp via Rooiberg Pass. About 13,7 km from Calitzdorp (33°38'08"S, 21°40'50"E; 3321Da; 280 m) they work some rock outcrops and get two *Pachydactylus bibronii* (PEM R11242) and see *Mabuya h. homalocephala*. Two *Geochelone pardalis* are found on the road, feeding near a farm house (Farm Rietvallei, Calitzdorp district; 33°38'11"S, 21°39'16"E; 3321Da; 330 m). At the top of Rooiberg Pass (33°40'55"S, 21°38'52"E; 3321Db; 751 m) they collect three *Cordylus cordylus* (PEM R11243-44) and one *Agama a. atra* (PEM R11245), then return to Huisrivier Pass (33°29'46"S, 21°35'00"E; 3321Dc; 528 m) to try for the *Pachydactylus* sp. nov. again, this time successfully. Craig and Aaron collect it (PEM R11246) close to where Bill and Gerald had collected one on the road at night on a previous field trip.

We take the road to Barrydale and Warmwaterberg where Bill and Aaron (with Marius Burger) collected a true *Phyllodactylus lineatus* in 1993. One kilometer before the turn off to Van Wyksdorp we stop to look in sandy veld near Naouwkloof, Ladismith district (33°33'34"S, 21°13'25"E; 3321Ca; 341 m) and shoot a *Pedioplanis lineoocellata* (PEM R11247) and a *Meroles knoxii* (PEM R11248). Drive past turning to Riversdale and stop at small, shallow farm dam (33°36'05"S, 21°05'15"E; 3321Ca; 398 m) and get three *Pelomedusa subrufa* (PEM R11250-51) and see *Pachydactylus bibronii* in culvert under road. Onto Warmwaterberg, stopping at rock outcrop on Farm Dooprivier, about 2-3 km past Touws River (33°41'22"S, 20°58'14"E; 3320Db; 309 m) to get one *P. bibronii* (PEM R11252) and a dry *Homopus boulengeri* shell (PEM R11253), one of very few records for the Little Karoo. On to Warmwatersberg, and just past the spa on rocky, succulent-covered northern slopes of the mountain we stop to look in dead aloes and *Crassula* for *Phyllodactylus lineatus*. It is very late and we have little time to look. We find nothing except a *Phyllodactylus* egg (FN 1180; to Aaron) in soil under an *Aloe comptonii.*

12 February 1995
Stop again at the *Homopus* locality, but get only one more *Pachydactylus bibronii,* three *Mabuya s. sulcata* (PEM R11254-55), one *M. v. variegata* (PEM R11256) and a *Chersina angulata* shell (PEM R11257). Drive to Barrydale for petrol and then back to

Lemoenshoek near Farm Swellendam (33°50'35"S, 20°52'00"E; 3320Dd; 483 m) to show Craig some of the lovely succulents (*Gibbaeum pubescens, Euphorbia suvvanae* etc.) on the quarzite gravels. We find three typical (PEM R11258) and one plain phase (FN 1210, PEM R11259) *Pedioplanis lineoocellata*. Stop at Touws River to look on flood plain near Farm Ockerts Kraal, Ladismith district (33°39'00"S, 21°01'02"E; 3321Ca; 311 m), but there is little herp activity. Craig gets an *Agama a. atra* (PEM R11260) and finds a *Geochelone pardalis* decomposed by the road. Also see *Mabuya s. sulcata*. On the drive back to Ladismith we spot a DOR snake (33°36'40"S, 21°03'57"E; 3321Ca; 302 m) in karroid transitional veld with low shale ridge near Farm Kareebosdam. It is a dwarf adder, *Bitis* cf. *cornuta albanica*! (PEM R11261) - very flat but an important new distribution record.

Turn off onto road to Baviaanskrans and stop to collect in sandy flats (33°37'03"S, 21°08'29"E; 3321Ca; 388 m) near Farm Gifkop, and get five *Pedioplanis lineoocellata* (PEM R11262-64), fragments of a *Psammobates tentorius* shell and see a *Nucras tessellata lívida* running in karroid veld before it disappears down a hole. At another sandy spot, about 2 km further on and near Farm Baviaanskrans (33°38'37"S, 21°09'48"E; 3321Ca; 352 m), we again stop to look for lacertids. Bill shoots a *Pedioplanis lineoocellata* (PEM R11265) and Gerald finds *Psammobates tentorius* shell fragments (not retained). On the main road back to Ladismith (33°37'21"S, 21°10'33"E; 3321Ca; 319 m) we find a *Psammophis notostictus* (DOR - not kept).

Stop between Calitzdorp and Oudtshoorn, near Farm Andrieskraal, Calitzdorp district (33°32'31"S, 21°48'34"E; 3321Db; 388 m) in region of deep red sandy soil (from erosion of conglomerates), well-vegetated and subject to low-intensity ostrich farming, and get four *Pedioplanis lineoocellata* (PEM R11266-68). They act strangely for the species, running on sandy soil and sheltering in holes. Stop again 7 km west of Oudtshoorn in similar habitat and near Farm Wynandsrivier, Oudtshoorn district (33°35'59"S, 22°02'54"E; 3322Ca; 382 m) and get one more *P. lineoocellata* (PEM R11269). Spend the night at municipal bungalows in Oudtshoorn.

13 February 1995

Up at 07h00 and off to Cango Croc farm to see and scrounge for local herps. We manage to get a small preserved female chameleon from Andrew Eriksen that comes from the same Oudtshoorn garden as a large male sent through earlier. On the way (33°35'12"S, 22°16'11"E; 3322Cb; 202 m) to De Rust we see a *Chersina angulata* DOR but don't stop to collect it. Then on the road to Willowmore we stop at an old ostrich paddock (33°28'44"S, 22°39'20"E; 3322Bc; 747 m) to look for lacertids, but find only a *Chersina angulata* shell.

In another region of deep sand in old ostrich paddocks near Farm Drinkwater, Oudtshoorn district (33°30'52"S, 22°42'04"E; 3322Da; 427 m) we again find no lacertids, but four *Chersina angulata*, of which we keep one shell (PEM R11270). About 2 km past Rooirivier (33°32'07"S, 22°52'44"E; 3322Db; 683 m) near Farm Buffelsklip, Uniondale district, and in region of deep red sand, we get three *Pedioplanis namaquensis* (PEM R11272-74) and another *C. angulata* (PEM R11271) and see *Agama a. atra*. The lacertids are the first signs of this species in the Little Karoo, where they are restricted to the eastern valleys. At the turning to Uniondale (33°32'04"S,

22°54'03"E; 3322 Db; 703 m) we find a very flat *Lamprophis fuliginosus* DOR (not kept). At Barandas Siding (33°29'18"S, 23°01'17"E, 560 m; 3323Ac) we stop to talk to a farmer who knows Puff Adder, Cape Cobra, *Chersina, Psammobates* and *Geochelone* from his farm, and three years previously had seen a *Varanus albigularis* (the south-western limit for the species), but knows them to be rare in the region. Finally we take the road across to Uniondale at the extreme eastern border of the Little Karoo, and look in sandy flats near Farm Rietfontein, Uniondale district (33°29'09"S, 23°12'02"E; 3323Ac; 777 m), getting one *Pedioplanis lineoocellata* (PEM R11275). At Farm Vetvlei (33°32'47"S, 23°06'30"E; 3323Ca; 777 m) we make a final stop to collect on sandy flats, finding only a *Chersina angulata* shell that is too damaged to keep. The only other herp seen on the long drive home was at the end of the Longkloof, 2,6 km before Deprivier, where a *Geochelone pardalis* was found DOR (not collected).

So ended a very hot and tiring trip. We were very successful in getting lots of new localities and tissues for the new *Pachydactylus*, but the prolonged drought and soaring temperatures in the region resulted in relatively few new records for the final part of the Little Karoo survey recently finalized by Branch & Bauer (1995).

ACKNOWLEDGEMENTS

To Aaron Bauer and Craig Weatherby for pleasant field assistance; and Dave Osbourne at Towerkop Nature Conservation Station, Ladismith, for excellent accommodation and discussions.

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A SMALL COLLECTION OF REPTILES AND AMPHIBIANS FROM CENTRAL AND SOUTHERN MALAWI

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While visiting Malawi in early June 1995, Doug and Beric Muller spent an hour or two collecting at two localities: i) the western edge of Elephant Marsh (1634Bd) near the boundary of Lengwe Game Reserve, southern Malawi, where all specimens were collected round the bases of banana plants, and ii) 2 km east of Masasa (1434Ab), ENE of Dedza, central Malawi, where specimens were collected by locals. Several of the reptile specimens are of particular interest and warrent publication. All specimens were deposited in the collection of the Natural History Museum of Zimbabwe (NMZB). Unfortunately the amphibians were put into very strong alcohol, are badly desiccated and were not individually labelled.

REPTILIA
SAURIA

AGAMIDAE

AGAMA KIRKII Boulenger — Kirk's Rock Agama
Voucher specimens: NMZB 13968-69, two juveniles - 2 km E of Masasa.

AGAMA ACULEATA ARMATA Peters — Eastern Ground Agama
Voucher specimens: NMZB 13967, juvenile - 2 km E of Masasa.

SCINCIDAE

MABUYA QUINQUETAENIATA MARGARITIFER (Peters) — Five-lined Skink
Voucher specimens: NMZB 13970-71, two females - 2 km E of Masasa.

MABUYA VARIA (Peters) — Variable Skink
Voucher specimens: NMZB 13973-75, three adults - 2 km E of Masasa.

MABUYA STRIATA STRIATA (Peters) — Eastern Striped Skink
Voucher specimens: NMZB 13972, adult - 2 km E of Masasa.

PANASPIS WAHLBERGII (A. Smith) — Wahlberg's Snake-eyed Skink
Voucher specimens: NMZB 13976-77, two males - 2 km E of Masasa.
Remarks: Venter uniform vermillion in both specimens.

LACERTIDAE

NUCRAS TAENIOLATA HOLUBI (Steindachner) — Holubi's Sandveld Lizard
Voucher specimens: NMZB 13978-79, adult male and female - 2 km E of Masasa.
Remarks: These have pale speckling on sides of head and neck, and key out to *N. t. holubi* according to Jacobsen (1989). This is the first record of this form from Malawi and north of the Zambezi. All material previously examined from Zambia and Malawi is referable to *Nucras ornata* (Gray). Snout-vent length: male 60 mm, female 70 mm.

SERPENTES

COLUBRIDAE

LYCODONOMORPHUS OBSCURIVENTRIS FitzSimons — Flood-plain Water Snake
Voucher specimens: NMZB 13963, adult male measuring 440 + 75 mm (tail truncated) - Elephant Marsh.
Remarks: This is the largest male specimen ever examined. Ventrals 176, subcaudals 39+, apical pits not detected on dorsal scales, otherwise lepidosis as given in Broadley (1967). Its colouration agrees with Mozambique material, except for additional faint dark spots on the third infralabials. *L. whytii obscuriventris* was described by FitzSimons in 1958, but treated as a synonym of *L. whytii* by Broadley (1967). Broadley (1983) later referred all southern African material to *L. w. obscuriventris*. This is the first record of *L. obscuriventris* north of the Zambezi, and its addition to the Malawi list warrants reconsideration of its relationship to *L. whytii* Boulenger, described from Fort Hill (= Chitipa), northern Malawi, and subsequently recorded only from two localities in south-western Tanzania (Broadley, 1983). The three known specimens are all females, with lower ventral counts (159-166 *vs* 168-175) but higher subcaudal counts (47 *vs* 37-42) than *L. obscuriventris*. In addition, the *whytii* specimens lack the distinctive labial markings of *obscuriventris* and all apparently originated from montane streams - a very different habitat from the lowland flood plains inhabited by *L. obscuriventris*. It therefore seems appropriate that the latter be recognised as a full species.

PSEUDASPIS CANA (Linnaeus) — Mole Snake
Voucher specimens: NMZB 13966, adult male measuring 870 + 185 mm - 2 km E of Masasa.
Remarks: Black chequer-board dorsal pattern which is more strongly defined than in most juveniles. Midbody scale rows 27; ventrals 179; subcaudals 51. This is only the fourth Malawian locality for this species. There are specimens from Zomba and Chiradzulu in the Natural History Museum (London) and three from the Nyika Plateau in the Natural History Museum (Bulawayo).

NATRICITERES OLIVACEA (Peters) — Olive Marsh Snake
Voucher specimens: NMZB 13964, male - Elephant Marsh.
Remarks: Olive brown with a darker vertebral stripe. Ventrals 138, subcaudals 63.

CROTAPHOPELTIS HOTAMBOEIA (Laurenti) — Red-lipped Snake
Voucher specimens: NMZB 13965, subadult male - Elephant Marsh.
Remarks: Ventrals 160, subcaudals 42.

AMPHIBIA
ANURA

PIPIDAE

XENOPUS MUELLERI (Peters) — Tropical Clawed Frog
Voucher specimens: four specimens - Elephant Marsh.

BUFONIDAE

BUFO GUTTURALIS Power — Guttural Toad
Voucher specimens: two specimens - 2 km E of Masasa.

RANIDAE

RANA ANGOLENSIS Bocage — Common River Frog
Voucher specimens: three specimens - Elephant Marsh.

PTYCHADENA ANCHIETAE (Bocage) — Plain Grass Frog
Voucher specimens: two specimens - Elephant Marsh.

PHRYNOBATRACHUS NATALENSIS (A. Smith) — Snoring Puddle Frog
Voucher specimens: one specimen - 2 km E of Masasa.

PHRYNOBATRACHUS MABABIENSIS FitzSimons — Dwarf Puddle Frog
Voucher specimens: five specimens - Elephant Marsh.

HYPEROLIIDAE

AFRIXALUS (BRACHYCNEMIS complex) — Golden Leaf-folding Frog
Voucher specimens: one juvenile - Elephant Marsh.

AFRIXALUS FORNASINII (Bianconi) — Greater Leaf-folding Frog
Voucher specimens: 16 specimens - Elephant Marsh.

ACKNOWLEDGEMENTS

The two anonymous reviewers are thanked for their comments.

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LIFE HISTORY NOTES

African Herp News publishes 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; Common name** (using Bill Branch's *Field Guide to the Snakes and other Reptiles of Southern Africa* for reptiles and Passmore & Carruthers' *South African Frogs* for amphibians, as far as possible); **Keyword** (this should be one or two words best describing the topic of the note, i.e. Reproduction, Avian predation etc.); the **text** (in brief English with only essential references quoted and in abbreviated form); **Locality** (country, province or state, location, quarter-degree grid unit, and latitude and longitude if available; elevation above sea level; use metric distances); **Date** (day, month, year); **Collector(s); Place of deposition and museum accession number** (required if specimens are preserved); Submitted by: **NAME**, address in parentheses. New South African province names must be used.

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AMPHIBIA
ANURA

BUFONIDAE

BUFO PARDALIS
Leopard Toad
SIZE

On 4 August 1995 B. Friedman found a very large Leopard Toad in a suburban garden in Mill Park, Port Elizabeth (3325Dc), South Africa. It was brought by Seth Rubin to the Port Elizabeth Museum where the following details were recorded: Snout-urostyl length 147 mm, midbody width 99 mm, head width 50,7 mm, femur length 51,3 mm, mass 410,7 g. The specimen is alive in captivity and a colour slide has been deposited in the Port Elizabeth Museum herpetological collection.

The Mill Park specimen appears to be the largest recorded for the species, slightly exceeding the 143 mm "maximum size" recorded by Poynton (1964, *Ann. Natal Mus.* 17: 1-334) for an unspecified voucher specimen. Cherry & Francillion-Vieillot (1992, *J. Zool.* (Lond.) 228(1): 41-50) recorded a maximum size of 120-122 mm snout-urostyl length for Western Cape female *Bufo pardalis*. Jacobsen (1989, *A herpetological survey of the Transvaal*, Ph.D. thesis, University of Natal, Durban) listed the following maximum sizes for Transvaal (old provincial boundaries) bufonids: *B. garmani*, female 115 mm snout-vent length (SVL), 130 g; *B. rangeri*, female 100 mm SVL, 103 g; *B. gutturalis*, female 92 mm SVL, 73 g; *Schismaderma carens*, female 83 mm SVL, 48,9 g. *B. pardalis* is thus easily the largest southern African bufonid.

As currently understood the species occurs in two geographical isolates in the Western and Eastern Cape provinces. The records of *B. pardalis* from Mpumalanga province

(Lambiris, 1976, *Arnoldia* (Rhod.) 7(40): 1-3) and KwaZulu-Natal (unspecified locality, 3029Ad; Lambiris, 1989, *Lammergeyer* **39**: 1-210) have not been confirmed by vocalization or additional material, and the Transvaal specimen has been re-identified as typical *B. rangeri* (Jacobsen, *op. cit.*). Lambiris (1989, *op. cit.*), indicated that the "southwestern Cape" population may deserve specific status, and this has been adopted by Duellman (1993, Amphibian species of the world: Additions and corrections, *Univ. Kansas Mus. Nat. Hist. Spec. Pub.* **21**: i-ii, 1-372) under the name *B. cruciger* Schmidt, 1846. However, this name is preoccupied by *Bufo variabilis* var. *crucigera* Eichwald, 1831 (Frost *in litt.*, 21 July 1995).

Submitted by: **W.R. BRANCH** (Department of Herpetology, Port Elizabeth Museum, P.O. Box 13147, Humewood 6013, South Africa).

RANIDAE

PYXICEPHALUS ADSPERSUS
Highveld Bullfrog
JUVENILE GROWTH

In March 1985 a sample of *Pyxicephalus adspersus* tadpoles was collected from a small dam, Dam van Trane (2926Aa2), near Bloemfontein, Free State province, South Africa, and reared in two large aquaria. A random sub-sample of 26 juveniles, all of which metamorphosed within five days of one another, was placed in an outside enclosure (350 x 85 cm) and fed once a week on as many cockroaches as could be eaten within a 30 min period. However, the possibility of additional insects entering the enclosure unnoticed and being consumed cannot be ruled out. Specimens were individually measured and weighed after the five day period (*i.e.* T1) and every second week thereafter. Due to greatly varying growth rates, data for the individual with the maximum gain and the individual with the minimum gain in any period (which may not necessarily have been the same individual), as well as the group average, are presented in Tables 1 to 3. Unfortunately due to the late rains and resulting late metamorphosis (late April 1985), all juveniles became dormant five weeks after metamorphosis.

Two juvenile *P. adspersus* collected at Florisbad Research Station (2826Cc1) in March 1985 were kept with some of the younger Dam van Trane juveniles in a separate outside enclosure. The feeding regime and recording of data was the same.

Growth results for the Dam van Trane sample (referred to as 'T' in the tables) are presented in Tables 1 to 3. It will be noted from Table 1 and 2 that there was a considerable difference between the maximum and minimum development of individuals within the sample, with a higher average initial metamorphose mass than that recorded by Rose (1956, *Afr. Wildl.* **10**: 160) and Van Wyk, Kok & Du Preez (1992, *J. Herpetol. Assoc. Afr.* **40**: 56). Although there was a drop in maximum and minimum mass gains between the second and third period, this was not true for the period as a whole, which reflected a overall increase. This trend was also true for body length (BL), while conversely the body length/mass (BL/M) ratio showed a continued overall decrease. With the constant decrease in the BL/M ratio it was clear that there was a substantial and disproportionate increase in mass over length, which continued with

growth. No cannibalism was observed in this group, possibly because all frogs were of a similar size.

Growth results for the Florisbad sample (referred to as 'F' in the tables) are also presented in Tables 1 to 3. The Florisbad juveniles showed greater mass and length increases between periods when compared to the Dam van Trane sample. This could be attributable to the fact that at least one of the Florisbad specimens was observed consuming smaller conspecifics on two occasions. Even with this additional food intake this specimen came nowhere near the length increase recorded by Grobler (1972. *Arnoldia [Rhod.]* **6**: 1-4).

A considerable difference between the maximum and minimum growth of individuals was recorded for the Florisbad sample, although this cannot be regarded as being true for the natural population. Although length and mass showed steady overall increases, a considerable decrease in the BL/M ratio was recorded. The maximum mass increase of 255%, and maximum length increase of 42%, recorded for the Dam van Trane sample over the 30 day period, were proportionately much smaller than the growth rates given by Van Wyk *et al.* (*op. cit.*) and Grobler (*op. cit.*).

An average BL/M ratio of 13,3 was calculated from data provided by Rose (*op. cit.*) for newly metamorphosed juveniles, and was similar to the BM/L ratio of 13,1 (max.) found in this study (Table 1). At one year of age Rose's (*op. cit.*) juvenile BL/M ratio had dropped dramatically to 0,85, possibly as a result of a liberal feeding regime and resultant rapid growth. Van Wyk *et al.* (*op. cit.*) recorded a higher metamorphose BL/M ratio of 17,5, with an 82% drop to 3,0 after 50 days.

It was concluded that with the potential rapid growth rate of this species, growth rates in captive specimens would probably be unreliable in comparison to those for natural populations. This would largely be due to the variable quantities and types of food provided, as well as the feeding frequency of captive specimens. Any comparison between captive and natural growth rates would also be difficult to make unless detailed dietary studies, coupled with natural food availability, were made for the latter.

Rose (*op. cit.*) noted that newly metamorphosed *P. adspersus* tadpoles gained over 6985% (1,4 to 99,2 g) in mass and 350% in length (20 to 90 mm) during their first year. These figures are probably unlikely for natural populations as juveniles would not feed continuously for a full year or consume the quantities of food offered in captivity. This was confirmed by Rose (*op. cit.*), who stated that another specimen from the same batch was fed on "a less liberal diet" and increased its bulk only 1500 times over the same period. However, this does illustrate the extremely rapid growth potential of juvenile *P. adspersus*. Van Wyk *et al.* (*op. cit.*) noted a 1020% mass increase (1,5 to 16,8 g), and a 93% length (26,3 to 50,9 mm) increase over a 50 day period both in the laboratory and in the wild. A 100% length (25 to 50 mm) increase was recorded by Grobler (*op. cit.*) over an eight day period, with a 180% length (25 to 70 mm) increase over 90 days.

Submitted by: **R. M. DOUGLAS** (Department of Herpetology, National Museum, P.O. Box 266, Bloemfontein 9300, South Africa).

Table 1 Mass (g) increases in recently metamorphosed *Pyxicephalus adspersus*.

Day	Ave. gain	% Incr.	Max. gain	% Incr.	Min. gain	% Incr.
T1	2.63		3.29		2.08	
T15	4.01	52	6.96	111	2.96	42
T30	7.65	90	11.70	68	3.60	21
X		190		255		73
1F	7.68		8.37		7.00	
15F	18.47	140	22.47	168	15.02	114

X = Percentage mass increase between T1 and T30
T = Dam van Trane specimens (n = 26)
F = Florisbad specimens (n = 2)

Table 2 Length (mm) increases in recently metamorphosed *Pyxicephalus adspersus*.

Day	Ave. gain	% Incr.	Max. gain	% Incr.	Min. gain	% Incr.
T1	28.6		31.8		25.0	
T15	31.0	9	36.8		15	27.3
9						
T30	36.9	18	45.2	22	27.8	1
X		29		42		11
1F	37.4		35.0		39.8	
15F	53.7	43	51.9	48	55.5	39

X = Percentage length increase between T1 and T30
T = Dam van Trane specimens (n = 26)
F = Florisbad specimens (n = 2)

Table 3 Body length/mass ratio decreases in recently metamorphosed *Pyxicephalus adspersus*.

Day	Ave. gain	% Incr.	Max. gain	% Incr.	Min. gain	% Incr.
T1	10.95		9.35		13.12	
T15	8.43	-23	5.24	-43	11.66	-11
T30	5.54	-34	3.76	10.60	-9	
X		-49		-59		-19
1F	4.92		4.75		5.00	
15F	3.00	-39	2.46	-48	3.45	-31

X = Percentage body length/mass ratio decrease between T1 and T30
T = Dam van Trane specimens (n = 26)
F = Florisbad specimens (n = 2)

REPTILIA
SAURIA

SCINCIDAE

MABUYA SULCATA SULCATA
Western Rock Skink
REPRODUCTION

A total of 107 *Mabuya s. sulcata* from the south-western Free State province of South Africa, collected from 1972 to 1993, are housed in the collection of the National Museum, Bloemfontein (NMB). Snout-vent length (SVL) was determined on fresh specimens, except for NMB R796 which was measured after fixation and preservation. After dissecting all specimens and examining their reproductive organs it was determined that 43 were adult females (63-80 mm SVL). These were collected in January (n = 4), February (n = 5), March (n = 2), April (n = 3), May (n = 2), June (n = 7), August (n = 8), November (n = 8) and December (n = 4). Fifteen females contained post-ovulatory follicles with embryos (not visible in NMB R4383) and one contained four greatly enlarged pre-ovulatory follicles, each of which was about 20 times larger than any of the smaller follicles. One embryo per female was examined in detail to determine its developmental stage according to Dufaure & Hubert (1961, *Arch. Anat. Microscop. Morphol. Exp.* **50**: 309-328) who studied *Lacerta vivipara*.

Table 1 shows that gravid females containing 2-5 embryos were collected from November to February (summer). The number of embryos per female appears to increase with increasing female SVL: two embryos (67 mm SVL, n = 1), three embryos (63-75 mm SVL, n = 8), four embryos (74-77 mm SVL, n = 3), five embryos (74-78 mm SVL, n = 4).

Seven of the eight females collected in November were gravid (the other specimen had vitellogenic follicles), three of the four December females were gravid (the other had enlarged, stretched oviducts indicating recent parturition), all four January females were gravid, and two of the five February females were gravid (of the other three, two had enlarged, stretched oviducts). The two females collected in March both had stretched oviducts.

Four of the five females collected on 18 November 1995 contained small embryos (stages <27 to 36), while the remaining female had very advanced embryos (stage 39); a similar situation occurred in December and January (Table 1).

The late stage of development of embryos in the November female NMB R4366, together with the early stage of development of embryos in the February female NMB R3162 and the stretched oviducts of the two March females, suggests that parturition occurs from November to March. Females with embryos in advanced stages of development were collected over a three month period, suggesting that at least two litters are produced in a breeding season.

Flemming (1994, *J. Herpetol.* **28**: 334-341) similarly reported that gravid *Mabuya capensis* were collected from October to February in the Free State, and parturition occurred from December to February.

According to FitzSimons (1943, *Transvaal Mus. Mem.* **1**: 1-528) mating occurs in spring and neonates, "usually about 4 in number", are born "towards the end of summer". De Waal (1978) noted that females with "partly to well-developed embryos" were found from November to February, and added that the embryos, "usually five in number", were arranged two in the left and three in the right oviduct. According to notes on catalogue index cards at the National Museum, De Waal determined the number of embryos in only four females, namely NMB R2885 (three embryos), NMB R3107, 3171 and 4366 (all with five embryos) (see Table 1). Branch (1988, *Field Guide to the Snakes and other Reptiles of Southern Africa*, Struik, Cape Town) reported that *M. sulcata* females give birth to 3-5 young measuring 58-65 mm from December to February, and noted that there are "informal reports that they may also occasionally lay eggs". The latter statement may have arisen from the incorrect deduction that enlarged, pre-ovulatory follicles, or post-ovulatory follicles where the embryos are not visible, were in fact eggs. Branch & Bauer (1995, *Herpetol. Nat. Hist.* **3**(1): 47-89) reported that four females (71-76 mm SVL) collected 20-24 October 1991 in the Little Karoo contained 3-5 "enlarged eggs (7-11 mm diameter)", while a female collected on 20 November 1982 at this locality contained 4 "well-developed embryos". They added that four "other smaller females" (65-71 mm SVL) collected in late October 1991 contained "small follicles (<3 mm) and threadlike oviducts indicating that they had not yet reached sexual maturity". The smallest gravid female from the Free State measured 63 mm SVL, while several other gravid females measured 65-69 mm SVL (Table 1). The smallest juveniles in the National Museum's collection were collected in January (NMB R3115; 32 mm SVL, tail broken) and March (NMB R1164; 33 mm SVL, ex-fix, tail broken).

Submitted by: **M.F. BATES** (Department of Herpetology, National Museum, P.O. Box 266, Bloemfontein 9300, South Africa).

Table 1: Reproductive data for 16 female *Mabuya s. sulcata* from the south-western Free State ([1] = according to Dufaure & Hubert, 1961; [2,3] = according to catalogue index cards at the National Museum). Localities are presented as follows: farm name, farm number, administrative district in the Free State.

Cat. no. NMB	SVL (mm)	Date collected	Locality	Grid	Number of embryos	Developmental stage[1]
R4364	68	18 Nov. 74	Dundee (416) Fauresmith	2924Dc4	3 (1+2)	34
R4366	78	18 Nov. 74	Dundee (416) Fauresmith	2924Dc4	5 (2+3)	39
R4383	66	18 Nov. 74	Groenekloof (16) Philippolis	3025Ac4	3 (1+2)	<27
R4371	68	18 Nov. 74	Heilbron (148) Philippolis	3024Bb2	3 (1+2)	33
R4370	69	18 Nov. 74	Heilbron (148) Philippolis	3024Bb2	3 (1+2)	32
R2885	63	29 Nov. 73	Waterhoek (156) Jacobsdal	2925Aa3	3 (1+2)	"partly developed"[2]
R2883	67	29 Nov. 73	Waterhoek (156) Jacobsdal	2925Aa3	2 (1+1)	36
R796	74[1]	4 Dec. 72	Bozrah (449) Fauresmith	2924Da1	4 (2+2)	36
R785	77	4 Dec. 72	Gruisrand (59) Fauresmith	2924Dc2	4 (1+3)	pre-ovulatory
R4461	65	13 Dec. 74	Geluk (498) Philippolis	3025Aa4	3 (1+2)	31
R6424	73	22 Jan. 91	Lockshoek (192) Fauresmith	2925Da3	3 (2+1)	35
R6412	77	25 Jan. 91	Winterspoort (869) Fauresmith	2925Da1	5 (2+3)	40
R3107	74	30 Jan. 74	Zoutpan (722) Fauresmith	2924Cb2	5 (2+3)	40
R3100	75	30 Jan. 74	Zoutpan (722) Fauresmith	2924Cb2	4 (2+2)	39
R3162	75	18 Feb. 74	Weltevreden (126) Jacobsdal	2924Bc3	3 (2+1)	27
R3171	76	18 Feb. 74	Brakpan (18) Jacobsdal	2924Bb1	5 (2+3)	"well developed"[3]

SERPENTES

COLUBRIDAE

PSAMMOPHYLAX RHOMBEATUS RHOMBEATUS
Spotted Skaapsteker
REPRODUCTION

On 8 November 1994 at 17h15 a female *Psammophylax r. rhombeatus* was found lying beside 13 eggs under a rusted iron plate. A second female, under a similar plate, was coiled around 49 eggs. Both snakes were found in short, open grassland about 400 m from a prominent water hole on an opencast coal mine in the Witbank/Middelburg area of Mpumalanga province (26°00'30"S, 29°23'46"E; 1592 m a.s.l.), South Africa.

Female "A" measured 635 mm total length (S.T.L.) and female "B" 666 mm S.T.L. The eggs were all measured with a vernier calliper (0,05 mm). Batch "A", length: mean 26,3 mm, range 25,0-30,1 mm; width: mean 15,2 mm, range 14,0-15,7 mm. Batch "B", length: mean 23,2 mm, range 20,3-30,2 mm; width: mean 13,4 mm, range 12,0-15,8 mm.

Six eggs from batch "B" were put into a transparent container with moist vermiculite and placed in a shoe box. The box was placed in a terrarium to serve as a 'hide' for the females (the eggs were not exposed to light). Neither female showed any signs of "guarding" for the seven days the eggs were in the hide. All remaining eggs were incubated in moist vermiculite (26-31°C). After seven days the other eggs were removed from the females and placed in the incubator, still in the transparent container.

After 31 days four eggs hatched from batch "A". It took four days for all 13 eggs to hatch. (see Table 1). In batch "B" the first egg hatched after 32 days. The balance hatched over a period of nine additional days (Table 2). Two of the 49 eggs went "bad"; they had dried out when opened - one had a fully developed embryo, while the other contained only a cheesy, yellow paste. All hatchlings were measured within two hours of hatching (see Tables 1 & 2).

Broadley (1983, *FitzSimons' Snakes of Southern Africa*, Delta Books, Johannesburg) reported that up to 30 eggs are laid by this species. Whether or not the eggs in batch "B" were all from female "B" is difficult to prove. It is possible that some of the eggs were from a female "C" (? a communal nesting site). This assumption is based on the small size of the hatchlings that hatched from 10 December 1994 up until 16 December 1994 (see Table 2, group A), compared to those from group B. The possible use of the same nesting site by another female has been noted by Hall (pers. comm.) in King William's Town district, Eastern Cape province (3227Cd).

The observed incubation period of batch "A" ranged from 31 to 34 days and batch "B" from 32 to 41 days. Bates (1985, *J. Herpetol. Assoc. Afr.* **31**: 21-22) recorded an upper range of 60 days, while Hall, Haagner & Branch (1994, *African Herp News* **21**: 20-21) gave an upper limit of 46 days. Unfortunately it is not known how long the eggs had already been incubating naturally so as to determine the correct total period.

The egg sizes from batch "A" fall within the range given by Broadley (*op. cit.*), *i.e.* 25-35 x 14-18 mm, but those from batch "B" do not. The latter fall within the range given by Branch (1988, *Field Guide to the Snakes of Southern Africa*, Struik, Cape Town), *i.e.* 20-35 x 12-18 mm.

Most of the hatchlings recorded from batch "B", group "A", are much smaller than those reported by Broadley (*op. cit.*), and are just outside the range given by Marais (1992, *A Complete Guide to the Snakes of Southern Africa*, Southern Books, Johannesburg).

Three unhatched eggs and the apparently unfertilised egg (TM 79594a-d), and four of the hatchlings (TM 79590-79593, including a deformed one), have been deposited in the collection of the Transvaal Museum.

Acknowledgement: Mr W.D. Haacke (Transvaal Museum) is thanked for commenting on the text.

Submitted by: **A.H. DE VILLIERS** (P.O. Box 13304, Leraatsfontein 1038, South Africa).

Table 1: Hatching dates and total length (S.T.L.) measurements (in mm) for *Psammophylax r. rhombeatus* from a clutch of 13 eggs (batch "A").

DATE	9/12/94	10/12/94	11/12/94	12/12/94	MEAN
1 (S.T.L)	187	182	186	184	184.75
2 (S.T.L)	200	186	192	182	190.00
3 (S.T.L)	184	182	165+		183.00
4 (S.T.L)	184	181			182.50
					185.06

+ Excl deformed hatchling

Table 2: Hatching dates and total length (S.T.L.) measurements (in mm) for *Psammophylax r. rhombeatus* from a clutch of 49 eggs (batch "B").

DATE	10/12/94	11/12/94	12/12/94	13/12/94	14/12/94	15/12/94	16/12/94	17/12/94	18/12/94	19/12/94	MEAN
1 (S.T.L.)	157	165	164	156	172	168	160	198	192	200	173.2
2 (S.T.L.)		176	155	****	173	169	155	196	198	200	177.75
3 (S.T.L.)		172		166	160	164	162	194	182	194	174.25
4 (S.T.L.)				162	165	***	170	200			174.25
5 (S.T.L.)					162	163	158				161
6 (S.T.L.)					168	161	164				164.33
7 (S.T.L.)					175	162	162				166.33
8 (S.T.L.)					174	170					172
9 (S.T.L.)					164						164
10 (S.T.L.)					172						172
	157	$\bar{x}$=171	$\bar{x}$=159	$\bar{x}$=161	$\bar{x}$=168.5	$\bar{x}$=165	$\bar{x}$=162	$\bar{x}$=197	$\bar{x}$=190	$\bar{x}$=198	169.91
			GROUP A					GROUP B			

GEOGRAPHICAL DISTRIBUTION

African Herp News publishes brief notes of new geographical distributions (preferably at least 100 km from the nearest published record) of amphibians and reptiles on 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; **Common name** (for source, see Life History Notes); **Locality** (country, province or state, location, quarter-degree grid unit, and latitude and longitude if available; elevation above sea level; use metric distances); **Date** (day, month, year); **Collector(s); Place of deposition and accession number** (required); **Comments** (including data on size, colour and scalation, especially for taxonomically problematic taxa; and nearest published record/s in km; references to be quoted in text); Submitted by: NAME, address (in brackets). Observation records are acceptable only in exceptional circumstances (as in the case of large or easily identifiable reptiles, *e.g.* pythons, tortoises). Records submitted should be based on specimens deposited in a recognised institutional collection (private collection records are discouraged). New South African province names must be used.

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REPTILIA

SERPENTES

COLUBRIDAE

PHILOTHAMNUS SEMIVARIEGATUS SEMIVARIEGATUS (A. Smith, 1840): Spotted Bush Snake; South Africa, Northern Cape province, Kamieskroon district, Skilpad Nature Reserve (30°10'01"S, 17°46'12"E; 3017Bb; 720 m a.s.l.); 7 October 1995; P. le F.N. Mouton; Port Elizabeth Museum, PEM R11865. The specimen was photographed live, and frozen tissues have been deposited in the Museum of Natural Science, Louisiana State University, Baton Rouge, United States of America. A large female (802 + 275 = 1077 mm), active at 15h00 on a warm day (air temp. 25°C) in a bush on the northern slopes of a large granite outcrop. It struck readily during capture. Scalation: 207 ventrals, keeled with a distinct lateral notch; 110 paired subcaudals; a divided anal; 15, 15, 11 dorsal scale rows; 9 supralabials (4-6 entering orbit); 11 right, 10 left infralabials, first pair in contact behind mental, and first five in contact with anterior chin shields; 2+2 temporals; 1 preocular; 2 postoculars; 1 prenasal; 1 postnasal; and 1 loreal.

The specimen has a bright and unusual colouration. The top and sides of the head are blue green, with a yellow infusion on the upper labials; the throat and neck are bright lemon yellow, which extends onto the ventrum, progressively fading towards the posterior (although the central part of every ventral is infused with yellow); the subcaudals are yellow-grey, brighter than the hind belly. The front quarter of the back bears approximately nine diagonal bars, comprising scattered black and blue-grey

scales, separated by pale green-grey interspaces; the bars fade at mid-body to a uniform blue-grey back on the hindbody. The interstitial skin of the forebody is black.

Haacke (1985, *J. Herpetol. Assoc. Afr.* **31**: 7-9) reviewed the few scattered records known from Namaqualand and Namibia, noting a southern limit for museum vouchers from Springbok (2917Db), and a positive sight record from Farm Withoek, by the road from Rooifontein and Gamoep (2918Cd). The Skilpad record is therefore the southernmost record for the species in Namaqualand. Its scalation details are comparable to others recorded from the region (Haacke, *op. cit.*). The colour pattern of a Springbok specimen (McLachlan, 1984, *J. Herpetol. Assoc. Afr.* **30**: 11) is similar, but shows a more boldly barred forebody.

Submitted by: **W.R. BRANCH** (Department of Herpetology, Port Elizabeth Museum, P.O. Box 13147, Humewood 6013, South Africa) & **P. le F.N. MOUTON** (Department of Zoology, University of Stellenbosch, Private Bag X1, Matieland 7602, South Africa).

TESTUDINES

TESTUDINIDAE

KINIXYS NATALENSIS Hewitt 1931: Natal Hinged Tortoise; South Africa, KwaZulu-Natal province, five localities: (1) Overvloed farm (2831Ad); February 1993; N. Steele via O. Bourquin; Transvaal Museum, TM 78155, damaged adult female shell containing eggshells; (2) Ulundi (2831Ad); May 1994; G.K. Engelbrecht via O. Bourquin; Natal Parks Board, NPB 4188, sent to Transvaal Museum; (3) Opathe Game Reserve (2831Ad); G.K. Engelbrecht; July 1994 to March 1995; various sight records, some animals marked and released, some photographs taken; (4) Mhlopeni Game Ranch (2930Ab); December 1988 and March 1989; F. Farquharson; University of Durban-Westville collection, two females found drowned; (5) Owen Sithole College of Agriculture game park; (2831Db); December 1988; L.A.C. Hoffman; Owen Sithole College of Agriculture collection, OSCA R 102 (see also photographs and sight records by Hoffman (1990, *The herpetofauna of the Owen Sithole College of Agriculture, Zululand*, Unpublished M.Sc. thesis, University of Natal, Durban).

These records extend the distribution range southwards and in terms of altitude range, and fill a gap in the centre of KwaZulu-Natal. Boycott & Jacobsen (1988, *Durban Museum Novitates* **14**(5): 93-101) indicated that the species is absent from the coastal plain and prefers more rocky, inland regions up to 1000 m a.s.l. (all altitudes given in metres above sea level). Broadley (1993, *Ann. Transvaal Mus.* **36**(6): 41-52) gives an altitudinal range of 300 - 1000 m.

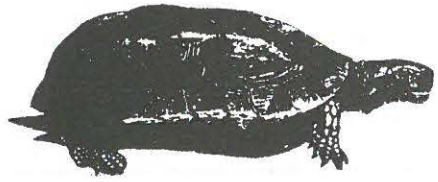
Early records include localities at lower altitudes, such as Manaba (TM 14875), Ntambanana (Hewitt, 1931, *Ann. Natal Mus.* **6**(3): 461-506), Othobothini (TM 19346, 69916), at approximate altitudes of 90 m, 200 m and 100 m respectively. These records were apparently not taken into account when altitude levels for the species were estimated by previous authors. The Owen Sithole Agricultural College game park is between 40 and 80 m a.s.l. Three live females were found at the mouth of the Tugela

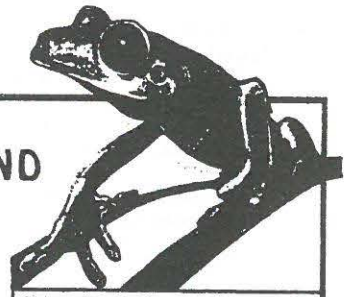
River after floods in 1993, but since these had clearly been transported by the flood waters, the record cannot be used to indicate distribution range. The lower altitude limit is nevertheless likely to be about 50 m a.s.l.

Upper altitudinal limits may well be above 1000 m a.s.l. TM 56755 was collected on "Uitkyk" farm which ranges from 940 to 1255 m, and TM 57520 and AJL 2527 were both collected from Itala, which ranges from 340 m to 1400 m. Weenen Nature Reserve, from which TM 6395 and TM 50682 were collected, rises from 900 to 1236 m in the north where they were found. Above 1200 m however, there it higher rainfall, cooler temperatures, less woody vegetation and denser grass cover, and it is likely that 1200 m is about the upper limit of the species' range in KwaZulu-Natal.

At all collecting sites exposed rocks are generally common, or at least present, with the possible exception of the "Manaba" locality. Manaba is the general name of an extended area in which a trading store called Manaba is located. In general the substrate is of sand, including ancient coastal sand dunes running parallel to the coast. However, if the record emanated from the general area near the base of the Lebombo Mountains, exposed rocks would be present.

Submitted by: **O. BOURQUIN** (Natal Parks Board, P.O. Box 662, Pietermaritzburg 3200, South Africa).





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Kevin M. Wright, D.V.M., is Curator of Amphibians and Reptiles for the Philadelphia Zoological Garden. He has published over thirty articles on amphibians and reptiles, and has been invited to speak on amphibian diseases at the 1994 International Herpetological Symposium, the 1994 Association of American Zoo Veterinarians Conference, and the 1995 North American Veterinary Conference.

Brent R. Whitaker, D.V.M., is Director of Animal Health at the National Aquarium in Baltimore. Dr. Whitaker has devoted his professional life to the study and treatment of disease in aquatic animals. He has been in the forefront of research efforts into the nature of various amphibian diseases, and is much sought after as a speaker, having lectured extensively on his work with amphibian diseases.

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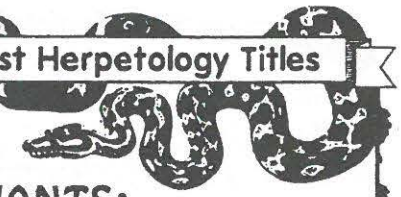

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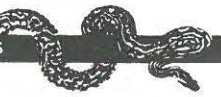

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H. Bernard Bechtel received his B.S. from the University of Pittsburgh and received his M.D. from the Jefferson Medical College in Philadelphia. After being a general practitioner for several years, he took a residency in dermatology and is a Fellow in the American Academy of Dermatology. Herpetology has been Dr. Bechtel's avocation since his teenage years, although his vocation is dermatology. He and his wife have been keeping and breeding snakes for over thirty-nine years, maintaining them for the purpose of studying the anomalies of their patterns, scales, colors, and other genetic variations. Dr. Bechtel has written many scientific papers on this fascinating topic as well as given lectures to various societies and has been a guest speaker at several conventions.

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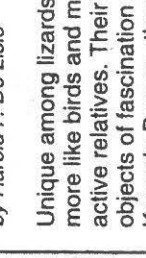
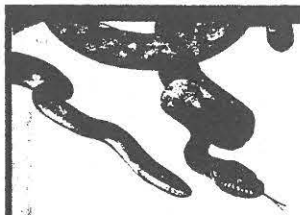


Harold F. De Lisle, Ph.D., is a professor of biology at Moorpark College in California. During his long career in herpetology he has specialized in the behavioral ecology of lizards and snakes, chiefly in the western United States and northern Mexico. He has long maintained a captive colony of monitor lizards and is the author of many papers and articles on wild and captive reptiles.



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Susan Barnard is a graduate of the Santa Fe Community College Biological Parks Program, and she received her bachelor of science degree from the University of the State of New York. She is currently lead keeper of reptiles and amphibians at Zoo Atlanta. Ms. Barnard has served on the board of directors of the American Association of Zoo Keepers and is also a licensed wildlife rehabilitator for the State of Georgia. She has authored over seventy publications, including *A Veterinary Guide to the Parasites of Reptiles: Volume 1, Protozoa*, and *The Maintenance of Bats in Captivity*. Susan Barnard has also been featured on the *National Geographic* Television Special, "Keepers of the Wild."

food habits, community interactions, and interpopulation variation in these factors are considered in detail for the host. Prevalence, intensity, life cycles, and transmission of the symbiotes is described. Core and satellite symbiotes are distinguished, and their effects upon the host evaluated. This represents the first attempt to synthesize the biologies of a host lizard and its parasites (symbiotes) from the viewpoint of community ecology.
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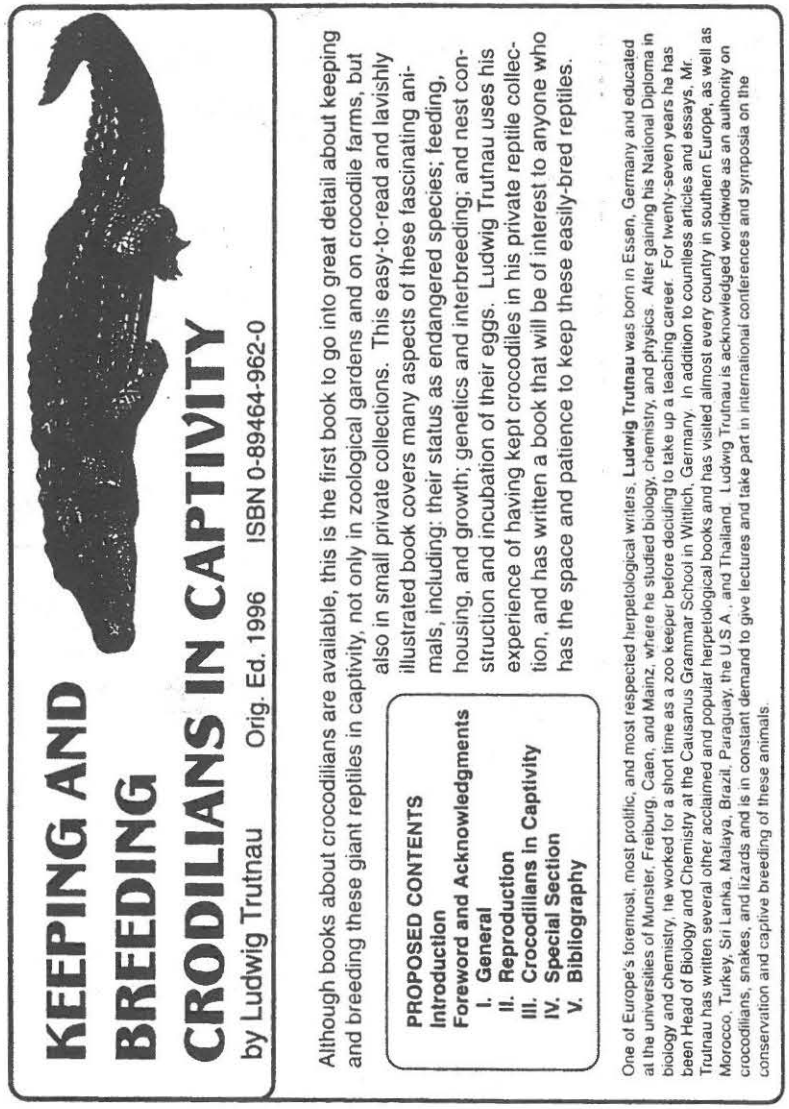

KEEPING AND BREEDING CROCODILIANS IN CAPTIVITY

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Although books about crocodilians are available, this is the first book to go into great detail about keeping and breeding these giant reptiles in captivity, not only in zoological gardens and on crocodile farms, but also in small private collections. This easy-to-read and lavishly illustrated book covers many aspects of these fascinating animals, including: their status as endangered species; feeding, housing, and growth; genetics and interbreeding; and nest construction and incubation of their eggs. Ludwig Trutnau uses his experience of having kept crocodiles in his private reptile collection, and has written a book that will be of interest to anyone who has the space and patience to keep these easily-bred reptiles.

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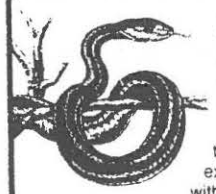
One of Europe's foremost, most prolific, and most respected herpetological writers, **Ludwig Trutnau** was born in Essen, Germany and educated at the universities of Munster, Freiburg, Caen, and Mainz, where he studied biology, chemistry, and physics. After gaining his National Diploma in biology and chemistry, he worked for a short time as a zoo keeper before deciding to take up a teaching career. For twenty-seven years he has been Head of Biology and Chemistry at the Carolinum Grammar School in Wittlich, Germany. In addition to countless articles and essays, Mr. Trutnau has written several other acclaimed and popular herpetological books and has visited almost every country in southern Europe, as well as Morocco, Turkey, Sri Lanka, Malaya, Brazil, Paraguay, the U.S.A., and Thailand. Ludwig Trutnau is acknowledged worldwide as an authority on crocodilians, snakes, and lizards and is in constant demand to give lectures and take part in international conferences and symposia on the conservation and captive breeding of these animals.



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by Carl Kauffeld

Orig. Ed. 1957, Reprint 1995 274 pp. ISBN 0-89464-931-0

Carl Kauffeld, former director and curator of reptiles at the Staten Island Zoo, an expert herpetologist, wrote with interest and excitement about reptiles. In *Snakes and Snake Hunting*, he recounts some of his trips made over the years from the Okeechobee swamps of Florida, to the barren Arizona desert, to New York State's Dutchess County. A retrospective by Robert T. Zappalorti has been added to this reprinted edition.

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SNAKES: The Keeper and the Kept

by Carl Kauffeld

Orig. Ed. 1969, Reprint 1995 286 pp. ISBN 0-89464-936-1

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Mr. Kauffeld offers complete advice for the amateur snake keeper in *Snakes: The Keeper and the Kept*. Information is presented on selecting snakes, providing them with the most favorable environments possible and treating their injuries and diseases. A retrospective by Robert T. Zappalorti has been added to this reprinted edition.

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