

Additional Distribution Records of the Berg Adder *Bitis atropos* in the South-eastern Transvaal and Swaziland

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The berg adder *Bitis atropos* is a small adder normally associated with mountainous areas in southern Africa. In the Transvaal this species is known to occur along the Drakensberg escarpment of the eastern and northern Transvaal. This paper reports on 19 new localities, extending the known range in a southerly and south-easterly direction. These localities are listed with notes on altitude, as well as notes on the sex, colour and reproductive status of the berg adder. Additional museum material and literature records are included to update the currently known distribution of the species in the Transvaal and Swaziland.

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Introduction

The berg adder, *Bitis atropos* (Fig. 1) is a small viper which is normally associated with mountainous areas of South Africa. This is misleading as they have been recorded on rocky areas down to sea level, especially in the eastern Cape Province (Broadley 1983). The berg adder is known from the Cedarberg in the

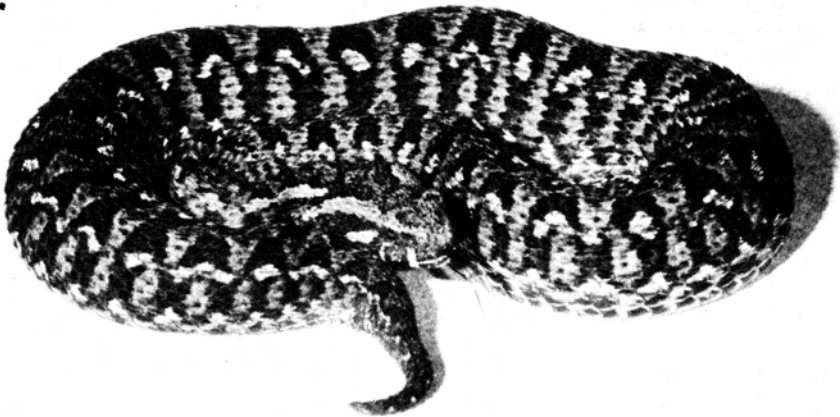


Fig. 1. The berg adder *Bitis atropos*. (Photograph: W.D. Haacke)

western Cape (Botha 1986), all along the mountains in the southern Cape eastwards to East London. It seems to be fairly common in the Natal Drakensberg where it is encountered at altitudes of up to 3 000 m (Broadley 1983; Marais 1985).

In the Transvaal, berg adders have been recorded on the Drakensberg in the eastern Transvaal as well as the Wolkberg in the northern Transvaal. Here they are normally encountered at altitudes exceeding 1 000 m above sea level. The species is variable in colour throughout its range. However, specimens from the eastern Transvaal are frequently a uniform brown to reddish-brown and khaki in colour. FitzSimons (1959) described these as a separate subspecies, *Bitis atropos unicolor*. In view of the variation in colour, size and even scalation in populations, the acceptance of the subspecies was not justified (Broadley 1983).

Further north, the species is also known from the Inyanga Highlands, the Chimanimani Mountain and the Himalaya Hill in Zimbabwe. Recently a specimen was collected at the Mucrera River in the Chimanimani Mountain in Moçambique (Broadley *pers. comm.*). This represents the first record for Moçambique and as the Chimanimani Range extends eastwards, it is surmised that this species occurs further east in Moçambique.

Methods

This study was initiated after several berg adders had been collected on the farm Duurstede 361 in the district of Barberton during October 1985. These represented a new locality and it was decided to look at the possibility of the species occurring along the escarpment of the Swaziland border.

The study area chosen extended from Mandendeka Kop in the north to Mlembe Kop in the south. Subsequent visits to this mountain range followed and further collecting was done at Makwane-, Hout- and Bell's Kop. The farms in the area were traversed on foot and stones were systematically overturned in search of specimens. Care was taken to replace the stones in order not to disturb the habitat too much. Where specimens were collected, relevant data was recorded. In some cases obviously gravid females were collected. A total of 14 snakes were kept until the young were born. Data was then recorded on litter sizes, measurements and mass of both the neonates and female. Out of a litter normally one or two would be preserved, representing the locality. The female as well as the rest of the litter was subsequently released on the original site of capture. The preserved specimens were donated to the herpetology collection of the Transvaal Museum, Pretoria.

To summarise the distribution of *Bitis atropos* in the Transvaal and Swaziland, the distribution map is divided into four categories (Fig. 2):

1. The previously known distribution in the Transvaal (Broadley 1983), listing the localities involved.
2. Additional records from the Transvaal Museum, collected subsequent to Broadley's 1983 summary.
3. New localities obtained during this survey along the Transvaal/Swaziland border.
4. Additional literature records.

Habitat

Although no surveys were done on the vegetation during this investigation, Acocks (1975), however, describes the veld-types along the Transvaal/Swaziland border as:

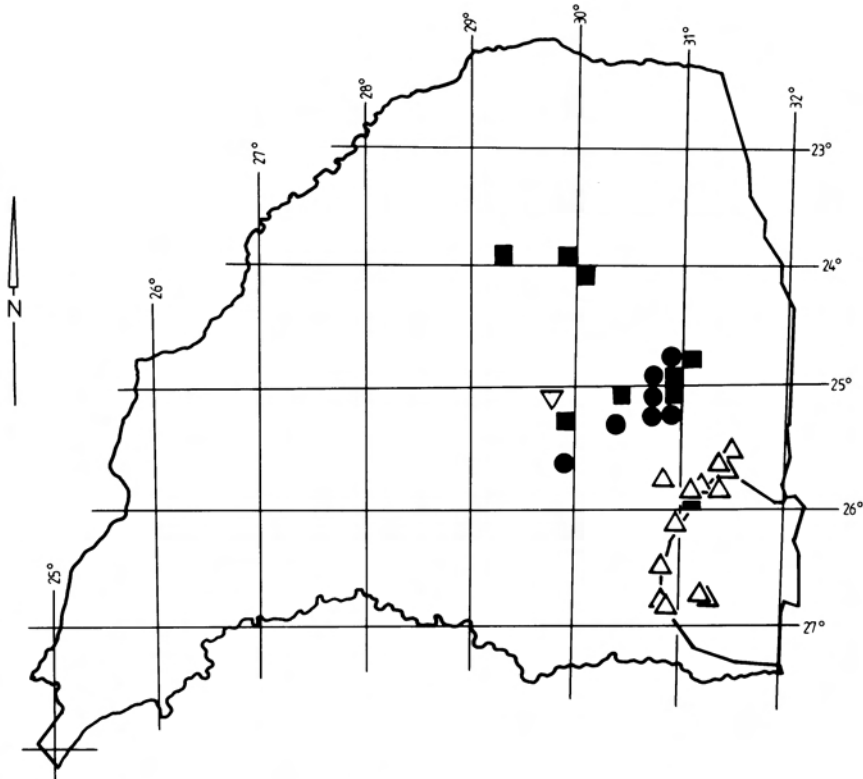


Fig 2. Distribution of *Bitis atropos* according to:

- Broadley (1983)
- △ Haagner and Hurter
- Tvl. Museum specimens
- ▽ Literature records

Piet Retief Sourveld (Veld Type 63) and North-eastern Mountain Sourveld (Veld Type 8) respectively. The former is described as a typical grassland, with patches of bush and shrub forest in sheltered places. Altitudes range from 800–1 900 m and rainfall from 750–1 150 mm per annum, mostly in summer.

On the escarpment, in association with sandstone, small patches of fynbos-like vegetation occur with species such as *Protea roupelliae*, *Erica oatesii*, *E. cerinthoides*, *Restia sieberi* and *Festuca costata* on the slopes. The grassveld is sour and common grass species include *Tristachya leucothrix*, *Eragrostis racemosa* and *Monocymbium cerasiiforme*.

The North-eastern Mountain Sourveld, found along the Drakensberg escarpment, is characterised mainly by sour grassveld, with pure grassveld on the mountain tops, and shrubby thorn veld on the slopes of the escarpment. The sour grassveld is dominated by *Themeda triandra* and other species include *Loudetia simplex*, *Rendlia altera*, *Eragrostis racemosa* and *Monocymbium cerasiiforme*. Shrubs include *Athanasia acerosa*, *Lippia javanica*, *Diospyros galpinii* and *Buddleia salviifolia*.

Results

A summary of all known localities to date follows below:

- TM 55666 Morgenson State Forest, District Pilgrims Rest (2430 Dc)
- TM 56378, 56681, 56840–42, Mount Sheba, District Pilgrims Rest (2430 Dc)
- TM 56280 Long Tom Pass Staircase, District Pilgrims Rest (2530 Ba)
- TM 56281 Long Tom State Forest, District Pilgrims Rest (2530 Ba)
- TM 55514 Serala Forest Reserve, District Letaba (2430 Aa)
- TM 56787 Farm Doornkop 356, District Belfast (2529 Db)
- TM 65068 Farm Zwartkoppie 329, District Belfast (2530 Cb)
- TM 57440 Mauchsberg, Farm de Kuilen 205, District Lydenburg (2530 Ba)
- TM 56270 Farm Rietfontein 255, District Nelspruit (2530 Bd)
- TM 56277 3 km south-east of Sibthorpe Station, District Nelspruit (2530 Bd)
- TM 63855, 63856 Mandandeka Kop, Farm Jeppe's Reef 334, District Kamhlushwa (2531 Cb)
- TM 64100, 64101 The Bearded Man, Farm Waiheuwel 360, District Barberton (2531 Cd)
- TM 64050, 64051 Farm Kamlubana 268, District Barberton (2531 Cb)
- TM 64049, 64308, 64309 Farm Amo 259, District Barberton (2531 Cb)
- TM 64053, 64054 Lufafa Kop, Farm Duurstede 361, District Barberton (2531 Cd)
- TM 64052, 64171, 64299–303 Farm Vooruitzicht 374, District Barberton (2531 Cc)
- TM 64055, 64098 Mlembe Kop, Farm Schoonoord 380, District Barberton (2531 Cc)
- TM 64222–26 Makwane Kop, Farm Bettysgoed 213, District Barberton (2630 Bd)
- TM 64304–307 Farm Schoonoord 380, District Barberton (2531 Dc)
- TM 65084 Saddleback Hill, District Barberton (2531 Dc)
- TM 65947 Nelshoogte, Farm Sunnymead 600, District Barberton (2530 Dd)
- TM 66044 Makwane Kop, Farm Oshoek 212, District Eerstehoek (2630 Cb)
- TM 65067 Bell's Kop, Farm The Chine, District Ermelo (2630 Db)
- TM 64349 Farm Evergreen 425, District Piet Retief (2630 Db)
- TM 64056, 64310–312 Farm Strydkraal 438, District Piet Retief (2630 Dd)
- TM 64205 Ntondozi Hill, District Manzini, Swaziland (2631 Ca)
- TM 64315 Makungutsha hill, district Manzini, Swaziland (2631 Cb)
- TM 64058 Kolombo Peak, District Hhohho, Swaziland (2531 Cd)

Hurter (1986) recorded the bite by a large gravid female from the Roose-nekal area (2529 Bb) in the Middelburg (Tvl) district.

Altitude : Most of the specimens collected during this survey were collected at altitudes of 1 600 m to 1 700 m. The additional specimens from the Transvaal Museum were mostly collected at higher altitudes (1 900 m to 2 000 m). It must be taken into consideration that the average altitude of the escarpment along the Transvaal/Swaziland border is lower than the Drakensberg escarpment of the Transvaal.

Colour : Most of the specimens collected in this survey represented Fitz-Simons' (1959) description of *B. atropos unicolor*. Colouration varied from a dull uniform grey to a rusty reddish, although most specimens were of a brownish colour as shown by Marais (1985).

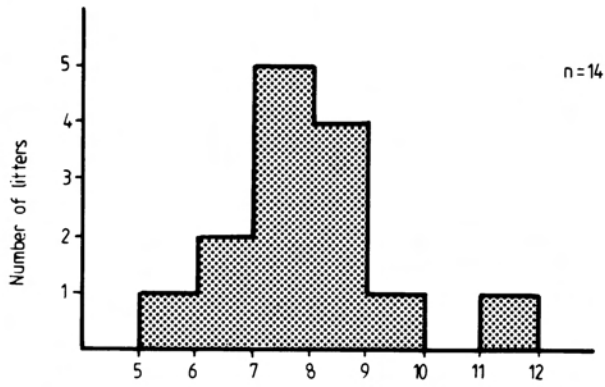


Fig. 3. Mean litter size recorded for *Bitis atropos*

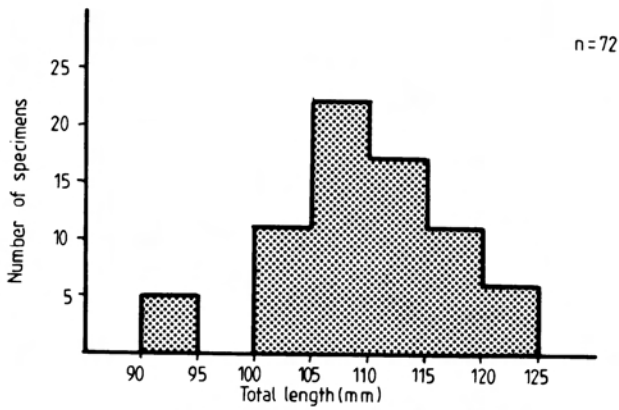


Fig. 4. Neonate lengths recorded for *Bitis atropos*

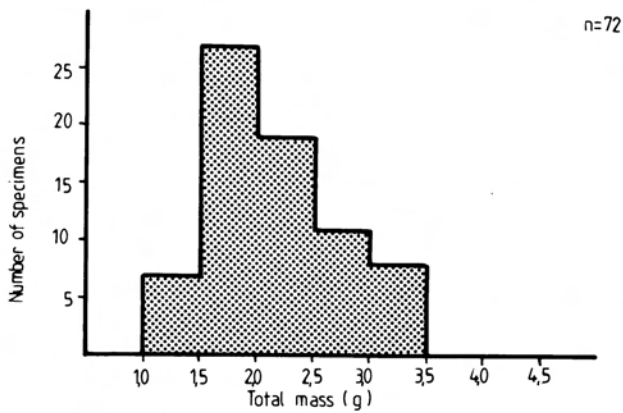


Fig. 5. Neonate mass recorded for *Bitis atropos*

The uniform colouration of the snakes seems to be a product of the environment in which they live, and clearly differs from specimens from other areas from the eastern Transvaal.

Reproductive data: During the study a total of 14 gravid females were collected. These were maintained individually in small cages until birth of juveniles. Most of the births occurred from November to December with noticeably fewer births in January. The mean litter size was 7,8 young (see Fig. 3). The neonates measured $\bar{x} = 109,7$ mm, range 94,5–124,9 mm (see Fig. 4) and weighed $\bar{x} = 2,08$ g, range 1,1–3,5 g (see Fig. 5).

Conclusion

Although the species was previously known from only one locality in the vicinity of the study area, *i.e.* Barberton (Broadley 1983), this study revealed that the berg adder is widely distributed along the escarpment of Swaziland, as far south as Piet Retief. Further work will possibly fill the gaps between the known localities and may show a link between the Swaziland population and those further north-west in the Lydenburg/Belfast districts.

Due to the habitat and altitude, it is safe to assume that the species occurs widely over large areas of western Swaziland. The habitat as well as the altitude is similar to that of the study area. Very little collecting work has been done in Swaziland, but some new localities were recorded during the period. These represented the first specimens recorded within Swaziland.

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