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## A new species of African snake-eyed skink (Scincidae: *Panaspis*) from central and northern Namibia

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### Abstract

A recent molecular revision of the snake-eyed skinks of the genus *Panaspis* Cope, 1868 uncovered extensive cryptic diversity within the *P. wahlbergi* (Smith, 1849) and *P. maculicollis* Jacobsen & Broadley, 2000 species complexes. We here describe an unnamed central and northern Namibian lineage of the *P. maculicollis* group as a new species. We base the description on previously published molecular evidence and newly collected morphological, meristic and coloration data. Members of the group share a conservative morphology and the newly described species is very similar to *P. maculicollis*, from which it differs mostly on the basis of its coloration. This description raises the number of *Panaspis* recognized to 17 species and reinforces the already strong evidence that northern Namibia is a hotspot of reptile diversity.

**Key words:** endemism, *Panaspis namibiana*, arid environments, cryptic species, taxonomy

### Introduction

Southwestern Africa, including Namibia, southern Angola, and the western regions of Botswana and South Africa, is a semi-arid to arid region that is especially rich in terms of reptile diversity (Hermann & Branch 2013; Roll *et al.* 2017). Genera such as *Trachylepis* (Scincidae), *Pedioplanis* (Lacertidae), and *Pachydactylus* (Gekkonidae) exhibit exceptional species diversity in Southwestern Africa, with the majority of constituent species endemic to the subregion. However, numerous other genera have their main centers of diversity in more mesic areas of central Africa and extend southwards chiefly along the east coast of Africa and enter the more xeric southwest only peripherally (Broadley 1966). This is the case of the African snake-eyed skinks of the genus *Panaspis* Cope, 1868 (Medina *et al.* 2016). *Panaspis cabindae* (Bocage, 1866), extending from central Africa to the central highlands in Angola, effectively reaches its southern limit outside of the xeric zone and *P. maculicollis* Jacobsen & Broadley, 2000 has been recorded from the mesic Caprivi Strip (Kavango Region) of northeastern Namibia. Specimens at least nominally referable to *P. wahlbergi* and *P. maculicollis* do, however, enter the arid southwest, with one probable new taxon in parts of central and southern Angola and a second in central and northern Namibia.

The taxonomic and nomenclatural history of African snake-eyed skinks has been unstable in recent decades, with several revisions sequentially presenting new interpretations regarding the generic allocation of recognized species (Fuhn 1969, 1972; Perret 1973, 1975; Greer 1974; Schmitz *et al.* 2005; Jesus *et al.* 2007; Medina *et al.* 2016). Until very recently *Panaspis* sensu lato comprised four subgenera—*Panaspis*, *Afroablepharus* Greer, 1974, *Leptosiphos* Schmidt, 1943 and *Lacertaspis* Perret, 1975. Based on molecular data, Schmitz *et al.* (2005) elevated these subgenera to full genera. Although composition of the latter two has not generally been problematic, the same is not true for *Panaspis* and *Afroablepharus*. The confusion has only recently been mostly resolved by Medina *et al.* (2016) who provided a molecular phylogeny for *Panaspis* and *Afroablepharus*, which revealed that the type

species of the latter genus is nested within a clade including the type species of the former. Based on these results, the authors subsumed *Afroablepharus* into the synonymy of *Panaspis*, identifying considerable species-level cryptic diversity within the genus in the process. The 16 species currently recognized within *Panaspis* are *P. africana* (Gray, 1845), *P. ambonensis* Fuhn, 1973, *P. breviceps* (Peters, 1873), *P. burgeoni* (De Witte, 1933), *P. cabindae*, *P. duruarum* (Monard, 1949), *P. helleri* (Loveridge, 1932), *P. maculicollis*, *P. megalurus* (Nieden, 1923), *P. nimbaensis* Angel, 1944, *P. seydeli* (De Witte, 1933), *P. tancredi* (Boulenger, 1909), *P. thomensis* Ceriaco *et al.* 2018 in Soares *et al.* 2018, *P. togoensis* (Werner, 1902), *P. wahlbergi*, and *P. wilsoni* (Werner, 1914).

In the study of Medina *et al.* (2016) the nominotypical form of *P. wahlbergi* was represented by specimens from southern Mozambique to KwaZulu-Natal and the Free State in South Africa. Nine additional species-level lineages in the *P. wahlbergi* group were also recovered from Malawi, Tanzania (2), Mozambique (4), and the Katanga region of the Democratic Republic of the Congo (2). Medina *et al.* (2016) identified four putatively species-level clades within the *Panaspis maculicollis* group: the nominotypical form (represented in their samples by material from northern Limpopo Province, South Africa and from Cuando Cubango Province in far southeastern Angola), one from northern Mozambique, one from southeastern Limpopo, and one from northern Namibia. Together the twelve new lineages identified by Medina *et al.* (2016) almost equal the current number of recognized *Panaspis* species. This taxonomic lag is testament to the morphological conservativeness of these skinks and highlights the value of molecular phylogenetics for resolving species boundaries within the genus.

Localities sampled by Medina *et al.* (2016) were scattered across Africa south of the Equator, often separated by large distances. The gap between the sampled localities for *Panaspis maculicollis* sensu stricto can be filled with records presented by Jacobsen & Broadley (2000) from northeastern Botswana, northeastern Namibia (Caprivi Strip), southwestern Zimbabwe, and southwestern Zambia. It is less clear if the records of Jacobsen & Broadley (2000) from central and northeastern Mozambique, as well as northeastern Zimbabwe belong to *P. maculicollis* or to the undescribed Mozambican lineage. Likewise, the borders of the nominotypical form and the undescribed Limpopo taxon remain uncertain. However, the fourth member of the *P. maculicollis* clade, that in northern Namibia, is geographically isolated from all others, being separated by approximately 500 km from the nearest records of the nominotypical form (Jacobsen & Broadley 2000; Conradie *et al.* 2016; Pieterse *et al.* 2017) and is also the only species in the group distributed chiefly in areas receiving less than 300 mm of rainfall per year. This form was noted as “the small drab *Panaspis* of Namibia” by Jacobsen & Broadley (2000), who suggested that it probably represented a distinctive species. In order to settle the taxonomic status of this Namibian form, we build on the molecular findings of Medina *et al.* (2016) and use newly collected morphological and coloration data to describe the “small drab” Namibian lineage of *Panaspis* as a new species.

## Materials and methods

Newly collected specimens were preserved in 10% buffered formalin in the field and were subsequently transferred to 70–75% ethanol. Liver tissue was removed before formalin fixation and preserved in 95% ethanol. For mensural and meristic comparisons, we examined high quality photographs of the holotype of *Panaspis maculicollis* from the collection of the Ditsong Natural History Museum (formerly Transvaal Museum) Pretoria, South Africa (TM), and examined other Namibian *Panaspis* specimens deposited in the collections at California Academy of Sciences, San Francisco, California, USA (CAS), Museum for Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA (MCZ), Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, USA (CM), Natural History Museum of Los Angeles County, Los Angeles, California, USA (LACM), Port Elizabeth Museum/Bayworld, Port Elizabeth, South Africa (PEM), Iziko South African Museum, Cape Town, South Africa (SAM), the National Museum of Namibia (formerly Staatsmuseum Windhoek), Windhoek, Namibia (SMW), and the Senckenberg Forschungsinstitut und Naturmuseum, Frankfurt am Main, Germany (SMF).

Specimens were measured with a digital caliper to the nearest 0.1. Lepidosis was examined under a stereomicroscope. Scale nomenclature, scales counts and measurements used in the description follow Broadley (2000), Jacobsen & Broadley (2000) and Soares *et al.* (2018). We measured the following 23 characters: snout–vent length (SVL), from the snout to the vent; tail length (TL), from anal plate to tip of tail, measured only in specimens with complete original tails; head length (HL), from tip of snout to anterior tympanum border; head height (HH), from the base of the maxilla to the top of head; head width (HW), at the widest part of the maxilla; eye-diameter (ED);

eye-tympanum distance (ET); eye-snout distance (ES), from the front of the eye to the tip of the snout; length of the arm (LA); length of the forearm (LFA); length of the leg (LL); length of the foreleg (LFL); distance between limbs (LD), minimum distance between the insertion of the anterior and posterior limbs; number of scale rows at midbody (MSR); number of paravertebral scales (SAD), from the nuchal (excluded from count) to base of the tail; number of scales ventrally (SAV), from the mental (excluded from count) to the anal plate (excluded); number of subdigital scales under Finger-IV (LUFF); number of subdigital scales under Toe-IV (LUFT); number of supralabials (SL), with those widened in subocular position indicated between brackets; number of supraciliaries (SC); nature of contact between parietals (CP); nature of contact between frontoparietals (CFP); nature of contact between prefrontals (CPF); nature of contact between prefrontal and preoculars (CPF/PO). Finally, coloration pattern was reported, and high-resolution photographs of preserved specimens taken. These data were compared with relevant literature on the group (Jacobsen & Broadley 2000) and comparative material of congeners occurring in southern and southwestern Africa, namely *P. cabindae*, *P. wahlbergi* and *P. maculicollis*. All specimens of the new species are listed in the type and additional material sections below. Comparative material of other species is listed in Appendix 1.

## Results

### Systematics

Combining the molecular evidence presented by Medina *et al.* (2016) and new morphological and coloration data from this study, we adopt the general lineage species concept (de Queiroz 1999) and recognize the central and northern Namibian members of the *P. maculicollis* clade sensu lato as a new species:

#### ***Panaspis namibiana* Ceriaco, Branch & Bauer sp. nov.**

(Fig. 1–2)

Chresonymy (includes only citations unambiguously pertaining to specimens referable to the new species, or explicitly stating or depicting its geographic range).

*Ablepharus wahlbergi* (Lawrence 1929:26)

*Ablepharus wahlbergii* (FitzSimons 1943:236; Mertens 1955:74, pl. 23, fig. 143; Mertens 1971:64)

*Panaspis (Afroablepharus) wahlbergi* (Visser 1984:59)

*Panaspis wahlbergii* (Branch 1988:134; Bauer *et al.* 1993:134; Branch 1994:134; Branch 1998:159).

*Panaspis* sp. nov. (Griffin 2003:60).

*Afroablepharus wahlbergi* (Herrmann & Branch 2013:29).

*Afroablepharus* sp. Namibia (Medina *et al.* 2016:411).

**Holotype.** CAS 206967, unsexed subadult, adjacent to Opuwo Road (D3704), 21 km N of Palmweg/Sesfontein Road (D3706) (18.9628333° S, 13.758666° E; WGS-84; Fig. 3), Kunene Region, Republic of Namibia, collected by Aaron M. Bauer, A. C. Lamb, J.L. Wright, P. Moler, W.R. Branch and R.D. Babb on 25 July 1998 (Fig. 1).

**Paratypes.** Ten specimens, all from the Republic of Namibia: MCZ R183767, unsexed subadult, Sesfontein, Paracamp, Kunene Region (19.1322222° S, 13.5877777° E; WGS-84), collected by Aaron M. Bauer and Anthony P. Russell on 11 December 2002; MCZ R190318, unsexed subadult, Kamanjab Rest Camp, Kunene Region (19.629611° S, 14.682417° E; WGS-84) collected by Aaron M. Bauer on 29 November 2011; CM 130371 (Fig. 2), unsexed adult, 80 air km E Sesfontein, 60 Air km WNW Kamanjab, Kunene Region (19.332654° S, 14.369919° E; WGS-84), collected by Paul Freed *et al.* on 3 April 1992 (Fig. 4); LACM 77840, unsexed adult, 40 km WNW Grootfontein, Otjozondjupa Region (19.48333° S, 17.73333° E; WGS-84), collected by R.L. Bezy on 20 November 1973; LACM 77841, 77842, unsexed adults, same collecting data as LACM 77840; PEM R2123, unsexed adult, Kaoko Otavi, Kunene Region (18.3° S, 13.7° E; WGS-84), collected by G. Mclachlan and J. Spence on 14 October 1965; PEM 2124, unsexed subadult, same collecting data as PEM R2123; PEM R10262, unsexed adult, Okahandja, Otjozondjupa Region (21.983333° S, 16.916667° E; WGS-84), collected by R. Bradfield on 23 April 1929; PEM R10273, unsexed adult, same collecting data as PEM R10262.

**Additional material.** SMF 46570, Farm Beula, Kunene Region (19.6608° S, 14.91185° E; WGS-84); SMF

50620, Okahandja, Otjozondjupa Region, (21.983333° S, 16.916667° E; WGS-84); SMF 66144, Warmquelle near Zesfontein, Kunene Region (19.182° S, 13.81384° E; WGS-84); SMF 67050-02, 60 mi. east of Okahandja, Otjozondjupa Region (21.623° S, 17.64941° E; WGS-84); SAM 017483, Kaoko Otavi, Kunene Region (18.3° S, 13.7° E; WGS-84); SAM 017557, Okorosave, Kunene Region (18.17° S, 13.8° E; WGS-84); SAM 046548, Tsumeb Townlands (19.23° S, 17.72° E; WGS-84), Oshikoto Region; PEM R8845, 2 km south of Grootfontein, Otjozondjupa Region (19.3206° S, 18.39306° E, WGS-84); TM 85249, Farm Uisib 422, Otjozondjupa Region (19.5531° S, 17.21667° E, WGS-84); SMW 1946, Namutoni, Oshikoto Region (18.80776° S, 16.940231° E, WGS-84), SMW 1947, Kaoko Otavi, Kunene Region (18.3° S, 13.7° E; WGS-84); SMW 1948, Klein Windhoek, Khomas Region (22.578° S, 17.10083° E, WGS-84); SMW 1949, Windhoek, Khomas Region (22.5613° S, 17.07214° E; WGS-84); SMW 5700, Barab on Palmwag 702, Kunene Region (19.8214° S, 13.7614° E; WGS-84); SMW 6471, Warmquelle, Kunene Region (19.182° S, 13.81384° E; WGS-84).

**Diagnosis.** *Panaspis namibiana* sp. nov. can be distinguished from other members of the genus by the following combination of characteristics: 1) absence of supranasals; 2) ablepharine eye (as defined by Greer 1974); 3) frontoparietals fused; 4) dorsum coppery-brown, with a dorsolateral light stripe extending approximately to midbody, and a thin darker band starting on the temporals and extending to midbody; 5) absence of rows of light spots on the neck; 6) absence of a white ventrolateral stripe.



**FIGURE 1.** Holotype of *Panaspis namibiana* sp. nov. (CAS 206967). Photo by Luis M. P. Ceriaco.

**Description of the holotype.** Unsexed subadult in good condition. Arrangement and relative size of head, body and tail scales typical for *Panaspis*. Robust, cylindrical body with well-developed pentadactyl limbs. Fore- and hind-limbs do not overlap when adpressed against the body. SVL 29.6 mm, tail length 38.6 mm. Head length 5.9 mm, with relatively acuminate snout (HL 184% HW). Other relevant measurements are presented in Table 1. Rostral wider than high, and visible from above. Nasals widely separated behind rostral by frontonasal. Frontonasal acuminate anteriorly, wider than long. Nostrils small, set posteriorly in the nasals but not bordering the postnasal. Prefrontals in contact with one another (atypical considering the type series), hexagonal, contacting frontonasal, loreals, first supraocular, first supraciliary and frontal. Two loreals, the posterior margins of the largest loreal border preocular, which is wider than high. Frontal length shorter than distance between anterior tip of frontal and tip of snout; frontal in contact with prefrontals anteriorly, two supraoculars (one on each side) and frontoparietals.



Frontoparietals fused, in contact with the frontal, three supraoculars, parietals and interparietal. Frontoparietal plus interparietal length 2.2 times length of the frontal. Interparietal quadrangular with visible parietal foramen in anterior part; parietals 1.2 times larger than frontoparietals and contacting each other at the anterior point of the interparietal. Parietals in contact. A pair of large, broad nuchals collectively bordered by a total of nine dorsals. Supraoculars three. Supraciliaries three (left side) and four (right side), third largest. Pretemporals two. Tympanum visible, approximately one fifth the height of the eye. Supralabials six, the fifth and sixth being the suboculars. Ablepharine eye. Infralabials five. Postmental bordering five scales (mental, two primary chin-shields, and one infralabial on each side). Ventral scales smooth. MSR 22, SAD 58, SAV 55. Limbs with five digits; scales on soles of hands and feet smooth. Relative length of digits of manus IV=III>II=V>I relative length of digits of pes IV>III>II>I>V. Finger-IV scales 9 (right side), Toe-IV scales 13 (right side). Tail long, robust and tapering smoothly.

In preservative, background color of flanks and upper side of head, neck, dorsum, legs and tail is coppery brown, with a darker dot in the anterior part of each scale. Posteriorly the tail is lighter, with disjunct dark speckles. A beige stripe, less than one scale wide, limited by the dorsal background color above and by a thin stripe of darker brown below (especially evident under the anterior part of eye), extends from the temporals and runs along the dorsolateral surface to the midbody. Areas below the dark brown stripe become lighter, until they reach the ventral side, which is beige. Supralabials light beige anteriorly and posteriorly, with strong coppery brown markings in the middle. This pattern extends to the infralabials. Venter uniformly light-beige, as are the palmar regions of hands and feet.



**FIGURE 2.** Life photo of *Panaspis namibiana* sp. nov. (CM 130371, paratype), from Kunene Region. Photo by Paul Freed.

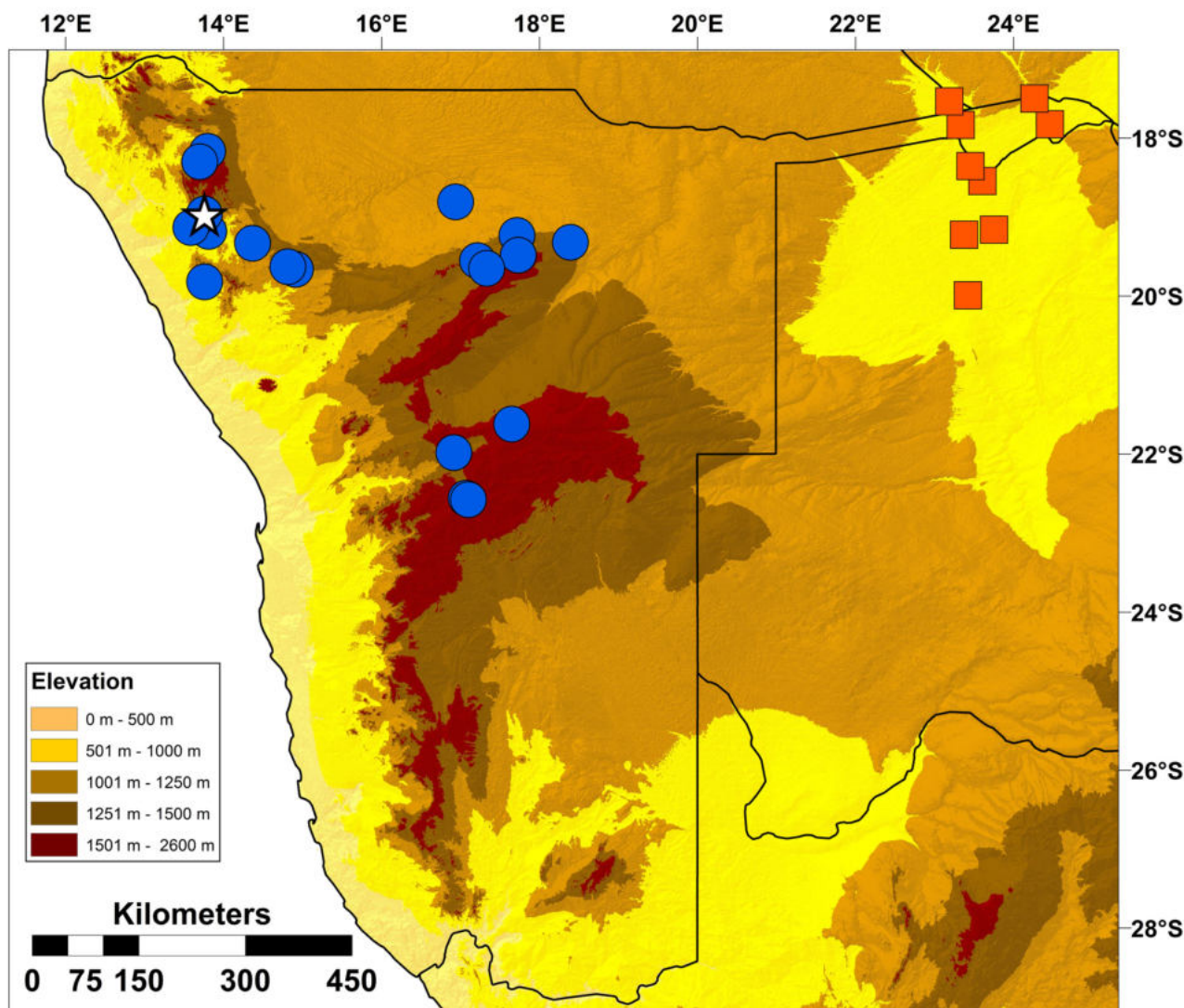
**Variation.** Variation in scalation and body measurements of the paratypes of *Panaspis namibiana* sp. nov. is reported in Table 1. The majority of the paratypes agree entirely with the holotype, except regarding the contact between the prefrontals, which are separated in paratypes CM 130371, LACM 77841, LACM 77842, PEM R10273, and narrowly separated in LACM 77840, PEM R2124 and PEM R 10262.

**Comparison with other South and Southwestern African *Panaspis*.** As the molecular framework of Medina *et al.* (2016) provided evidence of the independence of the *P. namibiana* lineage from all other taxa, we here restrict our morphological comparisons to those named congeners occurring in Namibia, Angola, Botswana and South

Africa. The extreme morphological conservatism of *Panaspis* limits diagnostic characters for most species (except *P. cabindae*) to subtle features, chiefly related to coloration pattern. Comparing *P. namibiana* **sp. nov.** with *P. cabindae*, the newly described species can be easily distinguished by not having supranasals (present in *P. cabindae*), by having an ablepharine eye (preablepharine eye in *P. cabindae*), and by having the frontoparietals fused (divided in *P. cabindae*). In comparison with *P. wahlbergi*, *P. namibiana* **sp. nov.** can be distinguished by its coloration, namely by the lack of the broad black lateral stripe and bordering ventrolateral white stripe extending from the supralabials through the ear to the groin (males) or terminating behind the shoulder (females). *Panaspis namibiana* **sp. nov.** can be distinguished from nominotypical *P. maculicollis* on the basis of the lack of black patch extending from ear to just beyond the shoulder with two or three vertical or diagonal rows of white spots.

**Distribution.** The newly described species is currently only known from central and northern Namibia. Confirmed localities are in three clusters, one in the northwest above the Western Escarpment from Sesfontein in the south to near Opuwo in the north, one in the Otavi Highlands, and a third in central Namibia in the Khomas Hochland (Fig. 3). It is likely that the species occurs in the intervening regions at higher elevations where appropriate habitat is available, but further sampling is needed to confirm its presence.

**Habitat and Natural History notes.** With the exception of Paracamp, near Sesfontein (~650 m), all localities are above 1200 m. The species is terrestrial and is typically found under leaf litter or other debris. Although most specimens were captured by day, MCZ R183767 was active in the leaf litter well after sunset (Fig. 4).



**FIGURE 3.** Geographic distribution of the specimens examined. White Star: Type locality of *Panaspis namibiana* **sp. nov.**; Blue dots: *Panaspis namibiana* **sp. nov.**; Orange squares: *Panaspis maculicollis*. *P. maculicollis* records from Jacobsen & Broadley (2000) and Conradie *et al.* (2016).

TABLE 1. Measurements (in mm) and scale counts of the holotype and paratypes of *Panaspis namibiana* sp. nov. Abbreviations are the same as those described in Materials and Methods.

Specimen	CAS	MCZ	MCZ	MCZ	CM	LACM	LACM	LACM	PEM	PEM	PEM	PEM
Locality	206967 (holotype)	R-183767 (paratype)	R-190318 (paratype)	R-190318 (paratype)	130371 (paratype)	77840 (paratype)	77841 (paratype)	77842 (paratype)	R 2123 (paratype)	R 2124 (paratype)	R 10262 (paratype)	R 10273 (paratype)
	Opuwo road, 21 km N of Palmweg- Sesfontein road	Paracamp, Sesfontein	Kamanjab	80 km E Sesfontein, 60 km WNW Kamanjab	40 km WNW Grootfontein	40 km WNW Grootfontein	40 km WNW Grootfontein	40 km WNW Grootfontein	Kaoko Otavi	Kaoko Otavi	Okahandja	Okahandja
SVL	29.6	30.8	30.1	35.6	39.8	34.8	33.0	35.4	29.3	42.6	38.7	
TL	38.6	Broken	Broken	Broken	Broken	Broken	Broken	Broken	Broken	Broken	50.0	55.7
HL	5.9	5.6	5.9	5.7	5.5	5.5	6.0	5.7	5.5	5.8	5.6	5.6
HH	2.5	2.5	2.0	2.2	2.2	2.4	2.3	2.6	2.3	2.6	3.2	3.2
HW	3.2	3.6	3.9	3.1	3.2	3.7	3.8	3.5	3.2	3.6	3.8	3.8
LA	1.8	2.5	2.3	1.7	1.7	2.0	2.0	2.5	2.1	3.1	3.3	3.3
LEA	1.6	2.2	1.8	2.3	2.3	2.5	2.8	2.3	2.1	2.6	2.8	2.8
LL	3.5	3.5	3.3	2.5	2.6	2.6	2.9	3.2	3.1	3.5	3.8	3.8
LFL	2.8	3.3	2.5	4.1	4.0	4.5	4.0	3.1	3.0	3.3	3.5	3.5
LD	18.3	19.0	18.4	22.1	25.0	20.4	20.1	20.7	17.3	24.8	23.0	23.0
ED	1.2	1.2	1.1	1.1	1.1	0.9	1.0	1.1	1.0	1.2	1.2	1.2
ET	2.7	2.3	2.4	2.2	2.2	2.2	2.3	2.4	2.3	2.3	2.6	2.6
ES	2.3	2.3	2.2	2.3	2.3	2.3	2.2	2.7	2.4	2.3	2.5	2.5
MSR	26	25	24	25	25	25	26	24	24	24	22	22
SAV	64	65	63	64	67	64	65	67	56	66	59	59
SAD	60	64	60	63	65	63	64	68	57	68	58	58
LUFT	15	16	14	15	14	15	16	13	14	15	-	-
LUFF	11	11	10	12	10	10	10	11	9	9	8	8
SC (Left/ Right)	4/4	4/4	4/4	5/5	4/4	4/4	4/5	4/4	4/4	5/5	4/4	4/4
SL	6	6	6	6	6	6	6	6	7	6	6/7	6/7
CP	In contact	In contact	In contact	In contact	In contact	In contact	In contact	In contact	In contact	In contact	In contact	In contact
CPF	In contact	In contact	In contact	<u>Separated</u>	Narrowly separated	Separated	Separated	Broad contact	Narrowly separated	Narrowly separated	Narrowly separated	Separated





**FIGURE 4.** Habitat of *Panaspis namibiana* **sp. nov.** at the paratype locality of Paracamp, near Sesfontein, Kunene Region, Namibia. Photo by Aaron M. Bauer.

**Etymology.** The specific epithet “*namibiana*” refers to the Republic of Namibia, to which the species is apparently endemic, and is applied here as a substantive in apposition. We propose the English vernacular name “Namibian Snake-Eyed Skink.”

## Discussion

This species was first collected in 1926 during the South African Museum expedition to the southern Kaokoveld, during which a total of 157 herpetological specimens were obtained (Lawrence 1927, 1929). The expedition travelled by donkey wagon from the railhead at Outjo to Kaoko Otavi (Gill 1927). Mertens (1955) added several localities and provided the first photograph of a preserved specimen. The geographic disjunction of northern Namibian *Panaspis* from their congeners was first depicted in a quarter degree square map published by Visser (1984), however the first explicit mention of this geographically isolated and distinctive form as a putative new species was not made until 2000 in the context of the description of *P. maculicollis* (Jacobsen & Broadley 2000). Although Griffin (2003) considered northern Namibian *Panaspis* to be a new species (listed by him as “*W. Haacke*, in prep.”), no further progress was made until the work of Medina *et al.* (2016) used a multigene molecular phylogenetic approach to reveal hitherto unsuspected diversity within the *P. wahlbergi* and *P. maculicollis* groups and, in so doing, confirmed the distinctiveness of the “small drab” form of Jacobsen and Broadley (2000).

The description of *P. namibiana* **sp. nov.** raises the number of valid species of *Panaspis* to 17, although, the work of Medina *et al.* (2016) clearly points to additional species in the genus which require formal description. Hopefully, the description of the already identified new lineages can be done in a timely fashion, avoiding the common cases of “taxonomic delays” noted by Soares *et al.* (2018), but certainly the description of *P. namibiana* **sp. nov.** is already a step towards the proper taxonomic and nomenclatural stabilization of the group.

The description of a new species of *Panaspis* for Namibia is also important for the formal recognition of the true diversity of the country and allows a better comprehension of biogeographic patterns in southwestern Africa.

In recent years many new species of reptiles, some of them endemic, have been described from the country, as for example in the genus *Pachydactylus* among lizards (Bauer *et al.* 2002, 2006; Bauer & Lamb 2003; Bauer 2010; Branch *et al.* 2011; Heinicke *et al.* 2011), *Telescopus* among snakes (Haacke 2013), and *Homopus* among chelonians (Branch 2007), while other descriptions and revisions are currently being prepared, reinforcing the status of the country as a hotspot of reptile diversity (Herrmann & Branch 2013; Roll *et al.* 2017).

The distribution of *Panaspis namibiana*, sp. nov. in northern and central Namibia is coincident with both the area of highest species richness among indigenous Namibian reptiles and with the area highest richness of those reptiles of conservation concern (Griffin 2000). As data on demography and other biological data are lacking, the conservation status of the new species must be based primarily on distributional data. With numerous localities across a large extent of occurrence, and presumably a large area of occupancy IUCN Red List guidelines would imply a status of Least Concern. Griffin (2003) suggested that this species should occur in Etosha National Park, the Waterberg Plateau Park, Von Bach Recreation Resort and the Daan Viljoen Game Park near Windhoek. Although its presence has not been verified in all of these areas, it is likely that, regardless of potential threats elsewhere in its range, *P. namibiana* sp. nov. is adequately protected at multiple sites within the Namibian protected areas network.

## Acknowledgments

The authors thank the help and support of various museums and their respective curators, collection managers and technicians, who allowed the access to the specimens consulted in this paper, namely Lauretta Mahlangu (TM), Jofred Opperman (SAM), Werner Conradie (PEM), Mathilda Awases (SMW), José Rosado (MCZ), Steve Rogers (CM), Lauren Scheinberg (CAS), Greg Pauly (LACM), and Gunther Köhler (SMF). From Namibia we want to thank to Mike Griffin, Toivo Uahengo, and Timoteus Iita Matheus of the Directorate of Scientific Services, Ministry of Environment and Tourism, Republic of Namibia, for supporting the field surveys and providing the appropriate research and export permits. Our acknowledgments are extended to the various colleagues that contributed to the collection of the type specimens, as well all other additional material used in this study. Paul Freed kindly provided a life photograph of one of the paratypes. Phil Pastor contributed to earlier versions of this manuscript. Aniruddha Datta-Roy, Sven Mecke, Philipp Wagner, Werner Conradie and an anonymous reviewer provided useful comments to the manuscript. This work was funded by US National Science Foundation and a grant from the JRS Biodiversity Foundation to AMB and David C. Blackburn grants to AMB (NSF DEB-1556255, DEB 1555968, and EF 1241885 (subaward 13-0632)).

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#### APPENDIX 1. Specimens from southwestern species of *Panaspis* examined for comparison.

(all representatives of the newly described taxon are listed under the “Holotype”, “Paratypes” and “Additional material” sections in the Results)

*Panaspis cabindae*—ANGOLA: CAS 258403–408; AMNH R40671, 40718, 48502, 48504.

*Panaspis maculicollis*—NAMIBIA: SMW 4122, 6557; SOUTH AFRICA: TM 76922, TM 76936, 76951, 76929.

*Panaspis wahlbergi*—SOUTH AFRICA: CAS 85852, 106017, 156733, 195473–474. 195476–481.