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Distribution and status of reptile species in south-eastern Zimbabwe

Kurt M van Wyk ^a, Bryan Maritz ^a and Bruce W Clegg^b

^aDepartment of Biodiversity and Conservation Biology, University of the Western Cape, Bellville, South Africa; ^bMalilangwe Trust, Malilangwe Wildlife Reserve, Chiredzi, Zimbabwe

ABSTRACT

While the loss of biodiversity in response to anthropogenic drivers is well documented, reptiles are rarely prioritised in global conservation efforts. Although more than 20% of all reptile species are currently listed as threatened, and a growing body of evidence highlights the sensitivity of reptiles to habitat change, basic information on the distribution, natural history, and regional conservation status of African reptiles remains sparse. Habitat loss through agricultural land-use change is regarded as the primary threat to global biodiversity and to southern African reptiles in particular. Arid and semi-arid ecoregions in southern Africa have been identified as areas of global conservation priority for reptiles. However, the status of Zimbabwe's reptiles remains largely unknown. Limited resources and more urgent concerns have hampered what Zimbabwe has been able to achieve with respect to international conservation initiatives. Furthermore, the ecological impacts of recent, wide-scale land-use change in the country have received little attention. As legacies of historical land-use change are acknowledged as determinants of current landscape ecology, addressing the long-term effects of land-use change on Zimbabwe's reptiles is crucial for effective conservation and management. Here we provide a complete account of the reptile taxa recorded in south-eastern Zimbabwe. We discuss sources of spatial and temporal bias in the occurrence dataset and highlight the importance of the region's protected area network for conserving reptile diversity. Our study increases the number of published reptile occurrence records from the region by an estimated 285%.

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Introduction

While the loss of biodiversity in response to anthropogenic drivers is well documented (Butchart et al. 2010; Dirzo et al. 2014), reptiles are underrepresented in global tetrapod

CONTACT Kurt M van Wyk  k.m.vanwyk@gmail.com

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conservation efforts (Roll et al. 2017). Moreover, more than 20% of all reptile species are currently listed as threatened (Cox et al. 2022), and a growing body of evidence highlights the sensitivity of reptiles to habitat change (Keinath et al. 2017; Doherty et al. 2020), yet basic information on the distribution, natural history, and conservation status of most African reptiles remains sparse (Tingley et al. 2016; Tolley et al. 2016). Habitat loss through agricultural land-use change (LUC) is regarded as the primary threat to global biodiversity (Cordier et al. 2021) and to southern African (defined herein as Africa south of the Kunene and Zambezi rivers) reptiles in particular (Masterson et al. 2009; Tolley et al. 2019, 2023a). Furthermore, southern Africa's current protected area network may not overlap adequately with the distribution of reptile species richness and threatened species in the region (Tolley et al. 2019). The impacts of LUC are predicted to increase, exacerbated by human population growth (McKee et al. 2004; Sleeter et al. 2017) and climate change (Jantz et al. 2015; Powers and Jetz 2019; Cordier et al. 2021). Thus, the dual threat posed by mounting overall extinction risk and a lack of baseline information has profound conservation implications for southern Africa's reptile populations.

Arid and semi-arid ecoregions in southern Africa (including portions of south-eastern Zimbabwe, where reptiles constitute a substantial proportion of tetrapod diversity) have been identified as areas of global conservation priority for reptiles (Roll et al. 2017). Zimbabwe is party to the United Nation's Convention on Biological Diversity (CBD) and is thus obliged to regularly report on measures taken to meet the conservation objectives laid out in the Convention and in the country's National Biodiversity Strategy and Action Plan (NBSAP) (Secretariat for the Convention on Biological Diversity 2011; Ministry of Environment, Tourism and Hospitality Industry 2020). However, the status of Zimbabwe's reptiles remains largely unknown (Ministry of Environment, Tourism and Hospitality Industry 2020). Limited resources and the need to address more pressing issues have hampered what Zimbabwe has been able to achieve with respect to international conservation initiatives such as the Great Limpopo Transfrontier Park (Chiutsi and Saarinen 2017). Over the past two decades, wide-scale LUC has occurred across the country (Matsa and Muringaniza 2011; Matondi 2012; Muringaniza et al. 2024), with associated impacts on agricultural productivity, hydrology, and vegetation cover (Zikhali 2008; Scharsich et al. 2017). The ecological impacts of this have received little attention (Matsa and Muringaniza 2011), but legacies of historical LUC have been widely acknowledged as determinants of current landscape ecology (Foster et al. 2003; Garbarino and Weisberg 2020), particularly in arid regions where succession rates are low (Ko et al. 2011). Therefore, addressing the long-term effects of LUC on Zimbabwe's reptiles is crucial for effective conservation and management, as well as compliance with multinational agreements.

Despite these present-day obstacles, Zimbabwe has a rich history of herpetological research and houses one of the largest natural history museum collections of reptile specimens in Africa (Broadley and Broadley 2017; Bates and Branch 2018; Uetz et al. 2019). Such collections have the potential to contribute valuable ecological data, as they frequently span much greater timeframes than typical field surveys and may thus provide an accessible basis for assessments of environmental change (Pyke and Ehrlich 2010; Lister 2011; Schmitt et al. 2019; Shultz et al. 2021). However, their applications to spatial ecology are limited by the completeness of the metadata attached to individual specimens (Nowak et al. 2021). Furthermore, a general decline in the number of new accessions to natural history collections has been observed in recent decades

Table 1. Herpetological surveys conducted in south-eastern Zimbabwe between 1937 and 2023.

	Date	Location	Survey lead
1937–1938	18 Dec – 8 Jan	Chipinge District	Vivian F. FitzSimons
1956	12–15 Dec	Mount Selinda	Donald G. Broadley
1957–1958	28 Dec – 1 Jan	Mount Selinda	Donald G. Broadley
1958	27–30 Dec	Mount Selinda	Donald G. Broadley
1966	29 Nov – 17 Dec	Gonarezhou National Park	Donald G. Broadley
1968	10–27 Jan	Gonarezhou National Park (south)	Donald G. Broadley
1968	18–29 Nov	Mahenye Communal Land	Donald G. Broadley
1974	19–25 Mar	Gonarezhou National Park (south)	Donald G. Broadley
1974	20–21 Nov	Bikita District	Donald G. Broadley
1979	20 Nov – 5 Dec	Chikore, Chipinge District	Donald G. Broadley
1983	16–21 Mar	Chiredzi and Triangle	Donald G. Broadley
1986	18–26 Nov	Chirinda Forest	Donald G. Broadley
1988	27–31 Dec	Triangle	Donald G. Broadley
1994–1995	Dec–Jan	Malilangwe Wildlife Reserve, Chizvirizvi Resettlement Area and Sangwe Communal Land	Craig D. Ferguson
2010	25 Sept – 4 Oct	Chimanimani and Chirinda Forest	James Harvey, Werner Conradie, Louis du Preez, Michael Cunningham
2010	28 Nov – 9 Dec	Malilangwe Wildlife Reserve and Chilo Gorge Safari Lodge	Donald G. Broadley
2021	15–30 Nov	Malilangwe Wildlife Reserve	Kurt M. van Wyk
2022	16 Jan – 28 Feb	Malilangwe Wildlife Reserve	Kurt M. van Wyk
2022	7 Nov – 4 Dec	Malilangwe Wildlife Reserve	Kurt M. van Wyk
2023	23 Feb – 26 Mar	Malilangwe Wildlife Reserve	Kurt M. van Wyk
2023	21 Nov – 17 Dec	Malilangwe Wildlife Reserve	Kurt M. van Wyk

References: FitzSimons 1939; Ferguson 1995; Broadley and Broadley 2017; W. Conradie, pers. comm. 2025.

(Shultz et al. 2021; Li et al. 2023). While advances in ecological modelling have improved our ability to infer species distributions from sparse occurrence data (Lütolf et al. 2006; Araújo et al. 2019), these data are inherently subject to spatial and temporal bias (Barends et al. 2020). Identifying sources of bias is a necessary validation exercise in assessing the utility of occurrence data for regional conservation assessments.

Here, we provide a complete account of the reptile taxa recorded in south-eastern Zimbabwe. The study area encompasses the Zimbabwean components of the Great Limpopo Transfrontier Conservation Area (GLTFCA) and is thus a region of international conservation significance. Formal surveys of the region's herpetofauna, including museum expeditions and ecological surveys, are summarised in Table 1. We supplement the datasets drawn from these surveys with additional occurrence records from museum catalogues (i.e., *ad hoc* collection events) and citizen science platforms, highlighting sources of spatial and temporal bias. We then summarise the regional distribution and global conservation status of each taxon.

Materials and Methods

Study area

We defined the study area as the administrative boundaries encompassing all active Zimbabwean members of the GLTFCA: Chipinge Safari Area (CSA), Chirinda Forest Botanical Reserve (CFBR), Gonarezhou National Park (GNP), Jamanda Community Conservancy (JCC), Malilangwe Wildlife Reserve (MWR), Naivasha CAMPFIRE Area (NCA), Savé

Valley Conservancy (SVC), and the Sengwe-Chipise Corridor (SCC). This area includes the boundaries of Bikita District (Masvingo Province), Chiredzi District (Masvingo Province), Chipinge District (Manicaland Province), and Chipise Ward in Beitbridge District

Localities			
1	A10 Road	41	Clearwater Estate, Chipinge
2	Babblespruit, Chipinge	42	Devure River Bridge
3	Bangala Ranch	43	Dotts Drift
4	Bedford Block, SVC	44	Farfell Coffee Estate, Chipinge
5	Bhenji River, GNP	45	Fishan, GNP
6	Bhenji Weir, GNP	46	Glen Clova, Bikita
7	Bikita	47	Gorwana Pan, GNP
8	Birchenough Bridge	48	Gorwe Pans, GNP
9	Boli School, Matibi II Communal Land	49	Guluene South
10	Bosmans Camp, Malipati, GNP	50	Gulugi Camp, North GNP
11	Bravo 2, Matendere, SVC	51	Gulugi River, GNP
12	Buffalo Bend	52	Gungunyana, Chipinge
13	Buffalo Range	53	Hakamela, MWR
14	Buffels Drift Estate, Chipinge	54	Hammond Ranch, SVC
15	Chagudo, Chipise Communal Land	55	High Syringa Game Park, Triangle
16	Changadzi Bridge	56	Hippo Mine
17	Chefu South, GNP	57	Hippo Valley
18	Chibuwe	58	Houtberg, Chipinge
19	Chibumani Ruins, Bikita	59	HQ Village, MWR
20	Chigwete, SVC	60	Humani, SVC
21	Chikore, Chipinge	61	Ingweni Pans
22	Chikuku, Bikita	62	Jersey Tea Estates, Chipinge
23	Chikwarakwara	63	Junction Gate
24	Chilo Gorge Safari Lodge	64	KayaNyala, Mahenye
25	Chilojo Camp, GNP	65	Kiledo Lodge, Chipinge
26	Chilojo Hill, Fishan, GNP	66	Kwali Camp, MWR
27	Chilomwe Hills, Nwanezi	67	Lower Runde River, GNP
28	Chilongwe	68	Mabalauta Field Station, GNP
29	Chingele Borehole, Matibi II Communal Land	69	Machaniwa Pan, GNP
30	Chipangayi Bridge	70	Mahenye
31	Chipinda Pools, GNP	71	Mahove Camp, GNP
32	Chiredzi	72	Makonde Mananga, GNP
33	Chiredzi River, MWR	73	Makwakwete, Chiredzi
34	Chirinda Forest	74	Malilangwe Dam, MWR
35	Chishakwe Ranch, SVC	75	Malipati
36	Chisumbanje	76	Malugwe Pan, GNP
37	Chitove Camp, GNP	77	Manjinji Pan, Mwanezi
38	Chitza, GNP	78	Marhumbini, GNP
39	Chivilila Falls, Savé River	79	Masarire, Bikita
40	Chivilila, GNP	80	Masasanya Dam, GNP
		81	Masasanya River, GNP
		82	Mase-Mwanezi Confluence
		83	Mashoko Mission, Matsai Communal Land, Bikita
		84	Matendere Ranch, SVC
		85	Mathuli Mananga, GNP
		86	Mkwaseni Irrigation Scheme
		87	Mokore Camp, Mokore, SVC
		88	Mokore, SVC
		89	Moodies Pass
		90	Mount Rudd, Chipinge
		91	Mount Selinda
		92	Msaize, SVC
		93	Mteri Dam
		94	Mtovoti Pan, near Nyala
		95	Musaswi River, Chipinge
		96	Musirizwi River
		97	Mutandahwe
		98	Mutare-Masvingo Road, Gunundwe, SVC
		99	Mutema, Chipinge
		100	Mutirikwe Weir, Triangle
		101	Muwatomba Pools, GNP
		102	Muzite School, Chipinge
		103	Naivasha Pan, GNP
		104	Nduna, MWR
		105	New Year's Gift Estate, Chipinge
		106	Nkwangulatio Causeway, GNP
		107	Ntambambomu Hills, GNP
		108	Nyahode River
		109	Nyahungwe, GNP
		110	Nyala Siding, GNP
		111	Nyamugwe Pan, GNP
		112	Nyamutongwe Hill, GNP
		113	Nyavasikana, GNP
		114	Nyika River
		115	Old Mill, Hippo Valley Estates
		116	Orphan Road, MWR
		117	Palm Tree Place, Chiredzi
		118	Pesu Bridge, Sengwe Communal Land
		119	Pombadzi River, GNP
		120	Pukupela Dip, Sengwe Communal Land
		121	Rossi Pools, GNP
		122	Runde-Tokwe Confluence
		123	Rupangwana
		124	Rupembi Swamp, Chipinge
		125	Rupise Hot Springs
		126	Ruware
		127	Sabi Experimental Station, Chipinge
		128	Sabi Gorge
		129	Samalema Gorge
		130	Samu School, Malapati
		131	Sango Chanurwe, SVC
		132	Sango Chapungu, SVC
		133	Sango Musawezi, SVC
		134	Sango Sabi, SVC
		135	Sango, GNP
		136	Savé-Runde Confluence, GNP
		137	Sazale Pan, GNP
		138	Senuko 2, SVC
		139	Senuko 3 Camp, SVC
		140	Simbiri Dam, MWR
		141	Singita Pamushana, MWR
		142	Sokwe Pans
		143	Svuwure, Ndanga Communal Land
		144	Swimuwini, GNP
		145	Tanganda Bridge
		146	Tanganda Tingamira Estate, Junction Gate
		147	Tembwahata Pan, GNP
		148	Triangle
		149	Tshiturapadi
		150	Tswiza, GNP
		151	Turwe Crossing, SVC
		152	Umkondo Mine, Bikita
		153	Upper Mutondowari River, GNP
		154	Urumbo Pan, GNP
		155	Vleiplaats, Chipinge
		156	Warden's Camp, GNP
		157	Whata Pan, MWR
		158	Xindwanini Camp, Mahenye
		159	Zigambuzi Pool, GNP
		160	Zona Tea Estate, Chipinge

Figure 1.

(Matabeleland South Province; Fig. 1). The region is broadly classified as lowveld (low-elevation, semi-arid savanna), with remnant patches of Afromontane forest at higher elevations. Vegetation units have been mapped and defined in detail for parts of the

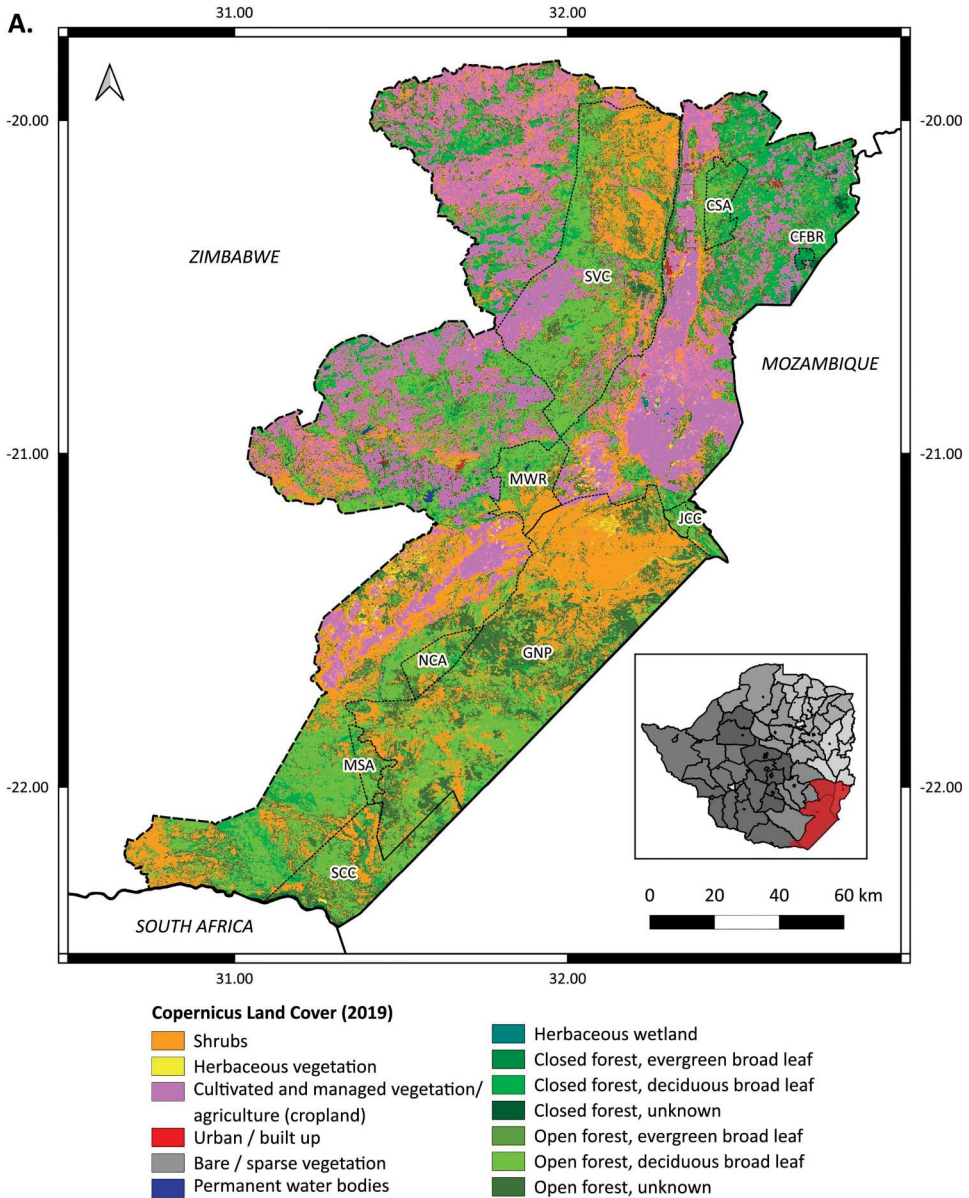


Figure 1A. Study area showing remote-sensed land cover as of 2019, generated using the European Union’s Copernicus Land Monitoring Service (CLMS) information (<https://doi.org/10.5281/zenodo.3939050>), overlaid with protected area boundaries (CSA = Chipinge Safari Area, CFBR = Chirinda Forest Botanical Reserve, SVC = Save Valley Conservancy, MWR = Malilangwe Wildlife Reserve, JCC = Jaimanda Community Conservancy, GNP = Gonarezhou National Park, NCA = Naivasha CAMPFIRE Area, MSA = Malipati Safari Area, SCC = Sengwe-Chipise Corridor), and inset showing location of the study area in Zimbabwe, with districts shaded by province.

study area, and these indicate high local variation in plant community composition and habitat structure (Clegg and Clegg 2001; Clegg and O'Connor 2012; Cunliffe et al. 2012).

The study area is characterised by a hot, wet period typically lasting from November to March, a cool, dry period from April to August, and a hot, dry period from September to October. Rainfall is variable and the region is prone to drought (Chikodzi et al. 2013; Southern Africa Drought Resilience Initiative 2021). In the region, mean annual temperature has increased by as much as 1 °C over the last century (greater than the global average), while mean annual precipitation has declined by an estimated 5% over the same period (Chikodzi et al. 2013; Sithole et al. 2023). Mean annual precipitation varies from 300–400 mm in the lower Savé Valley (Sithole et al. 2023) to over 1 000 mm in parts of Bikita District (Food and Nutrition Council 2022). The study area is drained by three major rivers: the Savé, Runde, and Mwenezi. Land-use is heterogeneous within the study area and includes irrigated agriculture, subsistence cropping, livestock production, and ecotourism. Agricultural activities are concentrated in the central and northern portions of the study area, while the southern portion remains less developed. Historically, Zimbabwe's protected areas were deliberately established in these areas of lower agricultural potential (Jansen et al. 1992). The region's protected areas host abundant megafauna, and the management of these animals contributes significantly to variation in land cover.

Species accounts

We obtained a near-exhaustive dataset of georeferenced occurrence records from museum catalogues, the Global Biodiversity Information Facility (GBIF), the Virtual Museum (VMUS, formerly hosted by the Biodiversity and Development Institute and the FitzPatrick Institute of African Ornithology, Department of Biological Sciences,

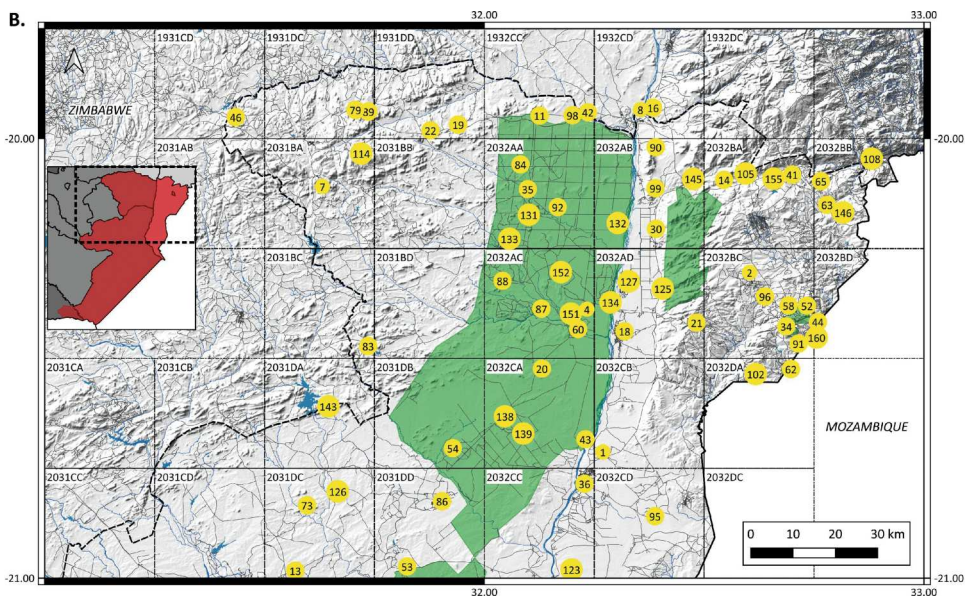


Figure 1B. Localities referenced in this study north of -21.00 latitude.

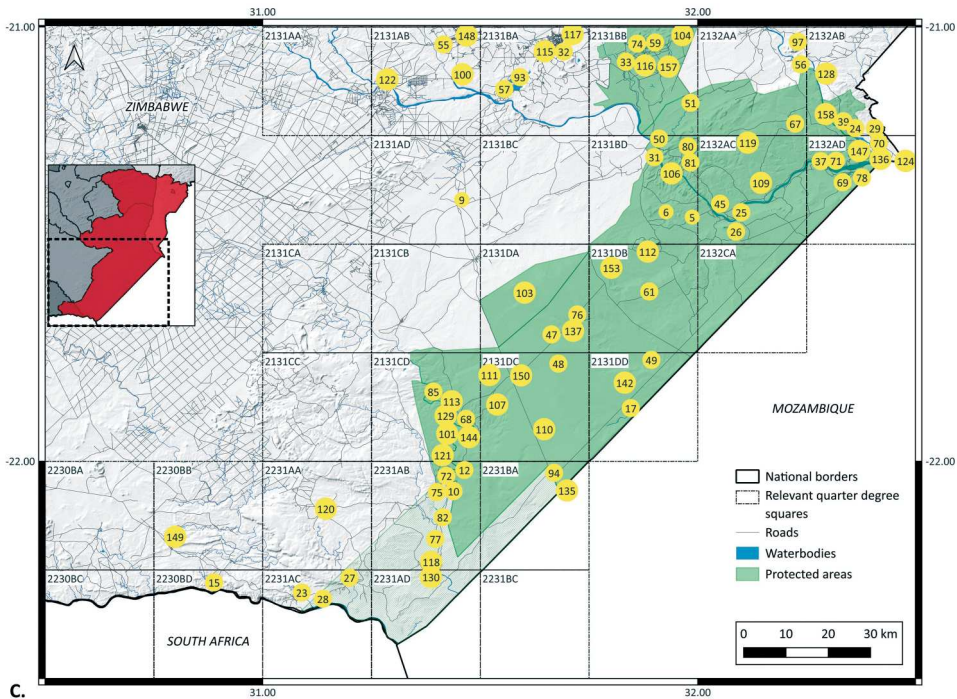


Figure 1C. Localities referenced in this study south of -21.00 latitude.

University of Cape Town, removed from the public domain in January 2025), iNaturalist, social media (including reptile identification groups on WhatsApp and Facebook), unpublished survey data, and personal observations. We requested additional records from the public via social media (private accounts as well as reptile identification groups on WhatsApp and Facebook). We considered reports from personal communications if these were verified with a photograph or submitted by someone skilled in reptile identification. We noted the positional accuracy of each record, as natural history museum collections vary considerably in the quality of their location data (Nowak et al. 2021), which may reduce their value in regional biodiversity assessments. We summarised the accumulation of records from 1818 to 2024 (Fig. 2), and visualised spatial sampling bias by producing a two-dimensional kernel density estimate from the occurrence data (Fig. 3). The final dataset was compiled on 21 September 2024. See Table 2 for a key to the standard collection abbreviations referenced in this study.

For each species, we provide a map of recorded localities, a list of locality names (because occurrence records frequently have low positional accuracy), a comment on the biology and distribution of the species within the region relative to its total distribution, and the current global conservation status as given by the IUCN Red List of Threatened Species (<https://www.iucnredlist.org/>). Where these were not available, we refer to alternative specialist assessments. We provide additional information for species which are not listed as Least Concern. Species accounts were informed by a review of existing natural history literature, including work on specific taxa as well as regional assemblages. Species maps (Figs. S1–119) are available as a digital supplement.

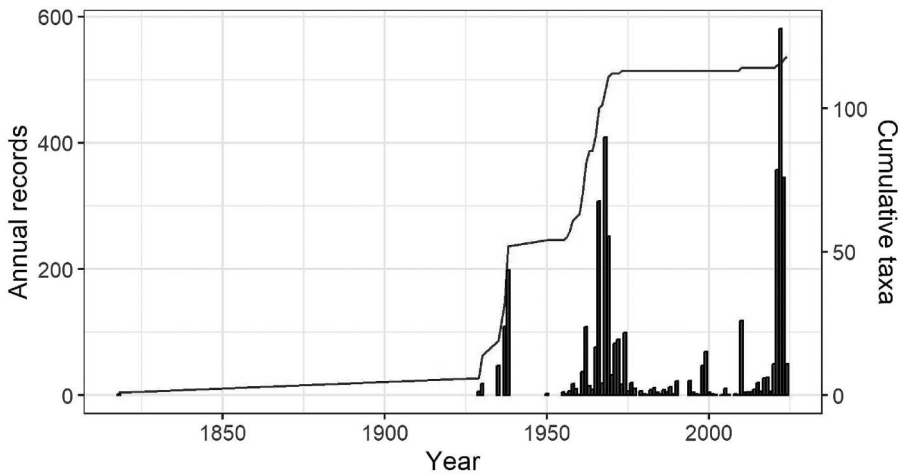


Figure 2. Time series of reptile records obtained from south-eastern Zimbabwe. Vertical bars indicate the number of records obtained per year, while the line indicates the cumulative number of taxa recorded. Records lacking a collection year were omitted from the figure.

Data handling

All maps were created in QGIS (v. 3.34.7, QGIS Development Team 2024). Figure 3 and the bias raster in Figure 2 were created in R (v. 4.3.2, R Core Team 2023) using functions in the ggplot2 (v. 3.4.4, Wickham 2016) and MASS (Venables and Ripley 2002) packages respectively.

Results

Species accounts

We obtained 4 017 occurrence records of 121 valid reptile taxa (i.e., species and subspecies) in the study area, comprising 62 snakes, 44 lizards, eight testudines, six amphisbaenians, and one crocodile. Two of the following accounts (*Trachylepis varia* complex and *Thelotornis capensis*) describe two closely related taxa each, due to uncertainty in the specific identity of multiple records. The distribution of records in the study area exhibits strong sampling bias, with the majority of records coming from protected areas (Fig. 3).

CROCODYLIA

Crocodylidae

Crocodylus niloticus Laurenti, 1768

Southern Nile Crocodile (Fig. 4a, Fig. S1)

Recorded localities: Banyini, MWR; Chigwete, SVC; Chilo Gorge Safari Lodge; Chipinda Pools, GNP; Chiredzi River, MWR; Chishakwe, SVC; Chivilila, GNP; Fishan, GNP; Limpopo River, Sengwe; Machaniwa Pan, GNP; Mahenye; Makonde Mananga, GNP;

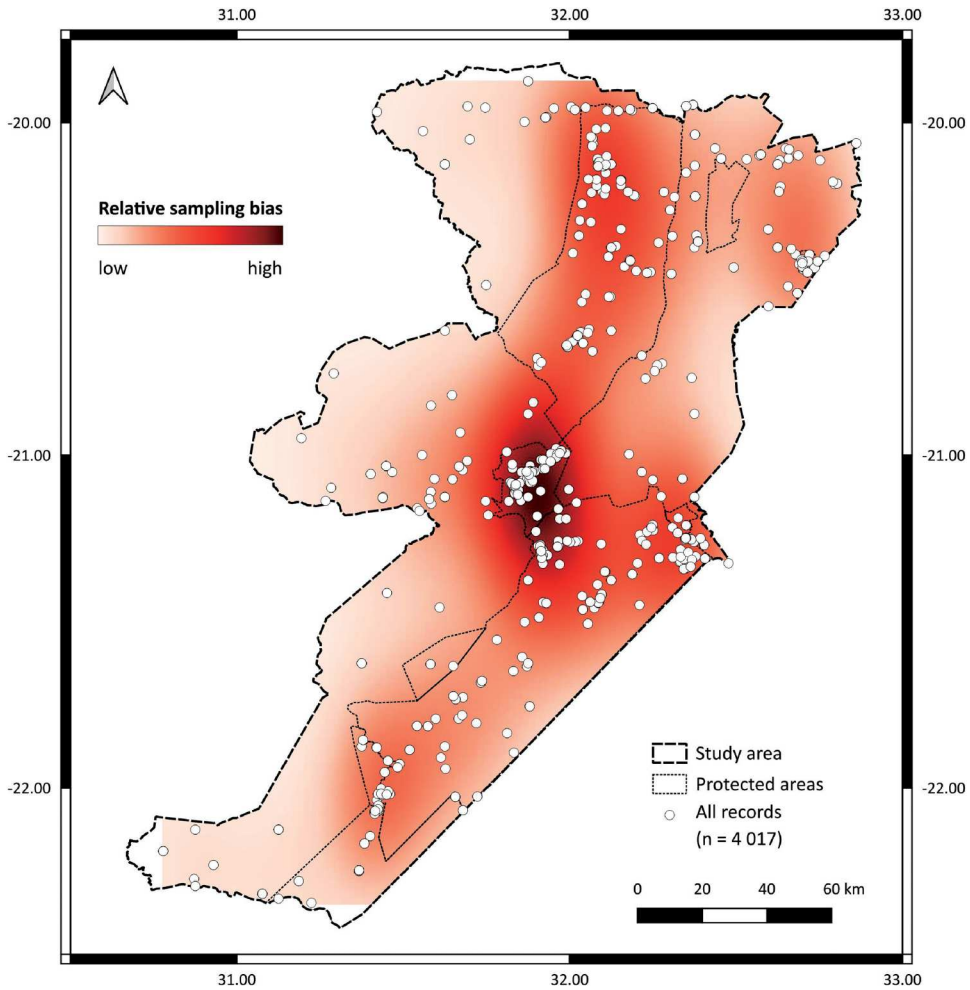


Figure 3. Spatial sampling bias across the study area, derived from a two-dimensional kernel density estimate of the full reptile occurrence dataset.

Table 2. Key to collection abbreviations referenced in this study.

Prefix	Institution
AJL	A. J. Lambiris Herpetological Collection, Durban, South Africa
CAS	California Academy of Sciences, San Francisco, USA
CM	Carnegie Museum of Natural History, Pittsburgh, USA
LACM	Natural History Museum of Los Angeles County, Los Angeles, USA
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge, USA
MNHN	Muséum National d'Histoire Naturelle, Paris, France
NHMUK	Natural History Museum, London, United Kingdom
NMSA	KwaZulu-Natal Museum, Pietermaritzburg, South Africa
NMZB	Natural History Museum of Zimbabwe, Bulawayo, Zimbabwe
NMZB-UM	NMZB specimens previously housed in the Mutare Museum (= Umtali Museum), Mutare, Zimbabwe
PEM	Bayworld (= Port Elizabeth Museum), Gqeberha, South Africa
RBINS	Royal Belgian Institute of Natural Sciences, Brussels, Belgium
TM	Ditsong National Museum of Natural History (= Transvaal Museum), Pretoria, South Africa
UMMZ	Museum of Zoology, University of Michigan, Ann Arbor, USA
USNM	Smithsonian National Museum of Natural History, Washington, DC, USA
ZFMK	Museum Koenig Bonn (= Zoological Research Museum Alexander Koenig), Bonn, Germany
ZMA	Zoological Museum Amsterdam, Amsterdam, Netherlands



Figure 4. Selected examples of crocodile and lizard species recorded in south-eastern Zimbabwe: **a.** *Crocodylus niloticus*; **b.** *Agama armata*; **c.** *Chamaeleo dilepis*; **d.** *Platysaurus intermedius rhodesianus*; **e.** *Hemidactylus* cf. *mabouia*; **f.** *Gerrhosaurus intermedius*; **g.** *Nucras ornata*; **h.** *Panaspis maculicollis*; **i.** *Varanus niloticus*. Image credits: John Gale (a); Rob Burrett (b); Kurt M. van Wyk (c–i).

Malilangwe Dam, MWR; Masasanya Dam, GNP; Mteri Dam; Mutirikwe Weir, Triangle; Muwatomba Pools, GNP; Nduna Dam, MWR; Ngwangulatilo Causeway, GNP; North GNP; Runde River at Warden's Camp, GNP; Sango Sabi, SVC; Savé-Odzi Confluence; Tembwahata Pan, Savé-Runde Confluence, GNP; Turgwe Crossing, SVC; Turgwe River at Humani-Bedford boundary, SVC; Xindwanini Camp, Mahenye. **Comments:** As few museum specimens exist from this region, most of the records listed here are from recent iNaturalist observations. Nevertheless, this subspecies was recorded in the Chiredzi and Runde rivers prior to the 1950s (Sparrow 2018). It is likely present throughout all perennial river systems and major dams of the region. While typically restricted to permanent waterbodies, this subspecies may move in search of water or food (Branch 1998). Young individuals that disperse during the wet season are occasionally found stranded several kilometres from water when the temporary pans dry up. Adults were recorded several hundred metres from the Chiredzi River on MWR, feeding on an elephant carcass (B. Tsuvuka, pers. comm. 2022). While not presently supported, the population in the study area is referable to the subspecies *C. niloticus cowiei* based on Hekkala et al. (2010). **Global conservation status:** Least Concern (Isberg et al. 2019).

SQUAMATA – AMPHISBAENIA

Amphisbaenidae

Chirindia swynnertoni Boulenger, 1907

Swynnerton's Worm Lizard (Fig. S2)

Recorded localities: Chirinda Forest. **Comments:** The type specimen (NHMUK 1946.8.2.36) remains the only individual ever recorded in the region, retrieved from the crop of a Brown-hooded Kingfisher (*Halcyon albiventris*) collected on the edge of Chirinda Forest prior to 1907 (Boulenger 1907). Due to a lack of records since then, despite targeted surveys, it has been suggested that the bird caught the specimen some distance to the east and that the species does not naturally occur in the region (Broadley and Gans 1978a; Broadley 2018). The next closest records are from 15 km east of Chirinda near Espungabera, Mozambique (Broadley 2018), and 55 km north-east of Chirinda in Haroni Forest, Chimanimani District (e.g., CAS 159079). In Mozambique, this species has been recorded from a number of localities on alluvial soils north of the Savé River (Broadley and Gans 1978b; Branch 1998; Branch et al. 2005). Given the spatial uncertainty associated with the type specimen, as well as its age, and the sedentary nature of its predator (Chittenden et al. 2016), we believe the species does occur within the study area but has not been recorded due to its cryptic nature. **Global conservation status:** Least Concern (Tolley and Alexander 2021a).

Monopeltis decosteri Boulenger, 1910

De Coster's Spade-snouted Worm Lizard (Fig. S3)

Recorded localities: 5 km north of Pafuri; Chipinda Pools, north bank, GNP; Mabalauta, GNP; Manjinji Pan, Mwenezi; Malugwe Pan, GNP; Nyala, GNP; Pukupela Dip, Sengwe Communal Land; Sango. **Comments:** This species inhabits deep alluvial soils from extreme south-eastern Zimbabwe into southern Mozambique and adjacent Kruger National Park (Broadley 1997). The distributions of *M. decosteri* and *M. rhodesiana* overlap narrowly at Chipinda Pools in GNP, but *M. decosteri* is not known to occur further north than the banks of the Runde River (Broadley 1997). The two species are morphologically similar with *M. decosteri* distinguished from *M. rhodesiana* by the number of supernumerary dorsal half-annuli (≥ 13 versus ≤ 12), the number of segments per midbody annulus (> 40 versus < 40), and the size and position of the ocular scale (moderate and touching the second supralabial versus absent or small and not touching the second supralabial; Broadley 1997). **Global conservation status:** Least Concern (Tolley and Alexander 2021b).

Monopeltis leonhardi Werner, 1910

Kalahari Spade-snouted Worm Lizard (Fig. S4)

Recorded localities: Malugwe Pan, GNP. **Comments:** The single specimen collected in the study area (NMZB-UM 12201) represents the easternmost record of the species. Elsewhere, it occurs on Kalahari sands along both sides of the Limpopo River, including northern Kruger National Park, South Africa (Pienaar 1978), and from southern and western Zimbabwe through central Botswana into eastern Namibia and parts of the Northern Cape province, South Africa (Broadley et al. 1976; Broadley 1997; Branch 1998). **Global conservation status:** Least Concern (Alexander and Tolley 2021a).

Monopeltis rhodesiana Broadley, Gans and Visser, 1976

Zimbabwe Spade-snouted Worm Lizard (Fig. S5)

Recorded localities: Birchenough Bridge; Buffalo Range; Chipangayi Bridge, Chipinge; Chipinda Pools, GNP; Chipinge; Chiredzi; Fishan, GNP; Hippo Valley; Humani Ranch, SVC; HQ staff village, MWR; Malikango, Matibi 2 Communal Land; Nyanyadzi, Chikwezi River; Rupisi Hot Springs; Ruware, Ndanga; Tanganda River Bridge; Triangle. **Comments:** The most widespread amphisbaenian in the study area, this species is represented by nearly 100 specimens in the NMZB alone. Like *M. decosteri*, this species primarily inhabits deep alluvial soils, but its distribution extends from the Runde River northwards as far as the Zambezi Valley and southern Malawi (Broadley 1997; Branch 1998; Pietersen et al. 2021a). Only one specimen is known from south of the Runde River (NMZB 28813, collected in Malikango, Matibi 2 Communal Land). **Global conservation status:** Least Concern (Alexander and Tolley 2021b).

Zygaspis arenicola Broadley and Broadley, 1997

Maputoland Dwarf Worm Lizard (Fig. S6)

Recorded localities: Gorwana Pan, GNP; Malugwe Pan, GNP; Marhumbini, GNP; Mtovoti Pan, GNP; Nyamugwe Pan, GNP. **Comments:** Within the study area, this species is believed to only occur south of the Runde and Savé rivers (Broadley and Gans 1978b; Broadley and Broadley 1997). Throughout its distribution, it favours alluvial and coastal sands with high leaf litter cover (Branch 1998; Pietersen et al. 2021a). **Global conservation status:** Least Concern (Pietersen et al. 2020).

Zygaspis ferox Broadley and Broadley, 1997

Ferocious Dwarf Worm Lizard (Fig. S7)

Recorded localities: Chirinda Forest. **Comments:** Very little is known of this species. We traced just three specimens collected within the study area (Chirinda Forest: NMZB 1220 and 1221, PEM R10369). It has also been recorded just north of the study area at Silverstreams Estate and Deysbrook Farm, Chimanimani District (Broadley and Broadley 1997). This species is currently thought to be endemic to forest fragments on clay soils in eastern Zimbabwe (Broadley and Broadley 1997). **Global conservation status:** Endangered; the species is believed to be undergoing a continuous decline owing to the widespread loss of its forest habitat (Alexander and Tolley 2021c).

SQUAMATA – LIZARDS

Agamidae

Acanthocercus atricollis (Smith, 1849)

Southern Tree Agama (Fig. S8)

Recorded localities: Bikita; Chikwarakwara, Chipise Communal Land; Mahenye; Mount Selinda; near Babblespruit, Chipinge; north-western SVC. **Comments:** As it is typically a conspicuous species, the paucity of records suggests that this species is confined to wetter woodlands in the north and east of the region. Occasionally seen on roadsides north of Chisumbanje (G. Nolan-Evans, pers. comm. 2023). An arboreal species, it can

be abundant in *Senegalia/Vachellia* and *Brachystegia* woodland (Branch 1998), as well as in suburbia. **Global conservation status:** Least Concern (Spawls 2020).

Agama armata Peters, 1854

Peters' Ground Agama (Fig. 4b, Fig. S9)

Recorded localities: A10 near Checheche, Savé River; Bikita; Birchenough Bridge; Changadzi River; Chilo Gorge Safari Lodge; Chiredzi; High Syringa Game Park, Triangle; Hippo Valley; Mahenye; MWR; Malipati Drift, Mwenezi River; Marhumbini, GNP; Pukupela Dip, Sengwe Communal Land; Rupisi Hot Springs; Ruware, Ndanga; Sango Chapungu, SVC; Savé-Runde Confluence, GNP; Tanganda River; Triangle. **Comments:** This species is inconspicuous but not rare, occurring on friable sandy soils appropriate for constructing their short burrows (Branch 1998). It is sympatric with *Agama aculeata distanti* in northern Limpopo province, South Africa, but the latter taxon is now considered endemic to South Africa and Eswatini (Bates et al. 2023) and all records of *A. aculeata* in south-eastern Zimbabwe are presently treated as *A. armata*. **Global conservation status:** Least Concern (Wagner and Howell 2021).

Agama kirkii Boulenger, 1885

Kirk's Rock Agama (Fig. S10)

Recorded localities: Bangala Dam; Bikita; Changadzi River Bridge; Chibvumani Ruins; Chishakwe Dam, SVC; Chishakwe Ranch, SVC; Hippo Valley Estates; Ruware, Ndanga; Sango Musawezi, SVC. **Comments:** This rupicolous species is frequently encountered on steep granite and paragneiss outcrops throughout much of Zimbabwe (Branch 1998; Howard and Hailey 1999) but is seemingly absent from sandstone outcrops further south (e.g., the Malilangwe Range). **Global conservation status:** Least Concern (Tolley and Alexander 2021c).

Agama mossambica Peters, 1854

Mozambique Agama (Fig. S11)

Recorded localities: Jersey Tea Estates. **Comments:** This species is known from forest edges at a single locality in the extreme north-east of the study area. Elsewhere, it occurs in mesic savanna through central Mozambique to Malawi and Tanzania (Branch 1998; Pietersen et al. 2021a). **Global conservation status:** Least Concern (Alexander and Tolley 2021d).

Chamaeleonidae

Chamaeleo dilepis Leach, 1819

Flap-necked Chameleon (Fig. 4c, Fig. S12)

Recorded localities: Bivis; Birchenough Bridge; Chibvumani Ruins; Chikombedzi; Chilo Gorge Safari Lodge; Chiredzi; Chirinda Forest; Chishakwe, SVC; Fishan, GNP; Hammond Ranch, SVC; Houtberg, Chipinge; Jamanda Community Conservancy; Mahenye; MWR; Marhumbini, GNP; Mantendere Ruins; Masvingo-Mutare Road, Gunundwe, SVC; Mount Selinda; New Year's Gift Estate; North GNP; Nyala Pan, GNP; Pesu Bridge, Sengwe Communal Land; Sango Chanurwe, SVC; Sango Sabi, SVC; Senuko 2, SVC; Tanganda River Bridge; Triangle. **Comments:** This species is widespread but inconspicuous, most readily detected

when crossing roads. The taxonomic status and geographic distributions of the various forms of *C. dilepis* are problematic (Main et al. 2018, 2022; Tilbury 2018). As such, no sub-specific label is assigned here. **Global conservation status:** Least Concern (Tolley 2014a).

Rhampholeon marshalli Boulenger, 1906

Marshall's Pygmy Chameleon (Fig. S13)

Recorded localities: Chirinda Forest; Mount Selinda. **Comments:** In the study area, this species is known only from Chirinda Forest and adjacent Mount Selinda. It may be present in the foothills of the Chimanimani Mountains in the extreme north of the study area. This species is endemic to remnant montane forest fragments in the Eastern Highlands and adjacent Mozambique (Tilbury 2018). **Global conservation status:** Vulnerable; this species is threatened by the extensive and ongoing loss of its forest habitat to timber harvesting (Tolley 2014b).

Cordylidae

Cordylus jonesii (Boulenger, 1891)

Jones' Girdled Lizard (Fig. S14)

Recorded localities: Birchenough Bridge; Devure River Bridge; Dotts Drift, Chipinge; Guluene South, GNP; MWR; Malugwe Pan, GNP; Mteri Dam; Mwenezi; Svuwure, Ndanga Communal Land; Tshiturapasi, Chipise Communal Lands. **Comments:** Field observations suggest that this species is locally common but rarely recorded due to its shy nature and camouflage. It is likely widespread, favouring woodland with abundant hollow trees (Branch 1998). The most recent records are from *Julbernardia globiflora* woodland on MWR and near Mteri Dam. Historically considered a subspecies of *Cordylus tropidosternum*, all material previously listed as *C. tropidosternum* in south-eastern Zimbabwe is now assigned to *C. jonesii* (Broadley and Branch 2002). The biogeographic boundary between the two species is unclear, but *C. tropidosternum* replaces *C. jonesii* in north-eastern Zimbabwe and reaches the southern limit of its distribution on the northern bank of the Savé River in Mozambique (Broadley and Branch 2002). **Global conservation status:** Least Concern (Alexander and Tolley 2021e).

Platysaurus intermedius rhodesianus FitzSimons, 1941

Zimbabwe Flat Lizard (Fig. 4d, Fig. S15)

Recorded localities: Bikita; Birchenough Bridge; Changadzi River; Chibvumani Ruins; Chilo Gorge Safari Lodge; Chilomwe Hills; Chipinda Pools, GNP; Chishakwe Ranch, SVC; Chisumbanje; Chivilila, GNP; Chiwaka Bridge, Bikita; Devure River; Dotts Drift, Chipinge; Fishan, GNP; Hippo Mine, Chipinge; Kwali Camp, MWR; Mahenye; Malilangwe Dam, MWR; Malilangwe Range, MWR; Matendere Ruins; Nduna Dam, MWR; Pesu Gorge, Sengwe Communal Lands; Rossi Pools, GNP; Ruware, Ndanga; Samalema Gorge, GNP; Senuko 2, SVC; Senuko 3, SVC; Singita Pamushana, MWR; Tshiturapasi, Chipise Communal Lands. **Comments:** This subspecies is conspicuous and abundant throughout rocky ranges in the region. Phylogenetic data suggest that *P. i. rhodesianus* may represent a species complex, separate from other *P. intermedius* subspecies (Scott et al. 2004; Alexander and Tolley 2021f). Individuals from the central and southern parts of the study area (on sandstone) closely resemble those from the Limpopo Valley (e.g., Mapungubwe, South

Africa). Although no photographs are available of individuals from the north of the study area, those just beyond the study area to the north-west (on granite; e.g., Great Zimbabwe) are noticeably larger and duller in colouration. Previous assessments of the South African populations suggested that conservation statuses may differ between *P. intermedius* subspecies, although all are now regarded as Least Concern (Tolley et al. 2023b). As such, further research is required to resolve the taxonomic and conservation status of the various populations in south-eastern Zimbabwe. **Global conservation status:** Least Concern (as *Platysaurus intermedius*; Alexander and Tolley 2021f).

Gekkonidae

Afroedura transvaalica (Hewitt, 1925)

Zimbabwean Flat Gecko (Fig. S16)

Recorded localities: Bikita; Chilo Gorge Safari Lodge; Chitove Camp, GNP; Chiwaka River; Devure River Bridge; Fishan, GNP; Kwali Camp, MWR; Mahenye; Malipati Bridge; Malilangwe Range, MWR; Nduna Camp, MWR; Pesu Gorge, Sengwe Communal Land; Siyanje, Beitbridge District. **Comments:** This species inhabits granite and sandstone outcrops throughout much of Zimbabwe and extreme northern Limpopo province, South Africa, often in large aggregations (Branch 1998). It is adaptable and commonly encountered in and around buildings, such as those on MWR which border on the sandstone Malilangwe Range. Jacobsen et al. (2014) found relatively deep genetic divergences between samples from northern Zimbabwe and samples from Limpopo and southern Zimbabwe, although it appears there are no significant gaps in the species' distribution. A phylogenetic review using samples from across Zimbabwe is warranted to resolve the taxonomic and conservation status of this species. **Global conservation status:** Least Concern (Bates et al. 2020).

Chondrodactylus turneri (Gray, 1864)

Turner's Gecko (Fig. S17)

Recorded localities: Bhenji Weir, GNP; Bikita; Birchenough Bridge; Bosmans Camp, Malipati, GNP; Buffalo Range; Chibuwe; Chikwarakwara, Mwenezi; Chilo Gorge Safari Lodge; Chipangayi Bridge; Chipinda Pools, GNP; Chiredzi; Chishakwe Ranch, SVC; Chitove Camp, GNP; Dotts Drift, Chipinge; Fishan, GNP; Guluene South, GNP; KayaNyala, Mahenye; Kwali Camp, MWR; Mabalauta, GNP; Mahenye; Makonde Mananga, GNP; Malipati Bridge; Malugwe Pan, GNP; Marhumbini, GNP; Matendere Ruins; MWR; Nyala, GNP; Nyanyadzi; Rupise Hot Springs; Ruware, Ndanga; Sazale Pan, GNP; Senuko 2, SVC; Siyanje, Beitbridge District; Swimuwini, GNP; Triangle; Tshiturapasi, Chipise Communal Lands; Tswiza, GNP. **Comments:** This species is widespread and commonly encountered crossing roads at night, typically in woodland. It has also been recorded among rock outcrops and human settlements (Branch 1998). **Global conservation status:** Least Concern (Tolley and Alexander 2021d).

Hemidactylus mabouia complex

Tropical House Gecko species complex (Fig. 4e, Fig. S18)

Recorded localities: Birchenough Bridge; Buffalo Bend; Changadzi River Bridge; Chikwarakwara, Mwenezi; Chilo Gorge Safari Lodge; Chilojo Cliffs, GNP; Chilongwe; Chipangayi Bridge, Chipinge; Chipinda Pools, GNP; Chipise; Chiredzi; Chishakwe Ranch, SVC; Chivilila, GNP; Fishan, GNP; Gungunyana, Chipinge; Hakamela, MWR; Hammond Ranch, SVC; Jersey Tea

Estates, Chipinge; Mabalauta, GNP; Machaniwa Pan, GNP; Mahenye; Majinji Pan, Mwenezi; Malipati Bridge; Malugwe Pan, GNP; Marhumbini, GNP; Mathuli Mananga, GNP; Mokore Camp, Mokore, SVC; Mount Selinda; MWR; Nduna Camp, MWR; Ntambambomvu Hills, GNP; Nyala, GNP; Rupise Hot Springs; Samu School, Malipati; Savé-Runde Confluence, GNP; Sazale Pan, GNP; Senuko 2, SVC; Senuko 3, SVC; Siyanje, Beitbridge District; Tanganda River Bridge; Triangle; Tshiturapasi, Chipise Communal Lands; Umkondo Mine, Bikita. **Comments:** Long thought to represent a single, cosmopolitan species, recent work indicates 20 putative species-level lineages within the *H. mabouia* complex, four of which are known from south-eastern Zimbabwe (ZIM1, ZIM2, ZIM4, and ZIM6; Agarwal et al 2021). The south-eastern Zimbabwe animals are arboreal and less frequently encountered around human dwellings than populations of this complex elsewhere (e.g., throughout much of South Africa). On MWR, these lizards appear to be associated with flaking bark. **Global conservation status:** Least Concern (as *H. mabouia*; Howell et al. 2021a).

Hemidactylus platycephalus Peters, 1854

Flat-headed House Gecko (Fig. S19)

Recorded localities: Chibuwe, Chipinge; Chilo Gorge Safari Lodge; Chivilila, Savé River; Dotts Drift, Chipinge; Fishan, GNP; Guluene South, GNP; Mahenye; Marhumbini, GNP; Sokwe Pans, GNP. **Comments:** Within the study area, this species is thought to be associated with baobab trees (*Adansonia digitata*) but is more widely distributed throughout east Africa (Branch 1998; Pietersen et al. 2021a). Some records of *H. platycephalus* may reflect misidentified *H. mabouia* complex, and vice versa. **Global conservation status:** Least Concern (Vences et al. 2021).

Hemidactylus tasmani Hewitt, 1932

Tasman's House Gecko (Fig. S20)

Recorded localities: Bikita; Chishakwe Ranch, SVC; Devure River; Malilangwe Range, MWR. **Comments:** A rupicolous Zimbabwean endemic (Branch 1998), it is locally common along the sandstone Malilangwe Range, where it frequently enters buildings. This species occasionally occurs syntopically with *Afroedura transvaalica*. **Global conservation status:** Least Concern (Verburg et al. 2020a).

Homopholis arnoldi Loveridge, 1944

Arnold's Velvet Gecko (Fig. S21)

Recorded localities: Bikita; Birchenough Bridge; Chiredzi; High Syringa Game Park, Triangle; Mahenye; Malipati; Malugwe Pan, GNP; Sazale Pan, GNP. **Comments:** Historical records of *Homopholis wahlbergii* (Smith, 1849) in Zimbabwe now refer to this species (Broadley et al. 2014). This species is found both in trees and on rock outcrops and is known to take up residence in human dwellings in parts of Zimbabwe (Broadley et al. 2014). **Global conservation status:** Least Concern (Alexander et al. 2021a).

Lygodactylus capensis (Smith, 1849)

Common Dwarf Gecko (Fig. S22)

Recorded localities: Bikita; Birchenough Bridge; Bosmans Camp, Malipati, GNP; Chikore, Chipinge; Chikwarakwara, Chipise Communal Lands; Chilo Gorge Safari Lodge; Chilojo Cliffs, GNP; Chipangayi Bridge; Chipinda Pools, GNP; Chipise; Chiredzi; Chirinda Forest; Chishakwe

Ranch, SVC; Chivilila, GNP; Devure River; Fishan, GNP; Guluene South, GNP; Gungunyana, Chipinge; Hammond Ranch, SVC; KayaNyala, Mahenye; Mahenye; Malipati School, Mwenezi; Malugwe Pan, GNP; Marhumbini, GNP; Mount Selinda; Musirizwi River; Mwenezi River; MWR; North GNP; Nyamugwe Pans; Nyika River; Rupise Hot Springs; Rusitu River; Sango Chaturwe, SVC; Senuko 2, SVC; Silverstreams Waterfall; Siyanje, Beitbridge District; Triangle; Tshiturapadi, Chipise Communal Lands. **Comments:** This is a ubiquitous and adaptable species, widespread in the study area, occurring on woody plants and around buildings throughout its range (Branch 1998). While it is currently the only *Lygodactylus* recorded in the region, *Lygodactylus stevensoni* may occur at the extreme south of the study area (see Discussion). **Global conservation status:** Least Concern (Alexander and Tolley 2021g).

Pachydactylus punctatus Peters, 1854

Speckled Thick-toed Gecko (Fig. S23)

Recorded localities: Birchenough Bridge; Chagudo, Chipise Communal Land; Chilomwe Hills, Mwenezi; Chipinda Pools, GNP; Devure River; Mahenye; Marhumbini, GNP; MWR; Pukupela Dip, Sengwe Communal Land; Rupise Hot Springs; Samu School, Malipati; Savé-Runde Confluence, GNP; Siyanje, Beitbridge District; Tshiturapadi, Chipise Communal Lands. **Comments:** The records reflect the generalist nature of this species, which occurs widely across the northern half of southern Africa, found under cover on sandy soils and on rocky outcrops, especially sandstone ridges (Branch 1998). It is occasionally observed around termite mounds. **Global conservation status:** Least Concern (Alexander et al. 2021b).

Pachydactylus tigrinus Van Dam, 1921

Tiger Thick-toed Gecko (Fig. S24)

Recorded localities: Bikita; Birchenough Bridge; Chilo Gorge Safari Lodge; Chishakwe Ranch, SVC; Devure River; Fishan, GNP; Malilangwe HQ, MWR; Mashoko Mission, Matsai Communal Land, Bikita; Ruware, Ndanga; Savé Valley; Senuko 2, SVC; Siyanje, Beitbridge District. **Comments:** This species is rupicolous and infrequently seen, inhabiting rock crevices among granite and sandstone outcrops in Zimbabwe and northern Limpopo province, South Africa (Branch 1998). **Global conservation status:** Least Concern (Alexander et al. 2021c).

Pachydactylus vansoni FitzSimons, 1933

Van Son's Thick-toed Gecko (Fig. S25)

Recorded localities: Chiredzi; Malugwe Pan, GNP; Savé-Runde Confluence, GNP; Sazale Pan, GNP. **Comments:** The Chiredzi specimen (NMZB-UM 17815) represents the northernmost record of this species. However, this record has a low positional accuracy. This species is terrestrial and rupicolous, found beneath rocks and logs (Broadley 1977; Branch 1998). Its distribution in the study area is considered marginal. **Global conservation status:** Least Concern (Bates and Bauer 2018).

Gerrhosauridae

Broadleysaurus major (Duméril, 1851)

Rough-scaled Plated Lizard (Fig. S26)

Recorded localities: Bangala Ranch; Birchenough Bridge; Chilo Gorge Safari Lodge; Chiredzi; Chishakwe, SVC; Humani Ranch, SVC; Kwali Camp, MWR; Mahenye; Mokore Camp,

Mokore, SVC; MWR; Rupise Hot Springs; Ruware, Ndanga; Sabi Experimental Station, Chipinge; Siyanje, Beitbridge District; Tanganda Bridge; Triangle; Tshiturapatsi, Chipise Communal Lands. **Comments:** This species is shy but locally abundant in the study area. Adults appear to have a high fidelity to their burrows, typically associated with rock outcrops and old termitaria (Branch 1998). We also observed individuals in mature woodland on MWR where they appear to shelter within or beneath fallen trees. **Global conservation status:** Least Concern (Branch et al. 2021a).

Gerrhosaurus flavigularis Wiegmann, 1828

Yellow-throated Plated Lizard (Fig. S27)

Recorded localities: Bikita; Buffalo Bend; Changadzi River; Chikombedzi; Chikwarakwara, Chipise Communal Lands; Chipinda Pools, GNP; Chiredzi; Chishakwe Ranch, SVC; Fishan, GNP; Jersey Tea Estates, Chipinge; KayaNyala, Mahenye; Mahenye; Marhumbini, GNP; MWR; Nduna Camp, MWR; Ntambambombvu Hills; Senuko 2, SVC; Triangle. **Comments:** This species is abundant in the study area and occupies a variety of habitats across its range (Branch 1998). It is often confused with *Gerrhosaurus intermedius*, requiring close inspection of minor morphological characters to distinguish the species. Several citizen science records were discarded for lacking adequate detail to determine which *Gerrhosaurus* species was observed. **Global conservation status:** Least Concern (Howell et al. 2021b).

Gerrhosaurus intermedius Lönnberg, 1907

Eastern Black-lined Plated Lizard (Fig. 4f, Fig. S28)

Recorded localities: Birchenough Bridge; Chikombedzi; Chipangayi Bridge, Chipinge; Chipinda Pools, GNP; Chishakwe Ranch, SVC; Mahenye; MWR; North GNP; Senuko 2, SVC; Tanganda River Bridge. **Comments:** This species is locally abundant, favouring more open habitat than *G. flavigularis* (Branch 1998). As such, it appears to avoid rocky terrain. Adults are occasionally seen basking on road edges with the large head prominently raised. **Global conservation status:** Least Concern (Wagner et al. 2021a).

Matobosaurus validus (Smith, 1849)

Common Giant Plated Lizard (Fig. S29)

Recorded localities: Bhenji River, GNP; Changadzi River Bridge; Chikwarakwara, Chipise Communal Lands; Chilo Gorge Safari Lodge; Chilojo Cliffs, GNP; Devure River Bridge; Hakamela Camp, MWR; Kwali Camp, MWR; Mahenye; Malilangwe Range, MWR; Matendere Ruins; North GNP; Savé-Runde Confluence, GNP; Senuko 2, SVC; Singita Pamushana, MWR. **Comments:** A rupicolous species occupying large rock outcrops throughout the region. It may cross open ground between outcrops (Branch 1998). While common, it does not seem to occur at high densities in the study area and is most often observed in pairs. **Global conservation status:** Least Concern (Alexander et al. 2021d).

Lacertidae

Heliobolus lugubris (Smith, 1838)

Bushveld Lizard (Fig. S30)

Recorded localities: Birchenough Bridge; Buffalo Bend; Changadzi River; Devure River; Fishan, GNP; Mabalauta, GNP; Makonde Mananga, GNP; Matendere Ruins; Mtovoti Pan,

GNP; Nyamugwe Pans; Puzani River, Chikwarakwara, Chipise Communal Lands; Rupise Hot Springs; Siyanje, Beitbridge District; Tanganda Bridge. **Comments:** There are very few recent records of this species within the study area, which represents the north-eastern end of its global distribution (Alexander and Tolley 2021h). Elsewhere, it is commonly encountered on open, compacted sandy plains (Branch 1998). **Global conservation status:** Least Concern (Alexander and Tolley 2021h).

Ichnotropis capensis (Smith, 1838)

Ornate Rough-scaled Lizard (Fig. S31)

Recorded localities: Birchenough Bridge; Fishan, GNP; Malugwe Pan, GNP; Sazale Pan, GNP; Tswiza, GNP. **Comments:** This species is widespread, inhabiting a variety of savanna habitats across its range (Branch 1998), but is infrequently seen. It has not been recorded in the study area since 1974. **Global conservation status:** Least Concern (Alexander et al. 2021e).

Meroles squamulosus (Peters, 1854)

Common Rough-scaled Lizard (Fig. S32)

Recorded localities: Bikita; Birchenough Bridge; Buffalo Bend; Fishan, GNP; Guluene South, GNP; Ingweni Pans; Mahenye; Malipati; Malugwe Pan, GNP; Marhumbini, GNP; Mtovoti Pan, GNP; Puzani River, Chikwarakwara, Chipise Communal Lands; Sango, GNP; Savé-Runde Confluence, GNP; Sazale Pan, GNP; Senuko 2, SVC; Siyanje, Beitbridge District; Triangle. **Comments:** This species is ecologically similar to *Ichnotropis capensis* but is more frequently recorded in the study area, typically on patches of open ground in savanna scrub. **Global conservation status:** Least Concern (Alexander and Tolley 2021i).

Nucras caesicaudata Broadley, 1972

Blue-tailed Sandveld Lizard (Fig. S33)

Recorded localities: Fishan, GNP; Malugwe Pan, GNP; Sazale Pan, GNP. **Comments:** The GNP specimens represent the only Zimbabwean records of this very poorly known species. It is thought to inhabit areas of deep sand from GNP across southern Mozambique and extreme north-eastern South Africa (Branch 1998). The type series was collected among *Hyphaene* palms on the edges of pans, merging into *Terminalia* woodland (Broadley 1972). This species appears to emerge after the first summer rains, thus coinciding with the emergence of termite alates on which it feeds (Branch 1998). This may contribute to the paucity of records, given the poor accessibility of much of its known distribution under wet conditions. **Global conservation status:** Data Deficient; the species has not been recorded since the 1980s (Pietersen et al. 2022).

Nucras holubi (Steindachner, 1882)

Holub's Sandveld Lizard (Fig. S34)

Recorded localities: Fishan, GNP; Masasanya Dam, GNP; Musirizwi River; Pukupela Dip, Sengwe Communal Land. **Comments:** This species inhabits broken rocky terrain in mesic savanna, foraging around grass tussocks and shrubs (Branch 1998; Burger and Tolley 2023a). Broadley (1972) considered *N. holubi* a junior synonym of "*N. taeniolata ornata*". It is therefore unclear what proportion of the NMZB records for *N. ornata* may represent specimens of *N. holubi*. Two specimens (NMZB 4988 and NMZB 4991) were dubiously recorded from Gungungwana, Chipinge District. It is likely that the locality name is incorrect

or the specimens were misidentified, as Gungunyana is beyond the accepted distribution of *N. holubi* and in unlikely habitat (distribution and habitat better fit *N. ornata*; Branch 1998). **Global conservation status:** Least Concern (Alexander and Tolley 2021j).

Nucras intertexta (Smith, 1838)

Spotted Sandveld Lizard (Fig. S35)

Recorded localities: Malugwe Pan, GNP; Mount Selinda; Sango; Sazale Pan, GNP. **Comments:** This species is found in open savanna, usually on sand, across a large elevational range (Branch 1998; Burger and Tolley 2023b). **Global conservation status:** Least Concern (Alexander and Tolley 2021k).

Nucras ornata (Gray, 1864)

Ornate Sandveld Lizard (Fig. 4g, Fig. S36)

Recorded localities: Birchenough Bridge; Buffalo Bend; Chiredzi; Chiwaka River, Bikita; Mahenye; Malipati; Mount Selinda; MWR; Rupise Hot Springs; Samalema Gorge, GNP; Sil-verstreams, Chimanimani; Triangle. **Comments:** The most frequently recorded *Nucras* in the study area, this species occupies a wide distribution in grassland and savanna (Branch 1998). We observed individuals utilising termitaria in various sandy habitats on MWR (including compacted alluvium as well as loose soils formed by weathering of sandstone), emerging from burrows to feed on alates. **Global conservation status:** Least Concern (Alexander and Tolley 2021l).

Scincidae

Acontias aff. *aurantiacus* (Peters, 1854)

Golden Blind Legless Skink (Fig. S37)

Recorded localities: Malipati; Ntambambomvu Hills, GNP. **Comments:** Broadley collected eight specimens in *Androstachys* thicket in the Ntambambomvu Hills, GNP in 1974. There is one earlier literature record from Malipati (Brain 1961; Broadley 1968). These represent the only Zimbabwean records of this species, which are seemingly disjunct from the population in southern coastal Mozambique. They are geographically closer to the population of *Acontias fitzsimonsi* in the Nyandu sandveld of northern Kruger National Park, South Africa (Broadley 1999), which was formerly treated as a subspecies of *A. aurantiacus* (Pietersen et al. 2018). Pietersen et al. (2018) did not include any Zimbabwean material in their phylogenetic review of *A. aurantiacus*, in which they raised two subspecies to full species (*A. fitzsimonsi* and *A. parietalis*). Major rivers in the region are thought to represent sufficient barriers to gene flow between the three species (Zhao et al. 2023), but new material is required to resolve the status of the Zimbabwean population (W. Conradie, pers. comm. 2024). In Mozambique, *A. aurantiacus* inhabits coastal sands and sandveld, encountered beneath logs and among plant roots (Branch 1998). **Global conservation status:** Least Concern (as *Acontias aurantiacus*; Conradie et al. 2019).

Acontias aff. *bicolor* (Hewitt, 1929)

Unknown Legless Skink (Fig. S38)

Recorded localities: Bikita. **Comments:** This unknown *Acontias* is represented by a single, interesting record. A juvenile specimen (NMZB-UM 3175) was retrieved from the stomach

of a *Platysaurus intermedius rhodesianus* (NMZB-UM 1418), collected “20 miles west of Birch-enough Bridge” (Broadley 1968, p. 9). The specimen is melanistic and further differs from typical *Acontias bicolor* by possessing two supraoculars as opposed to three (Broadley 1968). A melanistic population historically assigned to *Acontias cregoi* in north-western Kruger National Park, South Africa is thought to represent a cryptic species (Zhao et al. 2023). Further sampling is required to resolve the status of Zimbabwean *Acontias* in this clade. We therefore follow Broadley (1968) and list this species as most closely aligned with *A. bicolor*, which occurs to the north-east. Like other *Acontias*, it is a fossorial species, although the predation record here suggests that the species may come to the surface to traverse hard substrates. **Global conservation status:** Unknown; *Acontias bicolor* (*sensu stricto*) is assessed as Least Concern (Verburgt et al. 2021a).

Acontias plumbeus Bianconi, 1849

Giant Legless Skink (Fig. S39)

Recorded localities: Jersey Tea Estates, Chipinge. **Comments:** The isolated Zimbabwean population is confined to forests along the eastern border. This species occurs across a wider variety of habitats south of the Limpopo River in South Africa, Mozambique, and Eswatini (Zhao et al. 2019). **Global conservation status:** Least Concern (Pietersen et al. 2021b).

Mochlus sundevallii (Smith, 1849)

Sundevall’s Writhing Skink (Fig. S40)

Recorded localities: Bikita; Birchenough Bridge; Buffalo Bend; Chibuwe; Chikwarakwara, Chipise Communal Lands; Chilomwe Hills, Mwenezi; Chipangayi Bridge, Chipinge; Chiredzi; Chishakwe Ranch, SVC; Devure River; Dotts Drift, Chipinge; Fishan, GNP; Guluene South, GNP; High Syringa Game Park, Triangle; KayaNyala, Mahenye; Mabalauta, GNP; Machaniwa Pan, GNP; Mahenye; Malikango, Chikombedzi; Malugwe Pan, GNP; Marhumbeni, GNP; Mkwaseeni Irrigation Scheme; Mtovoti Pan, Nyala, GNP; MWR; Naivasha Pan, GNP; Nduna Camp, MWR; Ntambambomvu Hills, GNP; Nyanyadzi; Pesu Gorge, Sengwe Communal Land; Pukupela Dip, Sengwe Communal Land; Rupise Hot Springs; Sango Chapungu, SVC; Savé-Runde Confluence, GNP; Senuko 2, SVC; Siyanje, Beitbridge District; Tanganda River Bridge; Triangle; Tswiza, GNP. **Comments:** This species is very widespread on friable soil with high leaf litter cover, encountered beneath rocks and woody debris. It is occasionally found on more compacted soils when the seasonal increase in herbaceous cover is adequate to allow it to disperse short distances. **Global conservation status:** Least Concern (Beraducci et al. 2021a).

Panaspis maculicollis Jacobsen and Broadley, 2000

Spotted-neck Snake-eyed Skink (Fig. 4h, Fig. S41)

Recorded localities: Chikwarakwara, Chipise Communal Lands; Chilomwe Hills, Mwenezi; Chilojo, GNP; Chipise; Chiredzi; Chishakwe Ranch, SVC; Fishan, GNP; Mabalauta, GNP; Malugwe Pan, GNP; Marhumbeni, GNP; MWR; Naivasha Pan, GNP; Ntambambomvu Hills, GNP; Pesu Gorge, Sengwe Communal Land; Sazale Pan, GNP; Tswiza, GNP; Urumbo Pan, GNP. **Comments:** This small, active-foraging species is locally abundant in areas with high leaf litter cover, found below shrubs and among grass tussocks (Branch 1998). Almost all specimens from south-eastern Zimbabwe initially catalogued as

P. wahlbergii represent *P. maculicollis* (Jacobsen and Broadley 2000). *Panaspis maculicollis* is thought to occur over a smaller elevational range (220–900 m a.s.l.) than *P. wahlbergii* (0–2 000 m a.s.l.; Jacobsen and Broadley 2000). **Global conservation status:** Least Concern (Pietersen et al. 2021c).

Panaspis wahlbergii (Smith, 1849)

Wahlberg's Snake-eyed Skink (Fig. S42)

Recorded localities: Birchenough Bridge; Chikore, Chipinge; Mount Selinda; Musirizwe River.

Comments: Following Jacobsen and Broadley (2000), we consider *P. wahlbergii* to be locally restricted to the mesic montane and submontane habitats in the north-east of the study area. The Birchenough Bridge specimen (TM 18457) was not included in Jacobsen and Broadley's (2000) review, and its identity is uncertain – though we suspect it is in fact *P. maculicollis*. Zimbabwean material was not included in the most recent phylogenetic review of this species (Medina et al. 2016), and its status in the country requires further investigation. **Global conservation status:** Least Concern (Sindaco et al. 2021).

Proscelotes arnoldi (Hewitt, 1932)

Arnold's Montane Skink (Fig. S43)

Recorded localities: "Nyanga National Park to Chimanimani." **Comments:** The single specimen collected within the study area (PEM R20044) represents the southernmost known record of this species, with verbatim coordinates just east of New Year's Gift Estate, Chipinge District. It inhabits montane grassland and forest from the north-east of the study area northwards throughout the Eastern Highlands and presumably adjacent Mozambique (Branch 1998; Pietersen et al. 2021d). **Global conservation status:** Least Concern (Pietersen et al. 2021d).

Trachylepis depressa (Peters, 1854)

Eastern Coastal Skink (Fig. S44)

Recorded localities: Mahenye; Malugwe Pan, GNP; Sazale Pan, GNP; Urumbo Pan, GNP.

Comments: This species has a marginal distribution in extreme south-eastern Zimbabwe but occurs more widely eastwards along the Mozambique plain and coastline south of the Zambezi River (Broadley 2000). It inhabits sandy thicket and may hide in loose sand (Branch 1998). **Global conservation status:** Least Concern (Pietersen et al. 2021e).

Trachylepis lacertiformis (Peters, 1854)

Bronze Rock Skink (Fig. S45)

Recorded localities: Changadzi River; Chishakwe Ranch, SVC; Chiwaka River, Bikita; Devure River; Mount Rudd, Chipinge; Senuko 2, SVC. **Comments:** The recent observation from Senuko 2, SVC (<https://www.inaturalist.org/observations/141453735>) may be the southernmost record of this species. Occurring among rock outcrops in mesic savanna (Broadley 2000), its distribution within the study area is thus largely confined to Bikita District. **Global conservation status:** Least Concern (Pietersen et al. 2021f).

Trachylepis margaritifer (Peters, 1854)

Rainbow Skink (Fig. S46)

Recorded localities: Bhenji Spring, GNP; Bikita; Birchenough Bridge; Bravo 2, Matendere, SVC; Changadzi River; Chikwarakwara, Chipise Communal Lands; Chilo Gorge Safari

Lodge; Chilomwe Hills, Mwenezi; Chipinda Pools, GNP; Chiredzi; Chisekela Hot Springs, Chiredzi; Chishakwe Ranch, SVC; Chitove Camp, GNP; Chivilila, GNP; Devuli Ranch, SVC; Devure River Bridge; Dotts Drift; Fishan, GNP; Gulugi Camp, GNP; Jersey Tea Estates, Chipinge; Kwali Camp, MWR; Mabalauta, GNP; Mahenye; Makonde Mananga, GNP; Malipati Bridge; Malilangwe Range, MWR; Masasanya Dam, GNP; Matendere Ruins; Matendere, SVC; Mount Rudd, Chipinge; Mteri Dam; Mutirikwe Weir, Triangle; Muwatomba Pools, GNP; Mwenezi River; North GNP; Nyavasikana, GNP; Pesu Gorge, Sengwe Communal Land; Ruware, Ndanga; Samalema Gorge; Sango Chanurwe, SVC; Senuko 2, SVC; Senuko 3, SVC; Siyanje, Beitbridge District; Tanganda River Bridge; Triangle; Tshiturapasi, Chipise Communal Lands. **Comments:** This conspicuous lizard is abundant and widely recorded in the region. It is predominantly rupicolous, though it may take up residence in hollow trees near rock outcrops (Branch 1998). It is often syntopic with *Platysaurus intermedius rhodesianus* but is less specialised than that species (Howard and Hailey 1999). **Global conservation status:** Least Concern (Menegon et al. 2021).

Trachylepis striata (Peters, 1844)

Striped Skink (Fig. S47)

Recorded localities: Bikita; Birchenough Bridge; Bosmans Camp, Malipati, GNP; Chikore, Chipinge; Chikuku, Bikita; Chikwarakwara; Chilo Gorge Safari Lodge; Chilojo Cliffs, GNP; Chipinda Pools, GNP; Chiredzi; Chishakwe Ranch, SVC; Farfell Coffee Estate, Chipinge; Fishan, GNP; Glen Clova, Bikita; Gorwana Pan, GNP; Guluene South, GNP; Gulugi Camp, GNP; Ingweni Pans; KayaNyala, Mahenye; Mabalauta, GNP; Mahenye; Malipati Bridge; Malugwe Pan, GNP; Marhumbini, GNP; Masarire, Bikita; Matendere Ruins; Mount Selinda; MWR; Nduna Camp, MWR; North GNP; Nyala, GNP; Palm Tree Place, Chiredzi; Pesu Gorge, Sengwe Communal Land; Rupise Hot Springs; Sango Chanurwe, SVC; Sazale Pan, GNP; Siyanje, Beitbridge District; Triangle; Tshiturapasi, Chipise Communal Lands; Tswiza, GNP; Urumbo Pan, GNP. **Comments:** Widespread and abundant. Predominantly arboreal, *T. striata* occurs in a variety of habitats and around buildings (Branch 1998) but is most common in mature woodland within the study area. It may occur in rocky habitats where *T. margaritifer* is absent (Howard and Hailey 1999). Among the well-wooded sandstone outcrops of the Malilangwe Range, we have occasionally observed adult *T. margaritifer* cease basking to aggressively chase adult *T. striata* that venture too close. **Global conservation status:** Least Concern (Beraduccii et al. 2021b).

Trachylepis varia complex

Variable Skink species complex (Fig. S48)

Recorded localities: As *Trachylepis damarana*: Chilo Gorge Safari Lodge; KayaNyala, Mahenye; MWR. As *Trachylepis varia* or *Trachylepis varia* complex: Bhenji Spring, GNP; Bikita; Birchenough Bridge; Chagudo, Chipise Communal Land; Changadzi River; Chidhlambani, GNP; Chikore, Chipinge; Chikwarakwara, Chipise Communal Land; Chilo Gorge Safari Lodge; Chilojo Cliffs, GNP; Chiredzi; Chishakwe Ranch, SVC; Devure River; Farfell Coffee Estate, Chipinge; Fishan, GNP; Gorwana Pan, GNP; Guluene South, GNP; Hakamela, MWR; Hippo Mine; Mahenye; Malipati School, Mwenezi; Malugwe Pan, GNP; Marhumbini, GNP; Matendere Ruins; Mount Selinda; Mteri Dam; Mtovoti Pan, Nyala, GNP; Musirizwi River; Naivasha Pan, GNP;

Ntambambomvu Hills, GNP; Nyamutongwe Hill, GNP; Pesu Gorge, Sengwe Communal Land; Pesu River, Chikwarakwara; Rupise Hot Springs; Sango Chanurwe, SVC; Sazale Pan, GNP; Senuko 2, SVC; Siyanje, Beitbridge District; Triangle; Tshiturapasi, Chipise Communal Lands; Tswiza, GNP; Urumbo Pan, GNP. **Comments:** This is an abundant and widespread species, occurring in a variety of habitats (Branch 1998), though it is less conspicuous than the larger *Trachylepis* species in the study area and probably occurs at lower densities. Portions of south-eastern Zimbabwe lie within the perceived overlap of *Trachylepis varia* (*sensu stricto*) and the recently revived *Trachylepis damarana* (Peters, 1870) (Weinell and Bauer 2018). The phylogeography presented by Weinell and Bauer (2018) suggests that *T. varia* is a more temperate species, confined to higher elevations in the north of its range (e.g., Limpopo province, South Africa), while *T. damarana* is associated with more arid habitats at lower elevations. *Trachylepis varia* and *T. damarana* are visually distinguished only by the relative size of the second loreal scale, being significantly longer ventrally and shorter anteriorly in *T. damarana* (Weinell and Bauer 2018). A detailed inspection of specimens from across the study area is required to determine whether morphological differences alone are sufficient to distinguish the two species. We suspect that the vast majority of specimens from the study area represent *T. damarana*, with the possible exception of individuals from higher elevations in Chipinge District. **Global conservation status:** *T. damarana*: Least Concern (Farooq et al. 2021); *Trachylepis varia*: Least Concern (Beraduccii et al. 2023).

Varanidae

Varanus albigularis albigularis (Daudin, 1802)

White-throated Rock Monitor (Fig. S49)

Recorded localities: Birchenough Bridge; Chilo Gorge Safari Lodge; Chilomwe Hills, Mwenezi; Chipangayi Bridge, Chipinge; Guluene South, GNP; Mahenye; Malipati; Malugwe Pan, GNP; Majinji Pan, Mwenezi; Marhumbini, GNP; Matendere, SVC; Mokore Camp, Mokore, SVC; MWR; Nduna Dam, MWR; North GNP; Nyala, GNP; Rupise Hot Springs; Sango Chapungu, SVC; Savé-Runde Confluence, GNP; Senuko 2, SVC; Tembwa-hata Pan, GNP. **Comments:** This subspecies is an active forager, encountered in a wide variety of habitats. It may seek refuge in old termitaria, rocky outcrops, or hollow trees (Branch 1998). One individual on MWR was recorded resting in a tree for three consecutive days in late summer. Although we assign a subspecific label here, the proposed subspecies of *V. albigularis* are poorly defined. **Global conservation status:** Least Concern (as *Varanus albigularis*; Beraduccii et al. 2021c).

Varanus niloticus (Linnaeus, 1766)

Nile Monitor (Fig. 4i, Fig. S50)

Recorded localities: Chilo Gorge Safari Lodge; Chishakwe Ranch, SVC; Chivirira Falls, Savé River; Fishan, GNP; Humani, SVC; Kwali Camp, MWR; Masasanya Dam, GNP; Masasanya River, GNP; Mutirikwe Weir, Triangle; MWR; Triangle; Turgwe Crossing, SVC; Zigambuzi Pool, GNP. **Comments:** Widespread throughout the river valleys of sub-Saharan Africa, this species is rarely observed far from water (Branch 1998). It is most often recorded basking on rocks or branches in the vicinity of major dams and rivers in the region.

There are few museum records of this large species. **Global conservation status:** Least Concern (Wilms et al. 2021).

SQUAMATA – SERPENTES

Atractaspididae

Amblyodipsas polylepis (Bocage, 1873)

Common Purple-glossed Snake (Fig. 5a, Fig. S51)

Recorded localities: Buffels Drift Estate, Chipinge; Chipinda Pools, GNP; Chipinge; Chiredzi; Chirinda Forest; Silverstreams, Chimanimani; MWR; Singita Pamushana, MWR; Triangle. **Comments:** This widespread fossorial species inhabits savanna and dry forest throughout its range, but is infrequently seen except after rain in summer (Marais 2022). As the taxonomic validity of *A. polylepis hildebrandtii* remains to be assessed using molecular methods (Maritz and Burger 2023a), we refrain from assigning a



Figure 5. Selected examples of snake and testudines species recorded in south-eastern Zimbabwe: **a.** *Amblyodipsas polylepis*; **b.** *Philothamnus semivariiegatus*; **c.** *Naja mossambica*; **d.** *Gracililima nyassae*; **e.** *Prosymna stuhlmanni*; **f.** *Psammophis subtaeniatus*; **g.** *Python natalensis*; **h.** *Afrotyphlops dinga*; **i.** *Bitis arietans arietans*; **j.** *Pelusios sinuatus*; **k.** *Kinixys zombensis*; **l.** *Stigmochelys pardalis*. Image credits: Kurt M. van Wyk (a–i, l); John Gale (j); Morgan D. Heinz (k).

subspecific label here. The population in the study area is referable to *A. polylepis polylepis*. **Global conservation status:** Least Concern (Wagner et al. 2021b).

Aparallactus capensis Smith, 1849

Black-headed Centipede-eater (Fig. S52)

Recorded localities: Bikita; Chilo Gorge Safari Lodge; Chiredzi; Chirinda Forest; Fishan, GNP; Hippo Valley; Humani Ranch, SVC; Mabalauta, GNP; Mahenye; Makonde Mananga, GNP; Mount Selinda; MWR; Nyanyadzi; Silverstreams, Chimanimani; Uitkyk Farm, Chimanimani. **Comments:** This inconspicuous species occurs in diverse habitats across its range. It is most often encountered under rocks or in broken termite mounds, rarely above ground (Marais 2022; pers. obs.). **Global conservation status:** Least Concern (Spawls et al. 2021a).

Aparallactus guentheri Boulenger, 1895

Black Centipede-eater (Fig. S53)

Recorded localities: Chipinge; New Year's Gift Estate, Chipinge. **Comments:** This species is locally restricted to montane forests in the north-east of the study area, along the Mozambique border. **Global conservation status:** Least Concern (Malonza et al. 2021).

Aparallactus lunulatus (Peters, 1854)

Reticulated Centipede-eater (Fig. S54)

Recorded localities: Birchenough Bridge; Buffalo Range; Chipinda Pools, GNP; Chiredzi; Chiredzi Sugar Estates; Fishan, GNP; Hippo Valley; MWR; Triangle. **Comments:** This species is considered widespread throughout the Zimbabwean lowveld (Broadley and Blaylock 2013). It is more commonly encountered on the surface than other *Aparallactus* species in the region. As it is unclear whether the genetic structure observed in this species (Portillo et al. 2018) corresponds with any of the described subspecies, we assign no subspecific label here. However, the population in the study area is referable to *A. lunulatus lunulatus*. **Global conservation status:** Least Concern (as *A. lunulatus*, Luiselli et al. 2021a).

Atractaspis bibronii Smith, 1849

Bibron's Stiletto Snake (Fig. S55)

Recorded localities: Bhenji Spring, GNP; Birchenough Bridge; Buffalo Range; Chipinge; Chiredzi; Fishan, GNP; Highlands Farm, Chipinge; Hippo Valley; Hippo Valley Estates, Chiredzi; Jersey Tea Estates, Chipinge; Malugwe Pan, GNP; Mutema, Chipinge; MWR; Nyanyadzi; Rupise Hot Springs; Ruware, Ndanga; Sazale Pan, GNP; Silverstreams, Chimanimani; Tanganda River Bridge; Triangle; Zona Tea Estate, Chipinge. **Comments:** Though predominantly a fossorial snake, this subspecies is a habitat generalist and occurs widely throughout south-eastern Africa (Maritz and Burger 2023b). In parts of its range (e.g., north-eastern South Africa), it is frequently observed after dark in summer, especially after rain (Marais 2022). **Global conservation status:** Least Concern (Wagner et al. 2021c).

Xenocalamus bicolor lineatus Roux, 1907

Striped Quill-snouted Snake (Fig. S56)

Recorded localities: Buffalo Bend, Mwenezi River; Mabalauta, GNP; Malugwe Pan, GNP; Singita Pamushana, MWR. **Comments:** A secretive species, it is known to occur on deep sands from south-eastern Zimbabwe to northern Zululand in KwaZulu-Natal

province, South Africa and on the Bazaruto Archipelago, Mozambique (Branch 1998; Broadley and Blaylock 2013). The identity of the Malilangwe individual (S. Capon, pers. comm. 2021) is doubtful, as all other records of *X. b. lineatus* are from south of the Runde River. As no image of the snake is available, we cannot confirm whether the record refers to this species or *X. sabiensis*, which is the only other *Xenocalamus* species occurring in the study area. **Global conservation status:** Least Concern (as *Xenocalamus bicolor*; Alexander and Tolley 2021m).

Xenocalamus sabiensis Broadley, 1971

Savé Quill-snouted Snake (Fig. S57)

Recorded localities: Birchenough Bridge; Buffalo Range; Chipinda Pools, GNP; Chipinge; Chiredzi; Fishan, GNP; Hippo Valley; Humani Ranch, SVC; Nyanyadzi; Rupise Hot Springs; Ruware, Ndanga; Savé Research Station. **Comments:** This species is endemic to alluvial soils around the Savé and Runde rivers, entering Mozambique (Broadley 1983; Broadley and Blaylock 2013). The single record of *X. b. lineatus* from MWR is likely a misidentified *X. sabiensis*. **Global conservation status:** Least Concern (Alexander and Tolley 2021n).

Colubridae

Crotaphopeltis hotamboeia (Laurenti, 1768)

Herald Snake (Fig. S58)

Recorded localities: Bhenji River, GNP; Birchenough Bridge; Buffalo Range; Chilo Gorge Safari Lodge; Chipinda Pools, GNP; Chiredzi; Chirinda Forest; Chishakwe Ranch, SVC; Jersey Tea Estates, Chipinge; Mabalauta, GNP; Mahenye; Marhumbini, GNP; Mount Selinda; Musirizwi River; MWR; New Year's Gift Estate, Chipinge; Rupembi Swamp; Ruware, Ndanga; Savé-Odzi Confluence; Sazale Pan, GNP; Senuko 2, SVC; Silverstreams, Chimanimani; Triangle; Turgwe River, Bikita; Zona Tea Estate, Chipinge. **Comments:** A very widespread species occurring in a variety of habitats, but often in fairly moist environments. **Global conservation status:** Least Concern (Wagner et al. 2021d).

Dasypeltis medici (Bianconi, 1859)

East African Egg-eater (Fig. S59)

Recorded localities: Chirinda Forest; Mount Selinda. **Comments:** Within the study area, this species has only been recorded from Chirinda Forest and Mount Selinda. It likely occurs more widely in remnant evergreen forest in the north-east of the study area. Elsewhere, it occurs in forest and mesic savanna from northern KwaZulu-Natal province, South Africa to southern Somalia (Bates and Broadley 2018). **Global conservation status:** Least Concern (Spawls et al. 2021b).

Dasypeltis scabra (Linnaeus, 1758)

Rhombic Egg-eater (Fig. S60)

Recorded localities: Chipinge; Chiredzi; Chirinda Forest; Guluene South, GNP; Humani Ranch, SVC; Mabalauta, GNP; Machaniwa Pans, Marhumbini, GNP; MWR; Nyanyadzi; Sango, SVC; Senuko 2, SVC; Silverstreams, Chimanimani. **Comments:** A widespread habitat generalist but less frequently recorded in Zimbabwe than in other parts of its range. **Global conservation status:** Least Concern (Baha El Din et al. 2021).

Dipsadoboa aulica (Günther, 1864)

Marbled Tree Snake (Fig. S61)

Recorded localities: Birchenough Bridge; Chilojo Cliffs, GNP; Chiredzi; Humani Ranch, SVC; Kwali Camp, MWR; Majinji Pan, Mwenezi; Makwakwete, Chiredzi; MWR; Ruware, Ndanga; Triangle. **Comments:** Field observations suggest that this species may be locally common in moist, well-wooded areas. **Global conservation status:** Least Concern (Alexander and Tolley 2021o).

Dispholidus typus (Smith, 1828)

Boomslang (Fig. S62)

Recorded localities: Chilo Gorge Safari Lodge; Chipimbi Farm; Chipinge; Chirinda Forest; Chishakwe Ranch, SVC; Gungunyana, Chipinge; Mahenye; Malugwe Pan, GNP; Marhumbini, GNP; Mase-Mwenezi Confluence; Mount Selinda; MWR; Senuko 3, SVC; Silverstreams, Chimanimani; Tanganda Tingamira Estate, Junction Gate; Turgwe River, Bikita; Vleiplaats, Chipinge. **Comments:** This species is widespread throughout much of southern Africa, recorded in areas with sufficient woody plant cover. While predominantly arboreal, it does cross open ground to move between shrubs or trees. The taxonomic status of the various *Dispholidus* taxa is under review (W. Conradie, pers. comm. 2024), but we consider all populations in the study area referable to the proposed subspecies, *D. t. viridis* (Eimermacher 2012). **Global conservation status:** Least Concern (as *Dispholidus typus*; Luiselli et al. 2021b).

Meizodon semiornatus semiornatus (Peters, 1854)

Semiornate Snake (Fig. S63)

Recorded localities: MWR. **Comments:** Two observations by reserve staff on MWR represent the first records of this poorly known subspecies within the study area, although it was predicted to occur there (Broadley and Blaylock 2013). While the species is thought to favour thick, riverine vegetation (Branch 1998), one individual was observed at an artificial pan in dry, open woodland (<https://www.inaturalist.org/observations/132253576>). A record from Punda Maria Rest Camp, Kruger National Park, South Africa was in similar habitat (<https://www.inaturalist.org/observations/86040628>). **Global conservation status:** Least Concern (Howell et al. 2021c).

Natriciteres olivacea (Peters, 1854)

Olive Marsh Snake (Fig. S64)

Recorded localities: Chirinda Forest; Triangle. **Comments:** This rarely seen species is thought to occur near water in savanna throughout much of Zimbabwe (Branch 1998; Broadley and Blaylock 2013). It likely occurs more widely in the region than the records suggest. A record from Chirinda Forest (<https://www.inaturalist.org/observations/159483092>) may refer to this species, but is in unlikely habitat (Broadley and Blaylock 2013). **Global conservation status:** Least Concern (Luiselli et al. 2021c).

Natriciteres sylvatica Broadley, 1966

Forest Marsh Snake (Fig. S65)

Recorded localities: Chirinda Forest; Savé Experimental Station; Tanganda Tingamira Estate, Junction Gate. **Comments:** Within the study area, this species is thought to be restricted to submontane forest in the north-east (Broadley and Blaylock 2013). A

recent observation near Junction Gate (<https://www.inaturalist.org/observations/207731157>) represents the first record of the species in the study area since 1957. This species is reportedly seen regularly there (G. Griffiths, pers. comm. 2024). A record from the Savé River is suspicious and may represent a misidentified *N. olivacea*. The two *Natriciteres* species in the study area differ little in morphology (Broadley and Blaylock 2013), and unpublished data suggest that *N. sylvatica* may not be a valid taxon (W. Conradie, pers. comm. 2025). **Global conservation status:** Least Concern (Conradie 2021).

Philothamnus angolensis Bocage, 1882

Western Green Snake, Angolan Green Snake (Fig. S66)

Recorded localities: Birchenough Bridge; Chipinge; Coffee Research Station, Chipinge; Chirinda Forest; Junction Gate; Mount Selinda; Musirizwi River; Ruware, Ndanga; Triangle; Umzilizwe River, Mount Selinda. **Comments:** This species displays a patchy distribution in mesic savanna (Branch 1998). In Zimbabwe, it is most frequently observed in the foothills of the Eastern Highlands (Broadley and Blaylock 2013). **Global conservation status:** Least Concern (Howell et al. 2021c).

Philothamnus hoplogaster (Günther, 1863)

South-eastern Green Snake, Green Water Snake (Fig. S67)

Recorded localities: Bangala Dam; Birchenough Bridge; Chibuwe, Chipinge; Chipinda Pools, GNP; Chipinge; Chiredzi; Chirinda Forest; Fishan, GNP; Jersey Tea Estates, Chipinge; Machaniwa Pans, Marhumbini, GNP; Mahenye; Marhumbini, GNP; Mount Selinda; Musirizwi River, Mount Selinda; Savé Valley Conservancy; Turgwe River, Bikita; Zona Tea Estate, Chipinge. **Comments:** This species is widespread in south-eastern Africa, found close to water in moist savanna, grassland, and forest (Branch 1998; Marais 2022). It is thought to occur throughout Zimbabwe near permanent water (Broadley and Blaylock 2013). **Global conservation status:** Least Concern (Howell et al. 2021e).

Philothamnus natalensis (Smith, 1848)

Eastern Natal Green Snake (Fig. S68)

Recorded localities: Fishan, GNP; Mahenye. **Comments:** This species has a marginal distribution in Zimbabwe. The first Zimbabwean specimen was recorded at Fishan, GNP in 1962. It has also been recorded in dry riparian forest at Mahenye, near the Savé-Runde confluence (Broadley 1999; Broadley and Blaylock 2013). **Global conservation status:** Least Concern (Tolley et al. 2021).

Philothamnus semivariiegatus (Smith, 1840)

Spotted Bush Snake (Fig. 5b, Fig. S69)

Recorded localities: Bhenji River; Buffalo Bend; Buffalo Range; Chipinda Pools, GNP; Chipinge; Chiredzi; Chishakwe Ranch, SVC; Chivirira, Savé River; Devuli Ranch; Devure River Bridge; Kwali Camp, MWR; Machaniwa Pans, Marhumbini, GNP; Merrywaters Farm, Chimanmani; Msaize, SVC; MWR; Nyanyadzi; Ruware, Ndanga; Savé-Runde Confluence, GNP; Senuko 2, SVC; Silverstreams, Chimanmani; Siyanje, Beitbridge District; Triangle; Tshiturapasi, Chipise Communal Lands. **Comments:** This species is abundant and widespread in semi-arid woodland throughout the region. *Philothamnus semivariiegatus* consists of at least four deeply divergent clades across its broad distribution, and these warrant

recognition as full species (Engelbrecht et al. 2019; E. J. Madsen, unpublished data). As the type locality for *P. semivariiegatus* is Springbok, north-western South Africa, the population in the study area is likely referable to a new species. The study area may represent a contact zone between the clades (W. Conradie, pers. comm. 2025). **Global conservation status:** Least Concern (Branch et al. 2021b).

Telescopus semiannulatus semiannulatus Smith, 1849

Eastern Tiger Snake (Fig. S70)

Recorded localities: Bhenji River; Birchenough Bridge; Buffalo Bend, Mwenezi River; Chipinge; Chiredzi; Chitove Camp, GNP; Kwali Camp, MWR; MWR; Nyanyadzi; Rupise Hot Springs; Tanganda River Bridge. **Comments:** This subspecies is recorded in woodland and among rock outcrops. It appears to be locally abundant and is often observed hunting geckos in rock fissures on MWR. Branch (2018) suggested that *T. semiannulatus polystictus* might deserve full species status, and Marais (2022) treats it as such (i.e., as *T. polystictus*). However, the subspecies has not been formally elevated. If it is elevated, the population in the study area will be referable to *T. semiannulatus*. **Global conservation status:** Least Concern (as *Telescopus semiannulatus*; Alexander and Tolley 2021p).

Thelotornis capensis Smith, 1849

Southern Vine Snake (Fig. S71)

Recorded localities: Birchenough Bridge; Chipinda Pools, GNP; Chipinge; Chiredzi; Chirinda Forest; Fishan, GNP; Hippo Valley Country Club; Humani Ranch, SVC; Mount Selinda; MWR; Nyanyadzi, Chimanimani; Senuko 2, SVC. **Comments:** This species is highly inconspicuous but widespread in dense savanna thicket. South-eastern Zimbabwe represents a contact zone between both currently accepted subspecies of *T. capensis* (Broadley 2001). The subspecies differ little in morphology, with *T. c. capensis* tending to be smaller (TL 800–1 360 mm) than *T. c. oatesii* (TL 900–1 680 mm) and with fewer than 162 ventrals. The top of the head is typically heavily speckled in *T. c. capensis* and marked with a Y-shaped strap in *T. c. oatesii* (Broadley and Blaylock 2013). However, this Y-shaped marking has been recorded in specimens of *T. c. capensis* from KwaZulu-Natal province, South Africa, and even in some *T. mossambicanus*, and variation exists among alleged intergrade specimens (Broadley and Blaylock 2013). Individuals photographed on MWR and Senuko 2 possess the Y-shaped marking. Within the study area, Broadley (2001) assigned all *T. capensis* south of the Runde River to *T. c. capensis* and all from the Runde River northwards to *T. c. oatesii*, but it is evident that the taxonomy of this genus requires resolution. As such, no subspecific label is assigned here. **Global conservation status:** Least Concern (as *Thelotornis capensis*; Spawls 2021).

Thelotornis mossambicanus (Bocage, 1895)

Eastern Vine Snake (Fig. S72)

Recorded localities: Chirinda Forest. **Comments:** In Zimbabwe, this species is known only from forests along the border with Mozambique. It occurs widely throughout east Africa in moist savanna and forest (Broadley and Blaylock 2013). While it is occasionally sympatric with *T. capensis*, *T. mossambicanus* can typically be distinguished by its unmarked green head and by having the scales of the temporal patch speckled with

black, as opposed to edged with black (Pietersen et al. 2021a). **Global conservation status:** Least Concern (Wagner et al. 2021e).

Elapidae

Aspidelaps scutatus fulafula (Bianconi, 1849)

Eastern Shield-nosed Snake (Fig. S73)

Recorded localities: Chiredzi; Fishan, GNP; Gorwe Pan, GNP; Mahenye; Malugwe Pan, GNP; Nyamugwe Pan, GNP; Sango; Sazale Pan, GNP. **Comments:** This subspecies is locally known only from the south of the study area where it inhabits sandy savanna, often in association with *Hyphaene* palms (Broadley and Blaylock 2013). **Global conservation status:** Least Concern (as *Aspidelaps scutatus*; Alexander and Tolley 2021q).

Dendroaspis angusticeps (Smith, 1849)

Eastern Green Mamba (Fig. S74)

Recorded localities: Chirinda Forest; Jersey Tea Estates, Chipinge. **Comments:** In Zimbabwe, this species is known only from submontane forests and plantations along the border with Mozambique (Broadley and Blaylock 2013). The designation of the name *Dendroaspis intermedius* (Günther, 1865) to all populations outside of South Africa and extreme southern Mozambique is not supported, and deeper genetic sampling is required to determine whether the divergence between the southern and northern populations is sufficient to warrant further taxonomic review (Alexander et al. 2023a; Tolley et al. 2025). **Global conservation status:** Least Concern (Wagner et al. 2021f).

Dendroaspis polylepis Günther, 1864

Black Mamba (Fig. S75)

Recorded localities: Birchenough Bridge; Chipinda Pools, GNP; Chipinge; Chishakwe Ranch, SVC; Hippo Valley; Mahenye; Marhumbini, GNP; Mokore, SVC; Mwenezi River; MWR; Tswiza, GNP; New Year's Gift Estate, Chipinge; Savé-Runde Confluence, GNP; Senuko 2, SVC; Triangle. **Comments:** This species is widespread, occurring in a variety of habitats. It may take up residence in old termitaria, hollow trees, or rock outcrops, foraging in their vicinity (Marais 2022). It is often killed if observed near human habitation. **Global conservation status:** Least Concern (Branch et al. 2021c).

Elapsoidea boulengeri Boettger, 1895

Zambezi Garter Snake, Boulenger's Garter Snake (Fig. S76)

Recorded localities: 8 km south-east of Malugwe Pan, GNP; Buffalo Range; Chiredzi; Hippo Valley; Humani Ranch, SVC; Matendere Ranch, SVC; Savé-Odzi Confluence; Tanganda River Bridge. **Comments:** This species is inconspicuous but locally common, inhabiting mesic savanna throughout Zimbabwe (Broadley and Blaylock 2013). **Global conservation status:** Least Concern (Alexander and Tolley 2021r).

Elapsoidea sundevallii longicauda Broadley, 1971

Long-tailed Garter Snake (Fig. S77)

Recorded localities: Chiloyo Cliffs, GNP; Fishan, GNP; Malipati; Malugwe Pan, GNP; Sazale Pan, GNP. **Comments:** This subspecies occurs in sandy savanna from the Limpopo Valley

through south-eastern Zimbabwe to southern Mozambique (Branch 1998; Broadley and Blaylock 2013). Within the study area, it is currently known only from GNP and possibly from MWR, but likely occurs in Mahenye and Sengwe as well. **Global conservation status:** Least Concern (as *Elapsoidea sundevallii*; Alexander 2021).

Naja annulifera Peters, 1854

Snouted Cobra (Fig. S78)

Recorded localities: Birchenough Bridge; Chikwarakwara, Chipise Communal Lands; Chipinge; Chiredzi; Hippo Valley; MWR; New Year's Gift Estate, Chipinge; Rupise Hot Springs; Sabi Experimental Station, Chipinge. **Comments:** This species is suspected to be more widespread in the study area than the records suggest. Adults are often resident at rock outcrops and abandoned termitaria (Marais 2022; pers. obs.). It occurs at lower densities than *Naja mossambica*, possibly due to its larger size. **Global conservation status:** Least Concern (Alexander and Tolley 2021s).

Naja mossambica Peters, 1854

Mozambique Spitting Cobra (Fig. 5c, Fig. S79)

Recorded localities: Birchenough Bridge; Chilo Gorge Safari Lodge; Chipangayi Bridge, Chipinge; Chipinda Pools, GNP; Chipinge; Chiredzi; Chirinda Forest; Chishakwe Ranch, SVC; Guluene South, GNP; Hippo Valley; KayaNyala, Mahenye; Mabalauta, GNP; Mahenye; Musirizwi River; Mutandahwe; Muzite School, Chipinge; MWR; New Year's Gift Estate, Chipinge; North GNP; Senuko 2, SVC; Silverstreams, Chimanimani; Tanganda Halt, Chipinge; Triangle; Turgwe River, Bikita. **Comments:** This species is abundant and widespread in the study area, occurring in diverse habitats. It is frequently encountered during the summer months, often around buildings (Branch 1998; Marais 2022). It may be drawn to human habitation by the presence of poultry, rodents, amphibians, or water. **Global conservation status:** Least Concern (Verburg et al. 2022).

Naja subfulva Laurent, 1955

Eastern Forest Cobra, Brown Forest Cobra (Fig. S80)

Recorded localities: Chipinge; Jersey Tea Estates, Chipinge; Junction Gate; Mount Selinda. **Comments:** In the study area, this species is restricted to moist savanna and forests along the Mozambique border. It has also been recorded from agricultural lands around Chipinge and Junction Gate, where it appears to be locally common. **Global conservation status:** Least Concern (Spawls et al. 2021c).

Lamprophiidae

Boaedon capensis Duméril, Bibron and Duméril, 1854

Brown House Snake (Fig. S81)

Recorded localities: Bikita; Birchenough Bridge; Buffalo Bend, Mwenezi River; Buffalo Range; Chilo Gorge Safari Lodge; Chipinda Pools, GNP; Chipinge; Chirinda Forest; Kiledo Lodge, Chipinge; Kwali Camp, MWR; Mahenye; Marhumbini, GNP; Mount Selinda; MWR; Nyanyadzi; Sazale Pan, GNP; Senuko 2, SVC; Silverstreams, Chimanimani; Siyanje, Beitbridge District; Triangle; Turgwe River, Bikita. **Comments:** This is a ubiquitous snake

found throughout most of southern Africa, recorded from both arid and mesic habitats. It may be drawn to human habitation by the presence of geckos and rodents, where it is most frequently encountered (Branch 1998). **Global conservation status:** Least Concern (Alexander et al. 2021f).

Gracililima nyassae (Günther, 1888)

Black File Snake (Fig. 5d, Fig. S82)

Recorded localities: Chiredzi; Fishan, GNP; Hippo Valley; MWR; Senuko 2, SVC. **Comments:** This species is rarely seen but is widely distributed in savanna habitats (Branch 1998). The paucity of records is likely due to surveys not being conducted at night under optimal conditions for this species. **Global conservation status:** Least Concern (Howell et al. 2021f).

Limaformosa capensis (Smith, 1847)

Common File Snake (Fig. S83)

Recorded localities: Chipinge; New Year's Gift Estate, Chipinge; Tanganda River. **Comments:** This species is thought to inhabit savanna throughout most of Zimbabwe, but is very rarely encountered (Branch 1998; Broadley and Blaylock 2013). It is most frequently seen after rain at night. It likely occurs more widely in the study area than the records suggest. **Global conservation status:** Least Concern (Msuya et al. 2021).

Lycodonormorphus mlanjensis Loveridge, 1953

Mulanje Water Snake (Fig. S84)

Recorded localities: Nyahode River. **Comments:** Within the study area, this species is known from a single record on the banks of the Nyahode River (NMZB-UM 19658), where it is sympatric with *Lycodonormorphus rufulus*. Its distribution in the study area is considered marginal, confined to the rivers and foothills of the Chimanimani Mountains near Nyahode. It is also known to occur just north of the study area in Chimanimani District (e.g., Biriwiri River: NMZB-UM 31600; Silverstreams: NMZB-UM 19658). **Global conservation status:** Least Concern (Verburgt et al. 2021b).

Lycodonormorphus obscuriventris FitzSimons, 1963

Floodplain Water Snake (Fig. S85)

Recorded localities: Machaniwa Pans, Marhumbini, GNP; Mahove Tented Camp, GNP; Marhumbini, GNP; Pombadzi River, GNP. **Comments:** This species was first recorded in Zimbabwe at Machinawa Pans, GNP in 1968 (CAS 159091). Two individuals were recently recorded beneath a tent at Mahove Tented Camp, GNP in May 2023 (<https://www.inaturalist.org/observations/246903317>). It is currently known only from the Runde River floodplain and adjacent Pombadzi River (Broadley and Blaylock 2013), elsewhere from eastern South Africa through Mozambique to Malawi (Alexander et al. 2023b). **Global conservation status:** Data Deficient (Alexander and Tolley 2021t). While this species is believed to occur predominantly within protected areas in South Africa, where it has been assessed as Least Concern (Alexander et al. 2023b), records from the rest of its distribution are sparse (Alexander and Tolley 2021t).

Lycodonorphus rufulus (Lichtenstein, 1823)

Brown Water Snake (Fig. S86)

Recorded localities: Mount Selinda; Nyahode River. **Comments:** The isolated Zimbabwean population overlaps marginally with the north-east of the study area. Broadley (2018) notes that this species was collected at Mount Selinda Mission in 1986, but we were not able to trace any corresponding specimen. As such, the Nyahode specimen (NMZB-UM 19653) is the only valid record currently available. Elsewhere, it is widespread and locally abundant in temperate regions of South Africa, Eswatini, and Lesotho, occurring near water (Branch 1998; Maritz 2023). The taxonomic status of the Zimbabwean population warrants review (Maritz 2023). **Global conservation status:** Least Concern (Alexander et al. 2021g).

Lycophidion capense capense (Smith, 1831)

Common Wolf Snake (Fig. S87)

Recorded localities: Birchenough Bridge; Chibuwe, Chipinge; Chikore, Chipinge; Chipinda Pools, GNP; Chiredzi; Chirinda Forest; Fishan, GNP; MWR; Savé-Runde Confluence, GNP; Triangle; Triangle Sugar Estates. **Comments:** This subspecies occupies diverse habitats throughout its large range (Branch 1998). **Global conservation status:** Least Concern (as *Lycophidion capense*; Howell et al. 2021g).

Lycophidion variegatum Broadley, 1969

Variegated Wolf Snake (Fig. S88)

Recorded localities: Chiredzi; Chitove Camp, Runde River, GNP. **Comments:** This species inhabits rocky savanna throughout its patchy distribution, occasionally recorded beneath logs on sand (Jacobsen 1989; Branch 1998; Broadley and Blaylock 2013). In the study area, it is known only from cliffs along the Runde River and rocky terrain near Chiredzi. It may occur more widely, especially in the Savé River valley and among the extensive outcrops near Sengwe. **Global conservation status:** Least Concern (Maritz 2021).

Leptotyphlopidae

Leptotyphlops incognitus Broadley and Watson, 1976

Incognito Thread Snake (Fig. S89)

Recorded localities: Changadzi River; Chipinge; Mount Selinda; Musirizwi River. **Comments:** Within the study area, this species is known only from mesic savanna and forest edges in the north-east. It is currently thought to occupy a broad distribution from southern Malawi to central KwaZulu-Natal, South Africa (Broadley and Broadley 1999; Alexander 2023a). **Global conservation status:** Least Concern (Alexander and Tolley 2021u).

Leptotyphlops scutifrons (Peters, 1854)

Peters's Thread Snake (Fig. S90)

Recorded localities: Birchenough Bridge; Buffalo Range; Chibuwe, Chipinge; Chipinda Pools, GNP; Chiredzi; Chisumbanje; Fishan, GNP; Hippo Valley; Humani Ranch, SVC; Machaniwa Pans, Marhumbini, GNP; MWR; Nyahungwe, GNP; Senuko 2, SVC; Silverstreams, Chimanmani. **Comments:** This species is abundant and widespread over a variety of habitat types (Branch 1998), but seemingly more arid-adapted than *L. incognitus*. In the study area, it is most often found under debris or on the surface after rain. This species is

apparently sympatric with *L. incognitus* in Chipinge. As the genus is morphologically conservative and contains several cryptic taxa (see Adalsteinsson et al. 2009; Busschau et al. 2021), closer inspection and phylogenetic review of the Zimbabwean specimens are warranted. **Global conservation status:** Least Concern (Tolley and Alexander 2021e).

Myriopholis longicauda (Peters, 1854)

Long-tailed Thread Snake (Fig. S91)

Recorded localities: Chipinda Pools, GNP; Chishakwe Ranch, SVC; Malugwe Pan, GNP; MWR; Nyanyadzi, Chimanimani; Senuko 2, SVC; Siyanje, Beitbridge District. **Comments:** This species is widely distributed in low-elevation savanna from Malawi to eastern Mpumalanga province, South Africa (Branch 1998). We recorded this species in ant nests under rocks and on the surface after rain. **Global conservation status:** Least Concern (Alexander and Tolley 2021v).

Prosymnidae

Prosymna bivittata Werner, 1903

Two-striped Shovel-snout (Fig. S92)

Recorded localities: Chiredzi; Fishan, GNP; Ndanga. **Comments:** Within the study area, this species is known from only three records, all in Chiredzi District. It is possible that its distribution in the region is marginal. Elsewhere, it is widespread in savanna from southern Zimbabwe and northern South Africa to central Namibia (Branch 1998). **Global conservation status:** Least Concern (Verburgt et al. 2020b).

Prosymna lineata (Peters, 1871)

Lined Shovel-snout (Fig. S93)

Recorded localities: Ndanga; Rupise Hot Springs; Sabi Gorge. **Comments:** This species is known from only three records in the study area, but it is considered widespread in dry savanna and sandveld throughout Zimbabwe (Branch 1998; Broadley and Blaylock 2013). **Global conservation status:** Least Concern (Verburgt et al. 2020c).

Prosymna stuhlmanni (Pfeffer, 1893)

East African Shovel-snout (Fig. 5e, Fig. S94)

Recorded localities: Buffalo Range; Chipinda Pools, GNP; Chipinge; Chiredzi; Humani Ranch, SVC; MWR; Rupise Hot Springs; Sango, SVC; Triangle. **Comments:** More frequently encountered than other *Prosymna* in the region, this species is widespread in savanna and forest from eastern South Africa to Somalia (Branch 1998). The species is morphologically variable and limited phylogenetic data suggest that it may contain cryptic taxa (Heinicke et al. 2020). **Global conservation status:** Least Concern (Beraducci et al. 2021d).

Psammophiidae

Hemirhagerhis nototaenia (Günther, 1864)

Eastern Bark Snake (Fig. S95)

Recorded localities: Birchenough Bridge; Chipinda Pools, GNP; Chiredzi; Fishan, GNP; Humani Ranch, SVC; Marhumbini, GNP; MWR; Ndanga; North GNP; Nyanyadzi,

Chimanimani; Rupise Hot Springs; Ruware, Ndanga. **Comments:** This species shows an affinity for loose or textured bark in mixed broad-leaved and Mopane (*Colophospermum mopane*) woodland. Though it is an inconspicuous species, it is possibly quite abundant, given the extent of suitable habitat in the region. The species is apparently regularly encountered around Singita Pamushana lodge on MWR (B. Fouche, pers. comm. 2021). **Global conservation status:** Least Concern (Rödel et al. 2021).

Psammophis angolensis (Bocage, 1872)

Dwarf Sand Snake (Fig. S96)

Recorded localities: Chipinda Pools, GNP; Chipinge; Chiredzi; Devure River Bridge; Humani Ranch, SVC; Ntambambomvu Hills, GNP; Nyanyadzi. **Comments:** This species is widespread but rarely seen, occurring in dry woodland (Broadley and Blaylock 2013). **Global conservation status:** Least Concern (Branch et al. 2021d).

Psammophis mossambicus Peters, 1882

Olive Grass Snake (Fig. S97)

Recorded localities: Chipinda Pools, GNP; Chipinge; Chiredzi; Fishan, GNP; Gorwana Pan, GNP; Guluene South, GNP; Hippo Mine, Chipinge; Mabalauta, GNP; Mahenye; MWR; New Year's Gift Estate, Chipinge; Nyamugwe Pan, GNP; Senuko 2, SVC; Triangle; Turgwe River, Bikita. **Comments:** This species is widespread in savanna and grassland (Branch 1998). Recent observations on MWR have all been in disturbed Mopane and Umbrella Thorn (*Vachellia tortilis*) woodland. **Global conservation status:** Least Concern (Alexander et al. 2021h).

Psammophis orientalis Broadley, 1977

Eastern Stripe-bellied Sand Snake, Eastern Yellow-bellied Sand Snake (Fig. S98)

Recorded localities: Mahenye. **Comments:** This species has a marginal distribution in the study area, known only from mesic savanna in Mahenye (NMZB-UM 18712, 18842; possibly <https://www.inaturalist.org/observations/208451617>). It may also enter the region further north along the Mozambique border. **Global conservation status:** Least Concern (Spawls et al. 2021d).

Psammophis subtaeniatus Peters, 1882

Western Stripe-bellied Sand Snake, Western Yellow-bellied Sand Snake (Fig. 5f, Fig. S99)

Recorded localities: Bhenji River, GNP; Bhenji Spring, Nyamutongwe, GNP; Birchenough Bridge; Buffalo Range; Chilo Gorge Safari Lodge; Chingele Borehole, Matibi II Communal Lands; Chipinda Pools, GNP; Chiredzi; Chishakwe Ranch, SVC; Chitza, Savé-Runde Confluence, GNP; Devure River Bridge; Fishan, GNP; Hippo Valley Estates; Humani Ranch, SVC; KayaNyala, Mahenye; Mabalauta, GNP; Malipati, GNP; Mteri Dam; MWR; Ndali, Chipinda Pools, GNP; Ndanga; Nyanyadzi; Pesy River, Chikwarakwara, Chipise Communal Lands; Rupise Hot Springs; Ruware, Ndanga; Samalema Gorge; Savé-Runde Confluence; Senuko 2, SVC; Senuko 3, SVC; Siyanje, Beitbridge District; Triangle; Turgwe River, Bikita. **Comments:** This is a widespread savanna species and the most frequently recorded snake in the region. **Global conservation status:** Least Concern (Alexander et al. 2021i).

Psammophylax tritaeniatus (Günther, 1868)

Striped Skaapsteker, Striped Grass Snake (Fig. S100)

Recorded localities: Bikita; Chikombedzi; Chipinge Airfield; Chiredzi; Chirinda Forest; MWR; Savé-Runde Confluence. **Comments:** This species is widespread in open grassland and savanna (Branch 1998; Broadley and Blaylock 2013). Within the study area, it has mostly been recorded from Mopane woodland. **Global conservation status:** Least Concern (Bates et al. 2021).

Rhamphiophis rostratus Peters, 1854

Eastern Rufous Beaked Snake (Fig. S101)

Recorded localities: Bhenji Spring, GNP; Birchenough Bridge; Chipangayi Bridge, Chipinge; Chipinda Pools, GNP; Devure River Bridge; Guluene South, GNP; Mahenye; Majinji Pan, Mwenezi; Marhumbini, GNP; MWR; Nyanyadzi; Senuko 2, SVC. **Comments:** This species is widespread but rarely seen, favouring sandy lowveld (Broadley and Blaylock 2013). Out of 16 specimens recently recorded in surveys on MWR, 15 were caught in funnel traps, including only one adult. **Global conservation status:** Least Concern (Beraduccii et al. 2021e).

Pseudaspidae

Pseudaspis cana (Linnaeus, 1758)

Mole Snake (Fig. S102)

Recorded localities: Mount Selinda. **Comments:** Though widespread in a variety of habitats, this species is known from only a single record in the study area (CM S6333). It is unclear why the species has not been more widely recorded in the region. **Global conservation status:** Least Concern (Beraduccii et al. 2021f).

Pythonidae

Python natalensis Smith, 1840

Southern African Python (Fig. 5 g, Fig. S103)

Recorded localities: Chipinge; Hammond Ranch, SVC; Hippo Valley; Savé-Runde Confluence, GNP; Mahenye; Makonde Mananga, GNP; Mokore, SVC; MWR; North GNP; Old Mill, Hippo Valley Estates; Senuko 2, SVC; Triangle; upper Mutondowari River, GNP. **Comments:** This species is widespread and found in a variety of habitats but typically occurs at low densities (Alexander and Tolley 2021w), often in association with mammal burrows (Alexander 2018). It is considered sensitive to habitat transformation (Alexander 2023a). **Global conservation status:** Least Concern (Alexander and Tolley 2021w).

Typhlopidae

Afrotyphlops dinga (Peters, 1854)

Zambezi Blind Snake (Fig. 5 h, Fig. S104)

Recorded localities: Bikita; Birchenough Bridge; Chilo Gorge Safari Lodge; Chipinda Pools, GNP; Chipinge; Chiredzi; Chirinda Forest; Glen Clova, Bikita; Hippo Valley; Humani

Ranch, SVC; Jersey Tea Estates, Chipinge; KayaNyala, Mahenye; Kwali Camp, MWR; Mahove Camp; Marhumbini, GNP; Mount Selinda; Ndanga; North GNP; Senuko 2, SVC; Triangle. **Comments:** This fossorial species is widespread in Zimbabwe, occurring in a variety of habitats (Broadley and Blaylock 2013). The more widely used name, *Afrotyphlops mucruso* (Peters, 1854), is a junior synonym of *A. dinga* (Trape and Collet 2021). **Global conservation status:** Least Concern (as *Afrotyphlops mucruso*; Branch and Wagner 2021).

Afrotyphlops fornasinii (Bianconi, 1849)
Fornasini's Blind Snake (Fig. S105)

Recorded localities: Malugwe Pan, GNP. **Comments:** The only Zimbabwean specimen (NMZB-UM 12329) was collected at Malugwe Pan, GNP in 1966 (Broadley and Blaylock 2013). This species inhabits sandy soils in coastal scrub and grassland, burrowing beneath logs and leaf litter (Branch 1998). **Global conservation status:** Least Concern (Pietersen et al. 2021g).

Rhinotyphlops lalandei (Schlegel, 1839)
Delalande's Beaked Blind Snake (Fig. S106)

Recorded localities: Chikombedzi; Fishan, GNP. **Comments:** This species is known from only two specimens in the study area (NMZB-UM 20244 and NMZB-UM 33275), both collected in 1968. It is likely more widespread in the study area than the records suggest, as it occurs in savanna and semi-desert across much of southern Africa (Branch 1998; Broadley and Blaylock 2013). **Global conservation status:** Least Concern (Pietersen and Verburgt 2021).

Viperidae

Bitis arietans arietans (Merrem, 1820)
Common Puff Adder (Fig. 5i, Fig. S107)

Recorded localities: Birchenough Bridge; Buffalo Range; Chibvumani Ruins; Chigwete, SVC; Chipinda Pools, GNP; Chiredzi; Chishakwe Ranch, SVC; Fishan, GNP; Heathfield, Chimanimani; Humani, SVC; Mahenye; Malipati, GNP; Malugwe Pan, GNP; Matendere, SVC; Moodies Pass; Mount Selinda; MWR; New Year's Gift Estate, Chipinge; North, GNP; Rupise Hot Springs; Sango Lodge, SVC; Sango Musawezi, SVC; Senuko 2, SVC; Silverstreams, Chimanimani; Skyline Junction, Chimanimani; Triangle; Turgwe River, Bikita; Uitkyk Farm, Chimanimani. **Comments:** This subspecies is widespread and abundant in a variety of habitats across much of Africa. In southern Africa, it is absent only from dense forest, true desert, and very high elevations (Branch 1998). While two subspecies are recognised (*B. a. armata* and *B. a. somalica*), further investigation is required to resolve genetic structuring observed in the species (e.g., Barlow et al. 2013). **Global conservation status:** Least Concern (as *Bitis arietans*; Wagner et al. 2021g).

Bitis caudalis (Smith, 1839)
Horned Adder (Fig. S108)

Recorded localities: Boli Primary School, Matibi II Communal Land; Chipise Ward. **Comments:** This species has only been confirmed in the study area twice. The specimen collected at Boli Primary School, Matibi II Communal Land in 1976 (NZMB-UM 32386)

represents the easternmost record of this species (Broadley and Blaylock 2013). It is widespread in the arid regions of southern Africa (Branch 1998) but rarely seen in Zimbabwe. Here, at the eastern end of its range, it is found in Mopane scrub (Broadley and Blaylock 2013). Recent anecdotal reports suggest that the species still occurs near Boli (at Chikombedzi; P. Chivambu, pers. comm. 2023) and may occur as far east as Bhenji Weir in GNP, in stunted Mopane veld (J. Clegg, pers. comm. 2024). **Global conservation status:** Least Concern (Alexander and Tolley 2021x).

Bitis gabonica (Duméril, Bibron, and Duméril, 1854)

Eastern Gaboon Viper, Eastern Gaboon Adder (Fig. S109)

Recorded localities: Chipinge; Chirinda Forest; Dzoroka Farm, Chipinge; Gwali Farm, Chipinge. **Comments:** The species is locally restricted to forests and surrounding ecotones in the north-east of the study area. It occupies a large, disjunct distribution from central-west to south-east Africa (Luiselli et al. 2021d). **Global conservation status:** Vulnerable; the species has experienced local declines due to habitat loss across its range, especially in central-west Africa (Luiselli et al. 2021d). Threat levels across the various subpopulations are likely not equal (e.g., Alexander et al. 2023c).

Causus deflippii (Jan, 1863)

Snouted Night Adder (Fig. S110)

Recorded localities: Bhenji Spring, Nyamutongwe, GNP; Bikita; Birchenough Bridge; Buffalo Range; Chikombedzi; Chipinge; Chirinda Forest; Chishakwe Ranch, SVC; Highlands Farm, Chipinge; Mount Selinda; Runde-Turgwe Confluence; Sango HQ, SVC; Savé-Runde Confluence, GNP; Triangle. **Comments:** A VMUS record from Chikombedzi (ReptileMAP 185130) is currently the southernmost record in Zimbabwe, but this species likely occurs throughout much of the study area. It is abundant in dry savanna and lowveld with sufficient water to host frogs, its specialist prey (Broadley 1983; Branch 1998; Broadley and Blaylock 2013). **Global conservation status:** Least Concern (Alexander and Tolley 2021y).

Causus rhombeatus (Lichtenstein, 1823)

Rhombic Night Adder (Fig. S111)

Recorded localities: Cecilton, Chimanimani; Chirinda Forest; Clearwater Estate, Chipinge; Mount Selinda; Savé-Runde Confluence. **Comments:** This species appears to be restricted to mesic environments at moderately high elevations in the region, with the exception of one record at the Savé-Runde Confluence (NMZB 2318). **Global conservation status:** Least Concern (Alexander and Tolley 2021z).

TESTUDINES

Pelomedusidae

Pelomedusa subrufa (Bonnaterre, 1789)

Central Marsh Terrapin (Fig. S112)

Recorded localities: Birchenough Bridge; Chishakwe Ranch, SVC; Ingweni Pans, GNP; Chimbiya Spring, MWR; Chibvumani Ruins; Sango Chanurwe, SVC. **Comments:** This

species occupies a wide distribution, although it is not commonly recorded in the region. It favours temporary waterbodies and aestivates underground during droughts (Branch 1998). Several carapaces were found wedged in sandstone crevices at a spring on MWR, possibly by humans. **Global conservation status:** The species is currently Not Evaluated by the IUCN. Petzold et al. (2014) resolved the *Pelomedusa subrufa* species complex, describing six new species that have yet to be individually assessed. *Pelomedusa subrufa* (*sensu stricto*) was provisionally considered globally Data Deficient by the Tortoise and Freshwater Turtle Specialist Group (TFTSG) in 2018, as some populations in west, central, and east Africa have yet to be assigned to any specific species (TTWG 2021). However, it is regionally listed as Least Concern in South Africa (Fritz and Hofmeyr 2023). The known range and predicted population size of *P. subrufa* exceed the threshold for any official threat category, and we predict that this species will be assigned an IUCN Red List status of Least Concern, pending taxonomic resolution of the populations mentioned above.

Pelusios rhodesianus Hewitt, 1927

Mashona Hinged Terrapin, Variable Hinged Terrapin (Fig. S113)

Recorded localities: Junction Gate. **Comments:** Within the study area, this species is known from a single recent record on a farm near Junction Gate (<https://www.inaturalist.org/observations/240995106>). It is widespread through central and south-east Africa, with an apparently isolated subpopulation in KwaZulu-Natal province, South Africa (TTWG 2021). It inhabits well-vegetated wetlands, occasionally taking up residence in farm dams (Branch 1998). **Global conservation status:** Least Concern (TFTSG 1996a); update warranted given time since last assessment.

Pelusios sinuatus (Smith, 1838)

Serrated Hinged Terrapin (Fig. 5j, Fig. S114)

Recorded localities: Birchenough Bridge; Buffalo Bend Pan, GNP; Chigwete, SVC; Chilo Gorge Safari Lodge; Chilojo Cliffs, GNP; Chipinda Pools, GNP; Chirinda Forest; Chishakwe Ranch, SVC; Chivilila, GNP; Devuli Ranch, SVC; Devure River Bridge; Fishan, GNP; Limpopo River; Mabalauta, Mwenezi River, GNP; Marhumbini, GNP; Mungwezi River, Chiredzi; Musaswi River, Chipinge; MWR; Pesu River, Sengwe Communal Land; Runde River, Warden's Camp, GNP; Ruware, Ndanga; Samalema Gorge; Savé-Runde Confluence; Senuko 2, SVC; Swimuwini, GNP. **Comments:** This species is abundant in permanent waterbodies throughout the study area. Vamberger et al. (2019) revived the subspecies *P. s. bottegi* (Boulenger, 1895) and identified a contact point between it and *P. s. sinuatus* on the Limpopo River. While *P. s. sinuatus* likely crosses the Limpopo River into southern Zimbabwe, *P. s. bottegi* is considered the dominant subspecies in the study area (TTWG 2021). A molecular study is required to resolve the distribution of and potential gene flow between the two subspecies in south-eastern Zimbabwe. **Global conservation status:** Not Evaluated. Provisionally listed as Least Concern (TFTSG 2013 in TTWG 2021). The subspecies *P. s. sinuatus* is regionally listed as Least Concern in South Africa and Eswatini (Hofmeyr and Boycott 2023a).

Pelusios subniger (Bonnaterre, 1789)

Pan Hinged Terrapin, Black-bellied Hinged Terrapin (Fig. S115)

Recorded localities: Chiredzi River, Ruware; Fishan, GNP; Humani, SVC; Malugwe Pan, GNP; Musirizwi River; Naivasha Pan, GNP; Ntambambomvu Hills, GNP; Nyala Pan, GNP; Savé Experimental Station; Triangle. **Comments:** This species is widespread but infrequently recorded in the study area, possibly due to confusion with other terrapin species. It favours temporary waterbodies and may aestivate underground during droughts (Branch 1998). **Global conservation status:** Least Concern (TFTSG 1996b); update warranted given time since last assessment.

Testudinidae

Kinixys spekii Gray, 1863

Speke's Hinge-backed Tortoise (Fig. S116)

Recorded localities: Birchenough Bridge; Chipimbi Ranch, Chiredzi; Chiredzi; Matendere, SVC; Mount Selinda; MWR; North GNP; Sango Chanurwe, SVC; Senuko 2, SVC; Triangle. **Comments:** This locally common species is widespread from dune forest to thornveld, often in somewhat mesic environments. It aestivates underground during the dry season, becoming active in summer (Branch 1998). Anecdotal reports of "Bell's Hinge-backed Tortoise" may refer to this species. The specimen from Chipimbi Ranch, Chiredzi (NMZB 9483) is possibly a hybrid between *K. spekii* and *K. zombensis*, as is a live tortoise recorded in Triangle (Broadley 1988, 1990a). **Global conservation status:** While Not Evaluated on the IUCN Red List, the species was provisionally assessed as globally Vulnerable by the TFTSG in 2013 (TTWG 2021). It is regionally listed as Least Concern in South Africa and Eswatini (Hofmeyr and Boycott 2023b).

Kinixys zombensis Hewitt, 1931

Eastern Hinge-backed Tortoise (Fig. 5k, Fig. S117)

Recorded localities: KayaNyala, Mahenye; Mount Selinda. **Comments:** Historical records of *Kinixys belliana belliana* in the region refer to this species (Kindler et al. 2012). Four specimens from GNP (NMZB-UM 17770, 12078, 32991, and 19740, collected at Chefu South, Fishan, Guluene South, and Marhumbini, respectively) and seven from Mount Selinda (TM 16148–16153 and 19204) are listed as *Kinixys belliana* but it is unclear whether they refer to this species or *K. spekii*. Two specimens – a shell found at Chipimbi Ranch, Chiredzi in 1988 (NMZB 9483), and a live tortoise from Triangle – are possibly hybrids between *K. zombensis* and *K. spekii* (Broadley 1988, 1990a). *Kinixys zombensis* has been recorded from coastal forest, inland through thornveld and savanna (Broadley 1993; Branch 1998). Neither the TTWG (2021) nor Hofmeyr and Boycott (2023c) recognise this species as occurring in Zimbabwe, while its presence is recognised by Pietersen et al. (2021a). The accessible records are in-keeping with *K. zombensis* on the basis of morphology, although a phylogenetic placement of the Zimbabwean specimens/populations would be valuable. **Global conservation status:** While Not Evaluated on the IUCN Red List, the species was provisionally assessed as globally Vulnerable by the TFTSG in 2013 (TTWG 2021). It is regionally listed as Least Concern in South Africa (Hofmeyr and Boycott 2023c).

Stigmochelys pardalis (Bell, 1828)

Leopard Tortoise (Fig. 5 I, Fig. S118)

Recorded localities: Bedford Block, SVC; Birchenough Bridge; Chiredzi District; Devuli Ranch, SVC; Fishan, GNP; Guluji River, NE of Chipinda Pools, GNP; Mabalauta, GNP; Matendere, SVC; Mwenezi River, Malipati; Makonde, GNP; MWR; Tswiza, GNP; North GNP; Nyala, GNP; Rupise Hot Springs; Sango Chanurwe, SVC; Sango Chapungu, SVC; Tembwahata Pan, GNP; Turgwe River, SVC. **Comments:** This species is widely distributed in a variety of savanna habitats throughout southern and East Africa (Branch 1998; Baker et al. 2022). **Global conservation status:** Least Concern (Baker et al. 2022).

Trionychidae

Cycloderma frenatum Peters, 1854

Zambezi Soft-shelled Terrapin (Fig. S119)

Recorded localities: Chipinda Pools, GNP; Chitove Camp, Runde River, GNP; Lower Runde River, GNP; Marhumbini, GNP; Savé River, Chilo Gorge Safari Lodge; Savé-Runde Confluence, GNP. **Comments:** This species is locally restricted to the Savé and Runde Rivers and surrounding floodplains between Chipinda Pools and the Savé-Runde Confluence (Broadley 1990b). Elsewhere, it occurs in several major river basins, from the Rufiji River in Tanzania, south through Lake Malawi and the lower Zambezi River, reaching its southern limit at the Savé River in Mozambique (van Dijk 2016). One of the authors observed this species stealing bait from anglers on the Runde River, where it is thus occasionally foul hooked. It may be locally common. **Global conservation status:** Endangered; this species is believed to be declining across its range due to overexploitation for the East Asian market, pollution, and trophic effects resulting in increased predation by crocodiles (van Dijk 2016). However, the Zimbabwean population is largely confined to GNP and is thus well protected.

Discussion

Our study provides a comprehensive summary of the occurrence records for all reptile taxa in south-eastern Zimbabwe and highlights patterns of spatial and temporal sampling bias. Thus, it provides a baseline for further ecological research in the area and supports national conservation management strategies. The area hosts a diverse assemblage of reptiles, totalling 121 recognised taxa, 15 of which are known from only a single locality within the study area and 10 of which have only been recorded once within the study area. Seven lizard species contributed to nearly 40% of all records, and were either conspicuous and diurnal (e.g., *Platysaurus intermedius rhodesianus*, *Trachylepis margaritifer*) or synanthropic (e.g., *Lygodactylus capensis*, *Hemidactylus mabouia* complex). Two of the recorded species are globally listed by the IUCN as Vulnerable (*Bitis gabonica* and *Rhampholeon marshalli*), two are Endangered (*Cycloderma frenatum* and *Zygaspis ferox*), two are Data Deficient (*Lycodonmorphus obscuriventris* and *Nucras caesicaudata*), and four are Not Evaluated (*Pelomedusa subrufa*, *Pelusios sinuatus*, *Kinixys spekii*, and *Kinixys zombensis*). While none of the recorded taxa are endemic to the study area, they constitute a large

proportion of the area's tetrapod diversity, a fact which warrants greater attention in regional conservation planning.

The 4 017 records we examined were collected in three distinct peaks of sampling activity, each associated with the presence of an active herpetologist in the region. The most significant contributions to the dataset were made by the various expeditions led by Donald G. Broadley, particularly those to GNP and Mahenye in the late 1960s. Despite the total number of records more than doubling from 1970 to 2024, only six species were added to the region's species list over the same period. Few of the records have been published except in taxonomic papers (but see FitzSimons 1939; Broadley 1959, 1967, 1968; Barton 1969). As such, our study increases the number of published records by an estimated 285%.

We observed variation in taxonomic representation in the dataset associated with natural history traits that limit sampling. For example, large-bodied species such as crocodylians and varanids are poorly represented because their size precludes their inclusion in wet collections (Jacobsen 1989), although they have certainly been present in the region since herpetological surveys began. Only with the popularisation of digital photography in the last two decades has it become possible to record these species more widely, resulting in a recent spike in records. Conversely, fossorial species have rarely been reported since the 1970s. We attribute this to the fact that recent surveys (K. M. van Wyk, unpublished data) have not targeted them specifically – opting instead to sample the largest subset of the community possible using a single method (e.g., trapping, visual encounter surveys). While the majority of records stem from formal surveys of the region's reptile communities, citizen science has made valuable contributions to the dataset (86 records via personal communication and social media, and 549 records via the VMUS and iNaturalist). These include the first records of *Lycodonomorphus obscuriventris* and *Natriciteres sylvatica* in 55 and 67 years respectively, and the first ever records of *Meizodon semiornatus semiornatus* and *Pelusios rhodesianus* in the region, although both species were predicted to occur there. Such “chance encounters” can be of considerable value in understanding species distributions and ecology, particularly in regions that are poorly accessible, or which have historically been poorly sampled. We therefore emphasise the importance of considering multiple data sources when compiling baselines for ecological monitoring, and advocate for the submission of photographic records to citizen science platforms such as iNaturalist.

The kernel density estimate highlighted two conspicuous sources of bias in the occurrence dataset. The first was the dense cluster of records from MWR, owing to recent surveys conducted on the reserve from 2021 to 2023 (K. M. van Wyk, unpublished data). Smaller clusters of records were observed at some of the major camps in GNP and at Chilo Gorge Safari Lodge, where many citizen science records were logged. Conversely, the second source of bias was the lack of records from rural areas. Despite advances in opportunities for the public to contribute to biodiversity data, members of rural communities in Zimbabwe may not have access to the required technology or may not know the value of *ad hoc* observations of reptile species. While reptile abundance is thought to be broadly suppressed in agricultural areas across sub-Saharan Africa (Clements et al. 2024), we lack knowledge on potential shifts in relative abundance and community composition among those species which persist in these transformed habitats. This trend has also generally discouraged herpetologists from sampling outside of

protected areas. As a result, unprotected natural areas have seemingly been overlooked, and we lack the data required to quantify changes in reptile species richness across the total landscape over time. Model-based approaches to predict species richness across the study area are hampered by the paucity of occurrence data for many taxa as well as the spatial and temporal bias associated with the dataset. These biases limit our ability to correlate observed patterns of species richness with environmental data, including climate and land cover. As such, there is a need for robust sampling of reptile communities across multiple land uses in the region to assess the potential conservation value of remaining natural areas beyond the current protected area network. We hypothesise that these areas host diverse reptile communities, as anthropogenic disturbance is low due to the rugged terrain and drought-prone climate. Surveys in and conservation of these habitats may therefore constitute “low hanging fruit” for state and private conservation entities to meet national biodiversity targets.

Nonetheless, our study reinforces the conservation value of south-eastern Zimbabwe’s protected areas. One-hundred-and-six of the 121 reptile taxa (including all of the threatened species) recorded in the study area were recorded in at least one protected area. Three of the four globally threatened reptile species recorded in the study area are confined to rapidly shrinking forests along the Mozambique border (see Timberlake and Müller 2021), and targeted action is required to secure critical habitats for these species, which must be prioritised in national conservation planning. Dedicated surveys are also required to resolve the conservation status of the two Data Deficient species recorded in the region. As we have noted, citizen science may contribute meaningfully to this goal.

Possibly occurring

While the dataset considered in this paper spans over 200 years of records, providing a broad overview of south-eastern Zimbabwe’s reptile diversity, additional species may be documented with further surveys. The following taxa possibly occur in the region, based on nearby records and the existence of suitable habitat.

Squamata: Amphisbaenidae: *Chirindia langi langi* FitzSimons, 1939 – This subspecies has only been recorded from extreme north-eastern Limpopo province, South Africa (e.g., Pafuri; TM 26317, 28667, 28868; Stander 2023; <https://www.inaturalist.org/observations/227093777>). Little is known about the limits of its distribution, and it is suspected to occur in adjacent Mozambique and Zimbabwe (e.g., Sengwe; Measey 2023a).

Squamata: Amphisbaenidae: *Zygaspis quadrifrons* (Peters, 1862) – The absence of records from the study area is curious, as this is a widespread species, occurring on various soil types, and is often the most frequently encountered amphisbaenian in its range (Branch 1998; Pietersen et al. 2021). The closest known record is from Silverstreams, Chimanimani (NMZB-UM 18369), and the species is known to occur along the Limpopo River into Mozambique (Branch 1998). Broadley and Gans (1978a) note that this species has been collected in the vicinity of Chirinda Forest, so its occurrence in the study area is considered highly likely. There is a higher concentration of records in the western half of Zimbabwe, from Beitbridge (ReptileMAP 75015) to Victoria Falls (ReptileMAP 172112).

Squamata: Gekkonidae: *Lygodactylus stevensoni* Hewitt, 1926 – Endemic to southern Zimbabwe and northern Limpopo province, South Africa, inhabiting well-wooded rock

outcrops (Pietersen et al. 2023a). Recorded as far east as Mabyeni Hill (TM 52562), on the South African side of the Limpopo River opposite the Buby-Limpopo Confluence, Beitbridge District. The southern end of the study area (Chipise Ward and parts of the Sengwe Corridor) offers suitable habitat for this species, but as it is rupicolous, the Limpopo River may constitute a significant barrier to its distribution.

Squamata: Lacertidae: *Holaspis laevis* Werner, 1896 – The first Zimbabwean record was reported by Broadley and Wursten (2007) on the western bank of the Haroni River, approximately 15 km east-north-east of the study area. Though thought to be predominantly a forest-dwelling species, *H. laevis* has been recorded from miombo woodland near Beira, Mozambique (Broadley and Wursten 2007) and *Eucalyptus* plantations in southern Malawi (Broadley 2018). It may thus occur more widely in submontane habitats in eastern Zimbabwe.

Squamata: Scincidae: *Acontias fitzsimonsi* (Broadley, 1968) – The species is currently known only from extreme north-eastern Kruger National Park, Limpopo province, South Africa, but may occur in adjacent Mozambique and Zimbabwe (Bauer and Conradie 2023).

Squamata: Scincidae: *Scelotes limpopoensis limpopoensis* FitzSimons, 1930 – Known from many scattered records along the Limpopo River, but with very few records from Zimbabwe, all in Beitbridge District (Broadley et al. 1997). The easternmost record comes from Makuleke Contractual Park (ReptileMAP 87452), Limpopo province, South Africa, just south of the Buby-Limpopo Confluence, which is closer to the study area than the nearest known Zimbabwean record, collected just south of the Buby River Bridge (AJL 3447; Broadley et al. 1997). As it is an inconspicuous, fossorial species, it may be more widespread in southern Zimbabwe than is currently known.

Squamata: Scincidae: *Trachylepis boulengeri* (Sternfeld, 1911) – The species is known to occur just beyond the study area, on the western bank of the Haroni River (<https://www.inaturalist.org/observations/120490401>), in Ngorima Communal Land (NMZB-UM 9101, 9338) and Ngorima Forest Reserve (TM 34355; NMZB-UM 10377, 16944). It occupies a variety of habitats with a prominent herbaceous layer and high leaf litter cover, often near wetlands (Branch 1998; Pietersen et al. 2021a). It is therefore likely to be present in forest fringes and grassland in the north-east of the study area.

Squamata: Atractaspididae: *Amblyodipsas microphthalma microphthalma* (Bianconi, 1852) – This inconspicuous fossorial snake is currently known only from deep aeolian or alluvial sands in extreme eastern South Africa and southern Mozambique, but may occur in similar savanna habitats in south-eastern Zimbabwe (Jacobsen 1989; Maritz and Burger 2023c).

Squamata: Atractaspididae: *Xenocalamus transvaalensis* Methuen, 1919 – Historically known only from deep sands in coastal forest and Mopane woodland in southern Mozambique and adjacent South Africa (Jacobsen 1989; Pietersen et al. 2023b), this rare species has recently been recorded north of the Limpopo River for the first time on Sentinel Ranch, Beitbridge District. All specimens were found in the same swimming pool between 2019 and 2023 (<https://www.inaturalist.org/observations/37578530>; <https://www.inaturalist.org/observations/66506022>; <https://www.inaturalist.org/observations/68594801>; <https://www.inaturalist.org/observations/145101984>; <https://www.inaturalist.org/observations/146025358>). This species likely occurs more widely in alluvial savanna fringing the Limpopo River Valley.

Squamata: Elapidae: *Aspidelaps scutatus scutatus* (Smith, 1849) – The biogeographic divide between the three subspecies of *A. scutatus* is unclear (Alexander 2023b). A specimen labelled as *A. s. scutatus* was collected at Buby River Bridge (NMZB-UM 1597), approximately 100 km west of the nearest *A. s. fulafula* record in the study area (Nyamugwe Pan, GNP: NMZB 7148). It is possible that *A. s. scutatus* occurs in the south-western corner of the study area (e.g., in Chipise Ward). The third subspecies, *A. s. intermedius*, is not known to occur in Zimbabwe, with the closest records being two specimens collected in northern Kruger National Park, South Africa (ReptileMAP 80913, 80914).

Squamata: Lamprophiidae: *Lycophidion nanum* (Broadley, 1968) – In Zimbabwe, the species is known only from Haroni Forest; elsewhere, from central Mozambique (Broadley and Blaylock 2013). It may occur more widely in forest and woodland in the extreme north-east of the study area, and in other foothills of the Chimanimani Mountains. The species is thought to be a dietary specialist, feeding exclusively on *Chirindia* (Broadley 1996), which may limit its distribution in the study area.

Squamata: Pseudoxyrhopiidae: *Duberria rhodesiana* Broadley, 1958 – The closest record is a single specimen collected just north of the study area at Merry Waters Farm, Chimanimani (NMZB-UM 33710). Another 12 specimens have been collected at Silverstreams, Chimanimani. It may occur in mesic habitats in the extreme north-east of the study area (e.g., between Junction Gate and Nyahode).

Squamata: Typhlopidae: *Afrotyphlops schlegelii* (Bianconi, 1849) – The species is not thought to occur in Zimbabwe but is known from the southern bank of the Limpopo River. It is morphologically similar to *Afrotyphlops dinga* (although both species are variable; Branch 1998) and the status of the subspecies *Afrotyphlops schlegelii petersii* is poorly understood. Phylogenetic work is needed to resolve the status and distribution of these taxa (Measey 2023b).

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Disclosure statement

No potential conflict of interest was reported by the author(s).

ORCID

Kurt M van Wyk  <http://orcid.org/0000-0002-6391-3486>

Bryan Maritz  <http://orcid.org/0000-0003-2537-1222>

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