A CHECKLIST OF THE SPIDERS (ARACHNIDA, ARANEAE) OF THE POLOKWANE NATURE RESERVE, LIMPOPO PROVINCE, SOUTH AFRICA

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ABSTRACT

As part of the South African National Survey of Arachnida (SANSA), spiders were collected from all the field layers in the Polokwane Nature Reserve (Limpopo Province, South Africa) over a period of a year (2005–2006) using four collecting methods. Six habitat types were sampled: *Acacia tortillis* open savanna; *A. rehmanniana* woodland, false grassland, riverine and sweet thorn thicket, granite outcrop; and *Aloe marlothii* thicket. A total of 13 821 spiders were collected (using sweep netting, tree beating, active searching and pitfall trapping) represented by 39 families, 156 determined genera and 275 species. The most diverse families are the Thomisidae (42 spp.), Araneidae (39 spp.) and Salticidae (29 spp.). A total of 84 spp. (30.5%) were web builders and 191 spp. (69.5%) wanderers. In the Polokwane Nature Reserve, 13.75% of South African species are presently protected.

Keywords: Arachnida, Araneae, diversity, habitats, conservation

In the early 1990s, South Africa was recognised, in terrestrial terms, as a biologically very rich country and even identified as the world's 'hottest hotspot' (Myers 1990). After the United Nations Conference on Environment and Development in 1992, South Africa ratified the Convention on Biological Diversity in 1995 with the main goal to develop a strategic plan for conservation and sustainable use of biodiversity. One of the national efforts identified as necessary to accomplish the goal was to discover, describe and to make an inventory of the species of South Africa. As a result of this, the South African National Survey of Arachnida (SANSA) was established in 1997 with the aim to develop an inventory of the arachnofauna of South Africa (Dippenaar-Schoeman & Craemer 2000). Arachnids are well represented in South Africa, with nine of the twelve arachnid orders occurring here. However, even though they constitute an abundant and successful group, they are still poorly sampled with little existing knowledge about their diversity and distribution within certain ecoregions.

South Africa has a very rich spider fauna represented by 69 families, 469 genera and about 2 000 species that occur in all of the ecoregions of South Africa (Dippenaar-Schoeman 2002a). Unfortunately, the lack of taxonomic expertise makes it impossible to identify some spider families to species and even generic levels, which could lead to under-appreciation and estimation of the actual species pool and undermines meaningful conservation. As part of SANSA, this study addressed specifically the objective to compile species lists within the Savanna Biome, starting with checklists of the conserved areas where conservation strategies are already in place.

The Savanna Biome is one of the world's major biomes and covers about one third of South Africa (Low & Rebelo 1996). It is especially well developed in the Kalahari, parts of Limpopo and KwaZulu-Natal, Mpumalanga and the Eastern Cape. Savanna is characterised by a grassy ground layer and a distinct upper layer of woody plants that can be identified as shrubveld, woodland or bushveld. The delimiting factor is complex for the Savanna Biome and includes mainly rainfall (235 to 1 000 mm per year) and/or frost (0–120 days/year). Reports on the spiders of the Savanna Biome in South Africa are restricted to that of Roodeplaat Dam Nature Reserve (Dippenaar-Schoeman *et al.* 1989), Makalali Game Reserve (Whitmore *et al.* 2001, 2002), Western Soutpansberg (Foord *et al.* 2002), Kruger National Park (Dippenaar-Schoeman & Leroy 2003), Sovenga Hill (Modiba *et al.* 2005) and Ndumo Game Reserve (Haddad *et al.* 2006).

This is the second survey of arachnids from the Polokwane region, Limpopo Province. The study was undertaken in the Polokwane Nature Reserve (PNR) which lies in the Savanna Biome, and is situated in the Central Bushveld Bioregion, specifically the Polokwane Plateau Bushveld vegetation unit (Mucina *et al.* 2005, Mucina & Rutherford 2006). A significant portion of the reserve includes a unique and threatened habitat type known as the Pietersburg Plateau False Grassland. The reserve was given conservation status and was proclaimed as a municipal reserve after officially being opened in 1971. Currently the reserve conserves one of the largest pristine examples of this habitat type, along with its associated plant and animal species.

As part of the MSc studies of the third and fourth authors, spiders were sampled from six habitat types over a period of a year using four collecting methods, sampling all the field layers. This paper is the first in a series of papers on the reserve and provides only an annotated checklist for the spiders of the reserve. Detailed information about the abundance and species richness of spiders collected from different habitat types, during different seasons and using different sampling methods will be published in succeeding papers.

STUDY AREA

The Polokwane Nature Reserve (23°58′S 29°28′E) covers an area of approximately 3 200 ha and lies on an elevated plateau with an altitude ranging between 1 200 and 1 500 m above sea level. The climate is moderate with mean summer day-time high of 28 ºC and a mean winter night-time low of 5 ºC. The average annual rainfall for the area is 478 mm. The Polokwane Plateau Bushveld vegetation unit is characterised by open *Themeda* grassland with scattered *Acacia* trees and bush clumps. The dominant trees are *Acacia tortillis* (Forssk.) Hayne and *A. rehmanniana* Schinz. Other interesting plant communities and habitats in the reserve include riverine and sweet thorn thickets, granite outcrops, quartzite pebble slopes, saline patches and a mountain aloe, *Aloe marlothii* A. Berger thicket situated on a shale outcrop (Grosel pers. comm.).

METHODS

Six different habitat types were selected subjectively to represent most of the habitat diversity in the reserve and included: 1. *Acacia tortillis* open savanna, 2. *A. rehmanniana* woodland, 3. false grassland, 4. riverine and sweet thorn thicket, 5. a northern slope granite outcrop, and 6. *Aloe marlothii* thicket on shale outcrop.

Four collecting methods were used, namely grass sweep netting, tree beating, active searching and pitfall trapping. Leaf litter sifting was attempted once on the *A. rehmanniana* woodland site but was discontinued because of insufficient leaf litter. Sampling was conducted once a month in each of the six habitat types for a duration of 12 months (March 2005 to February 2006).

Pitfall trapping: Containers with a 10 cm diameter were planted with the upper rim level with the ground surface and covered by a funnel leading to a smaller container filled with 70% EtOH to immobilise and preserve caught specimens. Ten traps, 10 m apart, were planted per habitat site, consisting of a central trap with three arms in three different directions, each arm consisting of three traps. The traps were checked every day during the week of sampling per site. The pitfall traps were open for five consecutive days, resulting in 60 trap days per site and therefore 360 trap days for all sampling sites during the sampling period of one year. This resulted in a total of 3 600 pitfall trap samples taken during the study.

Sweep netting: A sweep net with a diameter of 31 cm was used to sample through grass and herbs. Sweeping was conducted once a month for two hours at each site, while walking from the central pitfall trap throughout the sampling site. Collected material was gathered into marked plastic bags and sorted in the laboratory.

Tree beating: Trees and shrubs were beaten with a 0.21 kg baton to dislodge specimens which were caught on a sheet and collected in plastic bags. Bigger trees received up to 20 beatings while smaller trees and shrubs received fewer beatings. This method was applied once a month for two hours at each site. Collected material was sorted in the laboratory.

Active searching was undertaken once a month for two hours at each site. The area covered was from the central pitfall trap working outwards and covered the whole sampling site. Specimens were searched and collected from all field layers.

Collected spiders were fixed and preserved in 70% EtOH and identified up to family level using the African spider family keys (Dippenaar-Schoeman & Jocqué 1997) while genus and species determinations were done by the second author. Voucher specimens were deposited in the National Collection of Arachnida (NCA) at the Plant Protection Research Institute in Pretoria, an institute of the Agricultural Research Council.

Two main guilds can be distinguished among spiders, namely wanderers and web builders. The wanderers can be further divided into plant wanderers (PW) and ground wanderers (GW). Plant wanderers were separated and placed in a guild based on the vegetation type that they were most commonly found on, namely plant wanderers found on foliage (PWF), plant wanderers found on grass (PWG) and plant wanderers found on bark (PWB) while ground wanderers may be free living or burrow dwelling (BD). The web-building spiders can also be subdivided into different guilds based on the structure of the webs that they build: sheet-web builders (SWB), space-web builders (SPWB), orb-web builders (OWB), funnel-web builders (FWB), retreat-web builders (RWB), tube-web builders (TWB) and gumfoot-web builders (GWB).

RESULTS AND DISCUSSION

A total of 13 821 spiders were caught during the sampling period, representing 39 families, 156 determined genera and 275 species (see Table 1). The 39 families represent 56.5% of the currently recognised families for South Africa (Dippenaar-Schoeman & Jocqué 1997). The representation and numbers caught (irrespective of other factors such as length of sampling period, size of sampling area etc.) compare favourably with

TABLE 1
Spider families collected in the Polokwane Nature Reserve indicating the number of species and percentage of the total number of specimens collected

FAMILIES	GENERA	SPECIES	SPECIMENS	%
Agelenidae	2	2	11	0.08
Amaurobiidae	1	1	1	0.01
Ammoxenidae	1	1	61	0.44
Araneidae	23	39	916	6.63
Barychelidae	1	1	3	0.02
Caponiidae	1	1	16	0.12
Clubionidae	1	2	17	0.12
Corinnidae	4	4	7	0.05
Ctenidae	1	1	3	0.02
Cyrtaucheniidae	1	1	6	0.04
Dictynidae	1	1	5	0.04
Eresidae	3	3	2 547	18.43
Gnaphosidae	13	25	499	3.61
Hersiliidae	1	1	11	0.08
Idiopidae	3	3	7	0.05
Linyphiidae	4	4	5	0.04
Lycosidae	8	21	784	5.67
Mimetidae	1	1	4	0.03
Miturgidae	1	3	289	2.09
Nemesiidae	1	1	2	0.01
Nephilidae	1	1	31	0.22
Oonopidae	1	1	1	0.01
Oxyopidae	3	16	3 415	24.71
Palpimanidae	2	3	53	0.38
Philodromidae	7	12	621	4.49
Pholcidae	1	1	4	0.03
Pisauridae	5	6	232	1.68
Prodidomidae	1	1	9	0.07
Salticidae	18	29	1 056	7.64
Scytodidae	1	1	2	0.01
Segestriidae	1	1	4	0.03
Selenopidae	2	2	9	0.07
Sparassidae	3	5	25	0.18
Tetragnathidae	1	2	4	0.03
Theraphosidae	3	3	10	0.07
Theridiidae	9	22	778	5.63
Thomisidae	17	42	2 212	16.00
Uloboridae	2	4	42	0.30
Zodariidae	6	7	119	0.86
TOTAL	**156**	**275**	**13 821**	**100**

(*value excluding undetermined genera)

TABLE 2
Checklist of the spiders of the Polokwane Nature Reserve, Limpopo Province, South Africa (PW: plant wanderer; GW: ground wanderer; BD: burrow dweller; SWB: sheet-web builder; SPWB: space-web builder; OWB: orb-web builder; FWB: funnel-web builder; RWB: retreat-web builder; GWB: gumfoot-web builder; TWB: tube-web builder)

* possibly new

FAMILY	SPECIES	GUILD	FIELD TYPE
Agelenidae	*Agelena sp.* (immature)	FWB	on soil
	Olorunia sp. (Immature)	FWB	on soil
Amaurobiidae	*Pseudauximus sp.* (immature)	RWB	debri
Ammoxenidae	*Ammoxenus amphalodes* Dippenaar & Meyer, 1980	GW	soil
Araneidae	*Acanthepeira sp. **	OWB	vegetation
	Araneidae sp. (genus undetermined)	OWB	vegetation
	Araneus apricus (Karsch, 1884)	OWB	vegetation
	Araneus coccinella Pocock, 1898	OWB	vegetation
	Araneus nigroquadratus Lawrence, 1937	OWB	vegetation
	*Araniella sp. 1**	OWB	vegetation
	*Araniella sp. 2**	OWB	vegetation
	*Araniella sp. 3**	OWB	vegetation
	Argiope aurocincta Pocock, 1898	OWB	vegetation
	Argiope australis (Walckenaer, 1805)	OWB	vegetation
	Argiope lobata (Pallas, 1772)	OWB	vegetation
	Argiope trifasciata (Forskal, 1775)	OWB	vegetation
	Argiope sp. (immature)	OWB	vegetation
	Caerostris sexcuspidata (Fabricius, 1793)	OWB	vegetation
	*Chorizopes sp. **	OWB	vegetation
	Cyclosa insulana (Costa, 1834)	OWB	vegetation
	Cyphalanothus larvatus (Simon, 1881)	OWB	vegetation
	Cyrtophora citricola (Forskal, 1775)	OWB	vegetation
	Gasteracantha sanguinolenta C.L. Koch, 1884	OWB	vegetation
	Gea infuscata Tullgren, 1910	OWB	vegetation
	Hypsosinga lithyphantoides Caporiacco, 1947	OWB	vegetation
	Hypsosinga sp. 2	OWB	vegetation
	Larinia natalensis (Grasshoff, 1971)	OWB	vegetation
	Lipocrea longissima (Simon, 1881)	OWB	vegetation
	Mahembea hewitti (Lessert, 1930)	OWB	vegetation
	Nemoscolus elongatus Lawrence, 1947	OWB	vegetation
	Nemoscolus sp. 2	OWB	vegetation
	Neoscona blondeli (Simon, 1886)	OWB	vegetation
	Neoscona moreli (Vinson, 1863)	OWB	vegetation
	Neoscona penicillipes (Karsch, 1879)	OWB	vegetation
	Neoscona quincasea Roberts, 1983	OWB	vegetation
	Neoscona subfusca (C.L. Koch, 1837)	OWB	vegetation
	Paraplectana sp. 1	OWB	vegetation
	Pararaneus cyrtoscapus (Pocock, 1898)	OWB	vegetation
	*Prasonica sp. 1**	OWB	vegetation
	Pycnacantha tribulus (Fabricius, 1781)	OWB	vegetation
	Singa lawrencei (Lessert, 1930)	OWB	vegetation
	Singa sp. 2	OWB	vegetation
	Singa sp. 3	OWB	vegetation
Caponiidae	*Caponia chelifera* Lessert, 1936	GW	soil
Clubionidae	*Clubiona abbajensis* Strand, 1906	PW	vegetation
	Clubiona sp. (immature)	PW	vegetation
Corinnidae	*Casteineira sp. 1*	GW	soil
	Cetonana simoni (Lawrence, 1942)	GW	soil
	Copa flavoplumosa Simon, 1885	GW	soil
	Graptartia mutillica Haddad, 2004	GW	soil
Ctenidae	*Ctenus sp. 1*	GW	soil
Cyrtaucheniidae	*Ancylotrypa brevipalpis* (Hewitt, 1916)	BD	burrow soil
Dictynidae	*Archaeodictyna sp. 1*	RWB	vegetation
Eresidae	*Dresserus colsoni* Tucker, 1920	RWB	soil debri
	Gandanameno fumosus (C.L. Koch, 1837)	RWB	tree
	Stegodyphus dumicola Pocock, 1898	RWB	tree

Table 2 continued . . .

FAMILY	SPECIES	GUILD	FIELD TYPE
Gnaphosidae	*Aneplasa sp. 1*		
	Asemesthes ceresicola Tucker, 1923	GW	soil
	Asemesthes decoratus Purcell, 1908	GW	soil
	Camillina aestus Tucker, 1923	GW	soil
	Camillina maun Platnick & Murphy, 1987	GW	soil
	Camillina procurva (Purcell, 1908)	GW	soil
	Drassodes bechuanicus Tucker, 1923	GW	soil
	Drassodes solitarius Purcell, 1907	GW	soil
	Drassodes splendens Tucker, 1923	GW	soil
	Drassodes stationis Tucker, 1923	GW	soil
	Echemus sp. 1	GW	soil
	Poecilochoa sp. 1	GW	soil
	Scotophaeus marleyi Tucker, 1923	GW	soil
	Setaphis anchoralis Purcell, 1908	GW	soil
	Setaphis arcus Tucker, 1923	GW	soil
	Setaphis subtilis (Simon, 1897)	GW	soil
	Trachyzelotes jaxartensis (Kroneberg, 1875)	GW	soil
	Trephopoda hanoveria Tucker, 1923	GW	soil
	Upognampa parvipalpa Tucker, 1923	GW	soil
	Xerophaeus appendiculatus Purcell, 1907	GW	soil
	Xerophaeus bicavus Tucker, 1923	GW	soil
	Zelotes reduncus (Purcell, 1907)	GW	soil
	Zelotes tuckeri Roewer, 1951	GW	soil
	Zelotes ungulus Tucker, 1923	GW	soil
	Zelotes sp. 4	GW	soil
Hersiliidae	*Tyrotama soutpansbergensis* Foord & Dippenaar-Schoeman, 2005	RWB	soil
Idiopidae	*Ctenolophus fernoulheti* Hewitt, 1913	BD	burrow soil
	Idiops monticola (Hewitt, 1916)	BD	burrow soil
	Idiops sp. 1	BD	burrow soil
Linyphiidae	*Pelecopsis sp. 1*	SWB	vegetation
	Meioneta sp. 1	SWB	vegetation
	Mecynidis sp. 1	SWB	vegetation
	Microlinyphia sterilis (Pavesi, 1883)	SWB	vegetation
Lycosidae	*Evippomma squamulatum* (Simon, 1898)	GW	soil
	Geolycosa sp. 1	GW	soil
	Lycosa sp. 1	GW	soil
	Lycosa sp. 2	GW	soil
	Hogna sp. 1	GW	soil
	Hogna sp. 2	GW	soil
	Lycosidae sp. 1 (genus undetermined)	GW	soil
	Lycosidae sp. 2 (genus undetermined)	GW	soil
	Lycosidae sp. 3 (genus undetermined)	GW	soil
	Lycosidae sp. 4 (genus undetermined)	GW	soil
	Lycosidae sp. 5 (genus undetermined)	GW	soil
	Lycosidae sp. 6 (genus undetermined)	GW	soil
	Lycosidae sp. 7 (genus undetermined)	GW	soil
	Pardosa leipoldti Purcell, 1903	GW	soil
	Pardosa sp. 2	GW	soil
	Pardosa sp. 3	GW	soil
	Pardosa sp. 4	GW	soil
	Proevippa wanlessi (Russell-Smith, 1981)	GW	soil
	Proevippa sp. 2	GW	soil
	Trabea purcelli Roewer, 1951	GW	soil
	Zenonina albocaudata Lawrence, 1952	GW	soil
Mimetidae	*Ero sp. 1**	PW	vegetation
Miturgidae	*Cheiracanthium africanum* Lessert, 1921	PW	vegetation
	Cheiracanthium furculatum Karsch, 1879	PW	vegetation
	Cheiracanthium vansoni Lawrence, 1936	PW	vegetation
Nemesiidae	*Hermacha mazoena* Hewitt, 1915	BD	burrow soil

Table 2 continued . . .

FAMILY	SPECIES	GUILD	FIELD TYPE
Nephilidae	*Nephila senegalensis* (Walckenaer, 1842)	OWB	vegetation
Oonopidae	*Gamasomorpha humicola* Lawrence, 1947	GW	soil
Oxyopidae	*Hamataliwa fronticornis* (Lessert, 1927)	PW	grass
	Hamataliwa kulczynskii (Lessert, 1915)	PW	grass
	Hamataliwa strandi Caporriacco, 1939	PW	grass
	Oxyopes affinis Lessert, 1915	PW	grass
	Oxyopes bedoti Lessert, 1915	PW	grass
	Oxyopes bothai Lessert, 1915	PW	grass
	Oxyopes hoggi Lessert, 1915	PW	grass
	Oxyopes jacksoni Lessert, 1915	PW	grass
	Oxyopes pallidecoloratus Strand, 1906	PW	grass
	Oxyopes russoi Caporiacco, 1940	PW	grass
	Oxyopes schenkeli Lessert, 1927	PW	grass
	Oxyopes tuberculatus Lessert, 1915	PW	grass
	Oxyopes sp. 10	PW	grass
	Oxyopes sp. 11	PW	grass
	Oxyopes sp. 12	PW	grass
	Peucetia viridis (Blackwall, 1858)	PW	grass
Palpimanidae	*Diaphorocellus biplagiatus* Simon, 1893	GW	soil
	Palpimanus armatus Pocock, 1898	GW	soil
	Palpimanus transvaalicus Simon, 1893	GW	soil
Philodromidae	*Ebo sp. 1**	PW	grass
	*Gephyrota sp. 1**	PW	grass
	Hirriusa variegata (Simon, 1895)	PW	grass
	Philodromus browningi Lawrence, 1952	PW	grass
	Philodromus grosi Lessert, 1943	PW	grass
	Philodromus guineensis Millot, 1942	PW	grass
	Suemus punctatus Lawrence, 1938	PW	grass
	Thanatus dorsilineatus Jézéquel, 1964	PW	grass
	Thanatus sp. 2	PW	grass
	Tibellus gerhardi Van den Berg & Dippenaar-Schoeman, 1994	PW	grass
	Tibellus hollidayi Lawrence, 1952	PW	grass
	Tibellus minor Lessert, 1919	PW	grass
Pholcidae	*Smeringopus atomarius* Simon, 1910	SPWB	soil
Pisauridae	*Afropisaura sp. 1*	PW	vegetation
	Euprosthenops australis Simon, 1898	FWB	vegetation
	Euprosthenopsis vuattouxi Blandin, 1977	FWB	vegetation
	Maypacius bilineatus (Pavesi, 1895)	PW	vegetation
	Maypacius stuhlmanni (Bösenberg & Lenz, 1895)	PW	vegetation
	Rothus purpurissatus Simon, 1898	PW	vegetation
Prodidomidae	*Theuma parva* Purcell, 1907	GW	soil
Salticidae	*Aelurillus sp. 1**	GW	soil
	Baryphas ahenus Simon, 1902	PW	vegetation
	Brancus bevisi Lessert, 1925	PW	vegetation
	Cosmophasis sp. 1	GW	soil
	Dendryphantes sp. 1	PW	vegetation
	Dendryphantes sp. 2	PW	vegetation
	Euophrys sp. 1	PW	vegetation
	Heliophanus debilis Simon, 1901	PW	vegetation
	Heliophanus demonstrativus Wesolowska, 1986	PW	vegetation
	Heliophanus insperatus Wesolowska, 1986	PW	vegetation
	Heliophanus transvaalicus Simon, 1901	PW	vegetation
	Hyllus treleaveni Peckham & Peckham, 1902	PW	vegetation
	Hyllus sp.	PW	vegetation
	Hyllus sp. 3	PW	vegetation
	Hyllus sp. 4	PW	vegetation
	Hyllus sp. 5	PW	vegetation
	Langelurillus sp. 1	GW	soil

Table 2 continued . . .

FAMILY	SPECIES	GUILD	FIELD TYPE
	Mogrus sp. 1	PW	vegetation
	Natta horizontalis Karsch, 1879	GW	soil
	Pellenes sp. 1	PW	vegetation
	Phlegra sp. 1	GW	soil
	Pseudicius sp. 1	PW	vegetation
	Rhene machadoi Berland & Millot, 1941	PW	vegetation
	Stenaelurillus nigricaudus Simon, 1886	GW	soil
	Stenaelurillus sp. 1	GW	soil
	Stenaelurillus sp. 2	GW	soil
	Stenaelurillus sp. 3	GW	soil
	Thyene inflata (Gerstäcker, 1873)	PW	vegetation
	Thyenula aurantiaca (Simon, 1902)	PW	vegetation
Scytodidae	*Scytodes sp. 1*	GW	soil
Segestriidae	*Ariadna sp. 1*	TWB	soil
Selenopidae	*Anyphops sp. 1*	PW	tree
	Selenops sp. 1	PW	tree
Sparassidae	*Olios sp. 1*	PW	vegetation
	Olios sp. 2	PW	vegetation
	Olios sp. 3	PW	vegetation
	Palystes superciliosus L. Koch, 1875	PW	vegetation
	Pseudomicrommata longipes (Bösenberg & Lenz, 1895)	PW	vegetation
Tetragnathidae	*Leucauge decorata* (Blackwall, 1864)	OWB	vegetation
	Leucauge festiva (Blackwall, 1866)	OWB	vegetation
Theraphosidae	*Augacephalus junodi* (Simon, 1904)	BD	burrow soil
	Brachionopus pretoriae Purcell, 1904	BD	burrow soil
	Harpactira sp. 1	BD	burrow soil
	Harpactirella sp. 1	BD	burrow soil
Theridiidae	*Argyrodes convivans* Lawrence, 1937	GWB	webs other spiders
	Argyrodes zonatus (Walckenaer, 1842)	GWB	webs other spiders
	Dipoena sp. 1	GWB	vegetation
	Enoplognatha molesta O.P.-Cambridge, 1904	GWB	vegetation
	Latrodectus geometricus C.L.Koch, 1841	GWB	vegetation
	Latrodectus renivulvatus Dahl, 1902	GWB	vegetation
	Phoroncidia eburnea (Simon, 1895)	GWB	vegetation
	Steatoda sp. 1	GWB	soil
	Theridiidae sp. 1 (genus undetermined)	GWB	vegetation
	Theridiidae sp. 2 (genus undetermined)	GWB	Vegetation
	Theridiidae sp. 3 (genus undetermined)	GWB	vegetation
	Theridiidae sp. 4 (genus undetermined)	GWB	vegetation
	Theridiidae sp. 5 (genus undetermined)	GWB	vegetation
	Theridion purcelli O.P.-Cambridge, 1904	GWB	vegetation
	Theridion sp. 2	GWB	vegetation
	Theridion sp. 3	GWB	vegetation
	Theridion sp. 4	GWB	vegetation
	Theridion sp. 5	GWB	vegetation
	Theridion sp. 6	GWB	vegetation
	Theridion sp. 7	GWB	vegetation
	Theridion sp. 8	GWB	vegetation
	Tidarren sp. 1	GWB	vegetation
Thomisidae	*Avelis hystriculus* Simon, 1895	PW	vegetation
	Camaricus nigrotesselatus Simon, 1895	PW	vegetation
	Heriaeus crassispinus Lawrence, 1942	PW	grass
	Heriaeus transvaalicus Simon, 1895	PW	grass
	Hewittia gracilis Lessert, 1928	PW	grass
	Misumenops rubrodecoratus Millot, 1942	PW	grass
	Monaeses austrinus Simon, 1910	PW	tree
	Monaeses fuscus Dippenaar-Schoeman, 1984	PW	tree
	Monaeses gibbus Dippenaar-Schoeman 1984	PW	tree
	Monaeses paradoxus (Lucas, 1846)	PW	tree

Table 2 continued . . .

FAMILY	SPECIES	GUILD	FIELD TYPE
	Monaeses pustulosus Pavesi, 1895	PW	tree
	Monaeses quadrituberculatus Lawrence, 1927	PW	tree
	Oxytate argenteooculata (Simon, 1886)	PW	tree
	Ozyptila sp. 1	PW	soil
	Pactactes trimaculatus Simon, 1895	PW	soil
	Pherecydes tuberculatus O.P.-Cambridge, 1883	PW	tree
	Pherecydes sp. 2	PW	tree
	Runcinia aethiops (Simon, 1901)	PW	grass
	Runcinia affinis Simon, 1897	PW	grass
	Runcinia erythrina Jézéquel, 1964	PW	grass
	Runcinia flavida (Simon, 1881)	PW	grass
	Stiphropus affinis Lessert, 1923	PW	soil
	Synema decens (Karsch, 1878)	PW	vegetation
	Synema diana (Audouin, 1826)	PW	vegetation
	Synema imitator (Pavesi, 1883)	PW	vegetation
	Synema nigrotibiale Lessert, 1919	PW	vegetation
	Thomisops sulcatus Simon, 1895	PW	vegetation
	Thomisus blandus Karsch, 1880	PW	grass
	Thomisus citrinellus Simon, 1875	PW	grass
	Thomisus congoensis Comellini, 1957	PW	grass
	Thomisus granulatus Karsch, 1880	PW	grass
	Thomisus kalaharinus Lawrence, 1936	PW	grass
	Thomisus scrupeus (Simon, 1886)	PW	grass
	Thomisus stenningi Pocock, 1900	PW	grass
	Tmarus africanus Lessert, 1919	PW	grass
	Tmarus cameliformis Millot, 1942	PW	grass
	Tmarus cancellatus Thorell, 1899	PW	grass
	Tmarus comellini Garcia-Neto, 1989	PW	grass
	Tmarus foliatus Lessert, 1928	PW	grass
	Tmarus longicaudatus Millot, 1941	PW	grass
	Tmarus sp. 7	PW	grass
	Xysticus fagei Lessert, 1919	GW	soil
Uloboridae	*Miagrammopes longicaudus* O.P.-Cambridge, 1882	OWB	vegetation
	Uloborus plumipes Lucas, 1846	OWB	vegetation
	Uloborus sp. 2	OWB	vegetation
	Uloborus sp. 3	OWB	vegetation
Zodariidae	*Capheris decorata* Simon, 1904	GW	soil
	Chariobas cylindraceus Simon, 1893	GW	soil
	Cydrela sp. 1	GW	soil
	Diores auricula Tucker, 1920	GW	soil
	Diores sp. 2	GW	soil
	Psammoduon sp. 1	GW	soil
	Ranops sp. 1	GW	soil

other surveys undertaken in the Savanna Biome. In the Makalali Private Game Reserve, 4 832 spiders were caught over a year represented by 38 families and 268 species (Whitmore *et al.* 2001); at Lajuma in the Western Soutpansberg 127 species were caught that represented 46 families (Foord *et al.* 2002); on Sovenga Hill in the Polokwane district 793 spiders were caught representing 29 families and 76 species (Modiba *et al.* 2005). In the Kruger National Park, 152 species from 40 families were recorded (Dippenaar-Schoeman & Leroy 2003). The survey of the Ndumo Game Reserve reported the highest spider diversity from any protected area in South Africa so far with 46 families and 431 species (Haddad *et al.* 2006).

The most diverse families collected at the PNR were the Thomisidae (42 spp.), representing 15.3% of the total number of species sampled, followed by the Araneidae (39 spp.; 14.2%) and the Salticidae (29 spp.; 10.5%) (see Table 1). Sixteen families were represented by a single species only. At Roodeplaat Dam Nature Reserve and Lajuma, the Thomisidae were also the most diverse with 25 and 15 species respectively, while at Ndumu Nature Reserve, the Salticidae were the most diverse with 82 species. The total spider diversity (275 spp.) represents 13.75% of the species of South African spiders (2 000 spp.), presently protected in the Polokwane Nature Reserve.

The vast majority of the spiders (191 spp.) collected were wanderers (69.5%), with web builders (84 spp.) contributing 30.5% (see Table 2). This follows the reported pattern for species of the Savanna Biome. At Ndumo Game Reserve, 75.9% were wanderers, with web builders contributing 24.1% of the species (Haddad *et al.* 2006). At Makalali Private Game Reserve, the most abundant spiders collected were also wanderers (59%), with web builders contributing 41% (Whitmore *et al.* 2002), while on Sovenga Hill, 64.9% of species were wanderers while the web builders only contributed 35.1% (Modiba *et al.* 2005). Similar results were found in the Western Soutpansberg with 64% of collected species being wanderers and 36% web builders (Foord *et al.* 2002).

Most of the Mygalomorphae spiders are protected due to the pet trade and it is important that species are protected in reserves. According to Dippenaar-Schoeman (2002b), there are 14 species of Mygalomorphae occurring in the Limpopo

TABLE 3
Checklist of the mygalomorphs of the Polokwane Nature Reserve, Limpopo Province, South Africa

FAMILY	SPECIES
Cyrtaucheniidae	*Ancylotrypa brevipalpis* (Hewitt, 1916)
Idiopidae	*Idiops* sp.
	Ctenolophus fernoulheti Hewitt, 1913
	Segregara monticola (Hewitt, 1916)
Nemesiidae	*Hermacha mazoena* Hewitt, 1915
Theraphosidae	*Augacephalus junodi* (Simon, 1904)
	Brachionopus pretoriae Purcell, 1904
	Harpactira sp.
	Harpactirella sp.

Province. Only one of the previously recorded species (i.e. *Augacephalus junodi* (Simon, 1904)) was encountered during the study period. However, eight additional mygalomorph species (see Table 3) have been collected: *Ancylotrypa brevipalpis* (Hewitt, 1916), *Brachionopus pretoriae* Purcell, 1904, *Ctenolophus fenoulheti* Hewitt, 1913, *Segregara monticola* (Hewitt, 1916), *Hermacha mazoena* Hewitt, 1915, *Idiops* sp., *Harpactira* sp. and *Harpactirella* sp. All of the above-mentioned species are burrow dwelling. These species are all new geographical records for the province.

CONCLUSION

Considering the duration of the current study (one year) and the large number of specimens caught (13 821), it may be expected that the study provides a good representation of families occurring in the Polokwane Nature Reserve and that an extension of the study will probably increase the number of genera and species, but will probably not increase the number of families significantly. All the reported families and species are new geographical records for the Polokwane Nature Reserve.

The large number of species (97) that could not be identified emphasises the taxonomic impediment of invertebrates in South Africa. During this study, nine possible new species were collected, and several genera were collected in South Africa for the first time. Additionally, the study provided new information on the distribution of all species concerned and provides material that can be used in future taxonomic work. This highlights the important contribution that the SANSA initiative makes to a better knowledge of the diversity of arachnids in South Africa, especially in conserved areas.

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