A CHECKLIST OF THE NON-ACARINE ARACHNIDS (CHELICERATA: ARACHNIDA) OF THE DE HOOP NATURE RESERVE, WESTERN CAPE PROVINCE, SOUTH AFRICA

ABSTRACT
As part of the South African National Survey of Arachnida (SANSA) in conserved areas, arachnids were collected in the De Hoop Nature Reserve in the Western Cape Province, South Africa. The survey was carried out between 1999 and 2007, and consisted of five intensive surveys between two and 12 days in duration. Arachnids were sampled in five broad habitat types, namely fynbos, wetlands, i.e. De Hoop Vlei, Eucalyptus plantations at Potberg and Cupido's Kraal, coastal dunes near Koppie Alleen and the intertidal zone at Koppie Alleen. A total of 274 species representing five orders, 65 families and 191 determined genera were collected, of which spiders (Araneae) were the dominant taxon (252 spp., 174 genera, 53 families). The most species rich families collected were the Salticidae (32 spp.), Thomisidae (26 spp.), Gnaphosidae (21 spp.), Araneidae (18 spp.), Theridiidae (16 spp.) and Corinnidae (15 spp.). Notes are provided on the most commonly collected arachnids in each habitat.

Conservation implications: This study provides valuable baseline data on arachnids conserved in De Hoop Nature Reserve, which can be used for future assessments of habitat transformation, alien invasive species and climate change on arachnid biodiversity.

INTRODUCTION
The South African National Survey of Arachnida (SANSA) was initiated in 1997 to record the biodiversity of arachnids in South Africa (Dippenaar-Schoeman & Craemer 2000). As part of this initiative, surveys are underway in various conservancies, provinces and biomes. So far, only two long-term surveys have been carried out in Western Cape Province conservancies, namely of the spiders of the Karoo National Park, falling within the Nama Karoo biome (Dippenaar-Schoeman et al. 1999), and the Swartberg Nature Reserve, falling within the Succulent Karoo biome (Dippenaar-Schoeman et al. 2005). These two surveys indicate a moderately high diversity of spiders in these conservancies, with 116 species (38 families) and 186 species (45 families) recorded from the two reserves, respectively.

The Cape Floristic Region comprises unique vegetation types such as fynbos, which are characterised by high levels of plant endemicity. According to Linder (2005) some 9,000 species can be found in the region in an area of approximately 90,000 km². Although the factors influencing insect abundance and diversity in this biome have been well studied (e.g. Giliomee 2003; Procheş & Cowling 2006; Wright & Samways 1996, 1999), little is known on the diversity of arachnids in the Fynbos Biome. Coetzee et al. (1990) studied the spiders associated with five proteaceous plant species, Visser et al. (1999) studied the arachnids associated with Protea nitida Mill., and Sharratt (2000) included arachnids in their assessment of the conservation status of cave-dwelling arthropods of the Cape Peninsula.

The general lack of information regarding arachnid diversity, as well as that for many other invertebrate groups in the Western Cape Province, is a great hindrance to effective conservation planning. Conservation strategies should not only take into account plants and vertebrates, but also need to recognise the role that invertebrates play in ecosystem functioning. Arachnids, with the exception of some phytophagous and parasitic Acari, form an important group of predatory terrestrial arthropods that feed on a wide variety of prey using a range of capture methods, including webs and active hunting strategies. Arachnids are frequently regarded as suitable candidates for studying ecological processes, as 1) they are diverse and abundant, 2) they can be easily sampled, 3) they are functionally significant in ecosystems as predators, and as food for other predators, and 4) they interact with their abiotic and biotic environment in a manner that reflects ecological change (Churchill 1997). Therefore, arachnids can be used to monitor ecosystem stability and changes over time, making them useful organisms in long-term conservation planning. Since fynbos vegetation, which is largely endemic to the Western Cape Province, is under increasing threat from urbanisation, agriculture, alien invasive species and climate change (e.g. Picker & Samways 1996; Richardson et al. 1996; McNeely 2001; Midgley et al. 2003; Witt & Samways 2004), arachnids provide an alternative taxonomic group to monitor changes in this unique vegetation type.

The present paper aims to report on the diversity of arachnids (excluding the Acarida) in the De Hoop Nature Reserve (DHNR) in the Western Cape, which consists of large areas of pristine fynbos and protected marine habitats. Apart from its value as a biodiversity and conservation tool, this checklist can thus be used as a baseline to assess impacts of the aforementioned effects on biodiversity in areas surrounding the reserve. This study forms part of the South African National Survey of Arachnida in conserved areas and the Fynbos Biome, and also contributes towards the checklists of species of the Western Cape Province.

STUDY AREA
DHNR is situated on the south east of the Western Cape Province, South Africa, and covers an area of...
32,279 hectares terrestrially (Figure 1). In addition, the coastline and adjacent marine areas are included in the reserve for the protection of the marine environment and its diversity. For the purposes of this survey the reserve was divided into five broad sampling habitats (plant classification follows Germishuizen et al. 2006):

1. Fynbos (FB) – the largest portion of the reserve contains typical fynbos vegetation characteristic of this particular floralbiome (Figure 2). An upper vegetative layer consisting primarily of taller Protea spp. (P. aurea pottergensis Rourke, P. obtusifolia H.Bee ex Meisn. and P. repens (L.) L.) is found in certain areas, particularly near hills and mountains. The field layer comprises a high diversity of fynbos plants, including Agathosma spp., Cliftonia spp., Leucodendron spp., Phyllica spp., Serruria fasciflora Salisb. ex Knight and Thamnochortus spp.

2. Eucalyptus plantation (EP) – two large plantations at Potberg and Cupido’s Kraal consist primarily of Eucalyptus camaldulensis Dehnh., with endemic low-growing shrubs (e.g. Carissa bispinosa (L.) Desf. ex Breidenb.) and other short vegetation (Agaranthus sp., Asparagus falcatus L., Bidens sp., Cynodon dactylon (L.) Pers. and Sansevieria hyacinthoides (L.) Druce) (Figure 3).

3. Wetlands (WL) – a single inland wetland, i.e. the De Hoop Vlei, is situated in the south-west of the reserve (Figure 4). The wetland is separated from the ocean by coastal dunes, and therefore does not form a lagoon per se. The De Hoop Vlei is fed by water from the Zout River, the catchment of which receives most of its rainfall during the winter rainfall season. The shores of the wetland are dominated by Sarcocornia spp. and Exomis microphylla (Thunb.) Aellen., with scattered patches of the reed Phragmites australis (Cav.) Steud. Beyond the shoreline the dominant vegetation includes Sideroxylon inerme L. trees and a variety of fynbos species.

4. Coastal dunes (CD) – coastal dune vegetation is found along the entire coastline of the reserve (Figure 5). Sea-facing dunes consist primarily of endemic shrub species, including Carissa bispinosa, Cynanchum obtusifolium L.f., Eucaira racemosa Murray, Passerina rigida Wikstr., Pterocarya spp., Robiniaodendron sp., Rhus glauca Thunb. and Scamone spp., interspersed with shorter species such as Arctotheca populifolia (P.J.Bergius) Norl., Asparagus falcatus, Bassia diffusa (Thunb.) Kunze, Chironia baccifera L., Dasiperumum suffruticosum (P.J.Bergius) B.L.Burtt, Gazania krebsiana Less., Limonium scabrum (Thunb.) Kunzne, Plantago crassifolia Forsk., Silene primuliflora Eckl. & Zeyh., Spirobolus sp., Trachandra ciliata (L.f) Kunth and fynbos vegetation. Many dunes are strongly overgrown with invasive alien plant species such as Acacia cyclops A.Cunn ex G.Don and A. saligna (Labill.) H.L.Wendl. (Figure 6), occasionally interspersed with fynbos elements.

5. Intertidal zone (IZ) – this habitat includes all rocky shores along the coastline and the vegetation immediately associated with the high tide breaker line (Figure 7). On the rocky shores themselves, various marine algae dominate, while plants associated with the high tide mark include scattered fynbos insertions and coastal dune shrubs.

**SAMPLING PERIOD AND METHODS**

Intensive sampling for arachnids was carried out during five visits to the reserve. Three of the trips were carried out during early autumn (March 1999 – April 1999, 2004 and 2005) and lasted 10 – 12 days each, the fourth trip was undertaken during the middle of winter (July 2005) and lasted four days, and the last trip took place in spring (September 2007) for two days.

Sampling was undertaken ad hoc in each of the habitats by active searching under rocks, logs and in leaf litter, beating foliage, sifting leaf litter and sweeping low-growing vegetation. Additional sampling was conducted by searching under bark in the EP, as this was the only habitat in which loose bark was available. Material was preserved in 70% ethanol for sorting and identification. Due to time and logistical constraints during the sampling trips, material was not collected quantitatively (i.e. according to a set sampling protocol). Thus, the sampling intensity varied considerably between habitats with a bias towards collecting in FB and EP, as these were the easiest habitats to access. However, adequate sampling was conducted in the other three habitats using various methods to give a good indication of the arachnid diversity of each.

**Guilds observed**

All arachnids were grouped into guilds based on the typical habits known for each family or genus, but also took into consideration the strata in which each species was sampled.
All arachnid orders collected, with the exception of spiders, can be classified as wanderers. Spiders can be separated into wandering and web-building guilds. The wandering arachnids can be broadly separated into ground wanderers (GW) and plant wanderers (PW). For the latter group, distinction was made between spiders associated with foliage (PWF) of plants and those associated with the bark of trees (PWB). Web-building spiders can be separated into various guilds based on the types of webs they construct, namely orb-web builders (OWB), funnel-web builders (FWB), sheet-web builders (SWB), space-web builders (SpWB), hackle-web builders (HWB) and gum-foot-web builders (GWB).

Representative specimens of each species are deposited in the institutions of the various specialists listed in the Acknowledgements, who provided identifications for their respective groups. Material of all the remaining taxa is deposited in the National Collection of Arachnida at the Plant Protection Research Institute, Pretoria, South Africa.

RESULTS & DISCUSSION

Diversity

A total of 274 species of arachnids were collected in DHNR, representing five orders, 65 families and 191 determined genera (Table 1, Appendix 1). The most species rich order was the Araneae, with 252 species in 54 families. This includes one published record of a species that was not collected in the current survey, Nephila fenestrata Thorell (Nephilidae) (Fromhage et al. 2007). The spider family diversity represents the highest from South Africa, exceeding the 46 families collected in the Western Soutpansberg in Limpopo Province (Foord et al. 2002) and Ndumo Game Reserve in KwaZulu-Natal (Haddad et al. 2006). The relatively high spider diversity from fynbos is impressive when compared to more structurally complex habitats such as savanna, where greater species diversity could be expected (see Table 2).

The remaining arachnid orders were relatively poorly represented, the most species rich being the Pseudoscorpiones (nine species, five families), followed by Opiliones (eight species, three families), Scorpiones (four species, three families), and Solifugae (one species, one family). One published record of Scorpiones, of Parabuthus planicauda (Pocock) (Buthidae), was found in the literature (Prendini 2004).

As in several other South Africa surveys, Salticidae were the most species rich family (32 spp., 12.7% of spiders), followed by the Thomisidae (26 spp., 10.3%) and Gnaphosidae (21 spp., 8.3%). Several other families contributed 5% or more of the spider species: Araneidae (18 spp., 7.1%), Theridiidae (16 spp., 6.3%) and Corinnidae (15 spp., 6%). In contrast to some other reserves previously sampled in South Africa, such as the Ndumo Game Reserve in KwaZulu-Natal, the family composition of spiders was considerably less skewed in the current study (Figure 8). At Ndumo, the five dominant spider families contributed 52% of the species, with the Salticidae dominant (82 spp., 19.0%) (Haddad et al. 2006). In contrast, the five families dominating the current study contributed 44.7% of the total spiders, with the dominant Salticidae only contributing 12.7% of the total.

Guilds

The majority of the arachnid species collected in DHNR are wanderers (73.0%), while web-builders comprise 27.0%. When spiders alone are considered, 70.6% are wanderers while 29.4% are web-builders. This compares well with several surveys completed in South Africa (Table 2). This indicates that fynbos and associated habitats sampled in this study are sufficiently heterogeneous to support a fauna similar to that found in more structurally complex habitat types, such as savanna.

Common taxa by stratum

This study was qualitative in its entirety and thus there is no data available on the relative abundance of arachnids. However, based on the frequency of collection and observations made during the study the following species can be recognised as representative of each stratum and guild:

Wanderers: A large proportion of the species collected are wandering arachnids on the soil surface (Appendix 1). The coastal dune (CD) fauna was largely dominated by Pardosa and Trabea spp. (Lycosidae), Grisaulda robusta (Simon) (Zoropsidae), Opopaea speciosa (Lawrence) (Oonopidae), Zelotes anchora Tucker (Gnaphosidae), Natta spp. (Salticidae), Diros simoni O.P.-Cambridge (Zodariidae) and Orthobula infima Simon (Corinnidae).

In the Eucalyptus plantation (EP), various gnaphosids (especially Zelotes, Camilina and Xerophasa spp.), Caponia capensis Purcell (Caponiidae), Oopisa speciosa, Xysticus lucifugus Lawrence (Thomisidae) Grisaulda robusta and Planeta digitata Griswold (Zoropsidae), Lepthrus nitranyi Hewitt (Nemesiidae), various lycosids, Fuchbia and Fuchibiulus spp. (Corinnidae) and Drassella vasivulata Tucker (Galleniellidae) were common.

**TABLE 1**

Order composition of the non-acarine arachnids of the De Hoop Nature Reserve, Western Cape Province, South Africa

| ORDER       | COMMON NAME | FAMILIES | GENERA | SPECIES |
|-------------|-------------|---------|--------|---------|
| Araneae     | Spiders     | 53      | 174    | 252     |
| Opiliones   | Harvestmen  | 3       | 5      | 8       |
| Pseudoscorpiones | False scorpions | 5 | 7 | 9       |
| Scorpiones  | Scorpions   | 3       | 4      | 4       |
| Solifugae   | Sun spiders | 1       | 1      | 1       |
| **Total**   |             | **65**  | **191**| **274** |

**TABLE 2**

GUILD composition of spiders collected in the De Hoop Nature Reserve, compared to other surveys carried out in South African conservation areas. Abbreviations: WA – wanderers; WB – web-builders

| CONSERVANCY                | BIOME | SPP. | %WA | %WB | REFERENCE          |
|----------------------------|-------|------|-----|-----|--------------------|
| De Hoop Nature Res.        | Fynbos| 252  | 79.6| 29.4| Current study      |
| Karoo Nat. Park            | Nama Karoo | 116 | 66.4| 33.6| Dippenaar-Schoeman et al. (1999) |
| Kruger Nat. Park           | Savanna | 152 | 79.0| 21.0| Dippenaar-Schoeman & Leroy (2003) |
| Makalali Game Res.         | Savanna | 268 | 69.4| 30.6| Whitmore et al. (2002) |
| Mountain Zebra Nat. Park   | Nama Karoo | 76  | 53.9| 46.1| Dippenaar-Schoeman (2006) |
| Ndumo Game Res.            | Savanna | 431 | 74.2| 25.8| Haddad et al. (2006) |
| Polokwane Nature Res.      | Savanna | 275 | 69.5| 30.5| Dippenaar et al. (2008) |
| Rooielsplaat Dam Nature Res. | Savanna | 110 | 65.5| 34.5| Dippenaar-Schoeman et al. (1989) |
| Sovenga Hill               | Savanna | 76  | 83.8| 16.1| Modiba et al. (2006) |
| Swartberg Nature Res.      | Succulent Karoo | 186 | 76.5| 23.5| Dippenaar-Schoeman et al. (2005) |
| Western Soutpansberg        | Savanna | 127 | 63.8| 36.2| Foord et al. (2002) |
Opistocatus capensis Thorell (Liochelidae) and Uroplectes lineatus (C. L. Koch) (Buthidae) were often collected under logs and rocks.

The fynbos (FB) fauna was dominated primarily by lycosids (particularly Pardosa, Trabea and Zonella spp.), Drassodes vasirostris, various gnaphosids (Camillina, Xerophasia and Zelotes spp.), Philodromus guineensis Millot and Siemen punctatus Lawrence (Philodromidae) and Afrolubus sp. (Orsolobidae). Large numbers of Pseudoscorpiones were collected by sifting leaf litter of Protea spp.

The fauna at De Hoop Vlei (WL) was strongly dominated by gnaphosids (Zelotes and Xerophasia spp., and Drassodes ereptor Purcell), lycosids (Cerolycosa and Pardosa spp.), and Heliophantus spp. (Salticidae). Various gnaphosids, corinnids and pseudoscorpions were common in sifted leaf litter of Sideroxylon inerme (milkwood) trees near to the wetland.

In the intertidal zone (IZ), only two species were particularly common. Amaurobioides africanus Hewitt (Anyphaenidae) was commonly found in retreats constructed in sandstone formations at the back end of the intertidal zone, while Desis formidabilis (O.P.-Cambridge) (Desidae) was occasionally collected from beneath limpet shells and between algae on the rocky shores. These two species are regarded as marine specialists, occurring only in association with the intertidal zone along rocky shores (Lamoral 1968).

Ground web-builders: Web-builders were generally uncommon on the ground surface, but several species can be singled out. In CD leaf litter, Hahnia spp. (Hahniiidae) were frequently found in their sheet-webs, while in FB leaf litter, Benolita ocellata (Pocock) (Agelenidae) and various linyphiids were common. Lamaika sp. and Vidole capensis (Pocock) (Physselidae) were frequently collected in leaf litter and under logs in the EP. The most common web-builders in the WL were Steatoda capensis Hann and Eurypogus sp. 1 (Theridiidae), while very few web-builders were collected from the ground level in IZ.

Arachnids associated with bark: Due to the vegetative structure of fynbos, very few large shrubs and trees are found in most of the habitats sampled. Only the EP contained Eucalyptus trees that were large enough to sample arachnids from under bark. Common wandering arachnids collected include Clubiona spp. (Clubionidae), Aneplusa sculpturata Tucker, Pocilochroa anomal (Hewitt) and Upognampa platina Tucker (Gnaphosidae), Pseudicus spp. and Menemerus bivittatus (Dufour) (Salticidae), Platypoides quinquedentatus Purcell (Trochanteriidae), Ctenoma martini (Simon) (Corinnidae) and Uroplectes lineatus (Buthidae). Dominant web-dwelling spiders include Theridion spp. (Theridiidae) and Neoscona subfuscus (C.L. Koch) (Araneidae). Interestingly, several specimens of the tree trapdoor spider Moggridgena peringueyi Simon (Migidae) were collected from their silk burrows under bark.

Foliage wanderers: The fauna of CD was dominated by Massagriscis regina Wesolowska and Heliophantus sp. (Salticidae) and predominantly immature Pulystes superciliosus L. Koch (Sparassidae). Wandering spiders were quite rare in WL, comprising primarily of Heliophantus spp., various philodromids, and ground-dwelling lycosids (particularly Pardosa spp.) that had wandered onto short vegetation.

In EP, various salticids (Massagriscis regina, Thyene and Heliophantus spp.), Oxyopes and Hamatalia spp. (Oxyopidae), Synema spp. (Thomisidae), immature Tibellus minor Lessert (Philodromidae) and Clubiona spp. (Clubionidae) were collected from short shrubs and creepers. The FB plant-dwellers were considerably more diverse. The most common species collected include Chariobas spp. (Zodariidae), various Thomisids (Timars, Thomisus and Misumena spp.), and salticids (Thyene and Menemerus spp.).

Foliage web-dwellers: Web-dwellers in the CD and FB were particularly dominated by Neoscona and Cyclosa spp. (Araneidae), Theridion spp. and various linyphiids. Several rare species were also collected in the FB and EP, particularly. The only common web-dweller near the

![Figure 8](http://www.koedoe.co.za)
IZ was *Larinia natatensis* (Grashoff) (Araneidae), which constructs its orb-web in creepers and other vegetation between rocky outcrops surrounding the intertidal zone.

**CONCLUSION**

This study provides the first intensive data on spider diversity in the Fynbos Biome, although two studies have previously been conducted in this vegetation type (Coetzee et al. 1990; Visser et al. 1999). In total, 274 species of arachnids were collected, with spiders the dominant group (252 species). This diversity represents approximately 12.5% of the currently known South African fauna of approximately 2000 species (Dippenaar-Schoeman & Haddad, unpubl.). While the species diversity is slightly lower than surveys conducted in the Savanna Biome, it compares favourably with studies conducted in the Succulent and Nama Karoo Biomes. The relatively high number of arachnid species collected, and the presence of several fynbos endemics (e.g. 10 of the 15 Corinnidae species), supports the generalised perception that fynbos contains a unique fauna and flora.

The only spiders currently considered to be of conservation importance are the baboon spiders, *Harpactira caffra* (Walkenaer) and *Harpactirella cafreriana*. Both species are relatively common under rocks and within tussocks of *Thamnochortis* grasses and populations are unlikely to be threatened by occasional collecting. Perhaps also worth noting was the unusual *Stasinogomphus* sp. (trapdoor spider), of which only males were collected. These have unusual spine-like tubercles in the eye region, something which could not be traced to any described species in the literature. Consequently, this species may possibly be new or an undescribed male of a described species.

The scorpions collected all have a relatively broad distribution within the Western Cape Province (Prendini pers. comm.). For example, *Parabuthus planicauda* (Pocock) was recorded from DHNr by Prendini (2004), but is widespread throughout the Western and Eastern Cape Provinces. The occurrence of these scorpions within a protected area such as DHNR can be considered important for the conservation of the species, particularly when the growing threats to the Fynbos Biome are considered.

In this study several new species and three new genera were collected, of which have recently been described (Haddad 2006; Haddad & Lyle 2008). This study expanded the distribution ranges known for many species, and provided valuable material for future taxonomic studies. This emphasises the need to expand efforts to survey the arachnid faunas of conservancies throughout South Africa, but particularly within the Western Cape Province, where invertebrate endemism may be relatively high compared to other areas.

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APPENDIX 1

A checklist of the non-acarine arachnids of the De Hoop Nature Reserve.

Guild abbreviations are provided in the text. Habitat abbreviations: CD – coastal dunes; EP – Eucalyptus plantation; FB – fynbos; IZ – intertidal zone; WL – wetlands.

Symbols: † indicates a new species; ‡ indicates a possible new species; ? indicates a dubious identification.

| FAMILY/GENUS/SPECIES | GUARDS | HABITATS |
|----------------------|--------|---------|
| **ORDER: ARANEAE (SPIDERS)** |        |         |
| **Family: Agelenidae** |        |         |
| Benotia ocellata (Pocock 1900) | FWB | FB |
| **Family: Anapidae** |        |         |
| Crozetulus rhodesiensis (Brignoli 1981) | OWB | FB |
| **Family: Anyphaenidae** |        |         |
| Amaurobioides africana (Hewitt 1917) | GW | IZ |
| **Family: Araneidae** |        |         |
| Araneus apricus (Karsch 1884) | OWB | EP |
| A. nigroquadratus (Lawrence 1937) | OWB | EP |
| Arigio trifasciata (Forskål 1775) | OWB | WL |
| Caerostris sexcupulata (Fabricius 1793) | OWB | EP, WL |
| Cyclosa insulana (Costa 1834) | OWB | CD, EP, FB |
| C. c. olata (Walckenaer 1802) | OWB | FB |
| Cyrtophora citrocella (Forskål 1775) | OWB | FB |
| Gea infuscata (Tulgren 1910) | OWB | WL |
| Ideocaira transversa (Simon 1903) | OWB | EP |
| Isoxya cicatricosa (C.L. Koch 1844) | OWB | FB |
| Kilima sp. | OWB | WL |
| Larinia natalensis (Grasshoff 1971) | OWB | FB, IZ |
| Lipocrea longissima (Simon 1881) | OWB | FB, WL |
| Nemosculus tubicolus (Simon 1887) | OWB | WL |
| Neoscona ruftopapis (Lucas 1858) | OWB | WL |
| N. subfuscus (C.L. Koch 1837) | OWB | CD, EP, FB |
| Paralarina bartelsi (Lassett 1933) | OWB | FB |
| Prasonica sp. | OWB | FB |
| **Family: Caponiidae** |        |         |
| Capiona capensis (Purcell 1904) | GW/PWB | CD, EP, FB, WL |
| **Family: Clubionidae** |        |         |
| Clubiona abbigensis (Strand 1906) | GW/PWB | EP, FB, WL |
| Clubiona sp. 2 | PWB | EP, FB |
| **Family: Corinnidae** |        |         |
| Apochinomma sp. | GW | FB |
| Castianeira fulvipes (Simon 1896) | GW | CD, EP, FB |
| Ctenonos tus martini (Simon 1896) | GW/PWB | EP, FB |
| Ctenonos tus sp. 2 | GW | EP |
| Ctenonos tus sp. 3 | GW | FB |
| Ctenonos tus sp. 4 | GW | FB |
| Copa flavogiliosa (Simon 1885) | GW | CD, EP, FB |
| Fuchibia capensis (Haddad & Lyle 2008) | GW | EP, FB, WL |
| Fuchhibolus biconis (Haddad & Lyle 2008) | GW | EP, FB, WL |
| Graptaria tropica (Haddad 2004) | GW | CD, EP, FB |
| Orthobula infima (Simon 1897) | GW | CD, EP, FB, WL |
| Pronophea natalica (Simon 1897) | GW | EP |
| Spinotrichelus capensis (Haddad 2006) | GW | EP, FB, WL |
| Trachelas sp. 1 | PWF | FB |
| Trachelas sp. 2 | PWF | FB |
| **Family: Ctenidae** |        |         |
| Thoriosa sp. | GW | EP, FB |
| **Family: Ctenizidae** |        |         |
| Stasimopus sp. | GW | EP, FB |
| **Family: Cyatholipidae** |        |         |
| Cyatholipus quadrimaculatus (Simon 1894) | GWB | EP |
| Cyatholipus sp. 2 | GWB | EP |
| Uwembia denticolata (Griswold 1987) | OWB | EP |
| **Family: Cyrtarachnididae** |        |         |
| Homostola reticulata (Purcell 1902) | GW | EP |
| **Family: Deinopidae** |        |         |
| Avellopus capensis (Purcell 1904) | MOB | EP, FB |
| Muenzes camelus (Pocock 1902) | MOB | EP, FB |
| **Family: Desidae** |        |         |
| Desis formidabilis (O.P.-Cambridge 1890) | GW | IZ |
| **Family: Dictynidae** |        |         |
| Archaeodictyna sp. | HWB | FB |
| Dictyna sp. 1 | HWB | FB |
| Dictyna sp. 2 | HWB | FB |
| **Family: Eresidae** |        |         |
| Dresserus collinus (Pocock 1900) | SWB | EP, FB |
| Gandanamene spenceri (Pocock 1900) | SWB | EP, FB |
| FAMILY/GENUS/SPECIES | GUIDS | HABITATS |
|----------------------|-------|----------|
| **Family: Gallieniellidae** | | |
| Drassodella quinquelabecula (Tucker 1923) | GW | FB |
| D. vasivulva (Tucker 1923) | GW | CD, EP, FB |
| **Family: Gnaphosidae** | | |
| Aneplasa sculpturata (Tucker 1923) | GW/PWB | EP, FB |
| Aphantaulax stationis (Tucker 1923) | GW | CD |
| Asemesthes sp. imm. | GW | |
| Camilliina corrugata (Purcell 1907) | GW | EP, FB |
| C. pavesi (Simon 1897) | GW | EP, FB, WL |
| C. procursa (Purcell 1908) | GW | EP, FB |
| Drassodes ereptor (Purcell 1907) | GW | WL |
| Echeminae sp. indet. | GW | PW |
| Echemus sp. | GW | WL |
| Megamyrmathe schreineri (Tucker 1923) | GW | WL |
| Micaria sp. | GW | CD, FB |
| Poecilochroa anomala (Hewitt 1915) | GW/PWB | EP, WL |
| Selaphis subtilis (Simon 1897) | GW | EP |
| Uçognaampa anapita (Tucker 1923) | GW/PWB | EP, WL |
| Xeropheaus capensensis (Purcell 1907) | GW | FB |
| X. cruculus (Tucker 1923) | GW | CD, EP, FB, WL |
| X. phaseolus (Tucker 1923) | GW | EP, FB |
| Zelotes anchora (Tucker 1923) | GW | CD, EP, FB, WL |
| Z. capsula (Tucker 1923) | GW | EP, WL |
| Z. fulgineus (Purcell 1907) | GW | EP, FB, WL |
| Z. montanus (Purcell 1907) | GW | EP, FB |
| **Family: Hahnidae** | | |
| Hahnia clathrata (Simon 1898) | SWB | FB |
| H. tabulicola (Simon 1898) | SWB | CD, EP, FB |
| Hahnia sp. 3‡ | SWB | EP |
| **Family: Idiopidae** | | |
| Idiopidae sp. | GW | EP |
| **Family: Liocranidae** | | |
| Rhaeboctesis sp. | GW | FB |
| **Family: Linyphiidae** | | |
| Callitrocha sp. | SWB | CD, FB |
| Ceratinopsis dippenaarea (Jocqué, 1984?) | SWB | CD, FB |
| Linyphidae sp. 1 | SWB | FB |
| Linyphidae sp. 2 | SWB | FB |
| Linyphidae sp. 3 | SWB | FB |
| Linyphidae sp. 4 | SWB | FB |
| Mecynilis sp.† | SWB | FB |
| Melorina sp. | SWB | FB |
| Metaleptychantes sp. | SWB | FB |
| Microlychnia sterilis (Pavesi 1883) | SWB | EP, FB |
| Ostearius melanopygius (O.P.-Cambridge 1879) | SWB | WL |
| **Family: Lycosidae** | | |
| Acontia sp. | GW | CD |
| Hogna sp. | GW | EP |
| Lycosa sp. | GW | EP |
| Pandosa sp. 1 | GW | CD |
| Pandosa sp. 2 | GW | CD |
| Proevippa albitentris (Simon 1898) | GW | WL |
| Trabea purcelli (Roewer 1951) | GW | CD, WL |
| T. rubricaps (Lawrence 1952) | GW | EP, FB, WL |
| Trochosa sp.† | GW | WL |
| Zononina sp. | GW | EP, FB, WL |
| **Family: Migidae** | | |
| Moggindigea peringueyi (Simon 1903) | PWB | EP |
| **Family: Mimidae** | | |
| Ero sp. | PWF | EP |
| Mimetus sp. 1‡ | PWF | EP |
| Mimetus sp. 2‡ | PWF | EP |

| FAMILY/GENUS/SPECIES | GUIDS | HABITATS |
|----------------------|-------|----------|
| **Family: Miturgidae** | | |
| Cheiramonia ansae (Lotz 2002) | PWF | FB |
| **Family: Nemastidae** | | |
| Lepithorax rattrayi (Hewitt 1917) | GW | CD, EP, FB, WL |
| Pionothele sp. | GW | EP |
| **Family: Nephilidae** | | |
| Nephila fenestra (Thorell 1859) | OWB | FB |
| **Family: Oecobiidae** | | |
| Oecobius navus (Blackwall 1859) | PWF | CD, FB |
| **Family: Oonopidae** | | |
| Gamasomorpha humicol (Lawrence 1947) | GW | FB |
| Oonopinae sp. | GW | EP, FB |
| Opoepa speciosa (Lawrence 1952) | GW | CD, EP, FB, WL |
| **Family: Orsolobidae** | | |
| Afthobius sp. | GW | CD, FB |
| **Family: Oxyopidae** | | |
| Hamataliwa julczynska (Lesser 1915) | PWF | EP, FB |
| Hamataliwa sp. 2 | PWF | EP, FB |
| Oxyopes pusillus (Ciformaggio 1940?) | PWF | EP |
| Oxyopes sp. 2 imm. | PWF | EP |
| **Family: Palpimanidae** | | |
| Palpimanus sp. 1 | GW | EP, FB, WL |
| Palpimanus sp. 2 | GW | EP |
| **Family: Philodromidae** | | |
| Philodromus guineensis (Miloti 1941) | GW | FB |
| Suemus punctatus (Lawrence 1938) | GW | CD, EP, FB, WL |
| Tibeius minor (Lesser 1919) | PWF | EP, FB |
| **Family: Philocidae** | | |
| Quantama sp. | SpWB | CD, FB |
| Smeringopus sp. | SpWB | EP, FB |
| **Family: Phytelidae** | | |
| Lamaika sp. | HWB | EP, FB |
| Violete capensis (Vocco 1900) | HWB | EP, FB |
| **Family: Pisauridae** | | |
| Chiasmopes sp. imm. | PWF | FB |
| Cospius sp. | PWF | FB |
| Euryprasonthes sp. imm. | PWF | FB |
| Rothus purpuratus (Simon 1898) | PWF | EP, FB |
| Thallaspis spinosissimus (Karsch 1879) | GW | WL |
| **Family: Prodidomidae** | | |
| Prodidomus capensis (Purcell 1904) | GW | FB |
| Theuma ababenesis (Tucker 1923) | GW | EP |
| T. capensis (Purcell 1907) | GW | FB |
| T. schreineri (Purcell 1907?) | GW | FB |
| **Family: Salticidae** | | |
| Asemonea sp. | PWF | EP |
| Baryphaxa then (Simon, 1902) | PWF | FB |
| Dendrysophantus purcelli (Peckham & Peckham 1903) | PWF | EP |
| Euophrys purcelli (Peckham & Peckham 1903) | GW | FB |
| Euophrys sp. 2 | GW | EP, FB |
| Evarcha dotata (Peckham & Peckham 1903) | PWF | EP |
| Habrocestum sapiens (Peckham & Peckham 1903) | GW | FB |
| Habrocestum sp. 2 | GW | EP |
| Helobolus claviger (Simon 1901) | GW | FB |
| H. modicus (Peckham & Peckham 1903) | GW | EP, FB, WL |
| H. natalensis (Simon 1901) | GW | WL |
| Helobolus sp. 4 | GW/PWF | CD, IZ |
| Massagris regina (Wesolowska 1993) | GW | CD, EP, FB, IZ, WL |
| Menemerus claviger (Dufour 1831) | PWF | EP |
| Menemerus sp. 2 | PWF | FB |
| Mymarachne leleupi (Wanless 1978) | GW | CD, FB |
| Mymarachne sp. 2 | GW | FB |
Natta chionogastra (Simon 1901) GW EP, FB
N. horizontalis (Karsch 1879) GW EP
Pellenes geniculatus (Simon, 1868) GW FB, EP
Phintella aequipes (Peckham & Peckham 1903) GW EP
Phlegra sp. GW EP
Pignus sp. GW EP
Pseudicus africanus (Peckham & Peckham 1903) PWB EP
Pseudicus sp. 2 PWF EP
Rhene sp. imm. PWF FB
Salticus sp. indet. 1 PWF FB
Salticus sp. indet. 2 GW EP
Thyene infaeta (Gerstaeker 1873) PWF EP, FB
T. ogdeni (Peckham & Peckham 1903?) PWF EP, FB
Thyene sp. PWF EP
Thyena sp. GW EP

Family: Scytodidae

Scytodes cedli (Porcelli 1904) GW EP, FB, WL
Scytodes sp. 2 GW EP

Family: Segestridae

Ariadna sp. TWB FB

Family: Selenopidae

Anythops capensis (Lawrence 1940) PWB EP, FB
Anythops sp. 2 PWB EP, FB, WL

Family: Sicariidae

Loxoscelus spinulosa (Porcelli 1904) GW EP, FB
Loxosceles sp. 1 GW EP
Sicarius sp. (Porcelli 1901) GW EP, FB

Family: Sparassidae

Olios sp. 1 PWF FB
Olios sp. 2 PWF FB
Palystes castaneus (Latrielle 1819) PWF EP, FB
P. superciliosus (L. Koch 1875) PWF EP, FB, WL
Panarellata sp. PWF FB
Pseudomorpomicta sp. PWF FB

Family: Tetragenathidae

Leucauge festiva (Blackwall 1866) OWB EP, FB, WL
L. levanderi (Kulczyński 1901) OWB EP, FB, WL
Tetragenatha ceylonica (O.P.-Cambridge 1869) OWB EP, FB
Tetragenatha sp. 2 OWB EP

Family: Thelosomatidae

Heradida extima (O.P.-Cambridge 1883) OWB EP, FB
Heradida sp. OWB EP

Family: Theridiosomatidae

Anelosimus sp. PWB FB
Anelosimus sp. 1 PWB FB
Anelosimus sp. 2 PWB FB
Dipoena sp. PWB EP, FB
Dipoena sp. 1 PWB EP, FB, WL
Dipoena sp. 2 PWB FB
Dipoenura sp. PWB FB
Euryops sp. 1 PWB FB, WL
Euryops sp. 2 PWB FB
Lathroctopus geometricus (C.L. Koch 1841) PWB EP, FB
L. indistinctus (O.P.-Cambridge 1904) PWB EP
Pholcomma sp. PWB FB
Phorpinicella capensis (Simon 1885) PWB EP
Steatoda capensis (Hann 1990) PWB EP, FB, WL
Theidion delicatum (O.P.-Cambridge 1904) PWB EP, FB
Theidion sp. 2 PWB EP, FB
Theidion sp. 3 PWB EP

Family: Theridionidae

Theridionidae sp. OWB EP

Family: Zodariidae

Caesiulus globicoxys (Lawrence 1942) PWB EP, FB
Chariobas cyrindracus (Simon 1893) PWB EP, FB
Chariobas sp. 1 PWB EP
Chariobas sp. 2 PWB EP
Chariobas sp. 3 PWB EP
Clyroctea gravicolbium (Platnick & Jocqué 1993) PWB EP, FB
Diores simoni (O.P.-Cambridge 1904) PWB EP, FB, WL
Heraldia extima (Jocqué 1987) PWB EP, FB
Heterocheira retroflexa (Jocqué 2000) PWB EP, FB
Phasminyrmex sp. PWB EP
Phylorachne melloleitoa (Simon 1895) PWB EP, FB
P. rugosa (Latrielle 1804) GW EP
Procydrela procursor (Porcelli 1907) PWB EP, FB
Procydrela sp. OWB EP
Ranopus sp. PWB EP, FB
Ranotoma rotunda (Jocqué 2000) PWB EP, FB
Systenoplaca sp. PWB EP, FB

Family: Zoropsidae

Voraptus sp. PWB EP, FB

ORDER: OPIJONES (HARVESTMEN)

Family: Alegandridae

Adzea spatulatum (Lawrence 1931) PWB EP, FB, WL
Ceratomonidae annae (Lawrence 1934) PWB EP, FB, WL
Ceratomonidae annae (Lawrence 1934) PWB EP, FB, WL
C. karooensis (Lawrence 1931) PWB EP, FB, WL
C. minor (Lawrence 1931) PWB EP, FB, WL

APPENDIX 1 (CONT.)
## APPENDIX 1 (CONT...)  

| FAMILY/GENUS/SPECIES | GUILDS | HABITATS |
|----------------------|--------|----------|
| Anaulacodithella angustimana (Beier 1955) | GW     | EP, FB   |
| Parabuthus planicauda (Pocock 1889) | GW     | CD, EP, FB |
| Unropectes lineatus (C.L. Koch 1844) | GW/PWB | EP, FB, WL |
| Opistacanthus capensis (Thorell 1877) | GW     | EP, FB   |
| Opiophilophthalmus macer (Thorell 1877) | GW     | EP       |

### ORDER: SCORPIONES (SCORPIONS)

#### Family: Atemniidae
- Cyclatemnus sp.
- B. walliskewi (Ellingsen 1912)
- Hansenius sp.

#### Family: Cheliferidae
- Beierius simplex (Beier 1955)
- C. natalensis (Beier 1947)
- Pselaphochernes natalensis (Beier 1947)

#### Family: Chernetidae
- C. bertholdii (Mahnert 1983)
- C. natalensis (Beier 1947)
- P. natalensis (Beier 1947)

#### Family: Geogarypidae
- Geogarypus purcelli (Ellingsen 1912)
- Anaulacodithella angustimana (Beier 1955)

#### Family: Trécithoniidae
- Cyclatemnus sp.
- Beierius simplex (Beier 1955)
- Hansenius sp.

### ORDER: SOLIFUGAE (SUN-SPIDERS)

#### Family: Solugidae
- Solugema sp. imm.